

# How the Paper Factories Denude American Forests

Every Sunday Edition of the New York World Has Necessitated the Destruction of Thirty Acres of Timber--In Little More than Twenty Years, There Will be no More Forests Left in America.

If this sheet of paper which you now are reading could speak it might say to you: "Hello, old chap; don't you remember me? I once clung about your waist; I am that shirt which you wore so long, and only stuffed into the rag-bag when it was past mending."

It the newspaper you read on the train going down town in the morning could speak it might surprise you by saying:

"A few weeks ago I was waving my branches in the wind and bending under a load of snow, monarch of the forest, beautiful in my symmetry, proud in my strength."

But as the paper cannot talk, your attention is never called to the marvel that it is.

A piece of paper is one of the most wonderful things which make up our modern civilization. And, strange to say, it is one of our civilization's greatest perils. For paper threatens to denude our fair land of its forests; and when the forests are gone the streams will dry up, the rivers will cease to run, the rain will fall no more, and America will be a desert.

Pleasant prospect, isn't it?

You say that you will not live to see the day. Don't be so sure of that. At the rate at which the paper-mills are chewing up forests you may very well live to see the day when there will be no more trees.

## SUPPLY GOOD FOR TWENTY YEARS

If you doubt this assertion, just listen to what Gifford Pinchot, head of the Forestry Bureau of the Department of Agriculture, said to the members of the Patria Club in March Here are his words:

"We have, roughly, two thousand billion feet of lumber still standing and the way we have used it in the past insures that, unless a change is made, this amount will last only about twenty years."

Here is more evidence. Mr. Whipple, the Forest, Fish and Game Commissioner of New York, told the Legislature in February that there are now in New York forty-one billion feet of timber, which is being cut at the rate of one and a half billion feet a year. He prophesied that all of it would be gone in twenty-two years, and, in reply to a question, said that the newspapers alone consumed two billion feet every year.

According to the report which the Forestry Bureau of the United States Department of Agriculture made last January, an area half the size of Rhode Island is shipped every year in spruce timber to make paper; the publishers of the country are using more than 3,500,000 cords of wood each year. The New York World used last year 77,333,875 pounds of white paper, or an average of 211,873 pounds a day. Taking these figures as a basis, the report continues: THIRTY ACRES OF TIMBER FOR OUR EDITION

"The large Sunday edition is estimated to require thirty per cent. of the paper used each week, while the week-day editions take up the remaining seventy per cent. Figuring the composition of this paper at eighty per cent. of ground wood and twenty per cent. of sulphite fiber, the average Sunday edition of this paper requires the cut of 29.7 acres of land, and a single week day edition requires, approximately, 11.5 acres.

Almost thirty acres of timber cut down to make our edition of the Sunday World! And the World is only one of four hundred and fifty-six Sunday papers in America.

The United States Census Bureau issued a bulletin last fall, in which it made the following statement:

"Of the total amount of paper manufactured in 1905, more than nine hundred thousand tons were used solely for newspapers and periodicals representing almost one-third of the entire output of the paper mills of the United States. To make this paper required the services of nearly fifteen thousand men, and represented, approximately, nine million dollars in wages. These mills used as raw material one million three hundred cords of spruce, poplar, and hemlock logs, representing the timber product of approximately one hundred thousand acres, exclusive of the logs imported from Canada.

"Thus every working day in the year the forests of New England and the Middle States, with scattering areas elsewhere in the North and Northwest, yielded, approximately, one million seven hundred and sixty-five thousand feet of timber to be transformed into newspapers and magazines required to supply the people of the United States."

This bulletin announces that in 1905, \$188,715,189 worth of paper was made in this country, newspaper representing \$35,906,460; book paper \$37,403,501; fine paper, \$22,249,170; wrapping paper, \$30,435,592; board, \$16,959,557.

## WOULD REACH THE MOON

For its newspapers alone New York City consumes one-eighth of all the paper produced in the United States. So great is this amount that the newspapers published in New York in one day would, if put end to end, make a five-foot-wide strip that would stretch from New York to San Francisco.

A week's product of New York papers would girdle the earth at the equator. In ten weeks they would reach the moon, and in a year, if cut into a strip five inches wide, might connect the earth with the sun.

