

three régimes: the Spanish, the Filipino, and the American. Don Maximo Parfan, especially, in spite of his more than three score years and ten, is still intellectually active and in fact is a living chronicler of the town, past and present.

The town of Lilio had an estimated population of 7,332 in 1928. The total mortality for the year was 160 or 21.82 per thousand inhabitants. The birth rate is high, there being a total of 234

live births in 1928, representing a rate of 31.91 per thousand inhabitants, thus showing a substantial increase in population from year to year. The town has been reputed so healthy and the quality of its waters so excellent, that the late Dr. T. H. Pardo de Tavera frequently spent short vacations there whenever the labors of an active political, scientific, and literary life permitted.

Your Newspaper

This is the first of a series of articles on *Your Newspaper*, another series interpretative of our environment in the Philippines. It will run until the subject has been briefly canvassed in all its departments. Newspapers are associated with constitutional government. They are dependent for their existence upon one particular product, paper; and it is one of the ironical circumstances of history that in Spain, the country to which the modern world is indebted for paper, the notion of a free press has never taken hold upon the government and the business of talking to the people through the medium of the newspaper remains closely supervised by a censorship.

Out of paper, of course, the first material cheap enough to be utilized in printing matter to be sold to the people, came the reforms of the modern era and the spread of education. Paradoxically, the movement has prospered everywhere else more than in Spain. But the art of paper-making survives in Spain, and the skill of her artisans in the mysterious craft is unexcelled.

The Chinese seem to have been the inventors of paper. They were making paper long before the Christian era; through them, by way of the Arabs, the art reached Spain. In 751, Chinese invaded Samarkand. They were repulsed by the Arab governor, whose troops captured many Chinese prisoners—among them some who were paper-makers, who imparted the secrets of the craft to their Arabian captors.

The Arabs then began manufacturing paper throughout their dominions, and notably in Spain whence there was access to Italy and all Europe. The Arabian kingdom in Spain was finally overcome by the medieval Christians of that country, but the arts of the Arabians, including that of paper-making, were happily preserved—to serve in time to come, who knows, as the basis of a revival of commerce and industry in that irrepressible country. No doubt Spain lost the paper trade because of her sales tax, the *alcabala*, the deciding factor in her economic decay; the imposition of this tax enabled rival countries making paper to deliver their product at lower prices; at least it soon turned out that Spain had the renown of mothering the industry, her lot in so many instances, and other countries had the paper business.

For more than ten centuries, or until the period of popular education and of newspapers, the material used for making paper was linen—old linen rags. The Arabs were supposed to have used wool or other fiber, but the *Encyclopedia Britannica* reaches the conclusion that their raw material too was flax fiber. Even after the advent of newspapers, linen was so widely used, that linen rags supplied enough fiber for all the paper the printing presses required; but linen gradually declined, and the use of cotton for cloth came up, and cotton fiber is not so well adapted to the making of paper because it is not so strong. The intermediate step in paper-making was, of course, to mix cotton and linen together; and paper of this type continues to be made for purposes which wood-pulp or other material will not serve.

The rise of the German state founded by Frederick the Great, the liberalization of French institutions, the success of the British colonies in America (which made themselves into the United States of America), the expansion of maritime commerce which was the making of modern England, the progress of democracy in Scandinavia and Italy—in a word, the popularization of political institutions and privileges in Europe and America, followed by the Restoration and the modern era in Japan—all this resulted in the daily newspaper and such demands for paper upon which to print it as the decreasing quantity of old linen could not supply.

There was a long period of anxious experimen-

tation with other vegetable fibers during the second quarter of the 19th century. England turned to esparto grass, France to grain straw, Germany to straw and wood-pulp, and Scandinavia, the United States and Canada to wood-pulp. This material, wood-pulp, is for the present the most dependable fiber supply, hence Scandinavia, the United States and Canada have world-wide commerce in paper; and Germany, getting her wood-pulp from Norway, is in the business too. Japan imports large quantities of paper and makes a great deal from straw and from Manila hemp (it is believed). Manila hemp, obtained from old cordage, was one of the first linen substitutes used in the United States for making paper, and on this account America, pioneer buyer of this Philippine fiber, imported a great deal of it during the twenty years just prior to the Civil War.

Again we turn back to China and the ingenious Chinese, who had always known how to extract wood-pulp, especially the fiber of the mulberry tree, and to utilize it for paper. But it must be remarked that their manner of printing makes lesser demands on paper than ours, and that they do not require paper of such firm and uniform texture as we must have for printing purposes. The observations of western paper-makers were of the wasp, which lines its nest with wood fiber, and the secrets of this process were those to be discovered. The mulberry was tried in America, it is true, because it had been imported from China and widely planted with a view to the introduction of silk culture in New England. Basswood made paper; in fact, all plants run 75% to 78% cellulose, or fiber, and all this fiber will make up into paper.

