

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 England 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

with ill-concealed eagerness. Finally, he spoke. "I know! The sea is the place for you! It is many times greater than your river. It is so vast that I have flown a long time over the water toward the sun, but I have never been able to glimpse a tree top. As far as I could see there was no land. I am sure there is always enough water there to cover your backs."

"We should like the sea!" Brother and sister spoke simultaneously. "How cool it sounds! Do you think we could reach it today if we started immediately?"

"Certainly you can! It is still early, and all you have to do is to follow this river and swim toward the sun."

"Thank you, Golden Oriole," said Aeel, first to remember her manners. "I hope some day when we are nicely settled in our new home you will call on us. If we can ever help you, please let us know. Good-bye!" Wasting no time, she slipped gracefully off through the water toward the east.

The prospect of realizing a Utopia long dreamed of was so exciting to Eolo that he had not listened carefully to the little bird's instructions as to how to get to this wonderful place. Though he was larger, he was not as clever as his sister.

"Would you mind telling me again about the sea? How shall I know where it is?"

"The sea is also called the ocean. It is very clear and as blue as the sky, and as large as a thousand rivers. It makes a great noise, like thunder. Be sure to swim toward the sun and you cannot miss it."

"I'm terribly excited, but I think I'll find it. Thank you and good-bye!"

place in the river.

What was this? They were not there. He followed the river to the sea, where he saw Aeel cavorting unrestrainedly about in her new home, pausing now and then to look expectantly toward the river. But where was Eolo? Manama anxiously scanned the rivers until he finally discovered him, lying woefully crumpled on the rocks.

Sighing for the loss of this pet, whom he had liked the better of the two, the god gazed meditatively at the gigantic motionless mass. One fold of lifeless body rose over another like rolling hills on an undulating landscape. Manama was struck with an idea.

"Some day," he thought, "there will be little eels swimming up the rivers from the ocean. If I should remove this one they may be just as foolish as he and meet with the same unhappy

end. I'll change him into a mountain, so that whenever they raise their heads above the water they will see his folds and take heed where they swim."

Thus it was that poor sentimental Eolo, dreaming of an ocean paradise, suddenly became a range of high mountains, the highest peak of which is called Mount Apo. Aeel, his shrewd sister, lived an obscure happy life, in time raising a large family. She did all she could to discourage them from becoming dreamers, but, though many of her descendants still live contentedly in the great sea, there are some who, in spite of her warnings, swim up the Davao and other Mindanao rivers. When they lift their heads out of the water and behold the sun lingering intimately on the summit of Mount Apo, perhaps they agree with Bogobo children that Eolo's fate was not so unfortunate after all.

Useful Plants in Foreign Lands

By P. J. WESTER

This is the second article in a series on this subject by Mr. Wester. The next will appear in an early issue.—Ed.

Realizing its potentialities for the creation of new wealth, the United States department of agriculture for more than 20 years has maintained an office of foreign plant introduction. This is manned by a large staff, has one or more field explorers in foreign lands, maintains several plant introduction gardens in different regions of the United States, and has made more than 70,000 separate plant or seed introductions since the organization of the service. A review of the

The TAMANI, *Bauhinia esculenta*, a perennial plant with trailing vines up to 5 meters long, growing from a large cone-shaped woody stem, found in the Transvaal and Bechuana, South Africa, to at least 100 meters elevation, doing best in sandy soils. The yellow flowers are followed by pods containing 2 to 6 large beans which are a staple food in some localities. They are eaten roasted or boiled, or ground into a powder and made into a beverage said to taste somewhat like cocoa. Europeans use them like almonds. They are an excellent hog feed. The tamani is a relative of the peanut.

The BLAKEA, *Blakea gracilis*, is a handsome terrestrial shrub or epiphyte, a native of Costa Rica. The leaves are long-petioled, leathery obovate-elliptic and pointed. The large handsome flowers are borne on long stems growing from the leaf axils. The flowers are common in the markets of Cartago, and the thick fleshy petals are eaten, and made into an excellent jelly, for which purpose they are much esteemed.

The RYERA, *Bombax globosum*, is a large forest tree with a trunk 10 meters high related to the kapok, ranging from Guiana to northern Brazil. The white flowers are followed by round fruits 4 to 5 cm. across, containing seeds the size of filberts enclosed in silky fiber. The seeds are eaten roasted, when they are of good taste.

The RIHI, *Brachystegia edulis*, is a large spreading tree found from Kenya to Rhodesia below 1300 meters altitude, thriving on sandy land. It belongs to the bean family. The pinnate leaves are up to 12 cm. long and have 3 to 5 pairs of leaflets. The large beans are eaten. A good timber tree.

The BREADNUT, *Brosimum alicastrum*, is a tall tree related to the breadfruit, native of tropical America. The leaves are oblong and pointed, to 18 cm. long. The round fruit contains a large seed. In Jamaica the seeds or nuts are roasted or boiled and pounded into a paste, in taste resembling the chestnut. Both the leaves and

(Please turn to page 12)

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As Eolo swam slowly away, repeating to himself what the oriole had told him, the little bird burst into a lively song. How delighted the eels would be when they reached the big sea where they would have all the water in the world in which to frolic happily!

Aeel had undertaken the journey to the sea in a businesslike manner, and she soon found the large body of water described by the golden oriole. Her more sentimental brother made his way dreamily, thinking of the pleasures awaiting him. He was so engrossed in the alluring picture painted by his little friend that he did not notice that he had arrived where the river branched. He swam absent-mindedly on to the left, instead of to the right toward the sun. Presently he thought he would stop to rest, but just then he heard a noise which sounded like water rushing over large rocks. He listened intently.

"That must be the sea. The oriole said it made a great noise. I must hasten if I want to reach it before dark." And with renewed energy he swam onward. A moment or so later, the river widened and seemed to stop abruptly. He paused, thinking to himself "the sea must surely lie just beyond," and with a tremendous lunge he threw himself forward. Poor Eolo had been mistaken. The noise he had heard was not the murmur of the ocean, but the sound of a mighty waterfall plunging over a steep cliff to sharp boulders below. Headfirst, he went down and down and down, straight on to the cruel stones of the rapids below. He lay there stunned until the river gradually swept the life from his body.

That evening, before Manama spread the dark star-sprinkled cover of the night over the earth, he thought again of his two enormous pets, and his eyes sought them in their resting-

more important plant introductions made by this office will be made in a subsequent article.

Since its organization the Philippine bureau of agriculture likewise has pursued a policy of introducing new plants, and one after another the new plant immigrants gradually find their way throughout the islands. During my inspection trips I often run across relatively new plant introductions in unexpected remote localities. Among the most valuable plant introductions are the new improved sugar cane varieties, the *Robusta* and *Excelsa* coffee, improved kamotes, standard varieties of oranges, mandarins, lemons and grapefruits, the chayote, cherimoya, and the cinchona or quinine tree. Other useful plants that could be introduced to advantage include the following species:

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