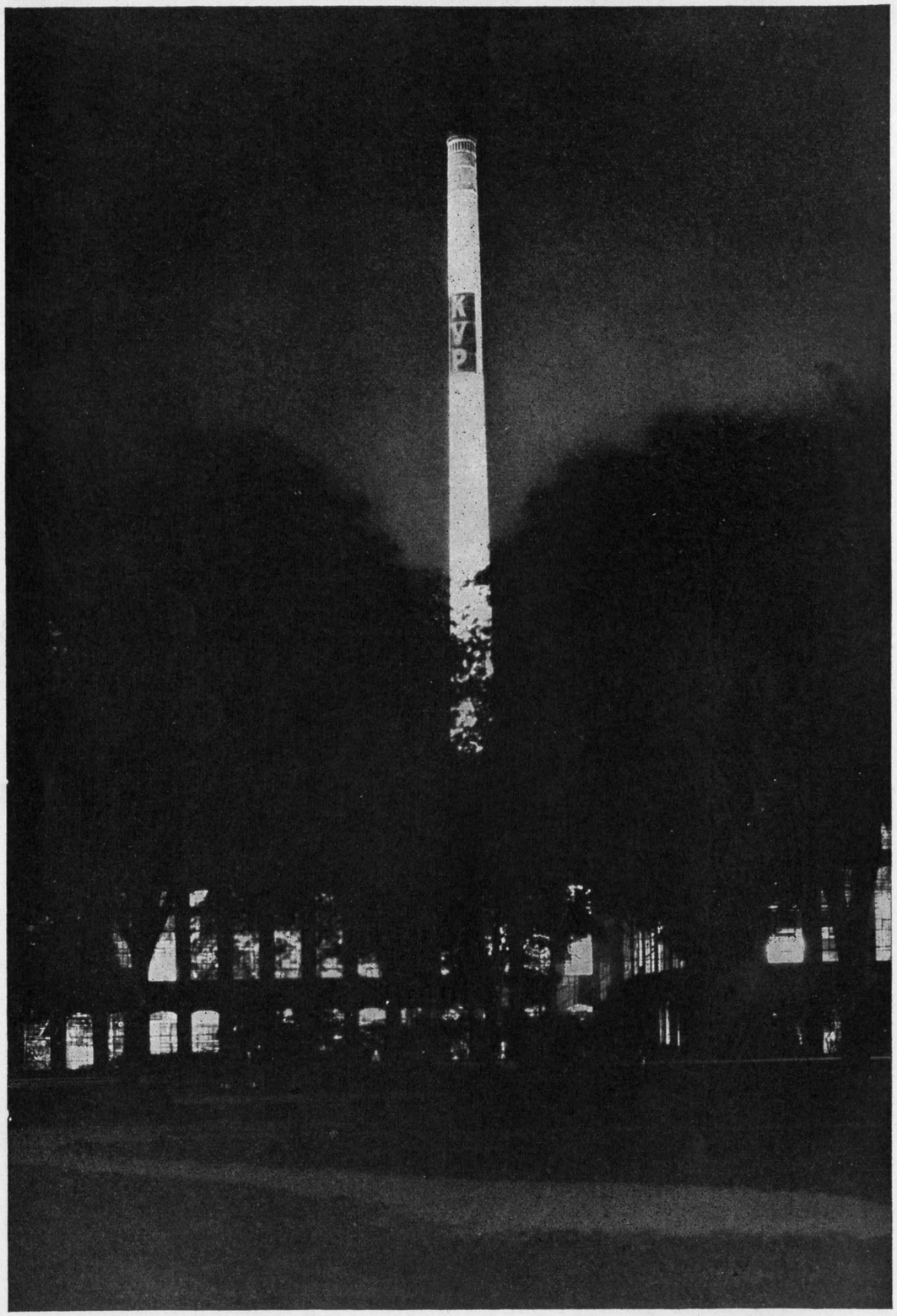
KVP

The STORY of PAPER MAKING

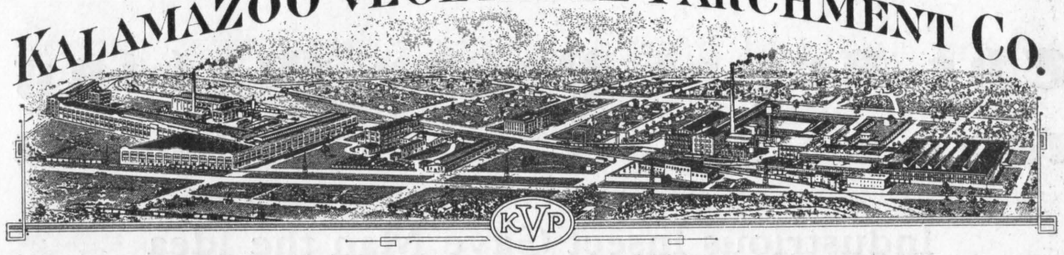
The History and Story of Paper Making

An Industrial Romance



Night scene of Mill No. 1 of the KVP Mills. The smoke stack with its two hundred and eighty-five feet of solid concrete covered with a brilliant coat of aluminum paint reflecting the rays of powerful searchlights, can be seen for miles piercing the blackness of the night like a huge electric needle

KALAMAZOO VEGETABLE PARCHMENT CO.



MANUFACTURERS OF
PARCHMENT, WAXED AND BOND PAPERS
PARCHMENT, MICHIGAN
(KALAMAZOO COUNTY)

OFFICE OF THE PRESIDENT

A PERSONAL MESSAGE FOR YOU
from
KALAMAZOO

In the following pages we have attempted to answer the many questions that are asked by those seeking information concerning this, one of the great industries of the country.

We are, of necessity, giving you a liberal amount of information concerning our own methods, but we believe it is none the less interesting. The history of paper is as authentic as possible. Many dates are only approximate but are as correct as existing records permit. We trust you will get information that will be helpful and valuable.

If we can be of further assistance to you, do not fail to call on us at any time.

Very truly yours,

KALAMAZOO VEGETABLE PARCHMENT CO.

