MACHINES *and* P. I. AGRICULTURE

P. L. JUSAY

AT HARVEST time if you happen to pass by an extensive rice field, say in Nueva Ecija, you will pause with surprise upon seeing a monster rice harvester gobbling up stalks of rice like some starved mammoth which has chanced upon a field of luscious grain. Or your attention will be focused on the thresher, of so-many horse-power, beating out grain from rice stalks. You couldn't help marvelling at the almost uncanny mechanical operation.

If it is plowing season in nearby Pampanga or in far away Occidental Negros, where there are vast sugar-cane fields, you will see, here and there, motorized units, like tanks in the army. They are tractors, sometimes called caterpillars. A tractor or caterpillar can plow in a few hours what a score of carabaos can in a day.

The machines mentioned above are but a few examples of modern inventions that have revolutionized agricultural practice. There are many more that have given impetus to so-called *mechanized farming*.

But if technology and invention have brought about important changes in the agricultural world, they have effected more significant developments in the industrial field. As everybody knows, mechanization of industry has become a by-word of the present century.

The development of mechanized agriculture and high-powered industry has brought about the Machine Age in which we now live. The great Industrial Revolution which started in 1775 gave succeeding generations hope and ambition and aroused their spirit of adventure and romance. Its far-reaching results kindled the imagination of hundreds of enterprising individuals whom mankind now remembers for their great researches and inventions which have relieved man of drudgery in farm and factory.

Economic development. These two words sum up the greatest material accomplishment of the United States in the Philippines. This country would still be in its swaddling clothes, economically speaking, if it were not for the United States. The Filipinos would have wallowed indefinitely in the backward economy that characterized the Spanish regime. Happily, Uncle Sam came over. It cannot be denied that uppermost in the minds of Americans who have settled here is Philippine economic development.

It was a blessing in disguise—the coming of the *americanos*. They were the sons of sturdy pioneers from middle-western United States. After forty years of ceaseless struggles, these hardy pioneers were getting more than bread and butter. They got gold! The proverbial hen that laid the golden egg is still with us and is laying more and better eggs.

The sugar industry may be said to have benefitted greatly from the introduction of agricultural and industrial machines into the Islands. The mining, abaca, coconut, and the manufacturing industries had likewise been favored.

When modern tillage is spoken of, one thinks right away of the tractor, the big motorized cousin of the plow. A tractor usually does fifteen times as much (and better) work as one carabao. Reports have it that there were about 3,000 tractors operating on the different plantations of the Philippines before the war. This shows that tractors were becoming increasingly popular in this country. The yearly importation of farming implements ran to millions of pesos.

The advantages of tractor farming have swelled the demand for more tractors and have contributed principally to the increased number of tractors being used before the war in many sections of the country. Besides a time—and labor-saving device, the tractor reduces farm operating expenses to the minimum. It has longer life and requires less care. The tractor is not affected by heat nor bothered by insects or rinderpest. On sale in the local market was a type of tractor that could plow, harrow, plant, and cultivate.

In the market also before the outbreak of World War II were the so-called *azucarero* carabao plow and *palaycro* plow. The ordinary farmer could afford to purchase either one of the two types. Their make is durable. They do the work quicker and better than the old wooden plow, which is made of a cast iron ware and point that merely scratches the ground to a depth of a few inches. The old styled plow does not turn over a clean furrow unlike the modern plow. Experienced agriculturists tell us that turning over clean furrows is most essential in order to kill the weeds and conserve moisture in the soil. The modern plow is especially useful in hard, sandy or gravelly soils or in plowing sugar lands.

There were other types of modern plow sold in the market, the prices of which were within the reach of the ordinary farmer. There were tractor moldboard plow and disk plow. Here is a string of valuable farming machines that the local machinery dealers used to offer to the farmers: harrows, cultivator, soil pulverizers, rice binders, reapers, headers, shellers, grinders, huskers, shredders, mowers, scrapers, ditchers and graders, lime sowers, farm wagons, and concrete mixers. Worth buying but rather expensive are electric plants, hoists and irrigation pumps,

The most highly mechanized industry before World War II in the Philippines

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Machines and . . .

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which was very profitable was mining. From a non-profit-making venture years ago, the mining industry became, through improved mining practices, the most profitable industry and was destined to be so for many years to come.

