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Philippine Geographical JOURNAL

Official Organ of the Philippine Geographical Society

Volume I SECOND & THIRD QUARTERS, 1953 Numbers 2 & 3

EDITORIAL

A Critical Situation

Since 1900, various administrations of government in the Philippines have been attempting to solve socio-economic problems which have hindered the development of the Philippines. To date, none of the programs established for this purpose can be said to have had unqualified success and, indeed, the great majority have been failures. Since 1946, the Republic has bent every energy to this problem. Yet, the road is still rough and questionable ahead.

Probably as significant a reason as any for this situation has been the indifference exhibited at all levels toward a serious study of geography and related disciplines. The major source for a study of Philippine geology and geography is the work by Warren D. Smith, *Geology and Mineral Resources of the Philippine Islands*, printed in 1924. From its publication to date, nothing correlative to it has appeared in the country; as of this month, a revised edition, prepared by Mr. Juan Teves of the Bureau of Mines, is due to appear—twenty-nine years after the Smith work. The literature on the principal aspects of geography is scanty indeed, and the program for the Eighth Pacific Science Congress, to be held in Manila during November, does not contain a single paper on Philippine geography, with the exception of monographs to be delivered during symposia connected with Pacific fisheries.

The text on geography, currently used in the Philippine school system, is wholly inadequate—and actually misinformative—for the purpose. Post-war numbers of the *Social Sciences and Humanities Review* of the University of the Philippines lack a single paper on Philippine geography. In five years of teaching in the Philippines, this writer has been unable to discover a single student able to name the provinces of the country, or even the chartered cities. A graduate student, appearing for his orals, and examined on his thesis entitled "Philippine Geopolitics", was unable to supply the coordinates for the Philippines, the name of the longest river in the Philippines, the major ports and their annual tonnage, or even the most basic information on the subject. Official publications of the government—including the Census—have located incorrectly various municipalities, even placing them in provinces other than the one in which they are located. Articles appearing in "magazine" sections of Sunday editions of metropolitan newspapers are superficial in the extreme and rather misleading.

The Philippine Geographical Society has expressed its deep concern over this situation from time to time but has so far failed to arouse any interest on the part of individuals most concerned. At a monthly meeting of the Society a resolution was approved requesting Malacañan to take under consideration the necessity of careful study of the problem of the change of geographic names in the country. Dr. Leopoldo Ui-

chanco, of the College of Agriculture, the University of the Philippines, pointed out that this frequent and ill-advised alteration of names causes great confusion in botanical and zoological studies. He was supported by Mr. Arturo Alcaraz, geophysicist of the Philippine Weather Bureau, who mentioned the fact that certain weather stations in the country are known by name to world meteorological stations and societies and when changed require a world-wide revision of data.

That the change of names has been capricious, hasty and ill-advised may be seen readily by even a hasty perusal of acts passed by the Commonwealth and Republic governments. The situation in the city of Manila is confusion compounded, with identically-named streets appearing in almost every section of the city. A motion was introduced recently in the City Council to remedy this situation but so far has been sidetracked by other issues.

The Society recommends the creation of a board in Malacañan, under the Office of the President, to be composed of one historian, one geographer, one zoologist, and one representative from the Weather Bureau, to advise the President on bills presented for his signature containing changes of names in the Philippines. Each bill of such a nature, the Society recommends, should be sent to the Society for scrutiny, after which it would send the bill accompanied by its recommendation to the committee suggested, who would then forward this to the President for action.

The Society recommends that a full year's course on Philippine geography be included in the curriculum of secondary schools, such a course *not* to be taught as an "integrated social studies" subject. However, in order for this necessary step to be taken, it will first be necessary to provide an adequate text on Philippine geography. This the Society has undertaken as one of its projects. Since the members of the Society are all employed full-time and many are immersed in university work of a very demanding nature, it is questionable whether or not this may be completed within two years. The Society is appalled at the absence of geographers from the Philippine scene, and the problem of securing text-book writers is a frustrating one.

A good geographical background or a thorough understanding of geography should be a prerequisite for administrators or others charged with developing and carrying out programs designed to solve the problems facing the people of the Philippines. Geographical place names should be standardized, since at the present many different spellings for a name can be found on several maps available, rivers will have several names for different sections of the same system, spellings vary with dialectical change or the language background of the individual naming a locality and confusion exists as to the language to be used for Philippine maps. Some names are used with the Spanish rendering, some with English and others with the particular language of the map-maker.

Regional and area studies should be undertaken to gather together available knowledge of the country, its inhabitants and resource patterns. The very strong regional diversity and heterogeneity so characteristic of the Philippines has never been fully explained or explored. If plans are drawn up without reference to these factors it seems like flying in the face of Providence to suppose that they will ever become effective.

The situation is now critical, since plans and programs are in constant preparation and if the present situation is allowed to go unchanged much time, energy and money will have been spent in vain. (C. O. H.)

THE PHILIPPINE COCONUT INDUSTRY

1934 - 1950

CHARLES O. HOUSTON, JR.*

A major element of the Philippine economy is the important industries derived from the coconut. The coconut palm (*Cocos nucifera*) is found in abundance throughout the tropics all over the world and finds a favorable home in the Philippines. Every portion of the tree has its utility — the nut, the leaves, the trunk — and it has occupied a position of importance in the native economy of all the tropical Asiatic countries. In the Philippines, it has been of primary importance since man first appeared there. The nuts supply food, with many different methods of preparation, and several kinds of drinks, from the pleasant unfermented water (erroneously called "milk" by Westerners) taken directly from the nut, to less pleasant beverages produced by fermenting and distilling.[1] The juice is drawn from the unopened flowers and is boiled down to sugar or is fermented and distilled producing a drink called "arrack" in certain parts of the world and "tuba," in the Philippines. The young bud, cut from the top of the tree, produces a "cabbage" highly esteemed by the people. The trunk yields soft lumber much used throughout the Islands for furniture and firewood. The leaves are woven into a great variety of useful products, fans, baskets, receptacles of one sort or another, and finds a further use as roofing. The shell of the nut is made into household vessels, utensils and a few implements. The external husk is excellent for polishing floors, being cut in half, turned faced down, and then briskly rubbed back and forth. The husk also provides coir from which ropes, cordage, brushes, door-mats, and many other articles are produced. The meat of the nut is the source of oil widely used for soap and margarine making. When broken into small pieces and dried (either in the sun or in ovens) it becomes copra. A general rule of the thumb is that 1,000 nuts will produce around five hundred pounds of copra, from which is extracted about twenty-five gallons of oil.[2]

In the Philippines, at least 4,000,000 people are wholly or partially dependent upon the coconut industry. The average annual value of coconut products exported in the period, 1927-1936, was $34,832,455, or 27 per cent of the total value of all exports, and represented some 34 per cent of the world's production of copra.[3]

In 1936, the Philippines, being the second largest producer of coconuts in the world, had a total of 600,000 hectares containing over 115,000,000 trees, of which 75,500,000 were bearing. Of the world's total of over three million hectares, the Philippines thus had nearly 20 per cent. The most important producing provinces were, in that year, Tayabas, Laguna, Cebu, Oriental and Occidental Misamis, Albay, Samar, Leyte, Negros, Bohol, Camarines Sur, Romblon and Pangasinan. The total of the provinces of Laguna and Tayabas alone was about 210,000 hectares, or 35 per cent of the national total.

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[1] "Milk" is expressed from the nut and is not the fluid found in the hollow of the kernel.

[2] *The Encyclopaedia Britannica*, (Chicago: The Encyclopaedia Britannica, Inc., 1947 edition), Vol. 5, p. 950.

[3] For information with regard to the industry and production practices in the Philippines, see: *The Coconut Industry in the Philippines*, Department of Agriculture and Commerce, (Manila: Bureau of Printing, 1939), 19 pp.

There are listed over one hundred variety names for the coconut in the Philippines many of which undoubtedly refer to the same variety in various areas of slightly different dialectical change. There are probably no more than thirty distinct varieties, of which the most important for copra are the *Romano* and the *Laguna*. Other varieties serve various local purposes, some like the *Macapuno*, being used for ice cream and other delicacies.

Costs of production varied widely throughout the Philippines, depending, naturally, upon local conditions. In Tayabas, the leading producer, the total average cost, in 1936, of producing 100 kilos of copra was P5.60. This resulted in a net average income of P69.58 per hectare. The situation of the coconut planters in 1933 and 1934, when prices dropped to P4.48 and P3.98 per 100 kilos is better imagined than described.

For domestic purposes, the Philippines manufactured four important products from the coconut: oil, shredded coconut, soaps, and vegetable lard. As a by-product in the manufacture of oil, copra cake and meal were of some importance at various periods. This item ranked third in the list of coconut export products. Other minor products were fatty acids, glycerine, charcoal and coir. Margarine, during the early Commonwealth, was rather inferior in quality, and had a difficult time competing with foreign products. Fatty acids were the subject of much discouragement and agitation in the United States, and glycerine and charcoal had only been in demand during the First World War.[4] The coir industry, while capable of expansion, was believed only able to succeed when costs were reduced to levels prevailing in India.[5] A writer, in 1937, believed that the domestic consumption of coconut products was "so tremendous that evidently, it has virtually reached the saturation point." Therefore, for it to survive, he believed, "it must at least maintain its export trade."[6] From the vantage point of later years, there seems little reason to believe that domestic consumption had reached the saturation point.

Since the coconut industry was particularly geared to American economy, its fate was determined by far-away men whose irresponsibility often brought confusion, frustration and destruction to many. The coconut industry was most sensitive to stimuli from abroad. The value of the product in 1929 was ₱89,093,620; it declined to ₱27,146,650, in 1934. It then rose to ₱92,126,490, in 1938, the greatest rise taking place in home-made oil and the utilization of nuts for food, and then dropped to ₱28,013,002 in 1939, a fall of over ₱64,000,000 in one year. In that year, the production of copra fell off ₱56,000,000, home-made oil some ₱200,000, and the utilization of nuts for food some eight million, while the production of tuba increased almost ₱1,000,000.[7]

The first blow struck at the Philippine coconut producer was delivered by the American Congress (at the instigation of domestic oil producers) through the Revenue Act of 1934 (H.R. 7835). Aside from the selfish motives which inspired such a step,[8] it was disastrous to the economy of the Islands, contrasting sharply with the "altruistic" motive which supposedly inspired the Tydings-McDuffie Act. Observers have

[4]Domingo B. Paguirigan: "Philippine Coconut Industry," *The Commercial and Industrial Manual of the Philippines, 1937-1938*, p. 246.

[5]*Ibid.*

[6]*Ibid.*

[7]*Yearbook of Philippine Statistics: 1946*, (Manila: Bureau of the Census and Statistics, 1947), p. 153.

[8]Grayson L. Kirk, *Philippine Independence*, (New York: Farrar and Rinehardt, 1936), Chapter V, pp. 102-135.

pointed to the fact that the processing tax provided by the Act was to be returned to the Philippine Commonwealth Government, thus providing that Government with a handsome revenue. It is interesting to note, as Professor Kirk points out, a provision in that amendment which stipulated that such payments were to cease if the Philippine Government provided any subsidy to be paid the producers of copra, coconut oil, or allied products.[9]

A writer heatedly termed this act "The Congressional vendetta," calling the legislation senseless and unjust.[10] "Even when considering the economic unwisdom of such a tax," he said, "and questioning the legal right of Congress to impose it, the question of the morality of such an action stands foremost.... Never in the 35 years of American sovereignty over the Philippines has the United States Government ever perpetrated an act of unmitigated injustice.... But of recent years, the United States Government, particularly the Congressional branch, has passed or has sought to pass laws in utter disregard of the interests of the people over whom or against whom these laws apply."[11] Under the circumstances, this must be considered a temperate statement. Governor-General Murphy was moved to wire, on February 24, 1934: "Intimate contact with the situation locally forces me to the conclusion that the unlimited application of the tax will provoke a near disaster in the economy of the Philippines. The general feeling is pronouncedly against the moral right of the United States to legislate so severely against a territory under the flag as practically to destroy an industry on which more than 3,000,000 people are dependent."[12] But, in 1934, the United States Congress was not interested in morality nor in the future of a people, of whom, President McKinley stating the reason for acquiring the country in 1898, said: "...there was nothing left for us to do but to take them all, and to educate the Filipinos, and uplift and civilize and Christianize them, and by God's grace do the very best we could for them, as our fellow-men for whom Christ also died."[13]

In January, 1934, the copra market was noted for its instability and most crushers were unwilling to enter into further contracts due to the unfavorable world market conditions. Spain had placed restrictions upon copra imports and it was rumored that France would take similar action. The excise tax by the United States, capped the climax and forced the exporters and oil millers to curtail purchases while they awaited further developments. The continuing uncertainty was greatly influenced by developments in Washington. One bill after another was introduced into Congress, providing for Philippine independence, which generally was welcomed by Filipinos, but all these bills were distinguished by their vagueness with regard to the future of Philippine economy or their stringent provisions with regard to it. This state of affairs was not conducive to calmness in the Philippines and brought about a general instability in those exports products most sensitive to conditions in America. The remarks of men like Rep. Harold Knutson of Minnesota and Rep. E. P. Burke of Nebraska, upon the independence question and the restriction of coconut oil created panic in business circles in the Philippines. For example, Rep. Knutson opposed the Hawes bill for independence, because it did not offer sufficient protection for the dairy interests in the

[9] *Ibid.*, p. 133

[10] "The Congressional Vendetta", Editorial, *Philippine Magazine*, XXXI, No.3 (March, 1934), p. 108.

[11] *Ibid.*,

[12] *Ibid.*

[13] Kirk, *op. cit.*, p. 17.

United States. Rep. A. C. Schallenberger of Nebraska stated that coconut oil was largely replacing beef and pork products and should be greatly restricted in any independence measure. The movement for granting independence became a stampede, and Representative Magnus Johnson introduced a bill calling for independence within thirty or forty months but saying nothing definitive with regard to the economy of the country.[14]

Mr. H. M. Cavender, President of the American Chamber of Commerce in Manila, declared that the Chamber should maintain an aggressive policy in opposing the inimical measures that were being considered in Washington.[15] The Philippine Chamber of Commerce went on record against the excise tax, stating that it would cause hardship to some 4,000,000 people, affecting an even larger number than "unfair" restrictions on the sugar industry. Governor-General Murphy proposed that either all Philippine oil and copra used for non-edible purposes be exempted from the tax, or that a quota of 200,000 long tons of oil be exempted. The Secretary of War, George C. Dern, addressed a letter to the House Ways and Means Committee, objecting strongly to the tax on oil and copra.[16] On February 1, the directorate of the Coconut Planters Association adopted a resolution which declared that while a solution of the Philippine-American relationship was pending, the Filipinos were entitled to the "full enjoyment of economic opportunity under American sovereignty" and that the proposed tax "would be a flagrant violation of this fundamental right."[17]

In spite of these objections and proposals, the House Ways and Means Committee refused to reconsider its action and endorsed the proposal to levy an excise tax on copra and oil. On February 4, Dern again protested against the tax, stating that it would defeat its purpose of raising revenue by destroying Filipino purchasing power. The Committee, however, countered with the statement that it was motivated as much by the desire to remove competition from the field of animal and vegetable fats as by the idea of raising revenue.[18] As pointed out by Professor Kirk, this argument was without adequate basis and had been repeatedly refuted by experts who appeared before the Committee.[19] The Governor-General again, on February 6 and 9, protested the tax stating that it was equal to 200 per cent of the current price and would work "incalculable harm to the Philippines without advantage to continental United States...." It meant, he said, financially, the "bankruptcy of eight important provinces... questionable solvency for ten others.... Socially it will entail widespread distress and disaffection among the people." He asked for a two or four years' trial of the limitation plan previously proposed by him. The House Committee, at that time, had voted three times to sustain the tax.

On February 15, President Quezon stated that he had received the promises of Tydings and McDuffie to oppose the excise tax and Representative R. R. Eltse, of California, sharply attacked the measure, stating accurately that "American farmers and all our people have been misled by false propaganda...." "The tax," he continued, "would be detrimental to business generally on the Pacific coast and also to the dairy industry in all parts of the country since the Philippines is the largest

[14] *Philippine Magazine*, XXXI, No. 3 (March, 1934), pp. 90-92.
[15] *Ibid.*
[16] *Ibid.*
[17] *Ibid.*
[18] *Ibid.*
[19] Note 8 above.

export market for American canned milk.... It seems strange to me that the predominantly what Democratic Ways and Means Committee should have given birth to this renegade high tariff measure."[20]

In the Philippines, Under Secretary Vargas appointed a committee to study the possibilities of utilizing coconut by-products in local industries, realizing that there was little chance that the tax would be defeated.

Rumors were circulated, following the approval of the Tydings-McDuffie Independence Act, that Congress would fail to enact the excise tax. The rumor was started, it was reported, to bring about a rise in prices, which, however, failed to materialize. Two days after the passage of the bill, the Senate finance committee voted to retain the excise tax but to reduce it from five to three cents a pound. Local producers saw no relief in this, however, and predicted the destruction of the industry.

Major William B. Anderson, Manila businessman, stated that ten or twelve years of slow economic strangulation was worse than a quicker death in three years. He predicted that invested capital would liquidate and that new capital would not enter, and that the only certainty was that the Japanese would soon control the interior trade held by the Chinese and also the import and export trade of the Islands. "It will probably be found highly inimical for Americans to continue."[21] Mr. S. Dazai, manager of the Yokohama Specie Bank and head of the Japanese Chamber of Commerce, in Manila, stated happily: "I am glad that the Philippines is now to obtain her independence. No, I don't think Japanese capital will fly away; on the contrary, there will be greater inducement for it to come into the Philippines. I am afraid that it is the American capital which will fly away. I am glad of independence because I believe that the Orient should be for Orientals. We are like one people. Oriental capital will come to the Philippines. Japan will play a great part in the economic development of this country."[22] No prophecy was ever more accurate and none received less attention on the part of those most concerned. How short the years were until fulfillment arrived with the checks of Japanese Government subsidies and the bayonets shining under a December sun.

The excitement over the excise tax, which manifested itself largely in restricted buying and which had brought a gradual decline in the market, gradually subsided at the end of 1934. The lowest ebb was reached in May, June, and July, of 1934, after which the market gradually recovered. During this lowest period, the industry might well have come to a complete halt had it not been for the development of factors outside the immediate Philippine economy. The most important of these, and the one which permitted the industry to regain its feet, was the advantage derived from an inflated currency. This enabled the Philippines to undersell all other producers. An American economist in the Philippines at the time stated that with the former gold currency, the Philippines would have been unable to continue production, as European price equivalents would have been lower than the production cost.[23]

Despite the slight advantage gained by inflated currency, the price was so low that many planters in areas where transportation and marketing costs were high, found themselves unable to sell at cost and fed

[20] *Philippine Magazine*, XXXI, No. 3 (March, 1934), p. 94.
[21] *Ibid.*, XXXI, No. 5 (May, 1934), p. 179.
[22] *Ibid.* Since this bank was subsidized by the Japanese Government, Mr. Dazai's comments conceivably represented the official position on the subject.
[23] Norbert W. Schmelkes: "The 1935 Prospects for the Coconut Grower," *Philippine Magazine*, XXXII, No. 3 (March, 1935), p. 136.

the nuts to their hogs or extracted oil for their own consumption. In so doing they withdrew from the market a considerable quantity of copra. Since trees increase in the Philippines by from two to three million annually, the amount of copra which normally would have been shipped was considerable, one estimate placing it at 60,000 tons.

At this point, fate stepped in. In 1934-35, the American farmer faced one of the worst droughts in history. In addition, the United States was experimenting with crop reduction programs under the AAA. Until this time, the United States had provided but a small market for Philippine copra meal. But with the farmers unable to feed their cattle with home-produced feeds and facing the possible loss of entire herds they frantically turned to copra meal. The tremendous increase in consumption of a commodity which had been selling in the Philippines at prices barely above its value as fuel, increased prices some 250 per cent to the delight of the starving coconut producers. This naturally increased the value of copra and as soon as the shortage in fats became evident and previous stocks of oil were consumed, the market boomed.[24]

This would have been enough to bring a certain prosperity to the producer, but fate again intervened in a typhoon which swept through the major coconut-producing provinces, causing prices to soar again. By the beginning of 1935, prices were high enough to be considered "spectacular" and caused considerable speculation whether the level could be maintained. In addition, the two-cent excise tax differential in favor of the Philippines had the effect of shutting out other copra producing countries and undoubtedly brought benefits to Philippine producers. Had the excise tax not been imposed, there is little doubt that the crisis of 1934-1935 in oil and copra meal could have been avoided, which would have meant a considerable saving to American farmers — one of the major groups eager for the imposition of the tax.

The Joint Preparatory Committee received a brief, in 1937, on the state of the coconut industry, setting forth its nature, history, activity, importance to Philippine economy, extent of dependence upon the American market, and the probable fate of the industry as a result of the Tydings-McDuffie Act and other possible future legislation leading to Philippine Independence. Unless favorable amendments were added to the Independence Law, the excise and export taxes as provided therein would be disastrous to the industry, it was believed. It would result, they said, in the withdrawal of three-fourths of hectarage from cultivation, adversely affecting some three million people and lowering the revenues of the Philippine Government from the ₱7,000,000, of 1935, to a probable ₱1,750,000.[25]

The industry believed that it was mutually beneficial for the *status quo* to be maintained, since the trade in oils and their derivatives was supplemented by certain advantages to America, such as freight, insurance, continued purchases by the industry in America, and interest payments on rather extensive American investments. And since the United States had to import seeds and oils from other countries because of the excise taxes reducing imports of the Philippine oil into America, this showed that the United States had to import these items because of industrial demands. Since this was so, and because of the long association of the two countries, coupled with the mutual trade advantage "and the responsibility shared by American capital in the promotion of the Philip-

[24] *Ibid.*

[25] "Brief," edited by D. B. Paguirigan, *The Commercial and Industrial Manual of the Philippines, 1937-1938*, p. 249.

pine coconut industry," there should exist sufficient motive to waive any discrimination against an industry so vital to the Philippines and its people.[26]

2

During the early years of the Commonwealth, unit prices of copra continued to rise until, by 1938, they had reached the highest annual level since 1930. The quantity of copra exported was lower, but the total shipped to the United States was greater than at almost any time in a decade.