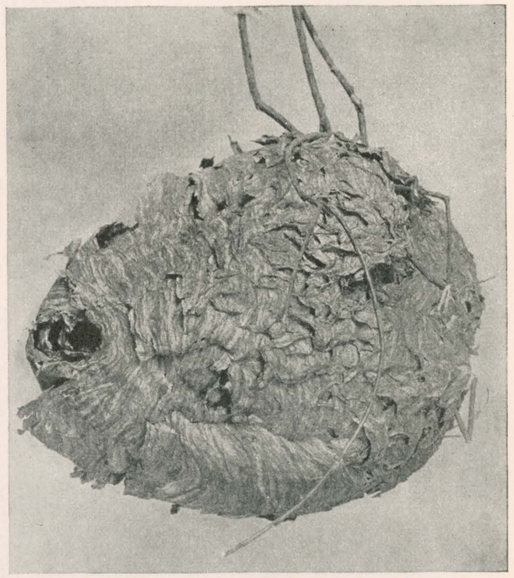
J. Kindleberger
President

The Art of Paper Making
Was Originated by the Hornet

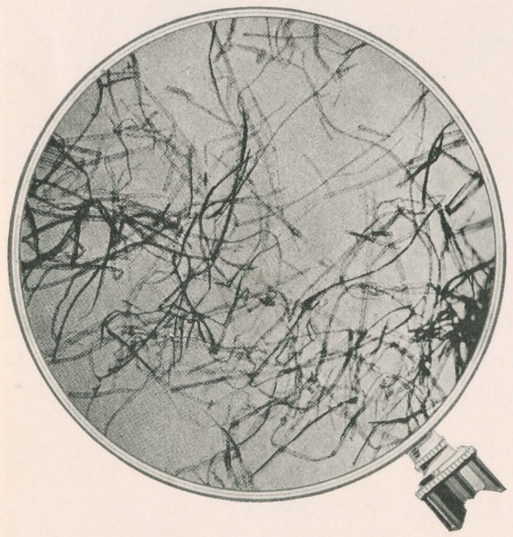
Industrious Insect Gave Man the Idea

THE earliest paper maker is the paper making wasp, or hornet ❧ This hornet takes wood fibre and grinds it in his mouth, at the same time mixing the fibre with a secretion from glands in the mouth which very much resembles saliva.

When smoothed out by a dextrous movement of the hornet, the ground fibre makes the walls of his house. An excess of cementing fluids secreted in the mouth of the hornet can and does make a sort of coating. As a matter of fact, the outside of the paper house is coated, presumably to make it waterproof.



The Waterproof Paper Home of the Social Hornet



The Fibres of the Wasp-made Paper look very similar to the Wood Fibres finished by Man-made Machinery

Paper making hornets are classed as social hornets; that is, they live in colonies similar to bees. The sociability that they manifest for the human race, especially any invader of their territory, to say the least, is of a very unpleasant sort. The privacy that the hornet insists upon when he is making paper, has made it difficult for even the scientific student to make accurate observations of his methods.

¶ The marvelous adaptability of nature to necessity is the making of paper by wasps. Man, with all his ingenuity, has not been able to make paper of finer quality than this little insect.

Paper was first made in Egypt, but our process comes from China and Japan

THERE is some uncertainty as to what country deserves the credit for the first making of paper. It is unfortunate that the origin of paper goes back to a time when man seemed to think it unnecessary to record his industrial achievements in a manner that could be authentically handed down to other generations ❧ ❧

Evidence shows that the Chinese knew how to make paper about A. D. 105 ❧ It was another six hundred years (A. D. 710) before the knowledge reached the Arabs in Mecca ❧ Thence, through the Moors, the knowledge reached Spain in the Eleventh Century, A. D.

But it was not until the Twelfth Century that the process of paper making, as it was known in China, had become one of the crafts of Western Europe. Paper in Europe was being made after the Egyptian method which, from earliest time, utilized the papyrus plant.

This was done by softening and beating up the soft, long papyrus fibres and then spreading out the pulp and permitting it to dry. It required a comparatively small amount of labor and primitive methods could be used. The paper was very coarse as compared to present-day products, but it was considered at that time a remarkable achievement.

The Egyptian method continued to be used in Europe up to within about the middle of the Eighth Century, and in fact, our present word "paper" gets its name from the Egyptian word, " papyrus."

The introduction of the Chinese method, on which the present day process is an improvement or elaboration, is quite authentically traced from China and Japan west into Europe.

Papyrus Plant

It seems that in the year 756 A. D., China was having frontier troubles or boundary disputes with Arabia. Chinese soldiers, who were fighting along this front, were taken prisoners by the Arabs and among the things with which these captives were familiar and which was entirely new to the Arabs, was the making of paper. The knowledge which was then acquired of paper making by the Arabs soon was carried further west in Europe, where by the Tenth or Twelfth Century, it had become one of the accepted forms of craftsmanship.

During the second crusade, the art was carried into Italy and by this means, the more modern practice, borrowed from the Chinese, gradually displaced the old Egyptian method.

Through the centuries, the art of paper making has continued to become more and more an important part of civilization.

Through the medium of paper, the sciences, art, literature, and principally education, have been advanced, and little do we realize today how much we really owe of this knowledge to paper making.

The Early European Hand Made Paper

AS THE making of paper developed into a craft during its early introduction into Europe, the methods first used were very simple.

The mulberry tree furnished the raw material which was procured by stripping the bark from the trees and then removing the fibrous inner bark. The usual procedure was to place this inner bark in a convenient sized pile on a table while four men with long-handled wooden mallets would stand at mallet-handle length and pound the fibrous bark into a good pulp. A fair day's work for the four men was about three hundred pounds. Reliable authority states that bamboo, hemp and rags were also used at this early date. The pulp was then put into a vat or tank and mixed well with water and an adhesive or sizing of some kind—about the same as is done today, except that it was mixed by hand. The paper maker then took a low walled sieve made of bamboo strips and dipped into a tank or tub. A side to side movement of the sieve as the water drained through interwove the fibres in the same way that the side movement of the paper machine of today felts the fibres in our modern paper manufacturing.

The matter and damp fibre was then placed on some smooth, flat surface to dry in the sun. Later, the drying was modernized to some extent in that the damp fibres or "young" sheets of paper were taken from the sizing vat and placed onto a piece of woolen felt about the same size as the sheet. The standard sheet was called an elephant sheet, 22 x 32.

When this stack of paper interleaved with woolen felt, which was called a "post," was sufficiently large, it was put in a large screw press, a considerable amount of the water in the sheets going into the woolen cloth. This was no doubt the father of the first felt on the Modern Machine.