It is scarcely necessary to say that this paper is made by machinery. This machinery is almost human in its perfection. Into one end of a machine, rough logs are fed, and from the other end issues paper ready for printing. These gigantic machines take only from eight to twelve hours to transform trees into paper, and, when put to the test, can do the work even more rapidly.

An experiment was made recently at Essenthal, in Germany, to see how rapidly it is possible to transform a living tree into a printed newspaper. Three trees in the neighborhood of the mill were cut down at 7 a. m. They were instantly fed into the machine, by which they were barked and pulped, and the first roll of paper was ready at 9.34. It was lifted into an automobile that stood waiting and was conveyed to the press-room of the nearest daily paper. The roll was put into the press, and by 10 a. m. the journal was being sold in the streets. The entire process had taken exactly two hours and twenty-five minutes. This, of course, was an exceptional test, but it reveals the rapidity with which the paper making machines work.

These machines saw up the logs of spruce, which have been floated down the streams to the mill, take off their bark, and grind them to pulp under a flow of water. The grinding is done, not by knives or saws, but by grindstones, which press upon the wood with a force that is sometimes as great as five hundred horse-power. These stones tear the logs into a fine, fibrous pulp, which passes into a vat containing boiling sulfuric acid. This acid destroys the woody fiber, and is then washed out.

The pulp is now washed with clay to give it a smooth surface, with resin to size it and prevent the ink from spreading, and with aniline blue to whiten it. More water pours in to dilute the pulp still further, and the mush thus formed flows along till it reaches an endless ribbon of fine wire mesh, with rubber straps at the edges to prevent the pulp from flowing off at the sides. The water drips through the wire mesh, and the pulp as it flows becomes gradually drier and drier. Rollers catch it and squeeze it, pressing out more of the water, and soon the paper can carry its own weight, and is dried by passing between huge cylinders heated by steam inside. It is finished when it has passed through a series of cold steel rollers, which give it a smooth surface, and has been trimmed and wound on a roll.

Some of the large machines can roll out about five hundred feet of paper a minute. One of the largest in the world, in a mill at Rumford Falls, Massachusetts, turns out eighty miles of paper in twenty-four hours, weighing nearly half a ton to the mile. It has been estimated that all the mills in the country turn out about four thousand tons each day, and that the newspapers of New York use five hundred tons of this.

## A COLOSSAL INDUSTRY

The amount of paper used in America is so vast that the figures are too great to be comprehended. In some respects, the paper-making industry is the biggest in the United States. The census report for 1905 announces that there were in that year 26,422 printing establishments, employing a total capital of \$355,008,604, and turning out annually products worth \$496,061,357. About one-third of these establishments were exclusively for book and job printing, one-sixth exclusively for newspapers and periodicals, and more than half combined the two.

The aggregate number of newspapers and periodicals printed in the United States in 1905 was 10,325,143. The Sunday editions of daily papers amounted to 11,539,021 copies per Sunday, contributed by 456 papers, and the dailies furnished 21,079,130 a day; the weeklies furnished 37,732,037 each week, and the monthlies 64,306,155 a month.

Herman Ridder, publisher and editor of the New York Staats Zeitung, told the National Civic Federation last October that the newspapers and periodicals paid annually \$58,000,000 for paper alone. There is one paper-making concern which does a business of \$21,000,000 a year, employs 15,000

men in its mills, and owns 2,397 square miles of timber lands.

## STREET-CAR TRANSFERS AND TELEPHONE BOOKS

After the newspapers and magazines among the largest consumers of paper are the street-car companies; their transfers alone require more than 3,000,000 slips annually, representing, approximately, 30,000,000 printed sheets of paper.

The telephone companies are another heavy user of paper, as can be judged when it is known that the subscribers of three cities alone—New York, Chicago and Philadelphia—used 1,400,000 copies of the lists of subscribers, containing more than 2,000,000 pounds of paper.

It is only since several years after the Civil War that newspaper has been made of wood pulp. Formerly it was made from rags, as is the paper on which such magazines as The Scrap Book are printed today, and it was much superior to the newspaper of today. But in those days people paid five cents for their papers, and the publishers were able to pay the twelve to twenty cents a pound which their paper cost them.

Just weigh a copy of a Sunday newspaper of today—the New York Herald of March 15 weighed eighteen ounces—and then figure out what the white paper alone, to say nothing of the printing, would cost if the old-fashioned rag paper were still used. As it is, such paper as the World and the Herald is printed on costs their proprietors about two and one-half cents a pound.