Economy determines what fiber shall be used. It is necessary to free the fiber from foreign substances, the resins, etc., making up the portion of vegetable matter which is not fiber, and methods were found in Europe and America for doing this chemically at about the period 1850. Caustic soda was first used, and is still one

method; that is, the pulp, either ground or chipped, is boiled under high pressure in a caustic solution. The sulphite method later discovered, employing sulphuric acid as the reducing agent, has proved more satisfactory for extracting pulp for ordinary papers, including news print. Hugh Burgess and Charles Watt made wood pulp by a chemical process, the soda process, in Reading, England, in 1851, patented their process in 1852, and Burgess took it to the United States in 1854, securing an American patent the same year.

Milton D. Whipple of Charlestown, Mass., patented a method in 1855 for preparing wood for pulp by grinding it on a stone. Chipping was patented later; the chips and sawdust which are waste or boiler fuel at a sawmill are suitable for making paper, as the object of the pulp-maker is to get the wood into pieces small enough for the chemicals to act upon it quickly. After ways were known for laboring the wood and extracting the pulp, knowledge which appeared in Europe and America at about the same time, still there was speculation as to what woods to use. But economy soon dictated the wisdom of backing pulp and paper mills close up to a fir or a hemlock or a spruce forest; for there is the material in abundance.

Then came the expansion of the American west, the maximum period of European immigration into the United States, the rapid increase of the population, the establishment of thousands of new communities throughout the western states and territories—all of them having schools and newspapers and demands for paper—and the hogging of the forests followed. In looking up the data for this article, resort was had to illustrated books and periodicals; among the illustrations are photographs of many men identified with the paper industry in America now and during the past century, and all of these faces are hard; there is no doubt that the game itself has been a hard one, and that it has fashioned the men engaged in it to its necessities.

Few communities have had, in the past, more forlorn histories than those built up by and dependent upon the paper and lumber mills. Where there was virgin forest, there the mills were placed and towns established. While the woods were nearby, everything flourished: property had value, trade was brisk and money plentiful from the large payrolls. But ruthlessly the timber line receded, until economy forced the closing down of the mills and their removal to new locations. And the towns perished, wanting anything to sustain them; desolation

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reigned where the woodsman's axe had made a dismal place for it.

Such has been history, but the paper and lumber industries themselves are seeing the folly of such methods. So now there are such precautions on the part of the Federal government as the forest conservation laws, and on the part of the states such laws as the forest law of Oregon, enacted with the approval of the lumber and paper industries while yet the state has 13 million acres of virgin timber. It is reported that the timber will be amply protected and new plantings undertaken, so that lumbering establishments will remain where first set up and lumbering and paper-making may be the activity of permanent communities.

But if paper has desolated some places, it has made others; picturesque Port Townsend, Oregon, for example. The grand prospects of this pioneer port on Puget Sound of forty years ago were blasted when the transcontinental railways failed of making it their western terminus. Port Townsend, *the key city of the Northwest*, went, like old Macao, on lentils and soup—until paper, just recently, opened new vistas of fortune to her. The forests of Olympic peninsula are still shading Port Townsend, so a paper mill turning out 200 tons of paper daily has been erected in the town and given it what, under the new forest law, may prove to be a permanent profitable industry.

The art of making paper is very simple, despite its reputation as a *mysterious* art. Paper is composed of fiber. The fibers, "first separated by mechanical action," says the Britannica, "are then deposited and felted together on wire cloth while suspended in water." Machines for doing this took the place of hand methods during the first quarter of the 19th century. One machine, the Fourdrinier, has undergone unceasing evolution and improvement in both Europe and America and still bears the name of its French inventor. Like many another inventor, Fourdrinier was ruined by his genius; but his British successors reaped the profits he should have had, were fortune always kind, and the Scotch especially became the paper-makers in Europe and America. Scotch mechanics were so widely employed in American paper mills that their influence served for a time to give preference to British-made *findings*, especially felts, over those made in America, which later proved to be superior.

While the art of making paper is a simple one, the process itself is complicated and partaken of many economies effected by the use of modern machinery. The capital required for an economic paper mill is therefore large, while the selling of the product of many mills can easily be centered in a single organization. The result is that capital in the industry tends to concentrate, single paper companies owning and operating many mills. The first American mills were of course on the Atlantic coast, the rest of the continent being wilderness at that time and much of it for generations afterward. The first printing press in America was set up in Boston in 1638, but Boston maintained regular commerce with London, whence came her paper. The first newspaper in America dates later than 1700; the first paper mill, of course making only hand-made paper, was the Rittenhouse mill established near Philadelphia on Wissahickon creek by Willem Rittenhouse and associates in 1690. We have seen that the most recent American paper mill is that at Port Townsend on the Pacific coast, established only last year, and that it is one of the largest in the United States.