The United States, however, continued to legislate against Philippine oil, altering its competitive position adversely, with the Revenue Acts of 1935 and 1936. According to the Joint Preparatory Committee Report:

> The Revenue Act of 1935 amended that of 1934 so as to place a compensatory tax on imported articles manufactured or produced in chief value from taxable oils. The rates were substantially the equivalent of the excise taxes which would have been collected had the oil ingredients been imported into the United States in the form of oil. The principal effect of this law on the Philippines was to subject Philippine-made fatty acids, vegetable lard, soap and other products made from coconut oil to the equivalent of the excise tax imposed on coconut oil.
>
> The Revenue Act of 1936 amended both of the preceding revenue acts. The most important changes, from the standpoint of the Philippines, were the extension of the list of taxable oils and the increases in rates on some of the oils already taxed. The rate on coconut oil was not changed.[27]

The Joint Preparatory Committee also pointed to the fact that the so-called preferential position accorded Philippine coconut oil did not work "as much to its advantage as might appear to be the case" since "it is still obliged to sell in the world market...."[28]

Although the Revenue Act of 1934 did not change the status of Philippine copra, experts believed that its effect had been favorable because it tended to equalize the competitive position of copra and oil "relative to other articles on which new or higher taxes have been imposed."[29]

During 1936, for the first time in some years, the European buyers were very active and offered better prices than the United States' market. However, uncertainty prevailed and the market fluctuated widely, with speculative buying and selling controlling the situation to a large degree. After May, a general rise in price took place reaching levels which had not been considered possible earlier in the year, with a peak in October of a monthly average price of P14.25 for resecada (dried). The market for coconut oil was much quieter with little business for bulk shipments. Price fluctuations occurred over a narrow range, with quotations at P0.20 for January and P0.36 for December. Copra cake and meal showed substantial increases, with the continued drought in the United States driving prices for foodstuffs to new highs. While this normally would have meant a boom in prices, due to the sanctions applied against Italy, and the consequent heavy demand for Philippine oils, many

[26] *Ibid.*

[27] Joint Preparatory Committee on Philippine Affairs, *Report of May 20, 1938*, Vol. I, pp. 63-64. The change in the act of 1935 went into effect September 30, 1935, and the second, August 21, 1936.

[28] *Ibid.*

[29] "U.S. Revenue Act Boosts P.I. Oil," *Philippine Journal of Commerce*, XIII, No. 1 (January, 1937), p. 13. The subtitle of this article read: "Revision Apparently Gives Advantage to a Number of Products." The reservation was well taken in view of later developments. See also: "Review of Coconut Products for 1936," *The Commercial and Industrial Manual of the Philippines, 1937-1938*, p. 250.

planters, in order to take advantage of the high prices while they lasted, harvested all the nuts possible, including green ones which they converted into low quality copra. This practice usually results in injuries to the trees and lowers the bearing capacity.[30] In addition, a severe typhoon in December swept across Southeastern Luzon causing extensive damage to trees in Albay, Sorsogon, and Camarines. These areas had barely recovered from the severe typhoon of 1934. Also, Pacific coast crushers, in the United States, faced difficult days because of the great shipping strike which paralyzed both current and future operations.

In an effort to aid the shaky coconut industry, the National Assembly, on October 14, 1936, passed Commonwealth Act No. 50, "directing the Secretary of Agriculture and Commerce, the Philippine National Bank and the National Development Company to establish, operate and maintain warehouses for copra and other marketable products." Any municipality wishing such a warehouse erected was directed to apply to the Government through these agencies which would examine the request and, if justified, invest funds in the enterprise. The municipality would make the proper arrangements with the Bank or the NDC for reimbursement of the money invested. The problem of adequate storage plagued the coconut producer throughout the period. It had always been a source of dissatisfaction, since so much of the planter's profits were eaten away by storage charges, and with the unstable conditions facing planters during the Commonwealth period, it added fuel to discontent. The problem was never solved.

In 1937, the better prices the industry hoped for were not forthcoming because of a shipping strike on the Pacific Coast. The bulk of the copra exports to the United States normally went to these Pacific Coast ports. It so happened that at that time stocks on the coast were low and prices were gradually rising. The benefits to be derived from the situation, however, were denied the Philippine producers as they were unable to get their shipments to the buyers. Hemp and cordage were little affected by the strike since the demand for lower grades of fiber generally came from Europe and from the eastern United States.

It is difficult in the United States to appreciate the tremendous importance of a single crop in the life of the people of the Philippines. Americans could not understand why such an outcry was raised in the Philippines over the control of coconut oil and copra. It should be realized that at the time of the beginning of the Commonwealth, there were some 115,312,400 coconut trees in the Philippines, of which about 75,414,200 were bearing and were distributed over 608,360 hectares or about 15 per cent of the total cultivated area of Philippine lands. When we say that about four million people were wholly or in part dependent upon the coconut industry it is difficult to grasp just what this means to the country. It may be better appreciated if it is realized that over 75 per cent of the taxes of the province of Tayabas (now Quezon) came from the assessment on coconut lands and trees; between 50 and 75 per cent for Laguna, Marinduque, Masbate, Oriental Misamis, Romblon and Zamboanga; and between 15 and 50 per cent for Agusan, Bohol, Camarines Norte, Camarines Sur, Capiz, Cotabato. Lanao, Mindoro, Palawan and Surigao. The government assessment, in 1933 amounted to ₱327,099,255, from which the government derived a direct land tax of ₱2,872,599, including revenues from industries resulting therefrom. It was estimated that over 4 million pesos was derived from the coconut industry annually by the govern-

[30] *Ibid.*

ment. To a large extent, interisland shipping depended upon the coconut industry.[31]

Imagine, for a rough comparison, seventeen of the States, of the United States, containing some 33,000,000 of the population of the country in 1940, with all rail, truck, bus and water lines of transportation between New York and Los Angeles, wholly or in part dependent upon one crop. Imagine further what the fate of these states, transportation facilities, and people would be were their future dependent upon Europe as the major buyer for the crop (some 96.5 per cent). Imagine still further that while this crop, corn for example, was selling in the American export centers at ten to fifteen cents a bushel, a tax was imposed in Europe of eight cents a bushel, this tax then being remitted to the United States Government with the proviso that it was not to be used, in any way, to aid the corn producers or those engaged in the corn business, directly or indirectly.

This, in effect, was the fate of the coconut producers in the Philippines. Coconut producers, in 1937, were making a profit of $0.0006 per pound on coconut oil. A five per cent export tax was provided by the Tydings-McDuffie Law (Section 6), to be levied during the sixth year following the inauguration of the Commonwealth Government, which amounted to $0.001 per pound. It was further provided that, in the tenth year, the export tax would amount to 25 per cent or $0.005 per pound. The reason for the panic in the coconut-growing regions when these provisions were announced should be self-evident. They believed that, with the imposition of this export tax, their industry was faced with extinction. The situation was sadly ironic in that the industry had been developed largely through the initiative of buyers in the United States who were now attempting to destroy it — each of which actions taking place with no thought of resultant effects upon Philippine economy, either in the United States or in the Philippines.

In order to meet a highly uncertain future, the old Philippine Coconut Planters' Association was reorganized into the Philippine Coconut Association, including for the first time exporters, millers and industrialists. The new organization petitioned the Government for the reservation of ₱1,000,000, from the proceeds of the excise tax fund, for research, educational promotion of the industry and publicity in the United States. Their hopes, however, were thwarted. This Association was formed at the initiative of the Bureau of Plant Industry who had arranged a meeting of interested parties at the time of the 1937 Philippine Exposition. Its aims were to improve generally the industry through seed selection, fertilization, cover-cropping, research into methods of improving the quality of copra and to encourage industrialization and commercialization of the numerous by-products. Another purpose was to keep members informed about developments in the industry and, of course, one of its major objectives was to fight and eliminate the objectionable provisions in the Independence Law and other American tax legislation. The Director of the Bureau, Hilarion Silayan, instructed field men in the Bureau to aid in all possible ways in the organization and direction of local chapters of the Association.

On October 18, 1937, President Quezon addressed a message to the National Assembly. In the course of this famous speech, dealing primarily with the demand for independence in 1939, he touched upon the subject of social justice under the Commonwealth and the means of carrying

[31] "Philippine-American Trade Relations," Bureau of Commerce, *PJC*, XIII, No. 2 (February, 1937), pp. 12-13.

out this program. Since the main problem was one of finance, he mentioned that "fortunately for us a new source of income has come to our hands that will facilitate the carrying out of our program of social justice and economic readjustment." This was the proceeds of the excise tax (amounting to P95,507,227.30 at the end of June, 1937) in the American Federal Treasury, "the transfer of which amount to the Treasury of the Philippines I had secured before I left America on my last trip."[32] He stated that the sum was then ready for appropriation.

> The final decision as to how the fund shall be spent is, of course, yours. But in the exercise of my constitutional prerogatives I shall take the liberty of making some suggestions regarding the purposes for which this money should be spent.
>
> The first thing that we must bear in mind is that this fund *does not constitute an ordinary income* of the Government upon which we may depend for recurring obligations. When Independence shall have been granted, this source of our income will cease. Were we to defray from this fund services that we cannot maintain once this income is terminated *we have thrown away* this money thus spent. We must therefore limit the use of this fund for what might be termed capital investments or for self-supporting enterprise. Above all we should use this fund for national objectives, for purposes where the greatest good may be derived by the Filipino people.
>
> Concretely, I recommend that this fund be devoted to the following purposes:
>
> 1. To improve the sanitary condition of centers of population by constructing water systems or artesian wells.
> 2. For combating malaria where there is assurance that it can be done *at reasonable expense.*
> 3. For the prevention of tuberculosis and establishment of more sanatoriums, as it is well-known the white plague is the worst scourge afflicting our race.
> 4. For the building of leprosariums....
> 5. For extending free dispensary service to the poor not only in centers of population but also in outlying barrios....
> 6. For building public schools in every barrio where there is a sufficient number of children justifying the opening of the school.
> 7. For opening national highways and helping in the construction of provincial and even barrio roads whenever the respective provinces and municipalities pledge themselves to maintain the roads constructed, and in the case of barrio roads where the volume of traffic on said roads also justifies their construction.
> 8. For construction of office buildings for the National Government so as to reduce, if not eliminate, the continued expense in rents.
> 9. For the purchase of large landed estates and their resale in small lots to the actual occupants thereof.
> 10. For the development of water power, the reforestation of denuded areas, the colonization and development of Mindanao; and
> 11. For the financing of a long range program of economic adjustment necessary to prepare the country for the new industries which at the same time will give work to the unemployed.[33]

The disposition of these funds was to provide many heated discussions for the remainder of the Commonwealth period. Quezon's eleven

[32] *PJC*, XIII, Nos. 10-11, (October-November, 1937), p. 15. This was not accurate. The transfer of funds was automatic. The President had nothing to do with the transaction.

[33] *Ibid.* Italics supplied. We may consider that the money *was* thrown away since the services organized were unable to continue in operation without extensive appropriations by the Government. A great portion of such services, begun with these funds, have long since disappeared.

objectives were never reached, nor, with the exception of a few enterprises touching immediately upon the benefits to a few branches of the government and the construction of one highway in Mindanao, were they ever seriously started.

There was much objection to using the funds for the redemption of the nation's bonded indebtedness as had been suggested by many in the Government. Secretary of Finance Antonio de las Alas, Auditor General Jaime Hernandez, and Executive Secretary Jorge B. Vargas, suggested that the funds be set aside for the creation of a merchant marine. The Auditor General stated that all Philippine bond issues had fixed dates of maturity, and were provided with sinking funds adequate for the purpose. Suggestions were made by the others also that the funds to establish the capital stock of the National Development Company would probably come from the excise tax funds. The Company was to be capitalized at ₱20,000,000, half of which had been provided. However, even the entire amount would be insufficient, some stated, to meet the demands of a merchant marine, necessitating application of excise tax funds.[34]

A Filipino columnist in America, Vicente Villamin, claimed that the application of the excise tax upon Philippine copra was beneficial and would prove a godsend to the industry and the Government.[35] The Secretary of Finance, however, felt differently, and immediately began laying plans to initiate strengthening measures for other industries as well as remedial measures for the coconut industry itself. His first plan was the establishment of abaca and coconut centrals which would be charged with research and other activities leading to a general improvement in the respective industries. He instructed Mr. M. L. Roxas, agricultural adviser in Malacañan, to proceed to the Bicol and Tayabas to select localities.

The *Bulletin*, in an editorial of May 8, 1937, suggested that a large portion of the funds be used to strengthen and rehabilitate the government pension system to reward faithful and suffering employees.[36] President Quezon never considered this suggestion.

High Commissioner McNutt counselled the wise spending of the funds whatever was done with them, and Assemblyman Felipe Jose and former Representative Francisco Varona suggested that a portion of the funds be utilized for the development of agricultural colonies in Mindanao. This suggestion, too, received short shrift.

The Department of Interior announced that it would submit a plan to the cabinet suggesting the use of ₱10,000,000, of the fund, for the improvement of sanitary facilities in various communities throughout the nation. This worthy plan was also ignored.

Secretary Vargas, replying to requests of planters, stated definitely that the President would not approve the use of any portion of the funds for aiding the coconut industry, either directly or indirectly. One definite plan, he stated, would be the extension of the railroad lines to Legaspi, Albay; since this line would extend rail service for planters, he believed it would be of benefit to them. In addition, he suggested that some way might be found to use a portion of the funds for the introduction of new drying methods for copra. If this proved impossible, he thought that perhaps a portion of the funds provided by the New Industries Act could be made available for that purpose.[37]

[34] *The Commercial and Industrial Manual of the Philippines, 1937-1938*, p. 270.
[35] *Ibid.*
[36] *Ibid.*, p. 271.
[37] *Ibid.*, p. 272.

Manuel de la Fuente, president of the Manila city board, advanced an excellent suggestion for the disposition of the funds. This was to provide a revolving calamity fund of P10,000,000, for the improvement of housing conditions in Manila, the extension of small loans to laborers and low salaried employees, with preference to be given to victims of calamities. Councilor Hermenegildo Atienza declared that the proposal was "one of the most progressive measures to ameliorate conditions of masses" yet advanced. "We cannot talk of social justice and reform," he said, "without taking the first step essential to any program of this nature — the improvement of the housing conditions of the masses."[38] Councilor Jose Advincula declared that such a fund would be "providential" and Councilor Celestino Ramos said that it was "a right step in the right direction." He was supported by Councilor Vicente Alindada who declared that it was an excellent investment from which "not only the government but the nation may profit considerably in the form of a healthy and contented populace."[39] The city councilors, however, spoke in vain.

Secretary Eulogio Rodriguez, of the Department of Agriculture and Commerce, stated that the funds accruing from the excise tax belonged to the people at large and would be spent for the economic development of the country as a whole, the funds being apportioned to the different provinces. He believed that the plan to use P23,657,000, for the realization of a five-year road and highway construction program in Mindanao and Sulu, was excellent, and should be supplemented by aid to the fishing industry and other infant industries.[40]

The *Philippines Herald* pointed to a danger not thoroughly understood by most observers of the time. This fund would accrue to the Government only so long as Philippine copra and oil were sold in the American market. As early as 1937, signs were apparent that exports to the United States were decreasing in value. If this trend were to continue, naturally the amounts accruing to the fund would decrease. Since the end result would be the crippling of the coconut industry as well as bringing serious injury to the financial structure of the government, the paper counselled full support to the Filipino members of the Joint Preparatory Committee in their struggle to adjust satisfactorily the economic relations between the two nations.[41]

In September, 1937, the Philippine-American Joint Preparatory Committee returned to Manila after a tour of inspection and investigation in the Bicol, Visayan and Mindanao provinces. It then conducted its third and last series of public hearings. Various briefs, prepared by the different chambers of commerce, were submitted, supplemented by oral arguments delivered by the authorized representatives of these organizations. The general tenor of the pleas was for an indefinite continuation of the free-trade relations. If this proved unacceptable, they advocated a reasonable period of time for readjustment before the free-trade period was terminated.

The first day of hearings was given over to the coconut industry, the representatives of which pleaded for a fairer treatment through the abolition of the excise tax and the continuation of existing trade arrangements between the two countries, even after independence.

The Philippine Coconut Association recommended that copra should continue on the free list; that no excise tax which did not apply equally

[38] *Ibid.*
[39] *Ibid.*, pp. 272-273.
[40] *Ibid.*, pp. 273-274.
[41] *Ibid.*, p. 274.

to Philippine and foreign products be levied; and that a duty-free quota of coconut oil and desiccated coconut, after independence, be established to continue as long as the United States needed to import these commodities. Mr. Maximo M. Kalaw, acting president of the Association, appealed to the committee, saying: "We do not wish to infringe upon the American farmers or upon the profits derived by them, but in view of the fact that the United States does not and cannot supply its own industrial oils and fats, the Philippines... should be entitled to even more advantageous position than that of any competing oils and fats produced in other countries not under the American flag."[42]

Mr. Kenneth B. Day, spokesman for the industrialists, said:

> The Philippine coconut oil industry is before you today to fight for its life. Ours is not a question of increased advantages — we ask none. It is not a question of special privileges. It is rather a question of non-discrimination. Our business is already limited in volume by the Tydings-McDuffie Act. All we are asking is the right to continue to operate on this limited basis, not only through the period of the Commonwealth but thereafter.[43]

The coconut oil mills recommended the annual admittance of two hundred thousand long tons of coconut oil to the United States "under the same conditions and terms as those given to oil made from duty-free copra shipped... to the United States." This meant that such oil would be free of export taxes and import duties. They also suggested "a readjustment of the excise taxes to permit Philippine coconut oil to recover its position as American oil in the American market, which position had been adversely affected by the products of American agriculture rather than by competing vegetable oils and fats imported from foreign countries." They concluded by advocating "a continuation of this arrangement not only during the Commonwealth period, but also indefinitely thereafter."[44]

3

The condition of the local market during the last quarter of 1937 was very quiet the Bureau of Commerce stated, "as traders' ideas drifted far apart under the influence of two factors: the absence of encouragement from the American oil market which prevented the mills from raising bids materially, and the higher copra market in Europe which enabled exporters to offer better prices than the mills."[45] Europe continued to outbid America, but the indusfry gained little advantage thereby because of the great lack of shipping. The market was a source of disappointment to those who had believed that year-end trends would be better. They drew their idea from market activities in 1936 and did not consider the operation of entirely different factors. The previous year had seen a shortage of fats and oils in the United States arising from a larger demand due to the industrial revival and greater purchasing power. This was also true in Europe. At the same time, the local supply was materially restricted aiding in the rise of prices. While this was temporarily beneficial, it had the ultimate effect of encouraging buyers in the States to look elsewhere for such cheaper oils as palm, kernel, and babasu from Brazil, Europe, and European dependencies. By the middle of the year, consumers had bought coconut oil, as well as cheaper oils, heavily, to last them through the year. So adequate were the stocks that large soap manufacturers held aloof from the Philippine market from

[42] *Op. cit.*, p. 61.
[43] *Ibid.*
[44] *Ibid.*
[45] *PJC*, XIII, Nos. 10-11 (October-November, 1937), p. 54.

July forward. In addition, large cotton and corn crops in the United States hit Philippine oil heavily, with cotton-seed oil in abundance and its price dropping considerably below coconut oil. The outlook, then, was far from bright, despite the rosy picture painted by Bureau of Commerce in its review of business conditions for the year.[46]

The Bureau of Plant Industry pointed out to the industry the importance of coir (coir is the dried outer husk of the coconut) as an additional source of income, able to bring in annually over three million pesos.[47] It was important to consider such other products E. E. Cruz, the Bureau spokesman said, "in the face of the impending ruin of the coconut industry which is brought about by world competition, recurring typhoons, pests and diseases, excise tax, plus the present limitation and forthcoming export taxes that will be levied. . . ."[48] Some coir was consumed locally by furniture factories and automobile industries. The foreign market, if properly developed, would undoubtedly take the remainder of the annual production, or so the Bureau predicted. The many uses of coir, if the industry had developed them, would have provided a considerable cushion for the tired industry. Actually, despite the abundance of coir in the Philippines, the country imported coir mats from other countries.

The rising discontent with the condition of the industry was brought to a head in the convention held by the hemp and coconut producers in February, 1938. President Quezon urged an educational program to acquaint the public, both in the Philippines and the United States, with the problems facing the industry thus removing the indifference or hostility directed against it. He went on to say, however, that although the government was prepared to give as much aid as possible, the main task was the industry's and the salvation of the industry lay within itself.[49] Cornelio Balmaceda, at that time acting manager of the National Produce Exchange, told the convention, that the elimination of the middlemen "would tend to increase the prices which the local producers will get if the plan for an organized system for handling local commodities presented to the convention is carried out."[50] He proposed a system which would place the producers, large or small, close to the exporters or manufacturers; the small farmers being organized into effective groups for the cooperative selling of their products. A system of farm credit would enable these small producers to get loans at low interest enabling them to meet the demands of the market. The system would necessitate a chain of warehouses for the convenience of the small producers. At the top, the National Produce Exchange would act as an organized central market. While not enthusiastic, the convention was interested. It adopted a policy of wait-and-see, and the program was never effectively carried out.

The Coalition Platform, in 1938, had promised that "we shall support the organization of the producers of abaca, coconut, tobacco, rice, and other articles for the defense and promotion of their interests.... We shall help industries based on the coconut and its derivatives, and we shall continue working for the elimination of unjust burdens imposed in the United States upon these products. We shall exert our utmost with

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[46]Anastacio de Castro: "Review of Business Conditions for 1937," *PJC*, Vol. XIV, No. 1 (January, 1938), pp. 7-8.

[47]Eugenio E. Cruz: "Coir Industry of the Philippines," *PJC*, XIV, No. 1 (January, 1938), p. 9.