When panning gold was entirely done by hand the production was very negligible, nay discouraging. There seemed to be no future in gold-digging. When mechanical power was being utilized already, the output skyrocketed spectacularly. The unprecedented rise in production was made possible by the installation of modern plants, equipped with the latest machines that money could buy. What were these mining paraphernalia? Generally we have two groups, namely: mining and milling supplies. All in all, it might be said that mechanization was instrumental in making the mining industry pay dividends to hundreds of shareholders.

Every now and then there are reported new inventions that promise to revolutionize agricultural practice. One of the newest farm machines that made its debut is a sugar cane harvester, reportedly perfected by R. G. LeTourneau, Inc., in the United States. The said device was built for the Honolulu Sugar Planters' Association. One could very well imagine the reception it received when it was introduced in Hawaii. Filipino cane planters should rejoice over the introduction of such a device.

Built as an experimental unit, the harvester would be "field-engineered"; any changes proved necessary by operating trials would be made by means of a truck, which is a travelling fabricating shop fitted with Lincoln Electric Company (U. S. A.) arc welding equipment, driven by power taken-off from the truck drive shaft. It was developed by R. G. LeTourneau, Inc., for many months. The idea for it grew out of a discussion of cane harvesting problems between Hawaiian cane growers and R. G. LeTourneau, president of the above mentioned company bearing his name.

The harvester has a number of very unique characteristics. It will cut the cane just below the surface, yet high enough to avoid injury to the roots. As it cuts the cane, the machine will pick up the stalks, take them into its cutting compartment, cut them into pieces approximately a foot long, then carry the pieces by conveyor mechanism to trucks or wagons which will travel along beside the harvester.

It was reported that the engine installed in the harvester is a 160-horsepower Diesel built by Caterpillar (U. S. A.). The large generator mounted on the front of the engine, according to the report, is for the purpose of furnishing power to electric motors which drive the conveyors and other operating mechanism. One man can successfully operate this huge piece of machinery.

This leads us to the question of how mechanized farming methods will affect the agricultural population of the Philippines. In the United States there is an imminent rural-to-urban rush. The metamorphosis here may not be as rapid as in the United States, but indications seem to point to the fact that what is taking place today in that country may also happen here in the future. The United States has changed from a nation of farmers into one composed largely of city workers. The proportion is: one-fifth in agriculture and four-fifth in city work.

Why this is so, one writer explains as follows:

"Reapers, gins, combines, corn harvesters, tractors, and hundreds of other labor-saving devices have given greater farm production with fewer farm laborers. At the same time the expansion of industry has provided more jobs in and around cities. Improvements in distribution and processing have done their bit by assuring the farmer that a larger percentage of his produce would reach the market unspoiled or would reach a more favorable, distant market, and then, perhaps, be processed into new forms.

"Technology and invention made possible or caused—depending on one's way of looking at it—this change in a nation's working habits. That, too, may sound matter-of-fact; yet it takes not even an intelligent imagination but only a knowledge of the facts of history to see bound up within it romance and heartbreak, achievement and hardships Farmers, themselves, provided many of the developments that have improved our farming methods. Others who were primarily investors supplied many inventions. But research workers, industrialists, men with vision to see possibilities and courage to carry through have done a larger job in developing correlative services, industries, processes, and markets. Struggle has been the keynote of the efforts of all these, and some have, indeed, suffered discouragement and poverty. Yet out of their work has come, not simply fewer farmers and more city workers, but an enormously improved standard of living."

Ramie . . .

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yield for many years. In many established plantations as much as 6 cuttings a year have been made.

Principal Operations.—If virgin lands are to be used, there will be a heavy cost of clearing forest which will go from 100 to 150 pesos per hectare, depending upon the stand of trees and labor supply and the skill of laborers. Old clearings free from stumps are preferable as the plantation can be made uniform and no obstruction will be met in farm operation from standing stumps and stray logs. Tractor is more effective and economical for these operations than work animals. The ground must be plowed and harrowed thoroughly to produce a good tilth before planting is attempted. This usually costs under pre-war conditions from 50 to 60 pesos per hectare. Planting is by hand as no machinery has come yet to market. This costs from 15 to 20 pesos per hectare. Harvesting is done by hand too, the cut stems are hauled to the decorticating machines, and the fiber, dried up. This operation costs from 5 to 7 pesos per picul. There is a very excellent opportunity to mechanize the operation as the ramie plants remain erect, in straight rows and the stems hardly grow to an inch in diameter.

Acceleration of ramie cultivation in regions where it can be grown successfully will be a wise move on the part of the government; that is, when conditions will permit. Farmers in places where it can be produced should take the first opportunity. For ramie is an up and coming crop and an important one at that.—*SILAGRAM*

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