This felt is just a large thick fluffy continuous woolen blanket manufactured from the finest long fibre wool that can be purchased. The purpose of this felt is to serve as a blotter to absorb as much of the surplus moisture from the sheet as possible before it hits the dryers.

¶ When you visit one of the great modern paper making plants, with their many departments and special machines for turning out vast quantities of paper with great speed and efficiency, it is hard to believe or appreciate that the same simple principles are being employed as in ancient times.

The minds of these ancient workmen were as keen to quality as the experienced manufacturer of today, but they lacked the engineering facilities of modern times.

The Invention of the Modern Paper Machine

THE paper machine, as we know it today, was invented by a Frenchman, Louis Robert, in 1798. The principles involved were taken up by Henry and Sealy Fourdrinier, two Englishmen, who lost a large fortune in developing the machine. The machine involved the same fundamental principles in use for nearly two thousand years; namely, a screen for letting the water run through, leaving the pulp in a more or less even thickness, and the side to side movement of the screen to weave or felt the fibre.

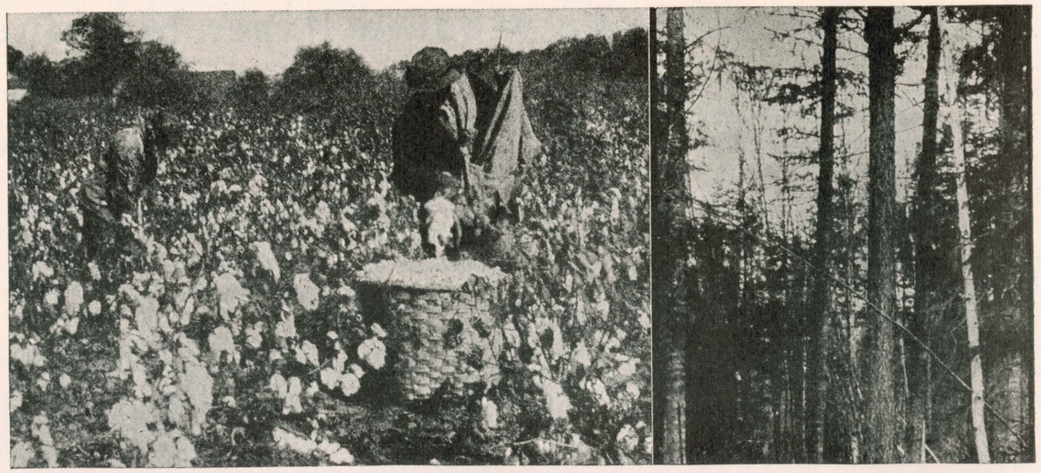
The first manufactured paper in the Colonies was made in a little hand-power mill in 1690, by William Rittenhouse in Germantown, a village now a part of Philadelphia. This mill was in operation more than one hundred years before the introduction of paper making machinery of any consequence in the Colonies. The first paper machinery in the United States was set up in Saratoga, New York, in 1827.

¶ The growth of the paper industry in the hundred years following the Revolutionary War was marvelous in the extreme. In 1900 there were in operation in the United States 1,232 paper mills, making paper in a variety and in a volume that far surpassed the wildest century-ago dreams of Washington, Jefferson and Adams. From 1900 on, the growth of this great industry in the United States has not increased so much in varieties of paper as in volume, which has grown by leaps and bounds. News print, which is the paper that feeds the mammoth newspaper presses every day of the week, stands at the top of the volume production in North America. An issue of the Paper Mill and Wood Pulp News in November, 1929, gives the news print production for the United States and Canada at 4,415,000 tons. This is estimating only the last two months of the year, 1929. A number so large is beyond ordinary comprehension, so think of it thus: loading five tons on each truck (allowing 100 feet for each truck and driving distance apart) you would have a fleet of trucks 16,723 miles along the highway—if there WERE such a highway. Being short of highways for our calculation, this line of trucks would reach from Kalamazoo to the Pacific coast and back six times. If you would rather load this North American 1929 production of news print onto or into average size freight cars of 50,000

First Paper Mill in America

pounds each, allowing 125 cars to the mile, you would have a freight train 1,412 miles long. If you had to wait at a crossing for this train, you would wait about forty-eight hours if the train were traveling without stops at thirty miles per hour. An article in one of the recent Paper Trade Journals estimates that a single Sunday edition alone of the *New York World* requires the usable pulp wood grown on one hundred acres of land. With these figures before us, it is no wonder that there is much concern in the United States regarding the question of how long our forests will withstand this and the other commercial drains of our modern civilization.

The illustrations shown in this book of paper mill scenes and operations are all taken in the mill of the Kalamazoo Vegetable Parchment Company, widely known as The World's Model Paper Mill. Many different kinds of paper are made here for widely diverse uses, and the trade-mark, "KVP" is synonymous with the phrase, "Good Papers."



Materials from which Paper is Made

AS THE above picture shows, the two principal materials from which paper is made are Wood and Cotton. The greatest amount of materials entering into paper comes from wood fibres. Millions of tons of different kinds of woods are reduced to pulp in the great pulp mills of America and foreign countries. The United States is probably the greatest user of paper in the world, and therefore, constitutes the greatest market for pulp. Shiploads of pulp are sent to the United States from foreign countries, and carloads and sometimes trainloads are shipped regularly to the United States from the pulp mills of Canada.

The second greatest source of materials for making papers is rags. This includes cotton rags which are gathered from all sources all over the world. Most of them are gathered in small quantities by rag pickers in the United States as well as many foreign countries.

The ravelings and cuttings from textile mills and garment factories also find their way into the paper mills. These rags are new, and as a rule, go into the choice and more expensive rag papers

Recent experiments have proved that many kinds of vegetable fibre can be used in paper making Fair results have been obtained from cornstalk fibre which can be used to a limited extent in some of the cheaper grades of paper

If some of these vegetable fibres can be developed a little more it will mean a great measure of farm relief and enable the agricultural section to turn a great portion of their waste crop into profits.