[48]*Ibid.*

[49]*M.O.P.*, Vol. 5, Pt. 1, 1941, pp. 40-45.

[50]*PJC*, XIV, No. 3 (March, 1938), p. 38.

a view to finding a sure and profitable market for... coconut... and other important products... and *if necessary with the financial assistance of the government.*"[51]

In his budget message to the National Assembly, in 1938, President Quezon stated, however, (referring to the excise tax): "This means that not only the proceeds of the said excise tax, *but even the funds derived from the local revenue of this Government cannot* be used for aiding the coconut industry as long as we continue receiving the benefits of the coconut oil excise tax."[52] He concluded by saying that he was transferring, from the proceeds of the excise tax, P26,840,000, for the purposes of "replenishing the current surplus," to certain "extra-ordinary purposes." These were: Subscription of stock of the National Development Company, P10 million; subscription of stock of the Manila Railroad Company, P1 million; for the acquisition of land and construction of buildings for laborers, P250,000; a loan to the Manila Railroad Co., P9,990,000; for the purchase of homesites, P1 million; for reforestation and afforestation, P250,000; for organizing the National Power Corp., P250,000; a revolving fund for the construction of water works, P2 million; for stabilizing prices of buntal fibers, P500,000; for a survey and subdivision of public agricultural lands, P100,000, and, for the new census P1,500,000.[53] He concluded, by emphasizing the need for continued economy.

The excitement and anger of the coconut producers, expressed in their convention, in February, 1938, can be readily understood. They saw the appropriation of twenty-six million pesos, for enterprises many of which were considered needless, and they were unable to touch a centavo of it, either directly or indirectly.

President Quezon addressed a tea party of coconut planters and municipal mayors at Malacañan, on February 19. Here he discussed the resolution passed by the planters asking for the abolition of the excise tax. He did not believe that Congress would act on the resolution but continued: "I am willing, nevertheless, to support you in your request.... I have not changed my attitude in this respect although I confess that I am not as positive today as I was before that the tax had done any harm to the industry, or that if it did, the harm was not so much as I had thought it to be."[54] He stated that he thought it was unfair to those who were taxed not to derive benefits from their taxation and promised to support a movement aimed at the abolition of the proviso prohibiting the use of excise tax funds to aid the coconut industry, were they unable to secure the abolition of the entire tax. But, he continued, "as long as the law exists, I will continue complying with the law honestly and strictly."[55]

The storm of indignation and discontent that arose throughout the country grew so intense that President Quezon went to some pains to explain the situation, particularly in his home province of Tayabas, a large coconut-producing region. He told his people of the difficulties facing him in this problem, saying frankly that there was little he could do. The solution, he said, lay in part with the planters. He was particularly interested in seeing that the people learned new uses for the coconut and that they increased their consumption of its products. The President believed there were great possibilities for the coconut industry in utilizing coconut for *bukayo* (the meat of the nut cooked with sugar) and *matamis sa bao* (coconut jelly). "The trouble with us Filipinos," the President

[51] *M.O.P.*, Vol. I (rev. ed.), pp. 250-251. Italics supplied.
[52] *M.O.P.*, Vol. 3, Pt. 1, p. 234. Italics supplied.
[53] *Ibid.*, pp. 249-251.
[54] *M.O.P.*, Vol. 4, Pt. 1, p. 27.
[55] *Ibid.*, p. 30.

said, "is that we forget what is truly our own. We have so many needs and uses for our coconut. Why don't we rediscover them so as to increase not only our export but also our local consumption of coconuts? The National Development Company has several expert chemists studying the different uses of the coconut; more important, however, is to have our coconut planters take full initiative in this matter."[56] During the Japanese occupation, with food a major problem, many Filipinos rediscovered the coconut, and the consumption of its fats and oils stayed off starvation for countless thousands living in areas where the nuts were available.[57]

In April, 1938, the National Assembly, fearful that the coconut industry would suffer complete destruction, created a committee to study means of improving it, with Assemblyman Lavides of Tayabas as Chairman. The committee was charged with conducting a survey and recommending measures for increasing production. The Assembly hoped that immediate action would be taken. It was pointed out that the industry had but one good year (1936) since 1930, and the warning of H. B. Pond, in 1934, was recalled; he had stated that under the provisions of the Independence Act and the Revenue Act of 1934, coconut profits would be eliminated after the fifth year of the Commonwealth or surely after the sixth year.[58]

The Philippine Coconut Association, in May, called a meeting of two hundred planters in Siniloan, Laguna. Governor Bonifacio extolled the advantages of the association and urged the planters to take united action to meet the crisis. He stated that the problem could be solved only if the planters pledged, before adjourning, a contribution of two centavos per one hundred kilos of copra sold, for a working fund.

The same month it was reported that Governor Bonifacio was starting a campaign to educate the people of his province to look for a new industry to replace the coconut, the major source of their income. With representatives from the Bureau of Commerce, Bureau of Plant Industry and the Bureau of Forestry, he visited some twenty-eight municipalities for this purpose and at the same time initiated a study of the economic conditions exsiting in the province. This was believed essential since the continuing poverty produced a rising trend in discontent and lawlessness and weakened the Government's general economic program.

On May 20, the Joint Preparatory Committee released its report, in which it made the following recommendations:

> Coconut oil should be exempt from Philippine export taxes but, in lieu thereof should be subject to annually declining duty-free quotas commencing with 200,000 long tons (of United States imports) for the calendar year 1940. This amount should be reduced by 5 per cent for each succeeding calendar year until it equals 150,000 long tons for the calendar year 1945. For the period January 1, 1946, through July 3, 1946, the quota should be one-half of the quota for the preceding year, or 75,000 long tons. Shipments in excess of the aforementioned quotas should be subject to whatever United States duty may be in force at the time.
>
> The Committee also recommends that the imposition of full United States duties should be postponed from July 4, 1946, to January 1, 1961, during which interim United States imports of coconut products, except coconut oil, should be subject to preferential tariff rates, in force on July 4, 1946 and increasing on each subsequent January 1, by 5 per cent of the then-

[56] *Ibid.*, p. 213.

[57] That the industry is capable of great extension is unquestioned but Filipino capital will have to lose its timidity and its desire for high returns on investment before the industry can stand steadily on its own feet.

[58] "The Future of Our Basic Industries," *The Philippines Herald Yearbook, 1934-1935*, pp. 101, 110.

existing rates. Coconut oil should be subject to the above duties only on those amounts in excess of declining, duty-free quotas, fixed as follows: For the period July 4, 1946, through December 31, 1946, the quota should be 75,000 long tons; for the following calendar year, it should be 140,000 long tons; and thereafter it should be reduced annually by 10,000 long tons (5 per cent of 200,000 long tons) until 1961....

The Committee believes that if the above recommendations were adopted, the Philippine Coconut industry would have an adequate opportunity to adjust itself to a position independent of the preferential tariff and excise tax treatment in the United States market.[59]

The Report met with an unenthusiastic reception in the Philippines.

By October, 1938, some P128 million in coconut oil tax money had been placed to the credit of the Philippine Commonwealth in the United States Treasury, a sum which excited the politicos in the Philippines to a fever pitch. Elaborate plans were laid for spending it, but little of permanent value resulted. The money was used to develop the future capital site, Quezon City (at the end of the war, a wasteland and no money for development), a new legislative building, a Jai Alai palace, the hemp industry, the NARIC, cooperative enterprises, the purchase of the Buenavista estate, the Koronadal Valley settlements, a fruit and fish cannery, a textile mill, two sugar refineries, and others. In 1950, the Quezon City capital site was still largely on paper, the war-ruined legislative building was being rebuilt, the Jai Alai palace (in sharp contrast to the rest) had been the first repaired and started in operation, the hemp business was almost prostrate, the NARIC a practical failure, cooperatives in their fetal stage, the Buenavista estate still in the courts, Koronadal settlements barely begun, the fish and fruit canneries but fond memories, the textile mill at a standstill facing disposal, and the sugar refineries producing spasmodically, and likewise facing disposal.

A sharp critic of the Commonwealth at that time had this to say of the oil money:[60]

In the opinion of some critics, the money should be used to pay off all the bonds of the government-owned Manila Railroad,[61] and all the Commonwealth's public debt — which is not large.... However, Manuel Quezon is a politician, and he may want to be President again after this term is over. It is normal for politicians, in any country, to use available funds in the showiest possible way. Building an army and paying off the public debt are

[59] *Op. cit.*, pp. 66-67.

[60] In a message to the Second National Assembly, on the budget for the fiscal year ending June 30, 1940, President Quezon referred to the fund, in a special section. He stated that, at the end of 1937, there existed a cash surplus in this fund of P82,669,860.82, and with additions and interest, the total amount available for 1938 amounted to over P103 million. The unexpended cash balance for 1938 was over P71 million, with total outstanding balances of authorized appropriations made against the fund as of that date being P110 million, which was P39 million greater than the available balance in the fund. However, no deficit was incurred, he said, because he had authorized the release of only some P44 million. The total income expected for the six months ending June 30, 1939, was P21 million, the total amount available for release at that time being P48 million. The estimated income from the fund for the fiscal year ending June 30, 1940 would amount to P25 million. With authorized expenditures, in the budget for that year, there would remain, he said, only an unappropriated surplus of P6 million. Therefore, he concluded, there could be no further appropriations made from the fund, especially when it was realized that the fund income would not be available until it was actually accredited to the Philippine Treasury. For this reason, he stated, to maintain the balanced budget presented, it was necessary to effect substantial economies, "limiting salary increases as well as creation of new positions to only those found to be absolutely necessary to insure the efficient operation of the government." *M.O.P.*, Vol. 5, Pt. 1, pp. 274-275, *passim.*

[61] By 1950, a steady money-loser.

> gestures that do not impress the electorate half as much as public-works funds scattered liberally in the proper geographical places.... When the President of the Commonwealth is asked about the probable shrinkage in the government budget after 1946, he cooly answers that it won't shrink. He or his successor will soak the rich by heavy taxation. (The rich, unhappily, will be fewer and less rich). Quezon also says that, beginning in 1946, he (or another) can make his own tariff, unhampered by the U.S. He will then put heavy import duties on all sorts of things—and thereby tax his people in other ways. He seems to have extremely optimistic ideas about the capacity of his people to pay....[62]

Although there was some truth in what Miss Horn had to say, few of these predictions were validated by events. The rich increased in numbers and wealth and the budget continued to expand. The question of taxation remained unresolved.

4

On May 17, 1939, the President requested the National Assembly to send an observer abroad to study foreign coconut industries.[63] The Assembly approved Resolution No. 23, and Maximo M. Kalaw was designated as observer. Five days later, the President discussed briefly the excise tax. He repeated, by implication, what he had to say earlier, on February 22,[64] and then gave his opinion with regard to the repeal of the excise tax. The proposal was that the tax be collected only for coconut oil to be used for edible purposes. He expressed the opinion that this would complicate the situation for the large American buyers would purchase only non-edible oils and "pocket the difference in prices." He continued: "In other words, the benefit to be derived from the elimination of this tax, instead of aiding the producers of copra, will only go to the pocket of the purchaser in the United States. The benefit may go to the soap distributor in America and, in turn, to the consumer: but I am not sure that it will be of any good to the producer in the Philippines."[65]

The President, it is evident, had now lost his enthusiasm for abolishing the excise tax, despite his promises to producers that he would support any movement to do away with it. The returns from the United States were too great to be thrown away carelessly. He presented the other side of the picture skillfully:

> On the other hand, what will be the result if that tax is removed? Our income will be reduced annually by over ₱20,000,000, an amount that comes from the excise tax. This yearly income, after 1940... or after seven years, will mean a loss of ₱140,000,000 in our income. How will such reduction affect our finances? In the first place, I will be forced to veto a large proportion of appropriations for public works, and I may have to suspend many of the constructions under way which are for the improvement of our means of communication and the economic development of the country. And I want you to remember, gentlemen, that I will not leave my successor in office emptyhanded, much less leave the government of the Philippines... with a problem in its hands: the lack of funds in the Treasury. No matter how much it may affect the success of my administration, even if it should mean the difference between a successful President and a failure, I would prefer to leave my office and be pointed out as a man who had failed rather than have the future of the Philippines exposed to bankruptcy. (Applause)[66]

[62] Florence Horn: *Orphans of the Pacific*, (New York, 1941), pp. 230-231. See also, J. R. Hayden: *The Philippines*, (New York, 1947), pp. 157-160, and note 23, pp. 888-889.
[63] *Supra.*
[64] *Supra.*
[65] *M.O.P.*, Vol. 5, Pt. 1, pp. 129-130.
[66] *Ibid.*

As a result of this statement, the campaign for the removal of the excise tax was conducted with little vigor, except by a few die-hards in the coconut industry. The Government's position was clear: it would like to help the coconut industry but not to the detriment of the country as a whole. Twenty million pesos annually was a sum to be regarded with appreciation.

This rather equivocal campaign (equivocal in the sense that the industry was promised aid but not at the expense of the excise tax fund) was continued throughout 1939.[67] President Quezon returned to his home province to allay the fears of his constituents, showing them the benefits to be derived from the excise tax fund. He pointed to the roads being constructed, and said that it was important that such work be done for the benefit of the country at large. Nothing should be done, he believed, which would benefit a section of the nation at the expense of other sections. He suggested that it was important to seek means of stabilizing the economy. "The Filipino must be taught to be self-reliant. We must know that we can realize profits if we have exportation, and we export those products which will give us profit even if a tariff duty or excise tax is levied. That is what we should ponder upon. Hence we must look for other native products which we can profitably sell abroad, even if they are levied a tariff duty or an excise tax."[68] Such words were cold comfort to a region dependent upon the coconut industry for its livelihood. It is difficult for the people of a certain section, even in the United States, to accept a diminution in their prosperity on the ground that it is good for the whole nation.

What was wrong, then, with the country's economy? The middlemen, according to the President. "One of the reasons why the Philippines remains poor," he stated, "is the fact that the man who tills the soil does not receive his just profits from the sale of his crops. Take the copra producers, for instance. The lack of proper commercial facilities compels them to pass their copra through the hands of many middlemen before they finally sell it. Each one of these middlemen engaged in the copra trade derives profit therefrom, and their profits, combined, take so much away from the amount that should go to the copra producer. Likewise, it is not only the poor sales made by the planter from his copra which gives him financial difficulties, but also the fact that he pays more for his daily purchases than city residents... because everyday commodities pass through so many middlemen.... To end this, I have caused a thorough study of the best plan by which small farmers may form cooperatives so that they can sell their products direct to the dealer without passing them through many middlemen. I have also advised the study of the means by which trading in commodities of prime necessity in the Philippines could be handled exclusively by Filipinos. (Shouts of 'Mabuhay!')."[69] While this may have been a popular analysis of the country's economic ills, it was far from being completely accurate. If nothing more than the existence of many middlemen plagued the nation, the solution of its problems would have been immeasurably simplified. Basic ills demanded remedy, and while the middlemen contributed to the uncertain state of the economy, ills arising from antiquated traditions and

[67] *Cf.* telegraphic correspondence between Quezon and Roosevelt during February and March with reference to proposed legislation in the U.S. Congress leading to an increase in the excise tax. *M.O.P.*, Vol. 5, Pt. 1, p. 432.

[68] *M.O.P.*, Vol. 5, Pt. 1, pp. 164-172, 158-163, *passim.*

[69] *M. O. P.*, Vol. 5, Pt. 1, p. 214. Speech on the occasion of the fourth annual celebration of the establishment of the Commonwealth, New Luneta, Manila November 15, 1939.

techniques needed attention before much lasting good could be accomplished.

There was no lack of information as to these ills. In January, 1940, Assemblyman Kalaw, who had been selected by the National Assembly to go abroad to study foreign methods of coconut production, submitted his report to the Assembly. He presented seven "salient points." He noted that "one of the greatest economic wastes of the Philippines is the poor preparation of our copra." He stated that despite the fact that the Philippines was the largest copra-producing country in the world, its quality of copra was among the worst and as a result the country lost an estimated ten million pesos every year. He pointed to the waste of over three hundred thousand tons of coconut fiber with a value of ₱75,000,000 each year. The Ceylon planter, he said, produced smaller nuts than his Filipino counterpart but received from nine to sixteen pesos more per thousand nuts than the Filipino planter. "The reason is that he produces very good copra and utilizes the by-products." He mentioned the well-known fact that, in 1939, the Philippines was the fifth best customer of the United States, and the United States would continue to need coconut products, thus maintaining a market for Philippine products. He suggested that "if there is to be some further reciprocal agreements effective after independence, coconut products should be given favorable treatment" in the American market. He predicted that the coconut industry would withstand the shock of independence much easier than others and that, if the necessary steps were taken by the Government, it would be "our greatest bet in the open markets of the world." Finally, he referred to the fact that the diet of the Filipinos was deficient in fats, a situation which would be remedied with an increased home consumption of coconut products. The force of this statement was illustrated by the experience during the Japanese occupation when the population, in many parts of the country, existed largely on coconut products.

The solution of these problems, the Assemblyman believed, lay in industrialization, socialization and cooperation of and in the industry. "The Government must lead the way," he said, "but the cooperation of the planters themselves is indispensable." He specifically recommended that after the creation of a government body similar to the National Coconut Corporation (which was then before the Assembly for approval) six steps be taken by that or another corporation. These steps were: the establishment of drying plants and coconut centrals aided by government standardization to improve the nation's copra; the utilization of husks and shells and other by-products, through industrialization; the establishment of cooperatives with the purpose of eliminating middlemen and improving credit facilities for the benefit of planters; establishment of "regular freight and shipping service to foreign countries"; establishment of a research and experimental station devoted exclusively to problems facing the coconut industry, preferably on a government-owned plantation; and the "fostering of a greater home consumption of coconut products." If these steps were taken, he believed, the industry would "stand the shocks of political and economic separation from America" and would furnish the country's leading export. The cost of this program he estimated at ₱20,000,000 for the remainder of the Commonwealth period. This was to be spent on 5,500 copra driers, twenty provincial centrals, five national centrals, the coconut research institute, and loans to planters, the last item bulking the largest, amounting to ₱9 million.[70]

[70]Maximo M. Kalaw: *The Coconut Industry*, (Manila, 1940), pp. vii, ix, *passim*.

On May 7, 1940, the National Assembly passed, and the President approved, Commonwealth Act No. 518, creating the National Coconut Corporation (known as the NACOCO). The corporation was to be organized within six months to exist for thirty years. It was "to establish, keep, maintain and operate or help establish, keep, maintain and operate drying plants, or copra driers, or coconut centrals with a view of adjusting the coconut industry to a position independent of trade preferences in the United States and to provide facilities for the better curing of copra products and the proper utilization of coconut by-products, *provided that no subsidy, direct or indirect, shall be paid to producers, or processors of copra, coconut oil and allied products.*"[71] Section 2 of the act also provided that the corporation was "to afford facilities for bona fide production loans to Philippine coconut planters and copra producers." In addition, the act provided for a "Coconut Industry Promotion Fund" which was to be derived from the coconut oil excise tax collected after January 1, 1939, two million pesos of which was appropriated with the approval of the act and the total not to exceed twenty million pesos. This fund was to be utilized by the directors as provided by the act and all moneys accruing to the corporation were to flow into it.

The stipulation with regard to subsidies to producers, was included with an eye to the American Congress which had imposed the excise tax at the insistence of the American farmer. In the years following the imposition of this tax, there was, in the words of Grayson Kirk, a "steady increase in American imports of coconut oil..." which proved that the Philippine oil was "not interchangeable" with any American oil.[72] Professor Kirk demonstrates that the result of the tax was only a charge to the American public of seventeen million dollars a year which benefitted neither the public nor the farmer. The sole benefits derived from the tax went to the Philippine Commonwealth as a "windfall," which enabled the Commonwealth to balance its budget at the expense of the American housewife. The suspension of this tax was asked by Commissioner Elizalde, in 1940, and was so provided in the bill introduced by Senator Tydings on June 11. The bill, however, was not passed until after the outbreak of the War.

According to the Philippine Trade Act of 1946 (the Bell Act), to anticipate events for a moment, the amount of duty-free coconut oil exported to the United States was set at 200,000 long tons and "during the effectiveness of the agreement the United States will not reduce the preference of 2 cents per pound provided in section 2470 of the Internal Revenue Code... except that it may suspend the provisions of... such section during any period as to which the President of the United States, after consultation with the President of the Philippines, finds that adequate supplies of neither copra nor coconut oil... are readily available for processing in the United States."[73] This hostile attitude of the United States toward the Philippine coconut industry, expressed in all legislation between 1933 and 1941 (and 1946), was directly responsible for the critical situation which arose at the outbreak of the war in the American supply of coconut oil. Since more than half of the U.S. imports of fats and vegetable oils came from the Philippines, the prices of edible coconut rose to fifteen cents a pound in December, 1940, more than twice the

[71] *The Lawyers' Journal*, VIII, No. 22 (November 30, 1940), p. 882. Italics supplied.

[72] Grayson Kirk: "Philippine-American Relations: Recent Trends," *Political Science Quarterly*, LIV, No. 3 (September, 1939), p. 336.

[73] *Public Law 371*, 79th Congress, 2nd session, H. R. 5856, Chapter 244, Section 403, subsection (d). The tax is still collected but is, of course, not returned to the Philippine Government.

price of the preceding December. The price of oil rose proportionately, while coconut meal increased almost five times during the same period.[74]

5

The outbreak of the European war in 1939-1940 dealt a serious blow to the coconut industry. The Philippines had such large stocks of coconut products that copra prices in August of 1940 dropped to an all-time low. Copra cake, normally exported for cattle feed, was used for fuel, the requirements being far below the supply. The normal American market for copra and oil was greatly reduced by an abundance of domestic oils and the export trade to Latin-America was hurt by lard exports from the United States. In addition, the great increase in ocean freight charges restricted shipments abroad. Rates, for copra, from Manila to American Pacific coast ports, increased from $9.50 to $13.50 per ton; for copra meal, from $8.00 to $11.50 per ton, and, for oil, from $15.50 to $20.00 per ton. This, naturally, cut sharply the profits of local producers. The Japanese reaped the benefit of this situation when they entered the Philippines, acquiring at one stroke a considerable portion of the oil needed for the year 1942. With the outbreak of the War with Japan, the United States, which had already felt a need for oils and fats because of defense preparations, found itself cut off from its largest and most faithful producer of these necessities. During 1941, the United States had increased its consumption of Philippine oil through the new federal regulations (the McNutt standard) which encouraged margarine producers, oil consumption increasing some three million pounds in one year.[75] Had the United States taken advantage of the low prices for Philippine coconut products after 1939 (a step which was never considered by Congress) it might well have faced December 7, 1941, with more confidence than was the case.