Ten years ago the paper cost only one and one-half cents a pound, but it has been steadily advancing, and has been steadily advancing, and has increased twelve dollars a ton since 1904, until now the great one-cent dailies are embarrassed by their cost of production, and would, if they dared, raise their price to two cents. Some of them have actually reached a point at which any increase in circulation would be unprofitable.

It was the demand for cheaper news papers that led to the search for materials to take the place of rags in the manufacture of paper. Old paper was mixed with the rags, then straw was used, then the wood-pulp process was invented.

In America, ground wood-pulp was first made by Alberto Pagenstecher, at Stockbridge, Massachusetts, in 1867, and was put into printing-paper by Wellington Smith, William A. Russell, and Warner Miller. Soon the wood-pulp alone was used. With each step the price fell.

More recently a chemical process for reducing the wood pulp has been invented. This consists in cooking the wood in acids or lyes instead of grinding it, thus dissolving the non-fibrous matter and leaving the fibers practically unimpaired, so that a fabric formed of these fibers has almost the strength of parchment.

Most paper today is a mixture of the chemically made and the ground pulp, about one-third of the former to two-thirds of the latter.

Nearly four-fifths of all the wood used for making paper is spruce. The United States Forestry Bureau is conducting experiments with other common woods, and announces that more may be expected from balsam than from any other tree.

Some excellent paper is now being made in Virginia from Southern pine, out of which the turpentine and resin have been extracted, and it has been demonstrated that from a cord of long-leaf yellow pine, weighing 5,500 pounds, can be extracted by the soda process more than half a ton of paper-pulp, several hundred pounds of resin, twenty to thirty gallons of turpentine, and one to two gallons of high-grade essential oils.

Paper was invented by a Chinaman named Ts'ai Lun about the time of Christ. In the earliest ages contracts and transfers of property had been certified by a complex system of knots tied in cord. There had been no written language, so no writing was needed. But letters were invented, and strips of bamboo were used as tablets on which to write.

## THE INVENTION OF PAPER

As China became more civilized, the legal and historical records accumulated and became so cumbersome that a lighter and less bulky material was needed. So Ts'ai Lun began experimenting, and the first paper he made was of silk. No better paper has ever been produced; but owing to the expensive nature of the material the Chinese have substituted rice-straw and rags for the silk.

The Egyptians wrote on papyrus, made from the fibers of a rush that is plentiful on the Nile. At Samarcand, in the seventh century, a factory was established where paper was made according to the ancient Chinese process. Paper was independently invented by a certain Joseph Amru in the city of Mecca in the year 706 A. D., and the learned Arabs soon made use of it. Amru's paper was made from cotton, for which

## "AFFINITY EARLE"

(Continued from page nine.)

### TRIED AN ARTISTIC CHOKING.

The following autumn found Earle again with Julia, who had harked to his prayers for forgiveness, but in January, 1909, she left him forever, asserting that he had tried to choke her in one of his artistic outbursts. Soon he discovered his third affinity in Gertrude Buell Dunn of Chicago, a model in the studio of Haag, a sculptor. They diagnosed it as a case of "soul-mating at first sight," and Miss Dunn went to the Earle mansion last summer.

The presentations of her brother drove Miss Dunn to leave Earle, but it was only to sail for Paris on one ship while he followed on another. Incidents in the French capital sent her hurrying back to New York, and though Earle tried hard to win her back she would have no more to do with him.

Meanwhile Mrs. Kutter-Earle had sued for annulment of the Venetian marriage. She contended that the first Mrs. Earle's divorce was not complete when Earle went through the second ceremony. A commission took testimony in Paris and upheld the plea. Referee Foley recommended an annulment.

WOULDN'T BLACKEN BOY'S NAME  
In view of the circumstances, the referee holds that it would be unjust to cast a stigma upon the boy, as Miss Kuttner firmly believed when Earle married her that he had been divorced legally. Whether the Supreme Court will have the power to declare that the boy was born in lawful wedlock, yet rule that there never was a marriage, is a problem for Justice Fitzgerald to solve.

hemp and flax were subsequently substituted. The Arabian paper came with the Moors to Spain in the eleventh century, and from Spain to France, and so to the rest of Europe. Paper is still made by hand in Europe; and there is a mill at Adams in Berkshire County, Massachusetts, which is said to be the only one in America that still turns out the hand-made article. This is of fine quality, and necessarily expensive, for it requires five persons to make three reams of hand-made paper in a day.