The following pages deal with some of the methods by which these various materials are treated and prepared before they are finally ready to be made up into paper, the finished product

THE STORY OF PAPERMAKING

The Rag Man and His Part in Paper Making

WHEN you see the rag man driving down the street and hear his familiar cry, "Any rags today?" you wonder as to the final destination of the millions of pounds of rags which are gathered from all sources all over the world and from rich and poor alike. The rags which are used in the making of paper are cotton garments which have been discarded and worn out. Before they reach the paper mill, however, they pass through many hands, the rag man taking them to a dealer who in turn ships them to a wholesaler. The wholesaler sorts and grades the rags carefully according to quality, color and cleanliness. Rags from foreign countries command different prices from domestic rags. Rags come to the paper mill in carload lots made up in bales of about 1,000 pounds.

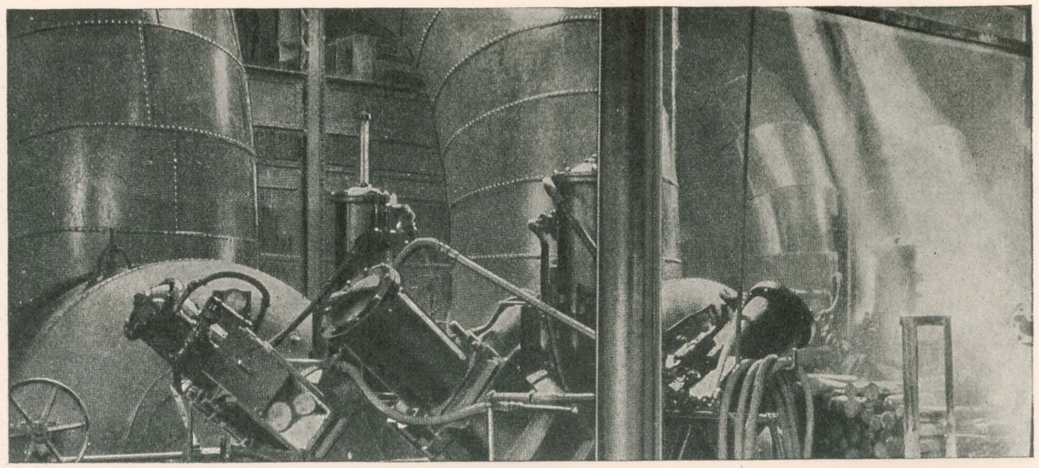
¶ It might be of interest to know that the best rags come from Egypt and other Mediterranean countries, because of the extra length of the fibres from cotton grown in this region.

¶ When the rags reach the manufacturer, they have been thoroughly disinfected. They are then dusted in great rotary dusters. From the dusters, they are distributed for inspection to the sorters, who lay them out on great tables, removing the buttons and clasps and searching the pockets for valuables One would think that there would be little chance for valuables to be found after examination by the housewife, the ragman and the rag grader; such, however, is not the case. The finding of money and jewelry, and even diamonds, is not at all uncommon in rags that reach the paper mill.

After the rags are sorted, they are put through a cooking process to loosen the dyes and dirt and are then thoroughly washed and bleached before they are ready for the making of paper.

(A) (B) (C)

A—Rags as they appear after leaving the cooker.
B—After passing through the washing process.
C—After bleaching—Just a snowy white mass of clean strong cotton fibres without even a speck to mar their purity.



Chipping Machines cut 15 cords of wood per hour

THE trees are cut and the logs are hauled or floated to the pulp mill where they are cut into four-foot lengths. They are then put through a machine that removes all the bark.

¶ From here they go to the chipping machine that cuts them into blocks from ½ to 1 inch in length and ⅛ to 3/16 of an inch in thickness. The machine gives the blocks of wood a slicing cut, approximately at an angle of 45°. This type of cut allows the natural pores of the wood to remain open and at the same time presents to the action of chemicals a much greater penetration surface than would be possible if cut at 90°, since penetration takes place through the ends of the chips. A chipper of ordinary size will often reduce the wood bolts to chips at the rate of fifteen cords per hour

For successful cooking the chips must be of practically uniform size The resolution of wood into pulp by any of the chemical pulp processes depends upon the fact that wood consists largely of two materials, the constitution and physical character of one being readily changed by the chemical action, while the other is resistant to both physical and chemical change The resistant material is termed cellulose, which occurs as individual fibres in the tree. These fibres are surrounded and held together by a less resistant material which is known as lignin. There are also smaller amounts of other substances in wood, all of which are more or less non-resistant to the action of the chemicals used in pulping. The action of the chemicals, therefore, is to dissolve the non-cellulose material and to leave the cellulose fibres in the form of pulp. The lignin and materials other than cellulose represent approximately 50% of the weight of the wood, so that the yield of paper making fibre in the commercial preparation of chemical wood pulp is in the proximity of 50%.

Wood pulp is shipped to us from New England, the West Coast, Canada, Germany, Norway and Sweden. Different kinds of pulp have fibre formation better suited for certain kinds of paper than others. Climate and humidity have much to do with fibre formation in the growing tree.

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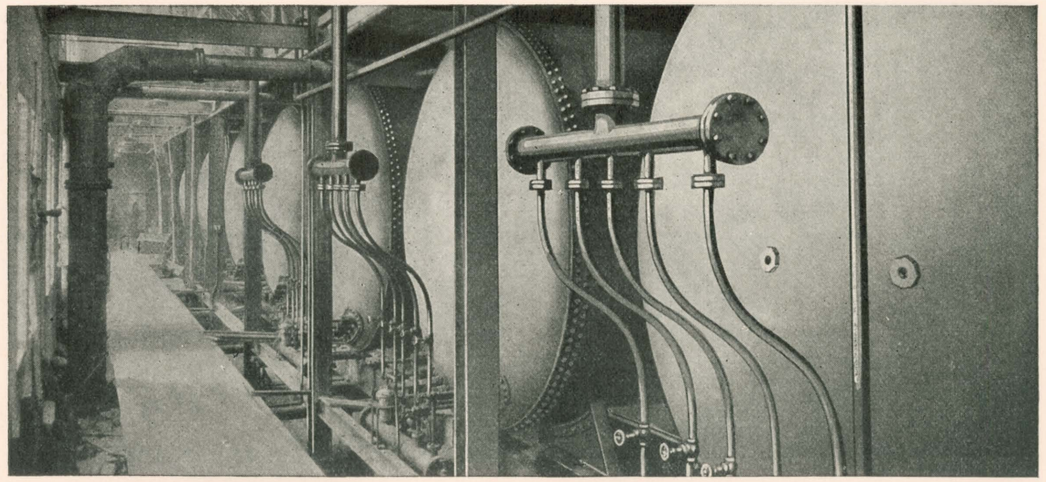