In 1946, the United States, returning to its position as the world's largest consumer of coconut products, signed an agreement with the Philippines by which it agreed to buy all the surplus copra and coconut oil for the year beginning July 1, 1946 at $103.56 per long ton for copra and 7.1 cents per pound for coconut oil.[76] During the first six months of that year, the Philippines exported 190,000,000 pounds of copra in terms of oil, about two-thirds going to the United States. While this meant prosperity for the long-suffering coconut products producer, the iniquitous economic system, as usual, robbed the small producer and enriched the middlemen and the large producers.

The outbreak of the War halted plans for carrying out Assemblyman Kalaw's recommendations for stabilizing the industry. As provided in the act creating the NACOCO, most of his recommendations would have had to be executed by other agencies than that provided by the Government. The end of the War gave a second chance for the stabilization of the industry which, as had been predicted, weathered the conflict more easily than the other major industries. While some damage was suffered by equipment and buildings, the trees still remained. There was a world-wide demand for coconut products at the end of the War and prices soared to unbelievable heights.

During the transition period, between the end of military rule and the beginning of private trading, the American need for coconut products was illustrated by the special arrangements made by the Foreign Economic Administration for the procurement of coconut products in 1945. The

[74] *Britannica Book of the Year, 1941*, p. 178; *1942*, p. 186.
[75] *Encyclopaedia Britannica Book of the Year, 1942*, p. 186.
[76] *Ibid.*

FEA announced the signing of an agreement between the U.S. Commercial Company and the Copra Export Management Company, a corporation formed by representatives of five producing companies engaged in the business before the war.[77] This agreement gave an impulse to the rehabilitation of the industry which enabled it to achieve an early prosperity not shared by other Philippine exports.

Prosperity was not immediately achieved, however. International agreements, following the War, had placed the price at P12.00 per 100 kilos of resecada (which is the dried husked flakes of meat). The Copra Export Management Co. (called the CEMCO) authorized buyers to pay no more than P10.50, with the result that few producers would sell at this price claiming, with justice, that the price did not cover the cost of production. Late in 1945, buyers offered as high as P15.00 per 100 kilos, but most producers continued to hold their stocks. In February, 1946, CEMCO then announced that copra would be paid for on the basis of 35 to 40 per cent cash, 30 per cent in textiles, 20 per cent in rice, and 15 per cent in beans, canned fish, milk, sugar, flour, etc. This offer was attractive enough to bring into the market increasing quantities of copra, the price rising to around P16.00 per 100 kilos. Buyers, during this period, paid higher than the authorized price; because, according to one source, they were selling the products on the black market at prices high enough to cover the high copra costs.

In August. 1946, the Copra and Coconut Oil Agreement was signed between the Philippines and the United States fixing the price at $103.50 per long ton in bulk. In October, it was announced that the copra ceiling was $116.20 per short ton at Atlantic and Gulf ports. This fixed the price at around ₱20.00 per 100 kilos, buyers' prices in Manila being about ₱16.00 per 100 kilos, delivered. This agreement also stipulated that the Philippines should sell its entire crop to the United States at these OPA ceiling prices, the Philippines to receive in addition, a loan of $2,000,000 to be used in the rehabilitaton of the *hemp* plantations. The United States also agreed to transfer to the Philippines some $3,500,000 worth of trade goods, including textiles, rice, and sugar. The American embassy announced that the Commodity Credit Corporation in the United States would allocate shares of copra from the Philippines and Java to other foreign nations, and would appoint companies in the United States as authorized buyers of Philippine copra.

This agreement was basically unfair to copra producers in the Philippines, who were thus deprived of an opportunity, quite necessary for the stabilization of their industry, to sell their stocks in the open world market where they could get higher prices than those provided in the Agreement. It is difficult to understand the motives of the President of the Philippines, who was quite conscious of the necessity of finding world markets for Philippine products to prepare the country for the day when the protected market in the United States would be closed. Producers and exporters in the Philippines raised loud outcries, but with little immediate effect. They realized that free trade would have a marked effect upon the development of their industry in the crucial years following the War, and were faced with the fact that the United States, although stating that it was working toward the establishment of free world trade, was engaged in activities exactly opposite in practice to its announced policy. The copra producers hoped to be able to sell enough stocks in the free world market to acquire sufficient strength to meet an uncertain future when prices might again tumble to the level of 1934.

[77]Reported in *Far Eastern Survey*, XIV, No. 15 (August 1, 1945), p. 214.

Evidently the Philippine Government hoped to receive concessions from the United States of a general nature, even at the expense of one of its hard-pressed industries. Its eagerness to rehabilitate the hemp industry, while laudable, should not have obscured the need of stabilizing the vital coconut industry. The Government replied, to domestic critics, by saying that it was duty-bound to share with other nations the commodities it had in abundance in order to receive such needed supplies as sugar and rice. It pointed to its membership in the International Emergency Food Council and the necessity of abiding by international agreements. The producers, however, suggested that a food emergency existed in the Philippines, and that it could partly be met by raising the prosperity of one industry, thus benefiting others and the people as a whole.

One author, writing in the Philippines, pointed to hard facts as proof that the Government's argument was specious. The Emergency Food Council had allocated, in 1946, 145,000 tons of rice for the Philippines, 45,000 tons of which was to come from Siam and the remainder from the United States and South America. However, 1946 saw a serious shipping strike in the United States, the result of which was to deprive the Philippines of rice supplies for a period of over three months. In addition, the price of rice rose in South America, to a point where NARIC officials stated they would lose money by selling at the ceiling price in the Philippines. Since the country was in dire need of rice, it had to continue buying the cereal from South America necessitating either a rise in the ceiling price at home or the assumption of a loss in the operations of the NARIC: "There is no parity," this observer stated, "in the prices of the commodities we export and those that we badly need in terms of the index of the cost of living in other counties."[78] Since the Philippines had no control over the prices in the American countries it was at their mercy, for the United States held the balance of trade through the pegged prices of copra. Thus, the Philippines continued to ship copra to the United States disadvantageously and received in exchange consumer goods which, however, remained largely on paper because of the great delay in shipping articles to the Philippines.

Then, on October 29, 1946, the OPA decontrolled all fats and oils, with the result that the price of coconut oil soared from eight cents a pound to twenty cents a pound. A great rush of buyers scoured the world market for available supplies. Copra dealers demanded, and received, as high as twenty-two cents a pound. The planters. however, were bound to continue selling at prices ranging from ₱17.00 to ₱20.00 per 100 kilos, which meant a price of eight cents a pound for oil, whereas the actual market value of the product, on the basis of twenty cents a pound for oil, was ₱46.00 per 100 kilos. Thus the individuals who benefited were not the planters, but the exporters and middlemen. It was quite clear that if the stabilization of the industry was to be achieved, it only could be done through the abrogation of the Agreement.

On November 22, 1946, abrogation was announced, with the result that buyers' bids rose 56 per cent over the level of mid-October. The price reached ₱30.00 per 100 kilos, and with the release of controls on fats and oils, domestic bids topped quotations in the United States.

During 1931-1935, the average exports to the United States were 64.9 per cent of the total. In the period up to December 31, 1946, of the total shipment of 599,000 long tons, 74 per cent went to *other* countries, such as the United Kingdom. France, Poland, Belgium, Norway, the Nether-

[78]Domingo C. Abadilla: "Confusion in the Copra Market," *The Sunday Post Magazine*, Vol. II, No. 8 (November 10, 1946), p. 24.

lands, Canada, Sweden, Denmark, and Panama. The percentage of price increase in copra was the second highest of the four major export products, being 376 per cent.[79]

During the first six months of 1948, copra prices reached an all-time high of P65.00 per 100 kilos and coconut oil reached P1.10 per kilo. By the end of July, copra dropped to P40.00 and oil to P0.90. During the first half of the year export sales dropped more than 30 per cent indicating that the goose was dying. Although the value was higher than in the preceding year because of the increase in prices, it was feared that the producers and sellers had priced themselves out of the market. American importers stated that costs were too high for soap and margarine and the United States forbade the sixteen nations then using ERP funds to purchase Philippine copra. American importers, affected by the high prices, had requested the Government to take this step.

In addition, a new and disturbing factor entered the copra and coconut oil picture. With the loss of copra and oil during the War, American manufacturers had turned in increasing numbers to the use of soy bean oil, cotton-seed oil, and tallow. New techniques developed by American research enabled manufacturers to utilize oils which a few years earlier they used with reluctance. This meant eventually a declining demand for coconut oil, since its price was determined by prices of other oils. Demand slackened also as a result of the American development of synthetic detergents and substitutes for soap, made previously with coconut oil. While soap-makers of the United States before the War utilized 70 per cent of imported coconut oil, the post-war period showed a drop of from 10 to 15 per cent because of synthetic oils. This was expected in 1950 to continue, thus presenting a gloomy prospect to Philippine copra producers.

Complicating the situation was the activity of certain exporters who, in 1947, were found to have misrepresented the weights of their shipments and their classification. Some foreign importers had complained of shortages of as much as 25 per cent in actual received weight compared to manifests. In addition, fresh copra had been deliberately classified as resecada. When it is realized that pre-war shrinkage in weight was allowed a maximum of 5 per cent, the seriousness of the complaints can be understood. The Philippine Coconut Planters Association adopted a resolution requesting President Roxas to order the prosecution of these exporters.[80] Many foreign importers expressed dissatisfaction year after year with the poor quality of Philippine copra, and the planters feared that unless the unscrupulous exporters were curbed, great harm would befall the industry. While the situation was ameliorated slightly by the threats of the Government, few individuals were actually prosecuted and the Bureau of Commerce in 1950 was still seeking means of controlling the classification of the product. The NACOCO was supposed to exert efforts with regard to this problem, but complaints of this body's inefficiency and ineffectiveness were widespread throughout 1948 and 1949.

Although the NACOCO met with some success in stabilizing copra prices, it encountered sharp criticism from many quarters for its apparent inability to handle its work to the benefit of the industry and the nation. In January, 1948, for instance, local copra dealers were loud in

[79]Sugar rose 654 per cent, hemp 279 per cent, and leaf tobacco 150 per cent over prewar levels. Since sugar had practically disappeared from the export market, copra by 1950 represented the greatest export item in quantity as well as value.

[80]*Manila Chronicle*, Year 3, No. 207, (December 12, 1947), p. 11.

their complaints that it had failed to make deliveries on contracts for September and October; this had "adversely affected commitments of large amounts of the product to buyers abroad and disrupted dealings in this Philippine export product."[81] Five large dealers were hurt, and one began court proceedings for damages suffered as a result of NACOCO's failure. One dealer who was reported to have made a commitment of some $315,000 had been waiting since October for NACOCO to make the delivery. Dr. Kalaw, general manager of the NACOCO, admitted the failure in deliveries, which he said was caused by typhoon damage to NACOCO stocks. While there was some truth in this statement, it did not wholly cover the situation. A Canadian representative reported that confidence in the corporation had suffered severely in the Dominion as a result of the "ragged business methods" of the NACOCO. He mentioned that, in one transaction with the corporation, involving 2,000 tons of copra at $165 a ton, the delivery was delayed over a month, and it was discovered that a shrinkage of 13.84 per cent had occurred. In addition, he said, the company experienced difficulty in obtaining a rebate on the freight charges. The whole transaction was considered highly unbusinesslike, with the result that his company would have no further dealings with the NACOCO.

Later in 1948, the trading activities of the NACOCO were suspended because of the heavy losses incurred in buying, selling and research. Its personnel was reduced 70 per cent and its agencies in the provinces were closed. The corporation, in the three years following its resumption of the business in 1946, in the words of an outstanding Manila reporter, had squandered more than three and a half million pesos of the people's hard earned money."[82] It was charged that Kalaw had been dealing in futures, entering into contracts with foreign buyers during a period of constantly rising prices. He failed in deliveries because he could not secure stocks from producers, who refused to sell at the low early price. To remedy the situation, it was charged, Kalaw bought stocks at the higher price and sold at a loss of one and a half million pesos "to save his face...."[83] It was further charged that large amounts were paid as commissions. One broker was to receive nearly P20,000 when payment was stopped by the Government Enterprises Council as being "anomalous."[84] The director replied that he could have made a profit for the corporation had the Philippine National Bank granted him a requested loan. The Bank replied that it had refused to grant the loan because the corporation was "mismanaged." Since the function of the NACOCO was not to act as a dealer and exporter, Mr. Kalaw's defense of his position was assailed by many critics; among them former Representative I. Vameta, one of the authors of the bill creating the corporation.[85]

While this sad story was little different in nature from others concerning the Government and its agencies throughout 1948 and 1949, it differed from the others in the fact that it concerned a very important government corporation charged with the direction of one of the most important Philippine industries. It strengthened the opponents of government participation in business, and deepened the disillusion of many

[81] *Manila Bulletin*, Vol. 133, No. 6 (January 7, 1948), p. 1.
[82] Leon O. Ty: "Another Kalaw Fiasco," *The Philippines Free Press*, Vol. 39, No. 26 (June 26, 1948), p. 4.
[83] *Ibid.*
[84] *Ibid.*
[85] "No Fiasco Says Maximo Kalaw," *Philippines Free Press*, Vol. 39, No. 28 (July 10, 1948), pp. 26-27. *Cf.* "Kalaw Stresses NACOCO Services," *Manila Times*, Vol. 4, No. 32 (September 18, 1948), pp. 1, 12.

observers with the post-war policies of a government which could not afford to waste even the most insignificant funds. The cause of the Hukbalahap and the Communist was thereby aided, and the cynicism of the citizen made more profound.

By contrast, the activities of one of the few successful private cooperative business enterprises in the country made cheerful reading for those interested in the healthy growth of Philippine economy. The CAPCA (Camarines Norte Copra and Abaca Producers Cooperative Association), of Daet, Camarines Norte, in the words of its supporters, belied "the charges that no Filipino business enterprise can succeed in a field dominated by aliens."[86] Its activities were successful in bringing a good life to the people it served. It aided in the stabilization of copra and rice prices and broke the alien monopoly of rice. It ended the hoarding of gasoline, and attacking the age-old problem of usury, opened credit facilities to tenants and landowners alike. Its activities in the copra field have been noteworthy. Small as it was, according to one writer, it could have aided NACOCO in its difficulties had "Dr. Maximo Kalaw... been farsighted."[87] The CAPCA had repeatedly asked financial assistance from the NACOCO but in each instance such assistance was denied and instead the activities of NACOCO were "entrusted... to personnel of doubtful ability in Tabaco and Legaspi." The writer pointedly referred to the fact that NACOCO spent "millions for the improvement of the quality of copra," whereas the CAPCA, with a fraction of the capital of the corporation, achieved the utmost in such improvement, according to statements of various Bureau of Commerce inspectors in the region.

Summary:—

Coconut industries were generally profitable during the early years of the Commonwealth but remained at the mercy of disease and natural disasters which, with important foreign developments, slowly ate away the high returns hoped for by planters. In general, the major profits were gained by processors and shippers. In an effort to aid planters, the Government began a move to provide warehouses for cheap storage. It had little effect, however, on the situation since the ills of the industry centered around poor production habits and improper drying and processing methods.

Since so much of the prosperity of the Philippines depended upon a prosperous coconut industry, the many adverse factors — uncertain legislative practices in America, shipping strikes in America, natural disasters and disease, lack of producers in remedying the manifold problems, excessive dependence upon the American market, confusion within the industry, confusion in the Government as to programs of solution — which were characteristics during this period led to a general retrogression within the industry with a resultant decay throughout the nation's economy.

Associations were formed and reformed in feeble attempts to meet an increasingly uncertain future but the members had a general lack of understanding as to proper procedures for action and, indeed, disagreement as to what was actually needed. As a result, they became more and more concerned with securing assistance from the United States and the Commonwealth Government. Their meetings soon fell into the usual pat-

[86]Julio Q. Liwag: "CAPCA — A Great Success," *The Philippines Free Press*, Vol. 39, No. 45 (November 6, 1948), p. 18.
[87]*Ibid.*

tern of forums for complaint and passing of meaningless resolutions although the expenditure of more funds and energy in research was needed.

The enthusiasm for ending, by the Government, uncertainty that existed for the industry, was soon dissipated. This occurred when individuals in the Government began to appreciate what the oil excise tax would provide in cash for the Government. Although the representatives of the Government had loudly protested the imposition of this tax, they soon realized that the treasury would be increased each year by P20,000,000, a sum whose magnitude eventually obscured the vision of Philippine legislators. Many proposals were made as to expenditure of these funds but no concrete steps were taken to utilize them in solving the basic economic problems of the nation. The industry, therefore, had to rely upon the uncertain generosity of the American Congress.

Members of the industry, realizing this if nothing more, appealed to the United States, through the Joint Preparatory Committee, for succor by the extension of free-trade relations for an indefinite period or a longer Commonwealth period of transition. They failed to secure this objective, through the opposition of politicos at home and "anti-imperialists" in America, and were urged to bear up under adverse conditions since their sacrifice was made, they were told, in the interest of the whole country. Actually, only a few benefitted and these only temporarily.

The President suggested that the difficulties were caused by the activities of middlemen and told the members of the coconut industry that he had directed a study be made with regard to the development of marketing and cooperatives. However, the difficulties of forming such cooperatives were either not appreciated or were ignored. In any event, it was the exception to the rule which succeeded.

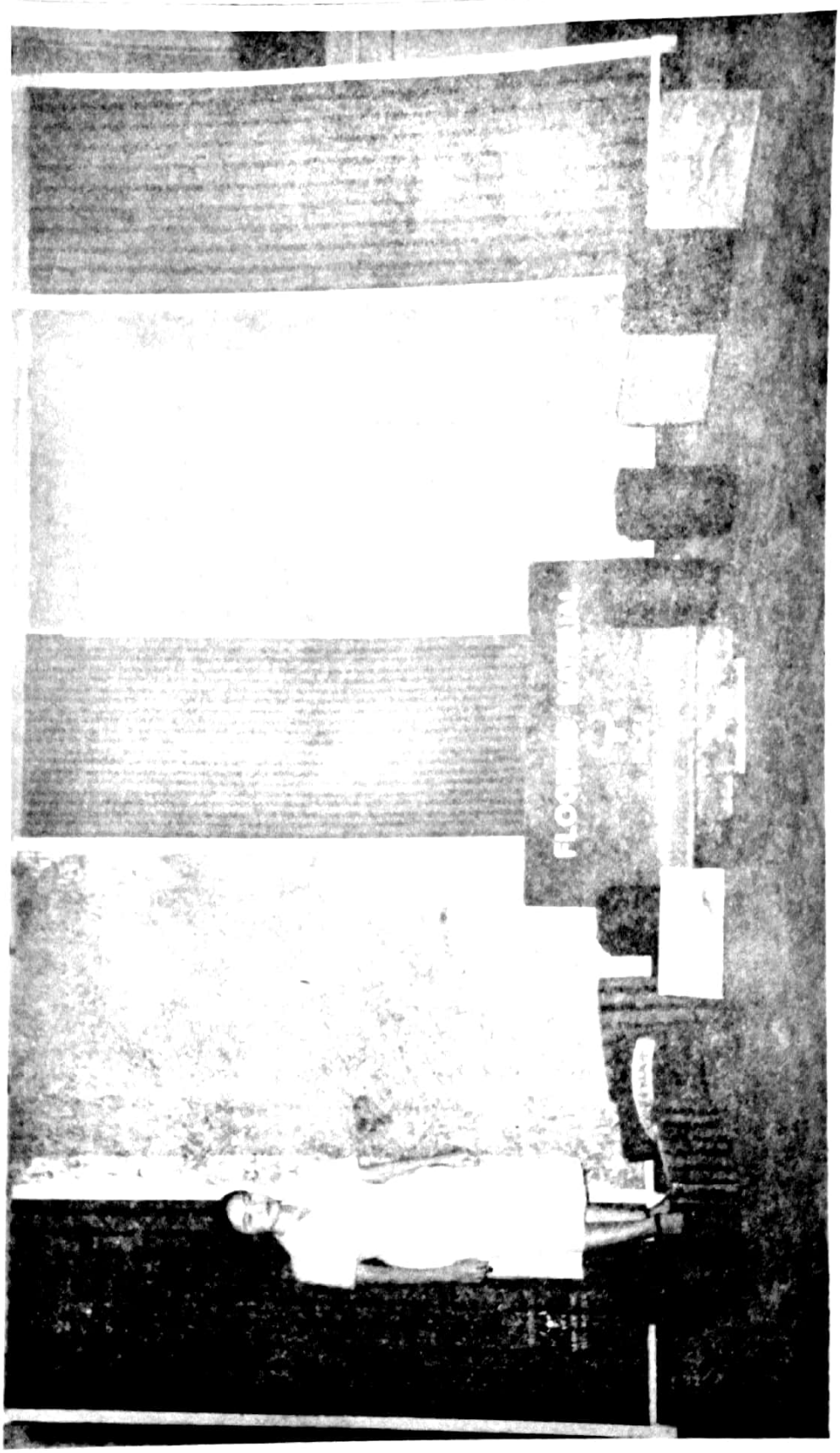
An observer was sent abroad to study production and marketing methods in competing countries but his report, published after his return, was largely ignored. The only result was the establishment of the National Coconut Corporation which was to prove to be one of the most dismal of failures.

The industry, then, was hardly in any position to face the disruption of a major war and its pre-war weaknesses foreshadowed the dark development of the post-war period. One cannot escape the conclusion that the industry continued to wait passively for some foreign miracle to occur to bring the industry back to prosperous days and preferred domination to determination.