Almost all the hand-made papers used in America come from Japan with Italy and France following. The most expensive of all papers is the so-called "imperial Japanese vellum," the cost of which is one hundred and fifteen dollars a ream of ve hundred sheets. You can tell whether a piece of paper is genuine imperial Japanese or an imitation by looking along the surface towards the light. If it is genuine it presents a woolly appearance, though its surface is perfectly smooth. Another way is to drop it on still water; if it is hand-made it will lie flat; if not, the paper will curl.

An ordinary dollar and a quarter novel is generally printed upon a paper that costs about two and one-half cents a pound, or half as much as the manilla paper in which the salesgirl wraps it for you. The book may be illustrated with pictures on smooth, glossy pages; the paper of these is the same as that of the printed pages, but its surface has been coated with clay and subjected to high pressure, and it costs from four to fifteen cents a pound.

Writing and note-papers cost the storekeepers from six to fifteen cents a pound, and are retailed by corner druggists at from twenty-five to seventy-five cents a pound.

Sugar-paper—so called because it is used for lining sugar-barrels—is a rice paper, stiff and damp-proof.

Paper is often water-marked. These marks are made by steel dies impressed upon the paper before it is dry. In America they are generally simple; but some of the Japanese Italian, and French makers of hand-made papers use wonderfully elaborate designs; and there is one American firm which has letter-heads made of Japanese paper with the firm's name, address, cable address, telephone number, and branch offices included in the water-mark.

Old paper-waste is used largely in making new paper. It is steamed and bleached and converted into pulp, but cannot be used over again for newspaper. It is, however, made into pencil-holders, ash-receivers, and other paper-mache articles. Paper floors and ceilings and the filling for carpets and walls is also made from this paper-waste; and there is one man in New York who makes kitchen utensils, such as pots and pans, from it, coating it with a fire-proof and water-proof enamel of his own invention.

### USED FOR EVERYTHING BUT FOOD

The uses to which paper is put today are multifarious. Car-wheels, telegraph poles, fire proof ceilings, floors, hats, artificial teeth, cannon made by Krupp, water-buckets, waistcoats, dress-linings, water mains curtains, window panes, filters, organ pipes, thread, and insulation for electric-wires, are only a few of the articles which are now made of paper.

There is a fortune for the man who can invent a way of extracting the ink from the pulp of old newspapers, because the resin and linseed-oil in the ink make the pulp unsuitable for remaking into newspaper. Any man who can devise a method of getting rid of them will be received with open arms by the publishers for this invention is all that is needed to reduce the price of newspaper from two and one-half cents a pound to about one cent.

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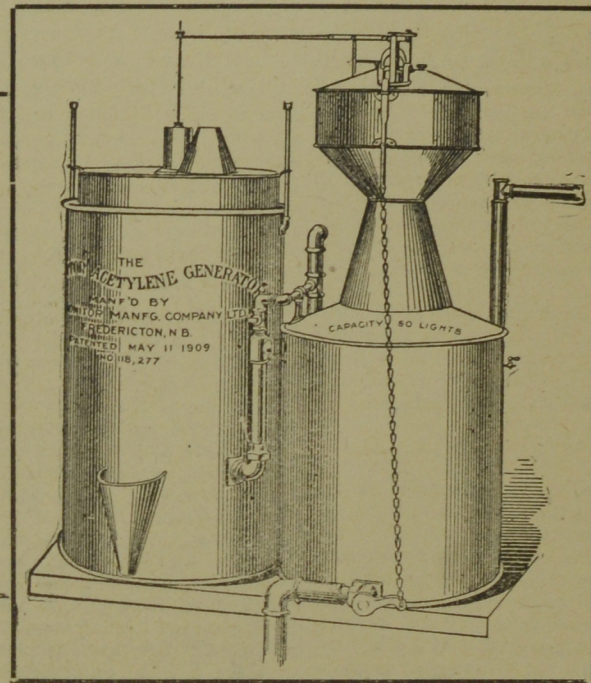
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