Courtesy of The Biggs Boiler Works Co., Akron, Ohio

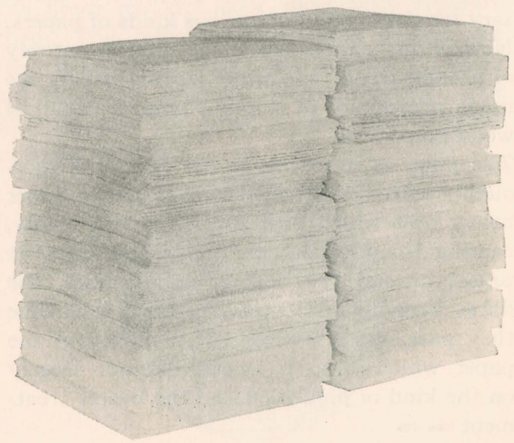
Digesters Cook 20 Tons of Pulp at One Time

THE actual cooking of the wood is carried out in large steel digesters which are lined with special acid-resisting brick These digesters are sometimes sufficiently large to produce nearly twenty tons of pulp at one cooking

Chips, manufactured from long-fibred coniferous wood of low resin content, such as spruce, hemlock, and balsam, flow by gravity from a chip bin above into the digester and sulphite acid added to the extent of approximately 2000 gallons per ton of pulp produced.

¶ After filling with chips and acid the digester is securely closed and live steam introduced directly into the digester at the bottom. The temperature gradually rises to about 325° F. and the pressure to about seventy-five pounds. Such a cook may last from eight to fifteen hours. The pulp is now subjected to a washing process which removes the last traces of cooking acid and leaves a clean, comparatively white pulp

The pulp is then screened in any one of the number of different types of screens to remove the knots or uncooked portion of the wood as well as to separate the well-cooked fibres into different grades of pulp The pulp, after screening, is thickened upon specially designed machines. One type of thickener is the wet machine which delivers the pulp in the form of laps or thick sheets ready to be made into paper



Sheets of pulp stacked ready for the beaters

The Beaters
beat up the pulp and separate the fibres

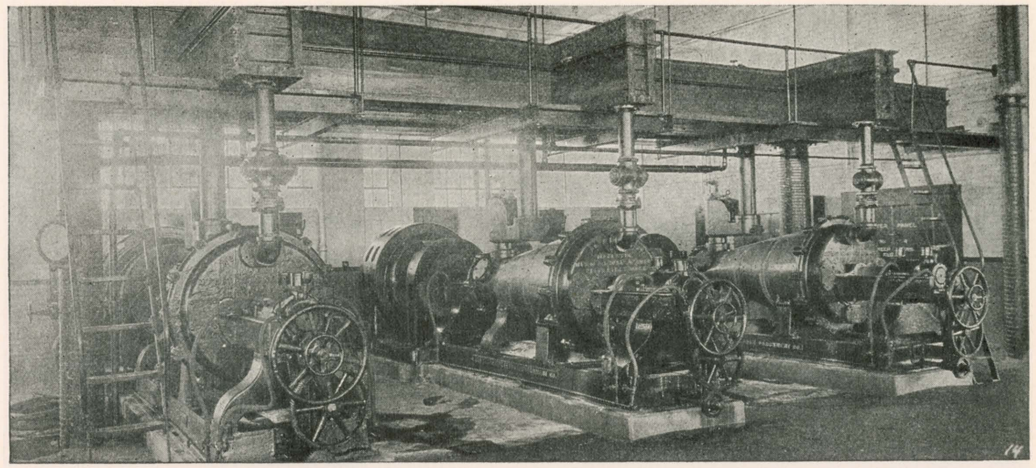
THE beaters are just what the name implies. You can gain, from the illustration of the beating machines shown above, an idea of the operation and purpose of this process. The coarse-fibred wood pulp or rag pulp is placed in this machine in different proportions necessary for the making of various kinds of papers. News print papers are made almost entirely of ground wood pulp while writing papers are made principally of sulphite pulp, a chemical wood pulp

The pulp, as it travels in the beater, is thoroughly mixed with water and it passes under heavy rolls which beat the fibres thoroughly, causing them to become softer and finer. It passes around the beaters many times, the fibres receiving additional treatment each time they pass under the roll. The quality of the paper which is to be made depends largely on the kind of pulp used and the beater treatment

During this operation, the necessary coloring is added. This determines the final color of the finished paper. When a pure white sheet is required, a small quantity of blue dye is put into the beaters just as bluing is added to make clothes whiter.

While the pulp is in the beaters, a filler and sizing is also added to the pulp just as it was added by hand in the early days of paper making in Europe. The sizing consists of resin, which is precipitated on the fibres with alum (aluminum sulphate) The fillers commonly used are china clay, talc or gypsum. These materials all come to the paper mill ready for use and are added to the paper in the proper proportions while it is going through the beaters, where it is thoroughly and uniformly mixed through the mass of the pulp.

The beating, which is done in these immense machines, is exactly the same process which, in centuries past, was done by hand by the earliest paper makers These beaters are simply a modernization of the same hand beating principles first used in paper making.



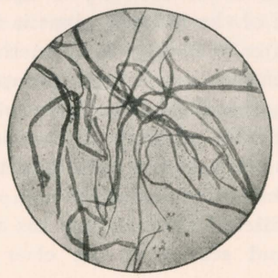
The Jordan Machine
regulates the final condition of the fibres

IT WOULD seem as though the beating process would be all that is necessary for preparing the fibres for paper making, but although the fibres are thoroughly separated, they require additional refining.

This is done by running the wood pulp, after it comes from the beaters, through pipes into machines which are known as Jordans. These Jordan engines are conical in shape, with a tapered plug which revolves against the tapered outer wall or shell. Both the plug and shell are equipped with bars or knives which refine the fibre as it passes through the Jordan. It is very similar to a huge coffee grinder. After the pulp flows through this machine it has the desired characteristics for making it into a sheet of paper.