The drop in copra prices early in the Republic caused some apprehension among producers and sellers. Many observers believed, however, that the situation would be of material assistance in the development of better methods of production and the eventual stabilization of the industry. Local businessmen repeatedly pointed to the fact that the industry could not be aided as long as its raw materials were shipped out of the country for processing. They hoped that the 1949-1950 slump in prices would encourage producers and capitalists to improve methods of production and the quality of the products, leading to a standardization of product that would bring continuing better prices in the world market.

One writer accurately stated, in 1949, that "if we are really set upon industrialization, we should first learn to discard antiquated agrarian concepts, accept transitory dislocations and prepare to fight for world markets against established industrial nations."[88] If the country and its

[88]Hernando G. Cosio: "Cushioning Copra Prices," *Manila Times Midweek Review*, Vol. 2, No. 27 (February 2, 1949), p. 5.



Courtesy of International Harvester

A well kept Coconut Plantation.

businessmen were not prepared to do that, he added, "let us stop kidding ourselves and chasing the rainbow of industrial competency." "Let us instead concentrate on our traditional agricultural economy and do a good job of producing raw materials from our bountiful natural resources for the endlessly hungry machines of the industrial world."[89] No more accurate observation has been made with regard to any of the country's industries and it should have been taken as a motto by a Government seeking a pathway out of the tangled jungles of its economy.

Since the hectarage of coconuts was constant since 1948, and since production steadily declined because of disease and other factors, and since no decisive steps had been taken, up to 1950, to meet the situation, most observers predicted that no change could be expected for at least five years, if then.

[89] *Ibid.*

ABBREVIATIONS:

PJC — Philippine Journal of Commerce.
M.O.P. — Messages of the President.

PHILCUSA-FOA PUMP IRRIGATION PROGRAM IN THE PHILIPPINES

DOMINADOR Z. ROSELL*

The pump irrigation program under the Department of Agriculture and Natural Resources is one of the many projects of the PHILCUSA-FOA in the Philippines. The office undertaking the implementation of the program is the Irrigation Service Unit, which was formally organized on October 1, 1952, in accordance with the provisions of the Memorandum of Agreement jointly made in August, 1952, by the Secretary of the Department of Agriculture and Natural Resources, the chief of the Mutual Security Agency (MSA) here and the chairman of the Philippine Council for U. S. Aid (PHILCUSA).

This program extends irrigation facilities through the installation of irrigation pumps, thus providing water to communities of small farmers whose fields depend solely upon rainfall for water supply during the rainy period of the year and are left uncultivated during the dry season. The immediate objective is to bring about increase in the yield of the regular season crop of rice in the irrigated areas, make possible the planting of a second crop during the dry season, and improve general farm practices to raise the level of the farm income and the standard of living of the farmers served.

There are three important fundamental factors to be considered before a pump irrigation system is installed, namely:

1. The people
2. The land
3. The water

(1) The people in the area where the pump irrigation system will be installed, such as the landowners and the farmers or tenants, must show and signify their interest in the irrigation project. They must indicate their desire by filing with the ISU, DANR, the necessary application for the purpose. When the application is approved, they must form an association duly registered with the Securities and Exchange Commission, in order to have a legal personality, thus enabling them to transact business and sign contracts with the Irrigation Service Unit.

(2) The land must at least be 75 hectares contiguous and irrigable once the irrigation water is made available. The soil should be of such texture that it will retain a good part of the water brought up for irrigation. It must be at least level or flat so that the construction of canals and their maintenance will be at the minimum cost. The distance from centers of population and good roads must be such that transportation of fuel for the engine and other necessities will not be prohibitive, thus making the operation, maintenance and administration economical.

(3) The water in the river should be able to supply a minimum of 2,000 gallons of water per minute, without being exhausted during the dry season. It must be free from harmful salts and substances toxic to the crop. The height from the water level to the discharge pipe should not be more than twenty-eight (28) feet.

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If one of these factors is not satisfied we simply disapprove the application and no irrigation pump will be installed. The ISU is at present in a position to investigate and study these factors everytime an application is received from interested parties. We have competent soil technologists to inspect the land and soils; agricultural engineers to see the elements involved in the construction of canals, water duty, and other factors; civil engineers for both designing and specification; and construction engineers to determine the proper designing, installation, and construction of the pump and engine on the site. We guarantee the proper installation and working condition of the project before the system is turned over to the association of landowners and tenants, who will eventually own the whole system. We have set a certain standard for a finished project called PHILCUSA-FOA STANDARD which consists of the following important requirements:

1. Engine and pump foundation should be permanent.
2. Pump and engine should be of correct size and design for the pump site.
3. Protective housing for the engine must be constructed.
4. Irrigable area to be comparable to full pump capacity considering type of soil and water duty.
5. Canals should have hydraulic elements which will minimize initial cost, maintenance cost, erosion and silting.
6. Canal structure should be of permanent nature.

Of the fifty 16-inch and the ten 42-inch pump units, bought under the dollar allocation, here is the score to date: (1) 39 units now in operation (1 came from the former IRPA); (2) 11 units under construction; (3) 11 units to be bidded for construction. The rest of the bids will be ready for construction before the end of 1953.

The condition for the operation and maintenance of the project is that the irrigation system shall be operated by the association which shall employ mechanics and watertenders as may be necessary, with the approval of the Administration of the ISU until the unit has been fully paid for. A head mechanic will be assisted by a second mechanic whenever it becomes necessary. There must be several watertenders for a unit and it is advisable to have at least one watertender for every 100 hectares irrigated to insure adequate distribution of water.

To date, farmers' associations operating these pump units report excellent performance of both the engines and pumps. The people can hardly believe that the 16-inch Johnston pumps and 95 HP Cummins engines brought by the American people could deliver so much water sufficient to irrigate 200 hectares. In the words of Mr. Flavio Vasquez, vice president, Vasquez Irrigation Association, Sto. Tomas, Jaen, Nueva Ecija, "During plowing and planting times I let the Cummins engines run 24 hours a day and I have no complaint. They are just perfect."

The people's reaction to having the irrigation water is certainly optimistic. They believe that with the irrigation water during this coming harvest season, they will significantly increase their yield from 50 to 75 per cent or more. The effect of the pump is by now felt in places where farmers and tenants have moved and built their houses in areas covered by the irrigation. The community's morale has increased and the people

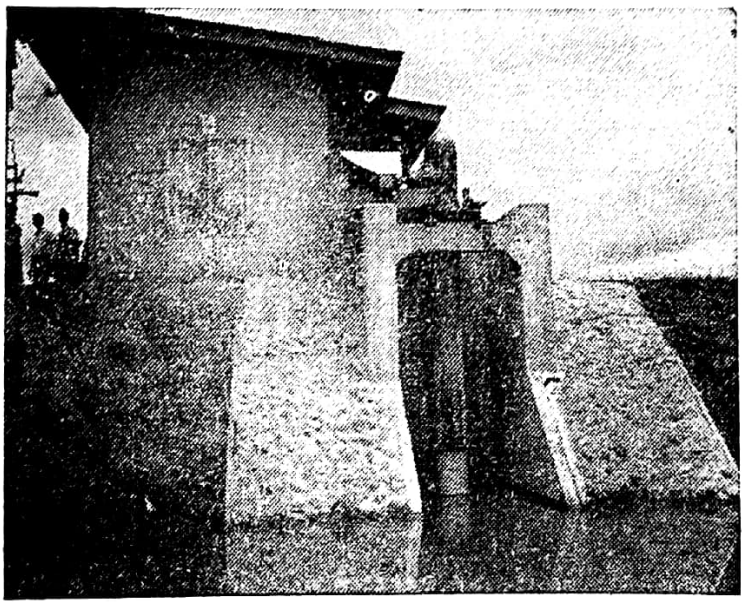
are now busy preparing the seed beds for the coming rice season. With more dollar allocation to buy more pumps and engines, and more peso counterpart to install and manage them, the Philippines will within a few years experience a bountiful harvest of rice in the rice-producing areas.

CONSTRUCTION OF PUMP IRRIGATION SYSTEM*

To be able to appreciate the task of the Irrigation Service Unit in the construction of pump irrigation systems throughout the Islands under the PHILCUSA-FOA program, the reader should know the answer to the question: How does the ISU construct a pump irrigation system?

According to the guiding principles jointly approved by FOA, PHILCUSA, and the Department of Agriculture and Natural Resources, a group of landowners with at least 75 hectares of land to be irrigated and with a suitable source of water supply may apply to the ISU (using ISU Form No. 2) for one or more pump units, depending upon the size of the irrigable area.

Upon receipt of the application, the site is investigated by ISU fieldmen and if found feasible, the project is surveyed and designed. The applicants are advised to organize themselves into an association duly registered with the Securities and Exchange Commission. Upon the approval of the plans, construction is undertaken either by the association which spends for the labor with the ISU furnishing all the materials, or by contract whereby the ISU shoulders all the expenses.



A low lift 16-inch pump installed in Sulipan, Apalit, Pampanga to irrigate 200 hectares.

*Excerpt from article by Mr. Pacifico Pinili, Chief Engineer, ISU

A high lift 16-inch pump installed in Magsalisi, Jaen, N.E., to irrigate 200 hectares of riceland.

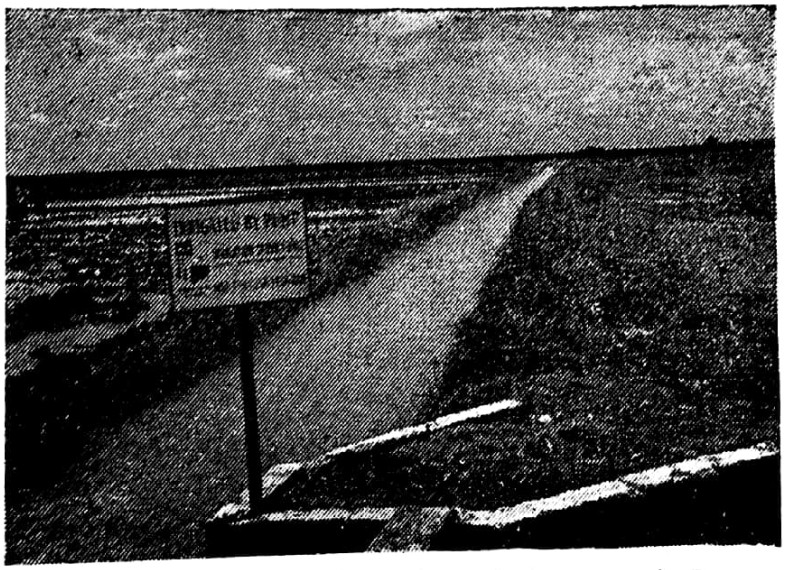
A pump irrigation project, as constructed by the ISU, must satisfy the following specifications:

1. A pump well and foundation on which the pump is mounted. It is located ordinarily a few meters inside the bank of the river in order to protect it from drifts during floods.
2. Engine foundation on which the engine driving the pump is set.
3. Housing for the engine and the mechanic.
4. Stilling basin to check the high velocity of the water discharged by the pump.
5. Main canal and laterals with the necessary structure to convey the water to the different parts of the irrigable area.

For every 200-hectares irrigable area, 16″-diameter pump and a 65-HP or 95-HP engine (depending upon the lift, that is, the approximate distance from the top of bank to the minimum water level in the river) are installed. For a project of 1,000 hectares, a 42″-diameter pump a 200-HP or 250-HP engine are allocated.

The ISU in one year of existence has been able to complete the construction of 34 projects with 38 16″-diameter and one 42″-diameter pump units installed, and nine other projects (six 16″-diameter and three 42″-diameter pumps), more or less completed.

Irrigation water delivered by a 16-inch pump to irrigate 200 hectares in Sta. Cruz, Laguna.



Main canal and a check gate for a 16-inch pump in Bayaniwan, La Paz, Tarlac.

The main problems or handicaps under which the engineering division of the ISU worked during the first year were:

1. Lack of the necessary technical personnel with sufficient experience in pump irrigation design and construction. Being new the office had to employ mostly inexperienced men in view of the unavailability of experienced ones.

2. Lack of engineering equipment and transportation facilities especially in the provinces.

3. Lack of hydrographic data for almost all sources of water supply. In this connection, it may be suggested that funds to finance the hydrographic survey by the corresponding office of the Bureau of Public Works of all streams in the Philippines for use in the consideration of the construction of pump and gravity irrigation systems be provided.

4. Difficulty in the acquisition of rights-of-way for canals and for pump and engine sites. In most cases small landowners would not part with their lots if traversed by a canal. Likewise some landowners who have not signed the necessary applications but whose lands are within the irrigable area, refuse to give rights-of-way, without certain privileges even if the guiding principles of the ISU require that an application may be approved if signed by the farmers representing at least 3/4 of the area to be irrigated.

5. Difficulty in securing signatures of illiterate small landowners. Many are reluctant to sign the regular application for the installation of a pump for their benefit and also the power of attorney authorizing the ISU to apply for water rights in their behalf for fear that their lands may be forfeited.

The benefits from the construction of 39 pump units by the ISU during its one year of existence will be appreciated when as a result of the operation of these pumps increased yields are obtained by the farmers. By then the ISU shall have justified its establishment.

PULP AND PAPER PROJECT

ERNESTO P. VILLAREAL*

Problems that greatly retard the development of the plup and paper industry in the Philippines, while sundry and manifold, are surmountable; but the major hindrance is still the immediate unavailability of the basic raw material, the right kind that is abundant locally yet cheap enough for commercial purpose as to place the industry on a competitive position.

Nearly all pulp and paper-making countries use as basic raw material the pulp wood, and whatever common wood predominating in their natural forests such as the pine and the spruce and few other species of trees indigenous to temperate climate regions.

In a tropical country like ours, on the other hand, the natural forests consist of more than 3,000 species of trees of which 75 per cent of the forest stand are of the dipterocarps commonly called "lauan" to which the "Philippine mahogany' belong. None of these trees possess the necessary qualities equal or comparable to the spruce or pine as a pulp and paper material, except for our only long fibered tree, the Benguet Pine, whose growth and natural habitat, however, is limited to the higher altitudes of the Mountain Province and the supply of which could hardly meet the present demand. Most of the production is used by gold mines in the Province as tunnel timber.

Fortunately, of the locally-available dipterocarps, the "white lauan" and some light colored trees, mostly second growth, possess some qualities, though inferior to those of the pine and spruce, that may to a certain extent be employed for special kinds of paper. At present, however, there is no attempt to produce on a commercial scale either newsprint or cardboard from these woods. All efforts, although still on an experimental basis, indicate a fairly bright prospect for paper-making from local woods.

Aside from wood, other fibrous materials may be considered for manufacturing into pulp and paper. Full utilization and conversion of sugarcane bagasse into paper has been long advocated as an alternative solution that may yet save the sugar industry whose future, like that of our coconut industry, is none too bright.

While it is true that the Philippines is the first country in the world to have made and produced paper from bagasse on a commercial scale, yet the limited demand for the kind of paper produced in Bais may not warrant the further establishment of similar paper mills. (India is the second country to make high grade paper from bagasse.) Furthermore, the sugar mills were forced to resort to very expensive bunker oil as replacement of bagasse as fuel. Considering the high cost of fuel oil (a drum of bunker fuel, 200 liters, is quoted at ₱28.32 per drum in Manila) and the scarcity of local coal, substituting these for bagasse as fuel, in order to utilize bagasse as a material for producing cheaper grades of paper whose market value is not substantial enough to make the enterprise profitable evidently can not really be called a solution to the problem of sugar industry at all as it was originally conceived.

For one thing, surplus bagasse from different sugar centrals can serve as a raw material for paper only if this surplus could be processed into semi-pulp form, then baled and transported to the nearby pulp and paper mill. Again, the uncertainty of the bagasse supply and the ab-

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sence of long term contracts between the sugar mill owner on the one hand and the paper mill owner on the other, in addition to the complexity of the problem that may arise from such a scheme, are obstacles that can discourage prospective paper manufacturers from investing millions of pesos in an industry which will necessarily have to be dependent on another industry for its continued existence.

Making paper from rice straw has been advanced by a group of local scientists. There is a move at present to establish a cottage industry for making handmade paper from rice straw. This proposed cottage industry has the objective of providing additional income to our farmers during the off-season.

Laudable as the project is, rice straw, however, has not been found to be good material for making paper. In the first place, fibers from the straw are short and fine. The silica content is high. Moreover, the presence of nodes in the rice stalks produces dark spots and impurities which can not be removed during the pulping and bleaching processes.

Also, the resulting paper from rice straw is stiff and hard, lacking the absorbent qualities of paper from wood pulp. Lastly, pure rice straw pulp could not be used for paper. Unless mixed with a long fibered pulp, with the percentage of rice straw pulp relatively small, rice straw pulp can not be made into paper and therefore, can not be regarded as a basic paper material.

An industry of this kind may have future possibilities, no doubt, if more suitable material for making a special hand-made paper is used and there is a demand and ready market of it.

Japan has been favored with cottage industries, aided and encouraged by several government research laboratories, which guide the people in the use of suitable raw materials, not to mention cheap labor and the existence of a ready home market. The raw material known as "kozo," which grows wild or is cultivated on the hill sides, and the bark of the mulberry tree, harvested every three years, offer very good basic materials for making hand-made paper.

Practically all houses of the masses use hand-made paper for windows and walls and other decorative fixtures for which the Japanese craftsman is noted. Umbrella making, also a traditional household industry, uses handmade paper to a great extent. These factors, coupled with cheap skilled labor, justify the existence of a sound and solid cottage industry that has flourished for hundreds of years and has remained unhampered by the establishment of modern paper mills.

In England, the making of special hand-made paper for bank notes, official documents, parchment papers, etc., is a flourishing industry and a highly developed art. Efforts by the machine paper manufacturers to duplicate such kind of papers have been to no avail.

Rice straw would be more suited to the manufacture of strawboard than bleached paper. Making strawboard is much simpler and more economical. Rice straw will cost less to make into strawboard, being a farm waste aside from being easily available especially in the Central Luzon provinces.

There is a great demand for pasteboards and cardboards either as insulation board or as boxes, as containers for haberdashery, toilet articles produced locally, canned foods, etc. Our importation of pasteboard and cardboard amounted to P10,127,594 in 1949 and P7,129,258 in 1950. For importing boxes alone, we spend around two and a half million pesos yearly. These materials could be made from rice straw.

The government should, therefore, encourage the establishment of a strawboard industry, even by foreigners, should local capitalists feel hesitant in investing money in such a venture.

Bamboo also has good paper-making possibilities. There are well-established paper mills utilizing bamboo as raw material in some countries, notably Siam and India. Local bamboo, especially "boho" (*Schizostachyum lumampao*), are found in thick stands in the national parks and U.S. army and naval reservations in Bataan and in some parts of Zambales. "Boho" could also be grown and cultivated in other areas.

A medium-sized paper factory utilizing "boho" as raw material can be started now, but hand in hand with its operation should be the future acquisition of sufficient areas of public land where "boho" grows. This area must be developed and maintained to assure a continuous supply of the material.

"Boho' is at present used as building material and in the manufacture of "sawali" as a substitute for wallboard; *sawali*-making as a household industry is developed in barrios where "boho" is available. However, it is regrettable that, as in the case with other forest products, there is rampant and indiscriminate cutting of "boho." If this harmful practice is not abated or stopped, there will be a rapid depletion of this forest product in the near future.

Abaca waste is one of the best local raw materials for making paper. Because of encouraging results in making strong paper from abaca waste, the Cebu Portland Cement Company has decided to erect a small pulp plant building this material. A mixture of pulp produced from abaca waste and kraft waste paper and other cheap materials has produced a satisfactory if not excellent paper for cement bags.

The limited supply of abaca waste, difficulty of collection because of the lack of roads from small stripping sheds to production centers, and lack of facilities for drying and baling are problems which will have to be solved before this material can be readily available at cheaper cost.

The pulp mill should be located with the paper mill in Cebu because the existing pulp machinery there will not warrant its establishment elsewhere.*

Pulp and paper mill machinery, like other machinery of a highly specialized industry, are very expensive and difficult to obtain at present. In the United States, where there is at present a shortage of metals particularly copper and steel, priorities for the defense program will have to be met first; in Europe, the big shops are filled with commitments, their standing orders and future deliveries running from two to three years ahead. In Japan, only a few essential machines may be ordered on shorter delivery time.

Considering these present difficulties of acquiring new pulp and paper machinery, a new mill will not only be costly but may also take years to erect and be ready for operation.

The distant position of the Philippines from other pulp and paper manufacturing countries is another difficulty which will have to be overcome. Executives for this new industry will have to plan one year ahead for mill supplies and spare parts, with provision for more capital for imported supplies and shop equipment for mill maintenance.

* There is no reason why pulp mills should not be, in the future, established in abaca-producing regions.—Ed.

The present high cost of fuel and power are other problems that need thorough study and investigation. Moreover, being a new industry there is the necessity for hiring foreign experts, experienced pulp and paper makers and mechanics, during the early stages of operation so as to give training to local technicians and personnel.

One great factor that will favor the development of the pulp and paper industry in the country, aside from high prices and the increasing consumption of paper, is the world wide shortage of pulp wood and the present tendency of using more and more short fiber (broad leaf and hardwood) trees as raw materials. With the exception of Canada, which is still underdeveloped, the great pulp and paper producing countries are suffering from a shortage of forest resources and other fiber materials.

Better methods of pulping and processing hardwood have been discovered; materials that were never used as pulp materials before are now being processed into paper on a commercial scale. The production of sulphate and semi-chemical pulps from hardwood or broad leaf trees is now fully developed and there is a justification for using any of the above processes for local woods in the production of certain kinds of paper and even fiberboards.

Although most local trees do not possess all the necessary qualities for the production of paper, yet there are some which can be utilized to a certain extent when the pulp obtained from them is mixed in a large proportion with long-fibered pulp which we may have to import. These trees are abundant and if systematic methods of logging and lumbering are properly carried out so as to utilize every portion of the tree including the slabs, small branches, etc., it is possible that costs can be brought to a minimum and enable the industry to stand on its own feet.