Thus moves the tide of empire west. The western mills are interested in the paper trade of the Philippines.

Critics who perhaps have made but little study of the economies of the intelligent division of labor and the utilization of machinery, often deplore the fact that the Philippines do not make their own paper. But even if a local mill were amply capitalized and enjoyed the entire market, the question is debatable that it could be made to pay. For the entire paper market of the Philippines—that is, the news-print market—would but run the Port Townsend mill two months. Paper, like steel, to be made economically must be made in quantity; we have a similar example in our sugar industry. No

doubt, when the Philippine demand is enough, and when a suitable substitute for the back-end of an Oregon forest is found at deep tide-water somewhere in the islands, our paper-making industry will begin. But someone's scraping together a few tons of fibrous material and acclaiming it the raw product for a brand new paper-making industry, is no cause for investor's excitement.

We might have a paper industry here, if we used enough paper. So we might have a steel industry, if we used enough steel. It is enough to say that we have neither industry, simply

because our market is too small to maintain an economical unit. America must be our present principal source of paper. What America will do when her forests are gone, if she really lets them go, is strictly her business. And it may be our opportunity.

The next paper in this series will be made up largely from data kindly furnished the editor by L. H. Thibault of the *T-V-T* newspapers. For the references making this first article possible we are deeply in the debt of Whipple S. Hall. The pictures are from a book from his library, *History of Paper Manufacturing in the United States*, Lyman Horace Weeks. As the articles progress, we shall give credit to those who assist their preparation.

A Legend of Mt. Apo

By IVON GRUNER COOK

When wise old men of the Bogobo tribe dwelling in the remote countryside of Mindanao, the



Waiter: Listen, you! I been waitin' on this table for twenty years, an' I—

Customer: Yeah? Who was your *other* customer?

—*Judge.*

The trouble probably started right with the cocktail, the dumb waiter trying to pan off on the customer a substitute for—

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southernmost island of the Philippines, look across the plains or up the mountain slopes to Mount Apo, they recall a tale told to them by the patriarchs of their childhood. Smoking their pipes lazily in the tropical sunshine, present-day grandfathers gather small boys about them, who listen with awe to the legend of how Mount Apo suddenly appeared on the island. Many hundreds of years ago, there was no mountain rising above the waving coconut palms.

Manana, the creator of all things, sitting on his throne among the white clouds, looked down upon his children of the earth and beheld two enormous eels sporting in the waters of what is now known as the Davao river. The sun's rays shining through the clear transparent water upon the long, black bodies beneath were diffused into all the colors of the spectrum. Now gleamed a flash of bright silver, and now the smoky fire of an opal with its changing tints of red, blue, yellow and green, dazzled the smaller creatures who lived near the river. The eels were brother and sister, and Manana, who had made them, called them *Eolo* and *Aeel*. He thought they were extraordinarily beautiful, and he enjoyed watching them whenever he could turn his attention from the many things which occupied him. In those days, the god of creation still had much work to do.

A twittering came from a large vine-hung tree beside the river. A golden oriole had flown to one of the branches reaching out over the water. He cocked his head speculatively on one side as he spied the huge eels. He was a lovely little creature perched there among the soft forest green, and if he could be accused of vanity, he was to be forgiven. He hopped to a vine below, so perkily that he almost lost his balance.

"I don't understand how anyone can like to be as big as you are," he chirped to the eels.

"It is a trial at times," replied Eolo. They were good-natured, friendly, simple creatures, but the brother was the more talkative of the two. "You see, we don't have very much water to play in because we take up so much room. When there is no rain we are very uncomfortable, for then there is not enough water to cover our backs and our skin becomes hard and stiff. It's not pleasant." He shook his huge body so emphatically that the wide river overflowed its banks.

"Do be careful!" exclaimed Aeel, impatiently. "It hasn't rained for three days, yet you spill water as though it were raining continuously."

"I'm sorry," her brother apologized contritely. "When I thought of the dry weather and how miserable we are I felt so sad that I just couldn't help it." A great tear rolled down his cheek as he spoke, and made such a splash in the river that the yellow bird fluttered nervously off the vine.

"Don't cry about it," he said, resuming his perch. "Perhaps I can help you." With all his conceit he was a kindhearted little bird.

"Do you really think you can?" His large friends were dubious. "You are very tiny to offer us assistance."

The little oriole puffed out his chest until he resembled a perfect ball of fluff. He always did this when he wished to concentrate. While he thought of a way to help them, the eels waited