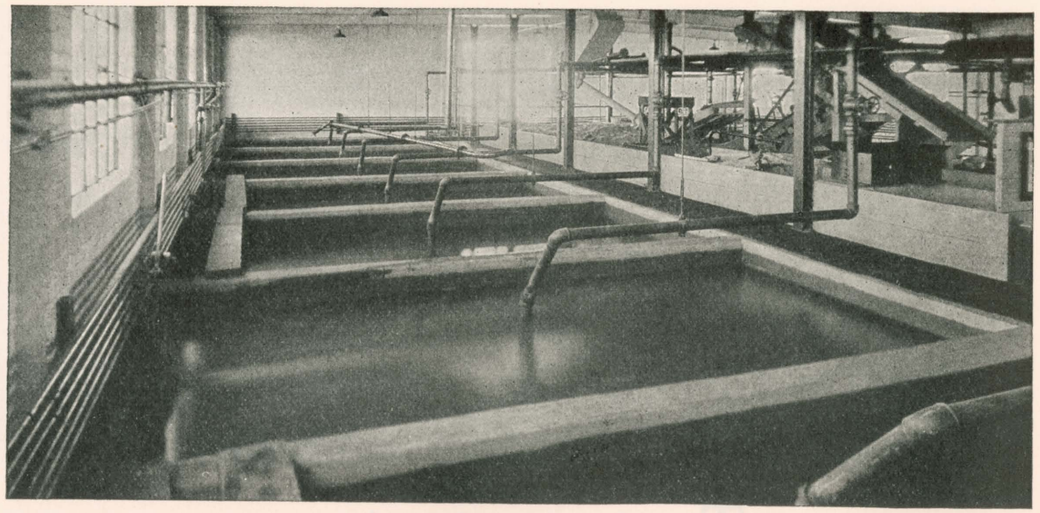
The micro photograph shown below gives an idea as to how the fibres are softened after being put through the Jordan.

The action of the Jordan machines is to soften the fibres and to more thoroughly separate them. This refining or softening process has the tendency to make the fibres lay closely together and interlace more smoothly. The interlacing of the fibres is the basic principle of paper making.



The above is a magnified view of the fibres after they are taken out of the beaters before going through the Jordan. In this stage they are tough and wiry

This shows the fibres after being put through the Jordan. In this stage, they are very soft and pliable, interlacing freely and laying flat as they are being formed into paper



Twelve Million Gallons of water used daily at the KVP Mills

Water is the Greatest Single Factor in Making Paper

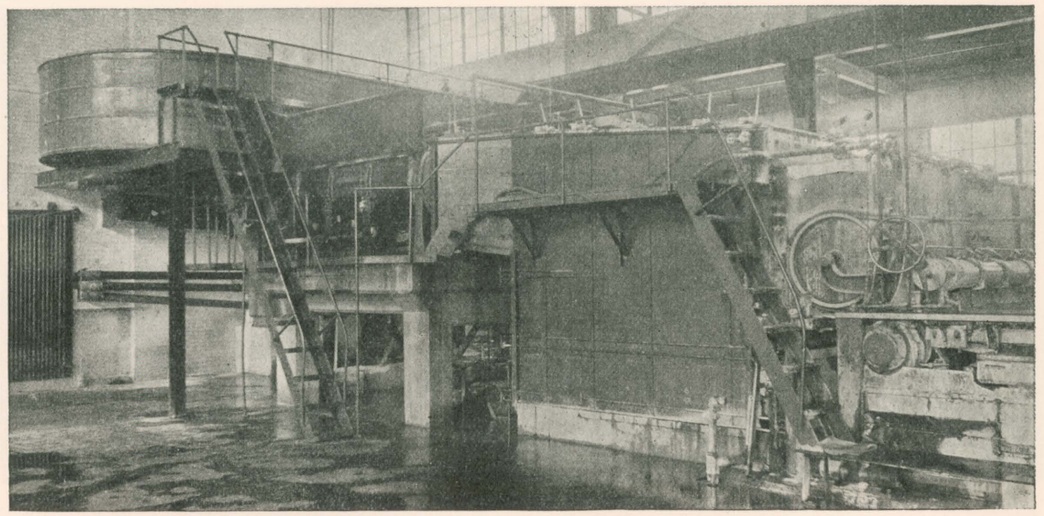
CLEAN water is undoubtedly the most important single factor in the making of good papers. Without plenty of pure, clean water, it would be impossible. It is necessary to keep the wood pulp flowing constantly with water in practically every paper mill operation, so that in a large mill, millions of gallons of water are used daily.

It is for this reason that you find the great paper mills of America located close to a supply of water, most of them being situated on banks of a large, clear flowing stream.

Here at the KVP mill, we are located on the Kalamazoo River, but this supply is not adequate for the immense amount of water that is required. About half of the water used here is taken from the river and the other half from deep wells which we have sunk for this purpose. The water, as it flows from the wells, is clear and clean and is ready for use, whereas, due to the effects of modern civilization, river water must be carefully filtered and chlorinated.

In order to do this work, it has been necessary to construct our own filtering plant on a scale that will supply the volume of water compared to that used by a small city. A description of the filtering plant is interesting.

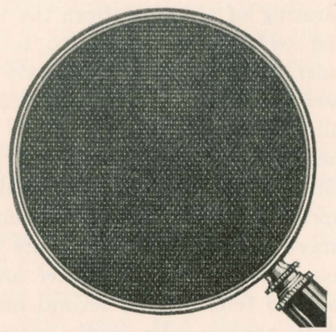
¶ The water is sucked in from the river by five sixteen-inch pipes and pumped to the coagulating basin at the filter plant where small quantities of alum are added to assist the dirt to settle to the bottom of the settling basin as the water passes through. The water is finally filtered through fine sea sand, chlorinated, and stored in the clear well until needed.