Utilizing our forests to the maximum advantage, and producing only such products for which a tree is best suited, we might yet find a way to solve this distressing problem of raw material supply. A good case in point is that of the Benguet Pine, perhaps the only material found locally that is ideally suited for making pulp and paper, which is being used as mine timber, even if it is not appropriate for such purpose because of its brittleness under prolonged load. If the Benguet Pine is earmarked for use by the pulp and paper makers only, then we will be utilizing our forest trees to the best advantage. For reinforcing mine tunnels we can urge the use of common lumber which is abundant and could be transported to the mines cheaply.* A similar scheme can, likewise, be followed regarding other fiber materials.

Using bagasse for paper-making was decidedly a good start; utilizing rice straw for strawboard may be another. Also producing paper from abaca wastes, bamboo, etc., are possibilities which we can exploit further. Using the pine tree and a few other local trees exclusively for pulp manufacture is a certain way of beginning this industry. Erecting an ambitiously large pulp and paper factory may not be possible because of certain limitations but erecting modest ones in places where the supply can be guaranteed may after all prove to be more practical and logical in the long run.

* This point may be disputed, in the absence of supporting statistics.—Ed.

CLIMATE OF MANILA

SEVERINO L. KOH *

TOPOGRAPHY

Located at about 14°35, N. lat., and 121°E. long, Manila lies in the western coast of Luzon along Manila Bay. The bay, which covers an approximate area of 750 square miles, lies to the western quadrant of the city. Across the bay, in the province of Bataan are mountains highest among which are the Mariveles Mountains, with peaks up to 4,660 feet. North of these are higher mountains, the Zambales Mountain Range, which rise to heights as high as 6,700 feet. To the east of the Zambales Mountain Range and from the northwest to directly north of Manila is the Central Plain of Luzon. The Sierra Madre extends in a north-south direction to the east of the Plains and Manila. Two of the high peaks in the Sierra Madre near Manila are, Mt. Irid, 4750 feet high, some 25 miles ENE of Manila, and Mt. Angilo, 4,300 feet high, about 25 miles NE of the city.

Ten miles to the SSE of Manila is the northweastern shore of Laguna de Bay. Farther to the SE of the city and across Laguna de Bay is Mt. Banahao, 7,150 feet above sea level. Several other peaks are scattered nearby: Mt. Maquiling, 3,640 feet high, 35 miles S of Manila; and Mt. Batulao, 2,600 feet high, 40 miles SSW of the city.

A general view of the topography around Manila presents an interesting picture. The high Sierra Madre Mountain Range shields the city from the direct effects of elements coming from the eastern semicircle. Through the Central Plains and between this Sierra Madre and the Bataan-Zambales Mountains, Manila is exposed from the north. In effect, this arrangement of mountains and plains serves like a channel oriented in a north-south direction with the city of Manila located at the southern end.

Another interesting feature is the location of Manila Bay between the Bataan Mountains and those in Cavite and Batangas. The bay empties into the China Sea at a point (about 12 miles wide) some 40 miles to the southwest of Manila. Thus, southwesterly air currents, especially during the prevalence of the Southwest Monsoon, are "funneled" through this point, over the bay, and into Manila.

Doubtless, these geographical features of the area surrounding Manila affect various weather elements as observed in the city. Frequently, characteristic climate peculiarities are satisfactorily explained by topography. In the discussion that follows, this influence of topography on climate is mentioned several times to explain and emphasize certain points.

WIND

As anywhere else in the Philippines, the seasonal variation in weather is largely influenced by wind flow. The high pressure area that predominates over the continent of Asia during the cold months of November to February causes northeasterly winds (frequently referred to as *Northers*) to prevail over Manila. With the subsequent weakening

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and northward displacement of this Asiatic High after the month of February, the effects of the trade winds become more pronounced. Coming under the influence of the Northern Pacific subtropical anti-cyclone, the southwestern sector of this anti-cyclone spreads over the northern portion of the Philippines. Luzon, in particular, experiences southeasterly trades. Therefore, during the months of March, April, and May southeasterly winds are observed in Manila most frequently. We may add further that from November to May the prevailing winds over the city have an easterly component. Plate I (b) shows the percentage distribution of winds at Manila from November to May.

During the rest of the year, *i.e.* from June to October, the Southwest Monsoon prevails over the Philippines. Consequently southwesterly winds are observed in Manila during these months. Plate I (a) shows the percentage of wind direction at Manila for this period. It must be mentioned here that June and October are transition months during which the southeasterly trades are replaced by the southwesterly winds in June and the southwesterly winds by the northers in October.

Due to other factors, the wind observed at Manila is at times at variance with the normal prevailing wind. A typhoon or a tropical depression in the vicinity of the Philippines might induce over Manila a wind from a direction entirely different from normal. Furthermore, being a coastal city, Manila is affected by the unequal heating and cooling of land and sea. Coming from the bay, a sea breeze is observed in the city during hot, sunny days when the land areas become rather heated. Land breeze is observed at night when these land areas have radiated much of the solar heat collected during the day and have become cooler than the surrounding water areas.

The wind speed varies in strength with the months. The wind is quite steady and strong during the prevalence of the Southwest Monsoon. Particularly, the wind is strongest in August — that is considering the average wind speeds as computed on monthly basis from wind records of 46 years. Based on these same records, the wind is lightest in December.

It might be interesting to note that the greatest wind force ever recorded at Manila was 118.5 miles per hour. This was on October 20, 1882.

RAINFALL

It was mentioned previously that topography has its influence on climate and that wind flow contributes greatly to seasonal variation in weather. The geographical distribution of land and water, mountains and plains, about a certain locality and the direction of wind flow (which is indirectly an index to the characteristics of the air mass over the locality)—the effects of these on rainfall variation in that locality cannot be denied. This is so particularly here in the Philippines. In fact, the existence of several types of rainfall characteristics over the Archipelago has served as the basis for classification of different climatic types in the Philippines.

Manila, in particular, is characterized by two pronounced seasons in a year. The city is dry during the months of January to April. (According to Rev. Coronas' classification, a dry month is considered such in the Philippines if the rainfall for that month is less than 50 millimeters.) During the rest of the year, *i.e.* from May to December, Manila

is wet with a marked rain period from June to October. The accompanying rainfall chart, Plate II, shows the monthly variation of average rainfall in Manila covering a period of 80 years.

It is noteworthy that the pronounced rainy season from June to October coincides with the prevalence of the Southwest Monsoon. During this period the extremely moist air which is unhampered by mountains as it comes from the southwest over Manila Bay and into the city brings with it considerable amount of rain. The strong convective instability of this air mass, which is conducive to the formation of thunderstorms, further causes a great amount of rain to fall; thus, rainfall during these months is excessive in Manila. July, which is the wettest month in the city, has an average rainfall of 16.84 inches. This is nearly 20% of the average yearly rainfall of 81.52 inches. On the average, rain is observed for 24 days of the month in July.

August and September are nearly as wet as July, with monthly rainfall averages for these two months equal to 16.58 and 13.95 inches, respectively. August has an average number of 23 rainy days in a month; while that for September is 22 days.

This excessive rain period coincident with the prevalence of the Southwest Monsoon is also observed at several other localities in the Philippines, especially those that are situated in Western Philippines and to the west of the high mountains. Worth mentioning among these localities are Baguio City, Iba, and Olongapo. Baguio, which holds the world's record for greatest 24-hour rainfall collected, has an average rainfall of 44.70 inches in August, and 41.90 inches in July. Iba and Olongapo are wettest in July with rainfall averages of 38.92 and 38.83 inches, respectively, for this month.

On the other hand, the other months of the year, November to May, are characterized by drier weather than that experienced from June to October. In Manila, the pronounced dry season from January to April coincides with the prevalence of the Northeast Monsoon. Coming from the northeast over the Pacific Ocean, the air is nearly as moist as the southwesterlies during the Southwest Monsoon. Excessive rain occurs over the eastern part of the Philippines, especially over the eastern slopes of the mountains in this region. Therefore, the air which has given off much rain becomes comparatively drier as it crosses the mountains. Streaming down the western slopes of Sierra Madre, the air is further dried and heated. Thus, little rain is available in the air as it streams over the city of Manila. This explains the pronounced dry season during the months of January to April.

In Manila the driest month is February. An average of only 0.44 inch of rainfall is collected for this month. This amount is less than one per cent of the average annual rainfall. For the month of February an average of only three days a month is characterized by rain; the remaining days of the month are totally dry.

During the dry season in Manila, other localities in the Philippines which are similarly situated in the western part of the Archipelago and to the west of mountains, such as the previously mentioned Baguio City, Iba, and Olongapo, also experience the dry season. From a maximum monthly average rainfall of 44.70 inches in August, Baguio City rainfall drops to a minimum of only 0.82 inch averaged for February. Similarly, Iba and Olongapo are quite dry during the months January to April. Iba is driest in February with an average rainfall of only 0.24 inch; while Olongapo is driest in March with an average of only 0.12 inch.

These figures cited above are normal values computed from many years' records. For Manila, our normal values are based on records for a period of 80 years of observation (1865 to 1939; 1946 to 1950). There are times when the amount collected for a given period is far below the normal value. Then we have what is called drought. Manila has experienced several such droughts, the most severe of which, since the establishment of the Weather Bureau in 1865, is that which occurred in the year 1885. This is the driest year on record, with a total rainfall of only 35.69 inches collected throughout the year. This amount is less than 45% of the average annual rainfall of 81.52 inches.

On the other hand, the rainfall accumulated for a given period may be far above the normal amount, in which case floods result due to insufficient drainage. These inundations occur especially if the rains remain heavy and continuous for long periods. Manila has been flooded many times in the past. Among the most remarkable floods that have ever been observed in Manila is the flood of 1919. This flood was mainly caused by the continuous heavy rains brought by the several typhoons that passed over or near the Philippines from the last week of July to the first week of September. An enormous total rainfall of 78.07 inches was accumulated in Manila during the 30 days it rained in the month of August. This amount of rainfall is on record as the greatest collected in Manila in a single month. It might also be mentioned here that this same year, 1919, holds the record for the greatest annual rainfall with a total amount of 154.35 inches.

Equally remarkable is the flood of August 11-13, 1931. Of this flood which was one of the worst ever experienced in the Philippines, Mr. Bernardino Perez, who made a study of Manila floods from 1900 to 1943, has this to say: "The very heavy rainfall in coincidence with an unusual hour-foot tide rise caused the worst flood ever experienced in Manila. Three-fourths of the city was under water."

TEMPERATURE

In the tropics, within which region the Philippines is included, the annual variation in temperature is small compared with the variation during the day. A twenty-degree Fahrenheit variation in one day is common in Manila; whereas, for a year, the difference between the means of the warmest and coolest months rarely exceeds ten degrees Fahrenheit.

To cite figures: temperature in Manila varies in a day from an average minimum of 69.0°F to an average maximum of 86.4°F in January. This is a variation of 17.4°F. In May, the variation in a day's time is from an average minimum of 75.3°F to an average maximum of 92.8°F or a range of 17.5°F. On the other hand, the annual variation is not as great. The mean monthly temperature varies from 83.4°F for May, the warmest month, to 76.8°F for January, the coolest month, giving an average annual range of 6.6°F only.

Plate III shows the fluctuation of the temperature in Manila based on 61-year monthly averages. The annual mean temperature for the city is 80.0°F, which is slightly cooler than that averaged for the entire Philippines.

It would be interesting to compare this 80.0° mean for Manila with those for other localities in the Philippines. To cite some: Baguio City, which is located at an altitude nearly 5000 feet above sea level, has a

mean annual temperature equal to 64.2°F; Cebu City, 81.3°F; Davao, 80.4°F; Dumaguete, 80.8°F; Iloilo, 80.5°F; Legaspi, 80.7°F; and Zamboanga, 79.8°F. This further proves the point that in the Philippines latitude is not an important factor insofar as temperature observations go; what is more important is the altitude of the station.

Finally, one would like to know the extreme temperature conditions observed at Manila. For a period of 61 years (1885 to 1940; 1946 to 1950), the temperature of 101.5°F on May 17, 1915 stands as the highest observed in Manila. In contrast to this, the lowest temperature ever registered in Manila was 58.1°F, observed on January 11, 1914.

HUMIDITY AND CLOUDINESS

Weather elements are closely related with one another. In particular, it is interesting how humidity, cloudiness, rain, and temperature are interdependent on each other. Everything else being the same, humid air is more conducive to cloud formation than dry air. Clouds under appropriate conditions result in rain. Then rain increases the humidity of the air. Further, the relative humidity of the air is high when the temperature is low; conversely, the relative humidity is low when the temperature is high. This fact is observed everyday as temperature fluctuates.

However, this inter-relationship is not that simple. Although rain occurs only in the presence of clouds, since it is these clouds that give off rain, still it must be understood that the mere presence of clouds do not presage the occurrence of rain. Suffice it to say that there are types of clouds which ultimately result in rain, while there are other types which do not give any rain at all. Also, humid air does not always result in more cloudy weather. So on with the other relationships: rain and humidity, temperature and humidity, etc. Other factors have to be considered.

Despite these complicated relationships between any two of the elements just mentioned, the mean values of these elements clearly show good correlation. Of humidity and rain: during the dry season, *i.e.* from January to April, the relative humidity is low. Averaging the monthly means for this period of the year gives an average relative humidity of 72.6%. These months of the dry season have monthly relative humidity means below 80%. That for the month of April is lowest with a value of 69.4%.

The average relative humidity for the marked rain period based on the monthly means for the period from June to October is 83.7%. This is more than 11% greater than that averaged for the dry season. The mean relative humidity for each of the months of the rainy season is above 80%. September has the highest relative humidity with a monthly mean of 85.1%.

In cloudiness, April, which has the lowest mean relative humidity, is also least cloudy. During this month an average of only four-tenths of the sky is covered by clouds. The other dry-season months, *i.e.* January, February, and March, are also characterized by nearly as small an average cloud coverage as that for April.

The three months of July, August, and September, which are the months of greatest rainfall, are also the months during which the sky is cloudiest. On the average, nearly eight-tenths of sky is cloud-covered throughout this rainy period.

Plate IV presents in comparative form rainfall, humidity and cloudiness variations in Manila throughout the year.

THUNDERSTORMS

Thunderstorms are frequently observed in Manila. For a period of five years, 1946 to 1950, thunderstorms were reported in the vicinity of Manila for 229 days. Of this total, 49 cases or 21% occurred in August, making this the month during which thunderstorms most frequently occur. Thunderstorms are observed in May, June, September, and nearly as frequently as in August. In fact, on the average no less than 4 cases are observed per month from April to October.

During this same five-year period, no thunderstorm was observed in January. Several other months are also characterized by rare occurrence of thunderstorms. For the five years considered, a total of only 5 cases was observed in November, 3 in December, 1 in February, and 3 in March. On the average, only a single case a month occurs in each of the months of November, December, and March; none occurs in January and February. It is noteworthy that this "thunderstorm-less" period coincides with the dry season more or less; while the months of frequent thunderstorms, particularly the months from June to September, coincide with the rainy season.

It must be remembered that this study on thunderstorm frequency is based on the record of five years only. This short-period record is not sufficient to establish normal values. In fact, it would not be surprising if the observations of the coming years would give results different from those based on this five-year record only.

TROPICAL CYCLONES

A study was made of the remarkable typhoons that passed over or near the Philippines for a period of 32 years. In this study, tropical cyclones of great intensities only were considered. A total of 123 such strong typhoons affected the Philippines during these 32 years under consideration. Of this number, 16.3%, or a total of 20 cases, passed within 75 miles of Manila. Forty-three or a percentage of 35, passed within 150 miles of Manila. The typhoon table appended at the end of this study shows the frequency distribution of strong typhoons and depressions over a period of 32 years.

It is worth mentioning that during the months of January to April throughout the period under study, no remarkable typhoon passed within 75 miles of Manila. Again, none passed within 150 miles of the city during the months of January, February and March. Furthermore, it can be noted that despite the fact that strong typhoons affect the Philippines rather frequently in July and August, only a total of three such typhoons passed within 150 miles of Manila during the 32-year period. The majority of these typhoons passed north of the Philippines.

SUMMARY

It would be desirable to summarize the more important points raised above. Thus, we conclude with a brief summary of the climate of Manila:

Easterly winds prevail over Manila from November to May—northeasterly in November becoming southeasterly by May. From June to October west to southwest winds prevail over the city.

The dry season starts from the latter part of December and continues to the end of April. May ushers in the rainy season.

In temperature, Manila is slightly cooler than most of the other low-altitude localities in the Philippines. Mean annual temperature is 80.0°F. January is the coolest month, while May is the warmest.

Finally, Manila is affected by strong typhoons most frequently in October and November. Very rarely do these typhoons occur in January, February, March or April.

ACKNOWLEDGEMENT

The author gratefully acknowledges the invaluable help and advice unselfishly extended to him by Mr. Lorenzo R. Goli, Chief, Statistics Section, Weather Bureau. Mr. Goli prepared most of statistical data used in this study.

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TEMPERATURE IN °F.

Month	*Mean (1885-1940; 1946-1950)*	*Mean maximum (1885-1940; 1946-1950)*	*Mean maximum (1885-1940; 1946-1950)*
January	76.8	86.4	69.0
February	77.8	88.0	69.0
March	80.1	90.8	70.6
April	82.8	93.4	73.3
May	83.4	92.8	75.3
June	82.2	90.5	75.4
July	80.6	87.8	74.8
August	80.7	87.4	75.0
September	80.3	87.6	74.7
October	79.9	88.0	73.6
November	78.5	87.1	72.1
December	77.2	86.4	70.3
Annual	80.0	88.8	72.8

Month	*Highest (1885-1939; 1946-1950)*	*Day and Year*	*Lowest (1885-1939; 1946-1950)*	*Day and Year*
January	95.4	6, 1947	58.1	11, 1914
February	96.1	25, 1906	60.1	18, 1920
March	98.1	(25, 1933	61.2	9, 10, 1911
		(17, 1946		
April	100.4	30, 1915	63.0	(2, 1913
				(2, 1923
May	101.5	17, 1915	68.0	(22, 1913
				(1, 1921
June	99.7	(4, 1912	70.9	7, 1895
		(5, 1946		..
July	97.3	(7, 1915	69.4	2, 1919
		(7, 1946		
August	95.4	6, 1900	69.1	27, 1896
September	95.5	18, 1903	69.4	24, 1919
October	95.2	10, 1903	67.1	26, 1913
November	93.2	(5, 1923	62.2	30, 1911
		(9, 1946		
December	94.3	14, 1947	60.3	31, 1892
Annual	101.5	May 17, 1915	58.1	Jan. 11, 1914

RAINFALL IN INCHES

Month	*Average amount (1865-1939; 1946-1950)*	*Average number of rainy days (1865-1939; 1946-1950)*	*Greatest fall in 24 hours (1865-1939; 194-61950)*	*Day and Year*	
January	0.91	6	7.33	1,	1883
February	0.44	3	1.72	3,	1921
March	0.69	4	2.36	18,	1866
April	1.31	4	5.63	29,	1905
May	5.06	12	8.32	7,	1923
June	9.93	17	9.95	15,	1891
July	16.84	24	11.56	29,	1919
August	16.58	23	12.75	10,	1947
September	13.95	22	13.23	24,	1867
October	7.61	19	7.65	15,	1918
November	5.53	14	10.96	18,	1923
December	2.67	11	3.90	19,	1889
Annual	81.52	159	13.23	Sept. 24,	1867

Month	*Highest monthly rainfall (1865-1939; 1946-1950)*	*Year*	*Lowest monthly rainfall (1865-1939; 1946-1950)*	*Year*
January	7.68	1883	0.00	1905, 1946
February	1.75	1921	0	Various
March	3.94	1887	0	Various
April	6.84	1905	0	Various
May	19.23	1934	0	1875, 1889
June	26.02	1926	0.98	1893
July	46.88	1899	5.28	1866
August	78.07	1919	2.80	1909
September	57.86	1867	2.00	1885
October	23.22	1869	0.38	1911
November	23.45	1923	0.24	1911
December	13.66	1889	0.01	1896
Annual	154.35	1919	35.69	1885

Month	*Prevailing wind direction (1903-1918; 1946-1950)*	*Average wind velocity (1893-1933; 1946-1950) m.p.h.*
January	NE quadrant	4.1
February	E quadrant	4.9
March	SE	5.3
April	SE	5.6
May	SE	5.5
June	W quadrant	5.6
July	W quadrant	6.7
August	W quadrant	7.7
September	W quadrant	6.1
October	W quadrant	4.1
November	NE quadrant	4.1
December	NE quadrant	3.8
Annual		5.3

Month	*Average Cloudiness (1885-1933; 1946-1950) 0-10*	*Average relative humidity (1885-1940; 1946-1950) %*
January	5.6	77.2
February	5.0	77.3
March	4.6	70.7
April	4.1	69.4
May	5.7	75.2
June	7.0	80.9
July	7.8	84.4
August	7.8	84.6
September	7.7	85.1
October	6.8	83.4
November	6.5	82.2
December	6.2	80.6
Annual	6.2	78.9

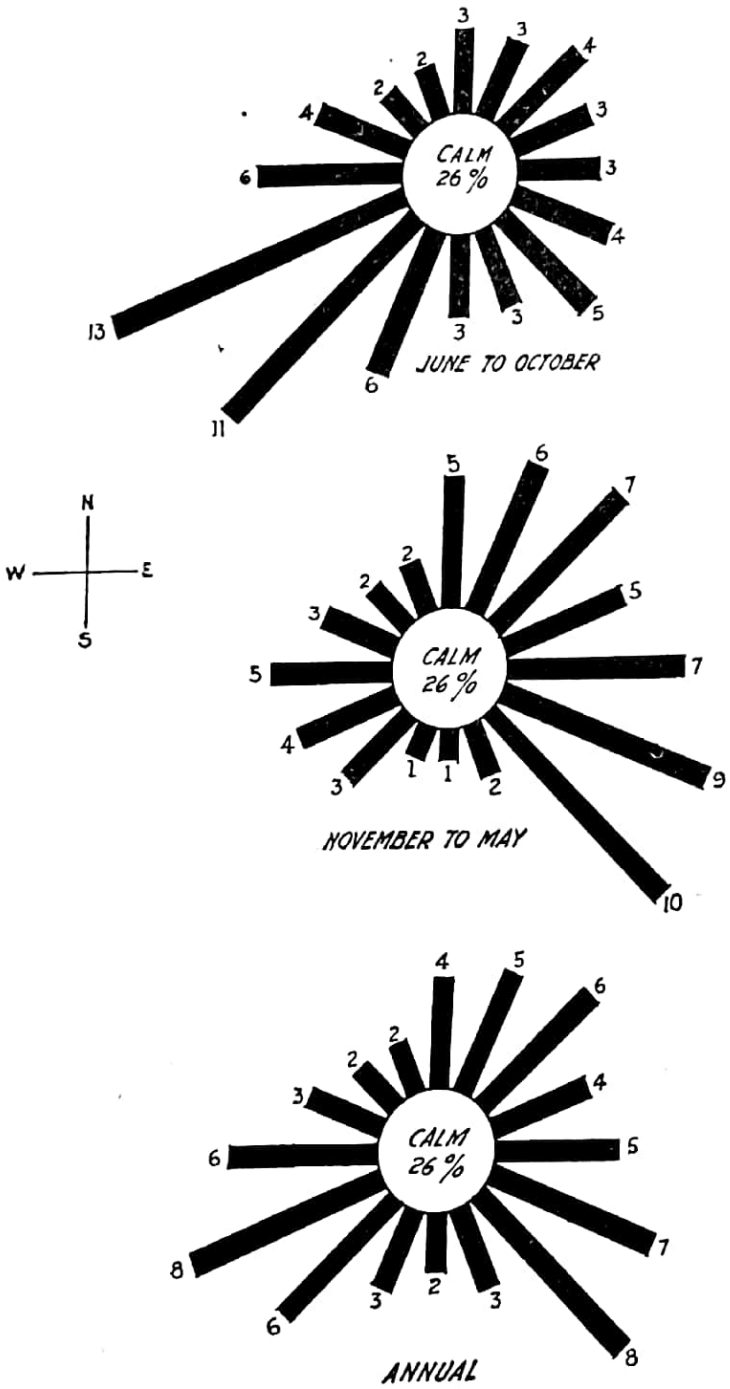
FREQUENCY OF THUNDERSTORM DAYS*

Month	*1946*	*1947*	*1948*	*1949*	*1905*	*Total*
January	0	0	0	0	0	0
February	0	0	1	0	0	1
March	1	1	0	0	1	3
April	0	8	3	1	6	18
May	9	4	2	0	16	31
June	8	5	5	11	13	42
July	2	6	5	8	3	24
August	8	6	4	17	14	49
September	6	4	3	12	9	34
October	3	0	3	10	3	19
November	1	0	0	4	0	5
December	3	0	0	0	0	3
Annual	41	34	26	63	65	229

REMARKABLE TYPHOONS
(1903-1934)

Month	*Passed over the Philippines*	*Passed within 75 miles of Manila*	*Passed within 150 miles of Manila*
January	3	0	0
February	0	0	0
March	0	0	0
April	3	0	1
May	4	1	3
June	11	3	5
July	15	1	1
August	17	2	2
September	22	2	6
October	22	4	8
November	17	4	13
December	9	3	4
Annual	123	20	43

PLATE - I



ANNUAL AND SEASONAL PERCENTAGES OF WIND DIRECTIONS AT MANILA

After Rev. Coronas, 1920

PLATE II

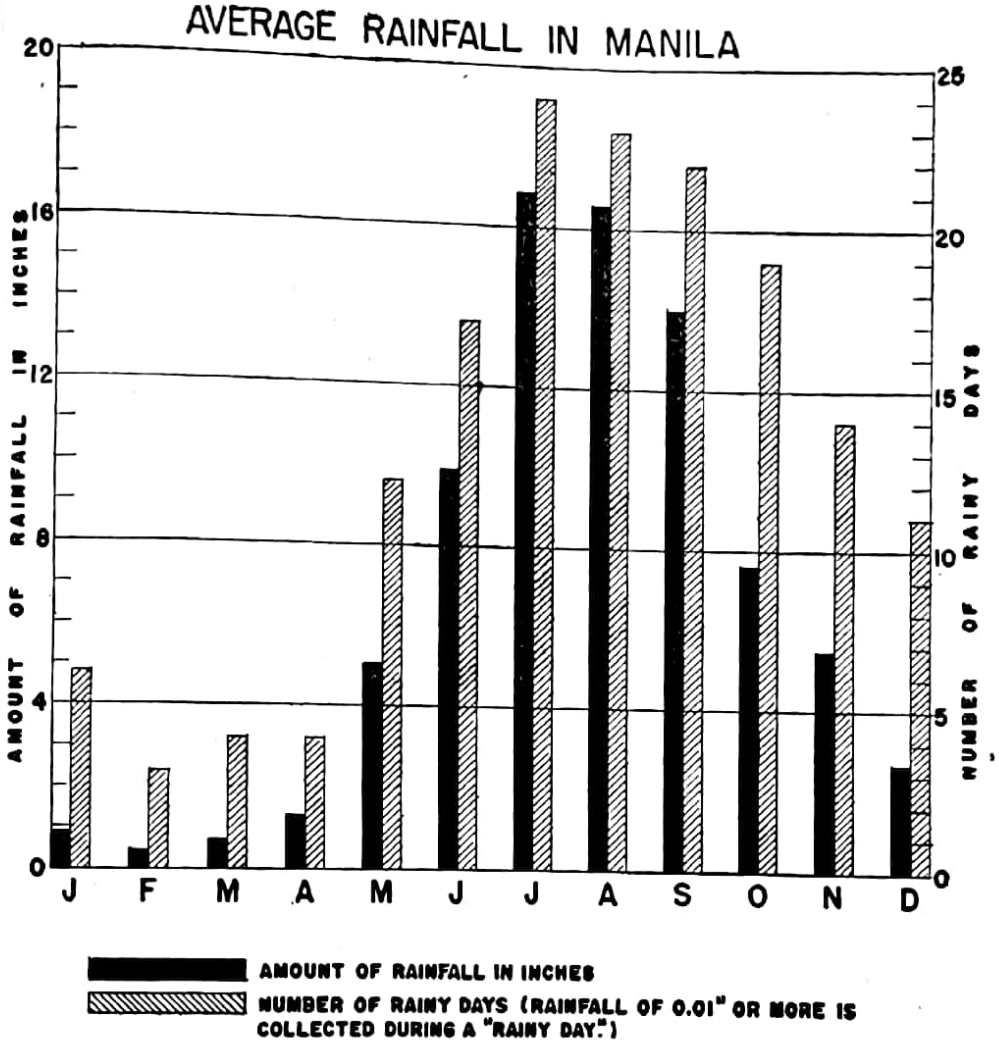

AVERAGE RAINFALL IN MANILA
AMOUNT OF RAINFALL IN INCHES
NUMBER OF RAINY DAYS
0
4
8
12
16
20
0
5
10
15
20
25
J F M A M J J A S O N D
AMOUNT OF RAINFALL IN INCHES
NUMBER OF RAINY DAYS (RAINFALL OF 0.01" OR MORE IS COLLECTED DURING A "RAINY DAY.")

PLATE III

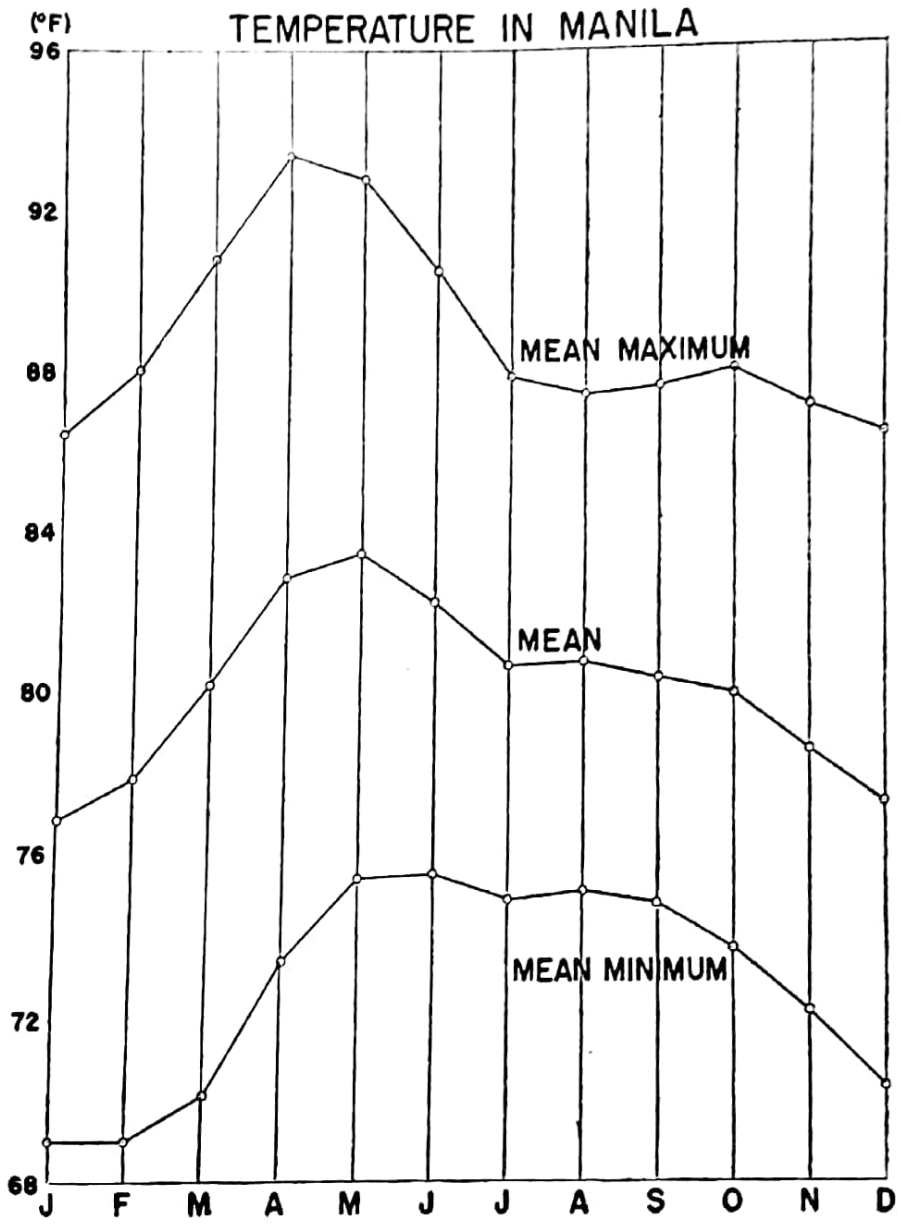
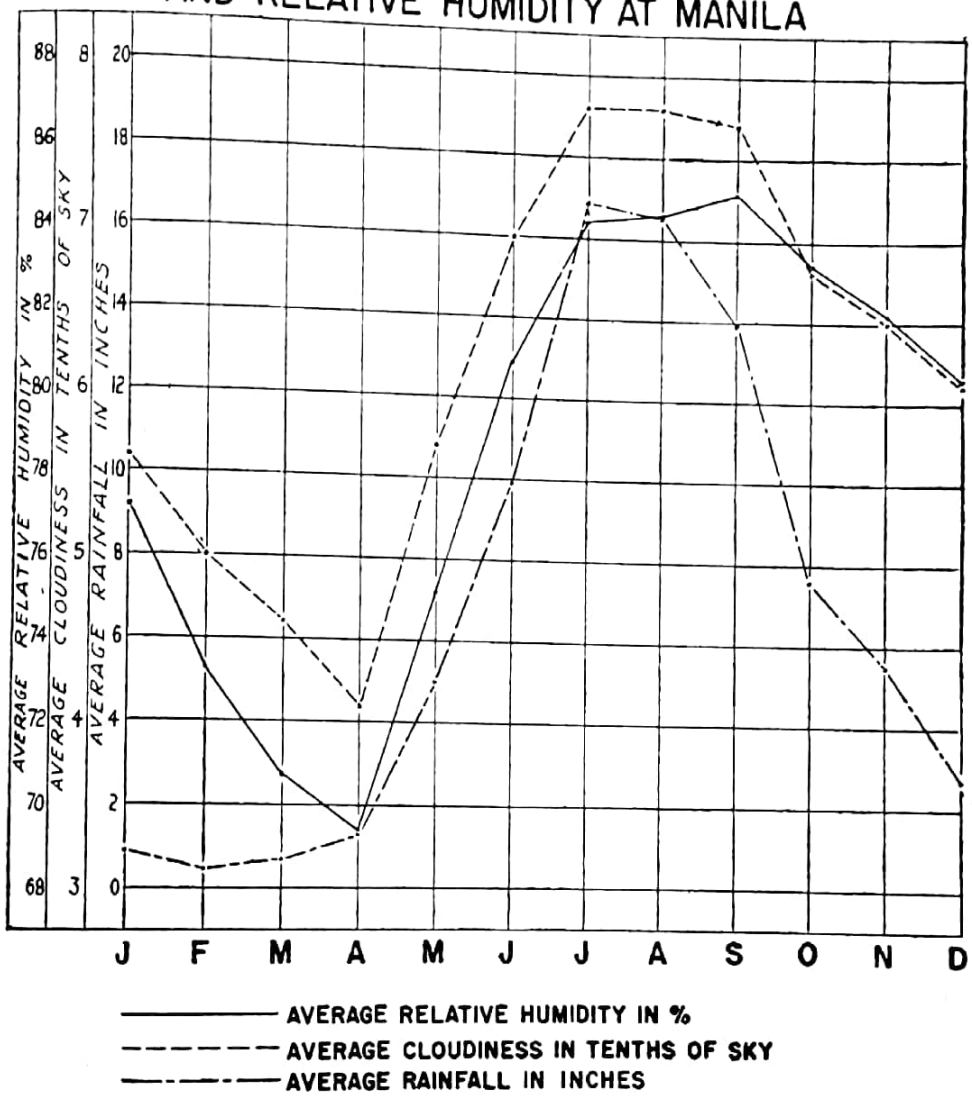

TEMPERATURE IN MANILA
(°F)
96
92
88
84
80
76
72
68
MEAN MAXIMUM
MEAN
MEAN MINIMUM
J F M A M J J A S O N D

PLATE IV

ANNUAL VARIATION OF RAINFALL, CLOUDINESS AND RELATIVE HUMIDITY AT MANILA



MARBLE DEVELOPMENT OF THE CEBU PORTLAND CEMENT COMPANY

FILOMENO DUTERTE JR.*

In plain geological language, marble is merely a metamorphosed limestone. To the layman, however, any rock that takes a polish is, in general, marble. The layman would, therefore, take even polished granite for marble.

As far as is known, there has been no attempt made by anyone to develop our granite deposits for building or ornamental purposes. This article covers only true marble rock, true as far as sense and form is concerned and as studied, explored and developed by the Cebu Portland Cement Co.

At present there are three areas where marble is known definitely to exist in commercial quantity and is either being intensively explored or in its early stages of development.

The first of these marble claims is in the Antipolo-Teresa area on the island of Luzon, covering an area of approximately 450 hectares. Prior to the war, they were developed by the A. C. G. Marble Co., Inc. but for some cause this company sold its rights to the Cebu Portland Cement Co. Immediately after the war, the Elizalde interests through their energetic representative, Mr. P. Umberti, pioneered a post-war marble industry.

Through negotiations, the Cebu Portland Cement Co., who has always wanted to encourage private capital, transferred its rights to the Elizalde interests, and this arrangement gave rise to the present "Marble Corporation of the Philippines."

Because of the difficulty of securing locally, during early liberation, the essential machinery and equipment, Mr. Umberti endeavored to obtain from war surplus and other sources, enough parts to assemble a make-shift unit able to produce his requirements. There was no market then for finished marble slabs. Production of these, therefore had to be temporarily stopped and other products were produced. Chips, gravel for road paving, marble dust that could be used as filler in the rubber shoe industry, in glass-making, for agricultural purposes, etc. were produced.

There is a market resistance to these products that must be overcome, since the present income derived is just enough to keep the present make-shift factory going. There could be no allowance for return of capital investment and purchase of new and modern machinery and equipment to be able to produce the desired products at low cost.

This industry can only survive the competition presented by imported marble by-products, if and when additional, adequate capital is secured Should this problem be impossible to overcome the government must come to the rescue. The government can be assured of a profitable return on investment in this industry and at the same time benefit the country.

There is only one color of marble of any commercial value in this area: beige with white and golden streaks It takes polish well.

The finishing plant is composed of two gang saws, one big automatic cutting machine, two made-up polishing machines, a horizontal grind-

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ing table and several other equipment and tools adequate only for a fairly small scale production of finished marble slabs.

Since there is no variety of colors for the customer to select from it would appear that production of marble slabs would only become a side line in the production of marble chips and dust. Very recently the Marble Corporation of the Philippines expanded their quarrying operation to produce whitish marble blocks in Romblon for trans-shipment to their plant in Teresa, Rizal.

The second marble claim is in the Naga-Toledo area of Cebu province. Before World War II, in the course of extensive operations of the Uling Coal Mines by the Cebu Portland Cement Co., a sizeable deposit of marble was discovered in the outlaying vicinity of Uling, Naga, Cebu. Several samples were taken for study and determination of its economic value. It is not "true" marble but simply a limestone that takes a very high polish.

There are several varieties of color ranging from grey to beige, golden and pink.

The pink variety is slightly "terraceous" made up of alternate layers of beautiful pink and whitish veins in irregular formation. Several blocks of this variety were shaped from big boulders before the war, for slabbing at the Cement Plant by a gang saw that was transferred from Romblon. Due to the outbreak of the war, the plan did not materialize. Recently, these blocks were shipped to the newly established CEPOC marble plant in Manila and were sawed and finished into slabs. This is by far the most beautiful color variety ever produced locally.

In the Naga-Toledo area there are seven placer claims of 64 hectares each, leased by the Cebu Portland Cement Co. The presence of other color varieties aside from the pink (Golden Cebu) are not attractive because of their existence in Romblon where the present development of marble industry is concentrated. However, the company has included in its program of future operation the production of "Golden Cebu" blocks which are to be finished in the Manila Plant

The third claim is in the Romblon area on the island of Romblon.

The Island of Romblon has become a synonym for marble so that whenever this island is mentioned it is always linked to this "rock gold." Early Spanish "conquistadores" utilized Romblon marble in churches for the altar, fonts, flooring, etc. Up to the present, the natives of Romblon have been making *almeris*, sign bars, *lapidas* and many other typical products that are marketed throughout the archipelago.

The production of marble in commercial form and quantity was started by the Philippine Marble Company in 1939. Gang saws, frasing and polishing machines, lathes and other finishing equipment were installed. Quarrying requirements were sufficient. Technical and practical know-how for the operations were furnished by Italians, who were brought to the Philippines. The company had reached a reasonable scale of operation as evidenced by the existence of present quarry faces and finished products.

The Philippine Marble Company folded up just before the war and sold out to the Cebu Portland Cement Co. During the war nothing was done on this property. After liberation, the Cebu Portland Cement Co., because of the enormous amount of work involved in the rehabilitation of its cement plant and the expenditure it had to make in the expansion

necessary to double its cement production, had neither the needed time, personnel nor capital to develop their other properties. Only recently has the company finally decided to launch a program to develop the marble industry into a large, full-producing enterprise to meet not only all local requirements but also for exportation.

The old machineries in Romblon that were installed by the defunct Philippine Marble Co. were salvaged, in spite of having been looted during the war. Some of these are installed and are now in actual operation at the North Harbor Compound of the Cebu Portland Co. A complement personnel under the supervision of an experienced plant foreman, Mr. Claudio Basina, is being maintained. Finished typical marble products are produced daily. The present purpose of the plant is not for commercial production but to serve as a pilot plant to make studies of the different varieties of marble best suited for the market, to determine what proper machineries are needed to meet the requirements of producing the best product at a minimum cost and to train the men who will undertake the work.

In this way, the company will be ready to meet the intricate problems inherent in full-scale production and keep to a minimum the risks involved thus insuring a reasonable dividend on the big capital investment. At the same time, the company is now maintaining a force at Romblon to locate and explore commercial quarry sites. Preparation of at least two quarries is well under way supervised by an experienced quarry foreman, Mr. Abraham Langara.

By nature, quarrying operation is slow and expensive at the start because of the quantity of overburden and boulders to move out before the rock in place is reached. Several marble blocks have already been shaped and some were shipped to the Manila finishing plant for study.

There is no argument that Romblon marble is a "true" marble. It is comparable to if not better than any foreign marble as to its hardness, color, texture and grain design. Marble from Romblon occurs in several color varieties ranging from whitish, golden pink, greenish, beige to gray. Different beautiful grain designs in the finished slabs are produced depending upon the angle the slab is sawn in relation to its definite line of color laminations.

Undoubtedly, marble deposits in commercial quality and quantity exists in the Philippines. The set-back of its early development and expansion is primarily due to the coolness of capitalists who are averse to the investment of capital without being able to expect an immediate return on the investment in the first to third year of operation. There are groups of persons or associations very anxious to develop a marble industry in the Islands but because of either their lack of capital or the inability to raise this capital from subscription, their plans have never gone beyond the exploration stage.

There are many ready local markets for finished marble for ornamental purposes in the construction of homes, churches, private and public edifices, tombs, etc. The import control imposed on foreign marble as an ornamental and building material is such as to make marble again a rarity and to command an exaggerated price. This can redound to the benefit of the industry in this country if marble production were immediately geared to present demand. Public edifices especially, which are now in the process of building, would serve as an outlet for finished products if available.

Loading marble rock in Romblon.

Agricultural Lime is also prepared as by-product of marble production.