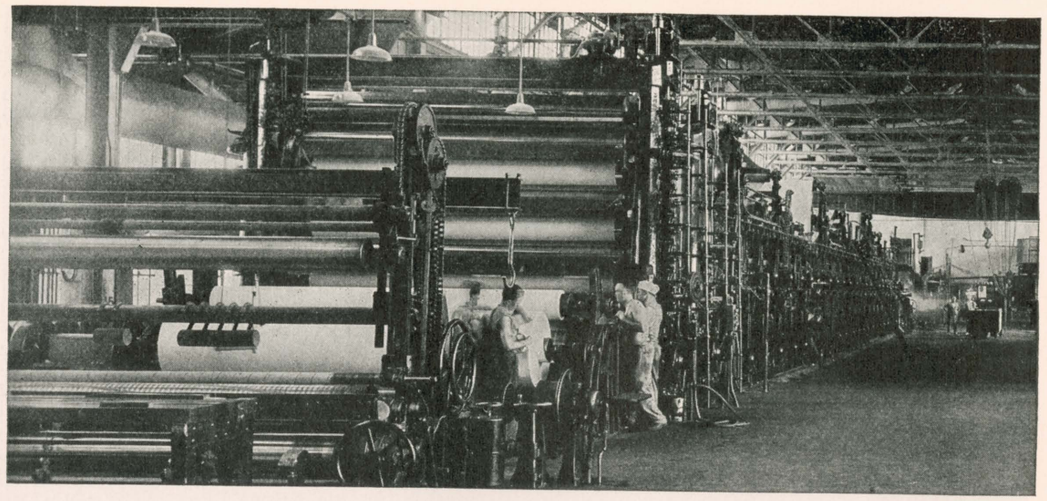
Flowing the Pulp Onto the Paper Machine

YOU will remember that we mentioned the names of the two brothers, Henry and Sealy Fourdrinier, the inventors of the paper machine. The first operation in the making of paper on the paper machines is to mix the water and pulp and flow it onto that part of the machine which still bears that name.

In the Fourdrinier machines, ninety-nine per cent water and one per cent pulp fibre, is flowed evenly through an opening onto a moving wire screen. The travel of this screen is the same as an endless belt. The screen on what is considered a large writing paper machine, is seventy-five feet long by one hundred and sixty-five inches wide. It is kept level by running over a series of even sized rolls that are perfectly mounted and very close together. As the water and pulp travel with and on this screen, most of the water runs through while the pulp or fibres stay on top, forming the thin sheet of paper.



This shows a reproduction of the wire screen belt over which the pulp is made to flow. This screen is made of fine strong bronze wire woven sixty-five wires to the inch. Here is where the watermark is put on the paper. A cylinder, called the "dandy roll," bearing the watermark design, presses the watermark into the wet thin sheet of pulp on the screen just after it is formed.



Paper Machines as long as a city block

AFTER the pulp is formed into a sheet it still contains a high percentage of water (about 80%). In order to remove the rest of this water the paper must travel over wet presses and a tremendously long series of drying cylinders

The separating of the pulp from the water is first aided by applied suction to boxes and a roll under the wire. After the newly formed web leaves the wire it is transferred to an endless all-wool felt blanket.

The paper is conveyed by the felt through press rolls which remove additional water and compress the sheet. A paper machine has two or more presses and a separate felt for each press. The first felt is lighter and more open than the felts on the second and third presses. After the paper leaves the press section the balance of the water in the sheet that has to be removed is evaporated as the sheet travels around a series of steam heated cylinders. It is conveyed through the dryer section and held in contact with the cylinders by a heavy cotton felt. The paper reaches the dry end of the machine containing from 4 to 6% moisture

From this point, the now perfectly dried web leaves the paper machine proper and enters the calender stacks and from here to the reel, where it is wound into a convenient diameter roll. This roll, 150 inches trimmed, is too long for any convenient commercial use, which necessitates it being slit and rewound into any length and diameter of rolls desired.

¶ There are four large paper machines in the KVP Mills that run day and night to make the thousands of tons of paper that are supplied to the many industries that depend entirely upon KVP paper for marketing their products.

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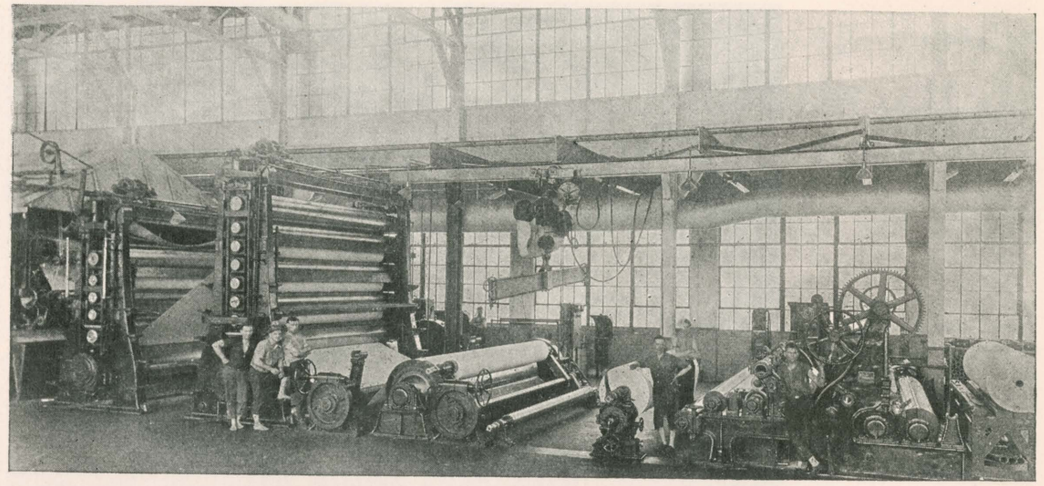


Smoothing or Calendering Machine and Rewinders

PAPERS require different finishes suitable for various printing processes. Some of it is used just as it comes off the machine, this being known as a machine finish. The greater portion of paper, however, is finished in some manner after it leaves the paper machine.

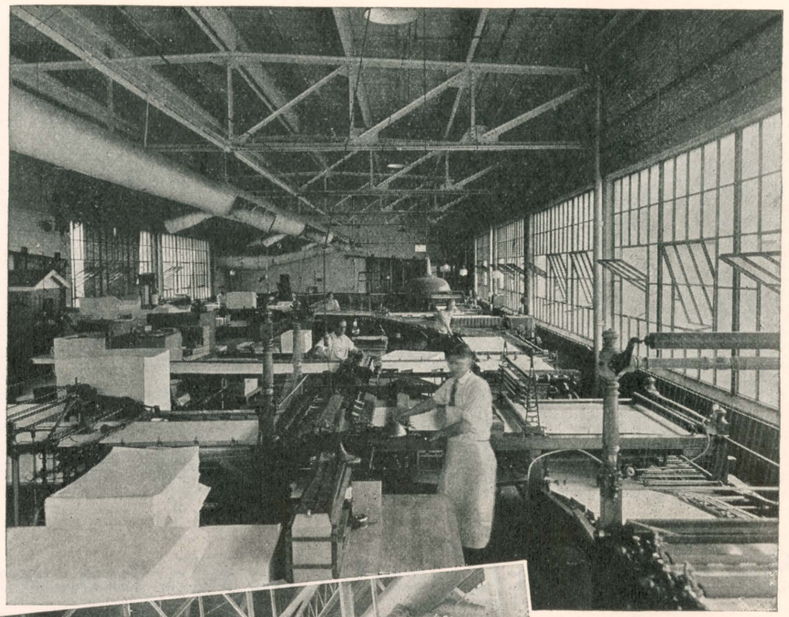
Papers which require a smooth printing surface are polished by a process known as calendering. This is done on machines which consist of a series of heavy steel rollers, one above the other. The paper is passed through these rollers under heavy pressure. These calendering machines are often located at the end of the paper machines, the paper passing directly from the paper machine into the calender. Most of the paper manufactured at the KVP mill is calendered in this way, although some of it is wound into rolls and later taken to the calendering room.