Ground Floor of the Philippine National Bank is furnished purely with Philippine Marble

Unfortunately, private capital, although given encouragement along this line, is either too timid or too incompetent. Nothing remains therefor but for the government to immediately and on full scale undertake the operation and exploitation of an industry which not only means the conserving but also the making of dollars.

Impetus should be give to the immediate development of the quarries and its product with the announced intention of the Battle Monuments Commission to use only Philippine Marble for the cemetery in Fort McKinley.

It is hoped that the government will see in this enough encouragement to order the training of skilled technicians. to purchase the necescary machineries and to provide the required financial outlay to foster the marble industry in the Philippines.

TYPHOONS AS A RETARDING INFLUENCE ON THE EAST COAST OF SAMAR

MIKE MCINTYRE*

The recent typhoons of October, 1952, which were so exceedingly destructive of life and property, have reemphasized for the Filipinos, and brought to the attention of the world at large, the innate hazards involved in attempting sustained occupance along the east coasts of the northern Philippines. While this is not to intimate that other parts of the Islands are not subject to occasional typhoon disaster, the great bulk of the north Pacific's violent tropical disturbances is spawned along the intertropic front south of the Marianas, and they take a westward course toward the exposed eastern flanks of the archipelagos off the Asiatic mainland. There is evident a certain seasonal nomadism of these storms, associated with the advance and retreat of the high sun during the year, and likewise an annual frequency variation may be observed, with the greatest number appearing in the late summer and early fall. Thus, the season of maximum frequency coincides with the period when the major storm tracks are athwart the northern Philippines, and the east coasts, then, of these islands are particularly susceptible to frequent and serious devastation.

Samar, situated toward the southern end of this danger zone, is relatively less afflicted than Luzon and the Batanes; nevertheless, fully 20% of the some 13 typhoons which cross the Philippines each year strike somewhere along the east coast of this land.[1] Such storm frequency profoundly modifies the overall climate of Samar, although in some respects the effect is distinctly beneficial, especially in terms of reliable precipitation. But any region, where three to five storms each year with winds upward of 100 miles per hour, torrential rains, and dangerously high seas must be accepted as normal, is forced to adjust its economy drastically to cope with these unusual environmental stringencies. Wholly successful adjustment is a virtual impossibility. Where the situation is somewhat more critical, as in northeastern Luzon, the coast has simply been abandoned except by wandering hill tribes. Eastern Samar, however, does support a moderate population, but regional development has lagged perceptibly, retarded in large part by these periodic typhoon visitations.

There are other factors, of course, aside from climatic considerations, which contribute to a lack of economic development of Samar's east coast. One of these is the peripheral location of the island within the archipelago and particularly the east coast, which faces out onto the Pacific instead of the busy inland seas. For although Samar was the site of Magellan's first Philippine landfall in 1521, it has since that time fallen more and more into the backwash of Philippine commerce and national affairs which tend to center strongly on distant Manila. The coastal district also exhibits a distinct paucity of low, flat land which in this region of subsistence rice culture constitutes a serious liability; for the number of people who can support themselves in a given area

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[1] U.S. Coast Pilot, Philippine Islands, Pt. I. Luzon, Mindanao, and the Visayas. 3rd Ed., Coast and Geodetic Survey, Washington, D.C., 1940, p. 32.

is likely to be in rather direct proportion to the amount of land which can be converted into productive rice paddy. And the east coast plains are limited to a series of deltaic lowlands, none extensive and all non-contiguous. In addition, the rivers to which these deltas owe their origin, although carrying a considerable volume of water throughout the year, are seldom of gentle enough gradient to be classed as navigable for any distance; and all have their mouths obstructed by bars which allow nothing but small boat traffic. Nor do these isolated plains have access to one another by anything resembling a reasonable system of roads. The sole coastal road, a one lane affair from Guiuan to Oras, boasts of only three short sections which are passable in all seasons, and it is constantly interrupted by broad river estuaries which are crossed by non-vehicular ferries. There is a difficult mountain road leading across the narrow waist of the island from Taft to Wright, but fully a third of the east coast, from Oras to Palapag, is not served by any form of transportation artery other than forest trail. Seaborne coast-wise movement, which in many parts of the Philippines is an adequate substitute for undeveloped land facilities, is hampered here during the winter months by strong northeast monsoon winds. And potential anchorages in the strongly indented coastline are not only exposed to these winds, but are more often than not mangrove fringed and reef encumbered as well.

These are admittedly serious difficulties, and to overcome them would require an imaginative and sustained planning project coupled with a considerable amount of working capital. But the problems are not insuperable, and it is eminently possible that a determined improvement program might achieve a great deal. For instance, centrally located Port Borongan might be transformed into a fine deep-water outlet for the entire region by the addition of a breakwater, a channel and turning basin cleared of coral snags, and additional wharfage construction. Such a course, however, assumes, for efficient use of the port, an adequate land transportation system which could funnel goods from the outlying areas and distribute imports. And this in turn assumes the production of a commodity surplus requiring markets outside of the immediate east coast district, and also a population with a standard of living well above the subsistence level which can create a demand for goods not locally available. All of these assumptions are far from valid at the moment, but improvements can be made.

The prefabricated Bailey bridge has proved successful elsewhere in the Philippines as a cheap, yet reasonably permanent means of bridging rivers the width of those encountered along the east coast of Samar, and it might be introduced here to help tie together the poorly integrated road system. New roads can be built, existing ones overhauled, and primitive maintainance methods modernized.

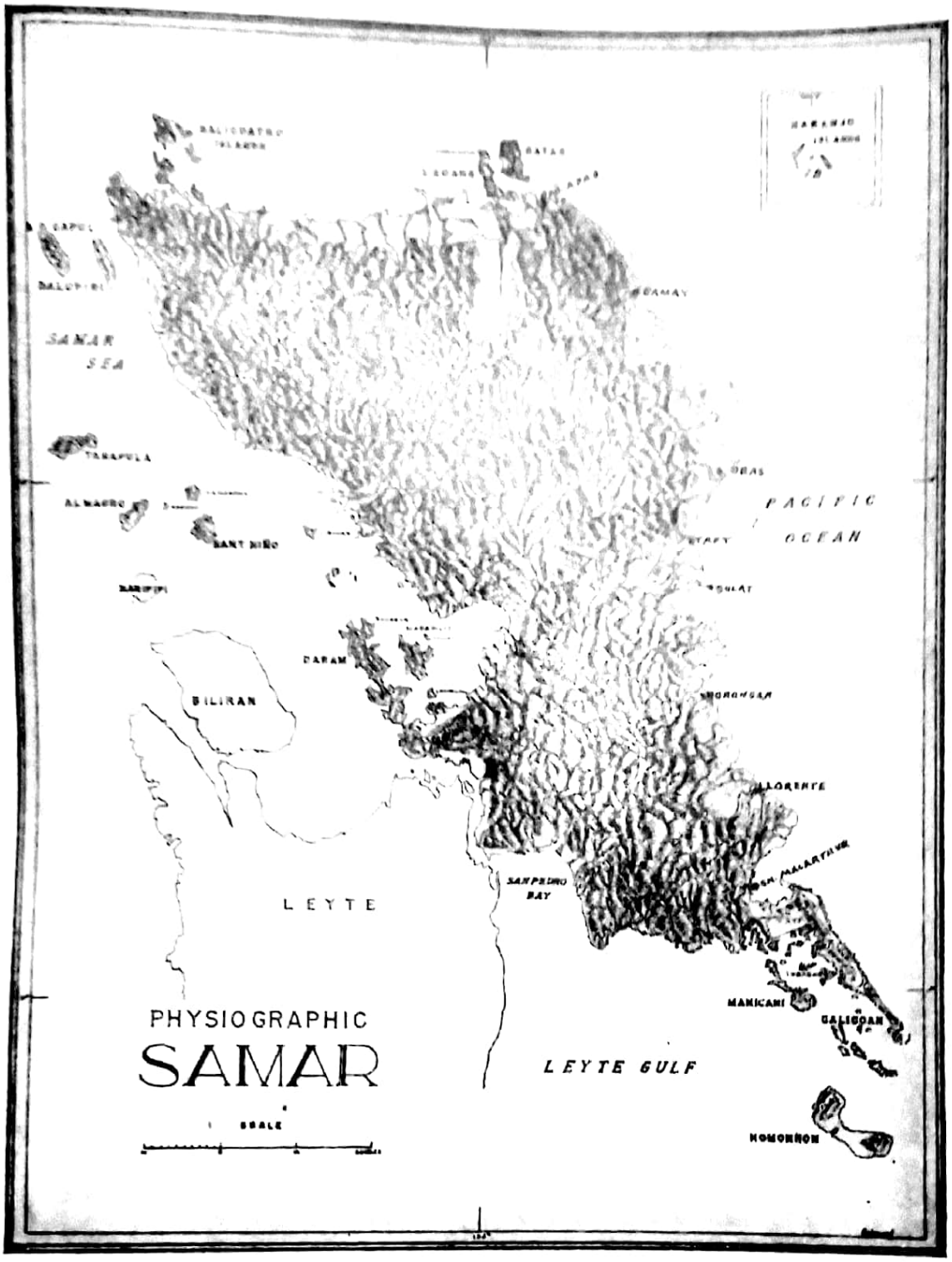
In the realm of agriculture, the basic industry of the region, a great deal could be done to increase the production and quality of both subsistence and commercial crops. The limited lowlands do not now produce sufficient rice to satisfy local requirements, but this is primarily due to backward farming methods rather than a shortage of land suited to rice. For even though the potential paddy land is in short supply, it could readily be made to produce triple its present yield. On the basis of annual rainfall and temperature, two crops a year is entirely feasible although seldom attempted at present. And, proper preparation of the field for planting by the use of plow and harrow (instead of merely the

muddy trodding of carabao), fertilization, seed selection, and insecticides, could do much toward increasing yields. Concomitantly, vigorous attacks on an entrenched system of tenancy and a long tradition of privately financed rural credit at exorbitant rates of interest might well be instituted.

There are on the east coast of Samar, two important commercial crops that for many years have entered the channels of international trade in small quantities. They are coconut and abaca. But through a combination of haphazard production methods and a needlessly involved system of marketing, the farmer has seldom realized a reasonable profit on the sale of his product, and has been the victim of a chronic fluctuating price structure. However, if the quality of Samar copra and fiber were improved so that it might enter the world market in a highly competitive position, price fluctuations could be held at a minimum. This upgrading of quality might be brought about, in the case of copra, by the adequate spacing of palms in the groves, by picking only the mature nuts, and by the application of modern drying techniques; and in the case of abaca by selective cutting of plants at the proper state of maturation, careful hand stripping of the fibers, and adequate drying and storage. But, above all, an incentive must be supplied the farmer by the elimination of the myriad middlemen in the marketing of his product and the establishment and enforcement of a workable grading system. These commercial crops are important in the east coast economy. Not only are they potential sources of capital, but they are complementary to rice culture rather than competing for land, for they occupy the sandy beaches and steep slopes which are useless for paddies.

A few kilometers inland from barrio General MacArthur on the southeastern coast, is the largest post-war iron mining development in the Philippines. An open pit operation on what appears to be rather extensive deposits of 60% ore, this mine is really of post-war origin since production had just gotten underway at the outbreak of hostilities. The ores are readily salable to Japan; and although the annual output of something over 100,000 tons may seem small, the income from this mine in terms of working capital to be applied to the development of the east coast is of very major local significance.

Thus it seems that the east coast of Samar has distinct possibilities of considerable regional development, given the requisite capital and planning. But this brings us back to our original proposition, namely, can any region which must accept several destructive typhoons each year as the normal order of things progress beyond the low economic and cultural level that has already been achieved in eastern Samar? It appears doubtful that a costly improvement program can be defended under these circumstances. There is little question but that some progress might be anticipated through the years in such things as seed selection, rural sanitation, simplifying of the marketing system, and the like; however, most public works are virtually ruled out by excessive maintenance costs in the face of serious and continuing typhoon devastation. Neither should the effects of these storms on the psychology of the people be underestimated. The prevalent "what's the use" attitude among the coast populace is easily understandable when every year coconut palms are damaged by high winds, weak abaca plants flattened, paddy fields flooded, grain shattered,


SAMAR SEA
PACIFIC OCEAN
BILIRAN
LEYTE
SAN PEDRO BAY
LEYTE GULF
MANICANI
GALIGUAN
HOMONHON
PHYSIOGRAPHIC
SAMAR
SCALE

and houses and personal belongings carried away downwind. Even the massive loading dock of the Samar Iron Mining Company has sustained sufficient damage on several occasions to necessitate the closing down of mining operations for considerable periods of time.

No one who has experienced a Samar typhoon doubts for a moment but that nature has the upper hand, and puny humans who at times are prone to boast of their mastery over nature find it expedient to simply hang on and pray. Science knows of no way to control typhoons. Actually, science is hard put to even explain their origin and the fickleness of their habits. At the present state of our knowledge the best that can be done is to attempt to track them once they have formed and to warn of their approach; but these are scarcely adequate measures to emancipate the east coast of Samar from its age old scourge. Perhaps the Samareño should be admired for his temerity in wresting a living from such a harsh environment rather than censored for his lack of progress.

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CHARLES O. HOUSTON, JR.

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GEOGRAPHICAL NOTES

RICE PRODUCTION CONTEST

The Soil Science Society of the Philippines is sponsoring the first Nationwide 100-cavan-per-hectare contest from April 15, 1953 to April 14, 1954, offering great opportunities to Filipino farmers to win prizes such as tractors, threshers, propeller pumps, diesel engines, rice and corn mills and other equipment for the farm. This was made possible through the cooperation of the various agencies of the Philippine Government, commercial houses and institutions of learning, engaged in promoting modern and progressive agriculture in the islands.

The main purpose of the contest is to arouse the interest of the farmers in increasing rice production through proper and modern agricultural practices to attain self-sufficiency in rice and reducing its cost of production. Also to help establish model rice units in rural communities which will serve as examples to farmers in their respective areas, and to demonstrate the need for crop diversification and feasibility of livestock farming in the Philippines.

Any farmer engaged in rice production and is interested in winning modern farm equipment and machineries can enter the contest provided he is willing to abide by the rules and regulations required. The said rules and regulations can be furnished by the Provincial and Municipal Agriculturist in charge of the area. Submit your entry form as soon as possible.

The contest is classified into three divisions as follows: (1.) Upland, (2.) lowland, and (3.) lowland with irrigation. The number of entries needed to qualify in each type of culture should exceed or equal at least the number of registered municipalities or districts in the province or chartered city, respectively.

The winner in each type of culture in each province automatically becomes candidate for the regional contest and the winners in the regional contest automatically become candidates for the National contest. So each entry has a chance to win three major prizes.

Misinterpretation of the rules and regulations in some provinces hindered the progress and expansion of the contest. Many of the farmers do not want to enter because they thought they had to pay five pesos for soil analysis even if they are not interested in the analysis. Most of those complaining about the fees are owners of more or less half a hectare and the said amount means a great deal to them. So to avoid further misunderstanding the Soil Science Society amended the rules and regulations about soil analysis in such a way that soil sample analysis will be free to all contestants and those who gave and are willing to give five pesos will automatically become members of the Society.

Now the only requirement that makes the farmers reluctant to enter is the procedure required in harvesting which calls for a specific length of time to finish the harvest. The contestant would provide plenty of "Bayani" to complete the harvesting and threshing within the specified time, and this will be a problem to most of the farmers for they plant and harvest almost at the same time.

The end of the contest is fast approaching and still there are but 24 provinces that are qualified out of the 53 provinces in the Philip-

pines as of October 15. Listed below are the qualified provinces and the types of culture entered:

1. Agusan — lowland and lowland with irrigation
2. Basilan — lowland
3. Bataan — lowland with irrigation
4. Batangas — upland
5. Bohol — upland and lowland
6. Bukidnon — lowland
7. Camarines Sur — upland, lowland with irrigation
8. Cavite — upland, lowland and lowland with irrigation
9. Cotabato — lowland
10. Ilocos Sur — lowland with irrigation
11. Isabela — lowland
12. Marinduque — lowland
13. Masbate — lowland
14. Mindoro Oriental — upland and lowland with irrigation
15. Misamis Occidental — upland and lowland with irrigation
16. Negros Occidental — lowland
17. Nueva Viscaya — lowland with irrigation
18. Pampanga — upland, lowland and lowland with irrigation
19. Quezon — lowland
20. Romblon — lowland
21. Surigao — lowland
22. Tarlac — lowland and lowland with irrigation
23. Zambales — lowland
24. Zamboanga del Norte — lowland

It is surprising to note that among the ten leading provinces in rice production, who are expected to join the contest, the following are not yet qualified: Nueva Ecija, Pangasinan, Iloilo, Lanao, Bulacan, and Samar.

MARIA CRISTINA FALLS HYDROELECTRIC PROGRAM

The Maria Cristina Falls Hydroelectric Plant and its sister project the Chemical Fertilizer Plant both located in Lanao are now realities. Their materialization is the culmination of many years of planning by the National Power Corporation. The harnessing of the Maria Cristina Falls is prompted by the need to abort the tendency of concentrating industrial development in Manila and its suburbs.

The hydroelectric plant is capable of supplying power of 25,000 kilowatts while the Chemical Fertilizer Plant is expected to give a yearly output of 50,000 metric tons of fertilizer. The estimated yearly income of P13,000,000 from the chemical fertilizer product alone and the rice yield from fields using the locally produced ammonium sulphate which is about P12.000,000 can justify the ₱19,000,000 invested in these two projectts. These will not only benefit the nation as a whole which is manifested in the acceleration of our national economic program but it will also affect the people individually by making possible the employment of many due to the expected increase in the industrialization of that part of the Philippines. All in all, the Maria Cristina Falls Project is a boon to our program toward the economic stabilization of the country.

THE EIGHTH PACIFIC SCIENCE CONGRESS

The Eighth Pacific Science Congress which will be held in the Philippines from November 16 to November 28, 1953 is under the auspices of the Republic of the Philippines and the National Research Council. The latter is a recognized scientific body of the country.

This conference will convene delegates representing the constituent countries, those appointed by the Representative Institutions of the Pacific Science Association, scientists personally invited by the Society

and officers of the Congress for the purpose of helping improve the welfare of all peoples of the Pacific area.

The Pacific Science Council consists of fourteen member-countries: Australia, Canada, China, France, Hawaii, Indonesia, United States, Japan, Netherlands, New Zealand, Philippines, U.S.S.R., United Kingdom and Vietman, although there are many other countries eligible for membership in the Association that have participated in previous congresses with their representative institutions.

During the conference, various activities are scheduled. Representatives will read their papers on original researches. There will be meetings to consider matters presented before the body and symposia to discuss scientific findings for the welfare of the people not only of the Pacific but of the whole human race. Tours of interest to geologists, botanists, ethnologists, agriculturists and others are organized to be held immediately before and after the Congress and also during the week end between the two weekly sessions.

This Congress is of great importance to peoples of the vast Pacific area — home of more than one-half of the human race. Findings of these group are the basis of most of human progress. They delve deeply into the great unknown and make startling discoveries that usually make world history.

It is of significance to the Philippines because it is the first time, since the organization of the Pacific Science Society in 1920, that their conference is held here.

ONE YEAR OF THE IRRIGATION SERVICE UNIT

The Irrigation Service Unit, a PHILCUSA-FOA project for the implementation of pump irrigation program in the Philippines, aims to provide water thru the installation of irrigation pumps to communities of small farmers whose fields depend solely upon rainfall for water supply during the rainy season and remain idle and uncultivated during the dry season. This will increase the yield of regular season crops and make possible the planting of a second crop during the dry season. As a result the income of farmers will increase and ultimately raise their standard of living.

Since October 1, 1952 when the ISU came into being, it has gained a foothold in our agricultural development program and its activities have been geared to the demands of our fast becoming science-minded farmers.

As of today, thirty-nine pump units have been installed in thirty-four projects. Eleven are under construction, eight are to be bidded and four are under study. This amounts to 62 irrigation pump units which will be completely functioning at the end of this year as per schedule.

The thirty-four pump irrigation projects now in operation cover an area of 7,800 hectares principally planted with rice. Thru pump irrigation, the potential rice production to be added yearly to the rice supply of the country will be 468,000 cavanes. With irrigation system, almost any crop can be planted the year round provided the soil and the climate will permit and if the farmer is interested in working.

COLOMBO PLAN TRAINEES

Colombo Plan trainees shown at Woodstock Farm, England, Shell's experimental agricultural station. Mr. Justo C. Gonzales, Instructor at the Araneta Institute of Agriculture and Mr. Ambrosio Ramos, Assistant Entomologist at the Bureau of Plant Industry, may be seen sitting in the front row.

Among a party of Colombo Plan Students who recently underwent a period of training with the Shell Company in the United Kingdom were Ambrosio Ramos, Assistant Entomologist, Bureau of Plant Industry, Manila, and Justo C. Gonzales, Instructor, Araneta Institute of Agriculture, Malabon.

During their period of training with Shell, the students were given an insight into the important role played by that Company in the never-ending fight against the many plant pests and diseases existing today throughout the world. They were given up-to-date information concerning Shell's research centers situated in the United Kingdom, Holland and the U.S.A. They were also told of the many facilities existing for extensive field trials in almost every country in the world.

A visit was made to one of Shell's experimental farms situated near Sittingborne in Kent, England, where a ceaseless research is carried on in order to find improved agricultural chemicals and where improvements in the technique for the application of existing chemicals are made. This included Shell Company's own engineering workshop where experimental farm machineries, designed by Shell's engineers, are experimented with in connection with the application of new crop protection material. Particular interest was shown by the visitors in the outstanding new insecticides—Aldrin and Dieldrin—which are today contributing greatly to increased crops and improved public health throughout the world.

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The undersigned, Dominador Z. Rosell, business manager of Philippine Geographical Journal, published Quarterly in English at Soil Conservation Bldg., Manila, after having been duly sworn in accordance with law, hereby submits the following statement of ownership, management, circulation, etc., which is required by Act 2580, as amended by Commonwealth Act No. 201:

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