Many papers requiring a still higher finish, receive a second polishing by being again passed through the calender. This is known as super-calendering.

Calendering machines are of large size and of immense weight. The picture above shows one of the largest KVP calendering machines, and gives some idea of their construction and size. This machine stands twenty feet from the floor to the top. After leaving the calenders the paper is wound into a large roll. This roll is then taken to the rewinders where it is slit into standard convenient size rolls.

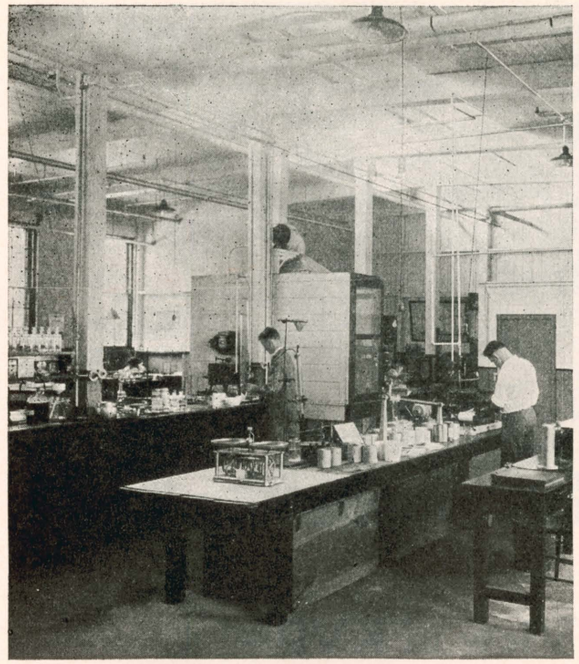
Calendering may be described, in a few words, as a process which does for paper about what ironing does for clothes—it simply smooths and evens up the surface, so that it is better adapted for fine printing.

There are other papers which are finished by coating with clay and then polished—but that is a subject which need not be treated here



THE picture at the top shows a view of the Ruling Division where commercial and school forms of every description are ruled. Also Notebook Fillers, Tablets and special ruled forms in large sheets.

Below is a view of the Bond Finishing Department where the paper is trimmed to size, counted, weighed, wrapped and packed in cartons and cases for shipment.



Determining Results in the Laboratory

KVP

LABORATORY plays an important part in all our paper making. It is here that all tests of materials that go into our paper are made. Inks that are used in printing wrappers for food products are all tested carefully.

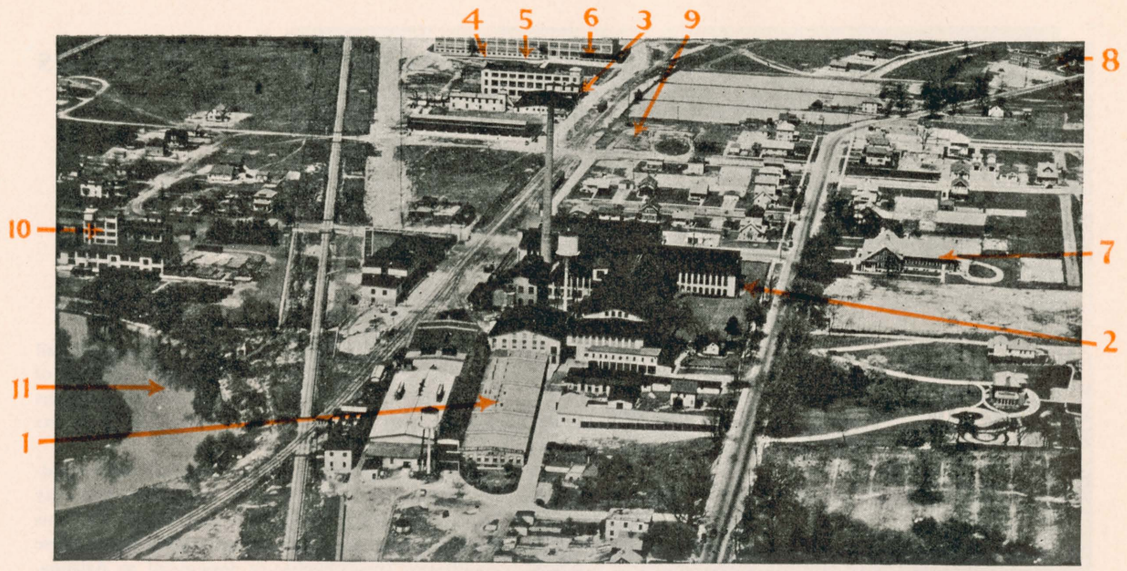
We have a room where the temperature and humidity of the air are at all times ideal, kept this way by automatically controlled appliances for this purpose. Tests can be made accurately under these conditions. In an enclosure designated as Arizona, the air is kept as near as possible like that of Arizona. Panama, Labrador and New York are other enclosures not shown in the picture where the temperature and humidity of these places are duplicated for more accurate testing of Food Protection Papers.

An Example of Moisture Loss that is Startling

THE two beakers shown in the two illustrations herewith were both filled with colored water and placed in cartons—one of which was wrapped and sealed in Carton Sealing Waxed Paper and the other without a waxed wrapper. They were kept in the KVP research laboratories "Arizona" (Hot Dry) climate for eleven days. The pictures show the results at the end of this time. The loss of moisture in this short period is really astonishing and illustrates exactly what happens to any food product which is subjected to the same conditions.

¶ Naturally, under climatic conditions where there is an extreme amount of humidity, there would be likewise an absorption of moisture.

A waxed wrapper protects under all climatic conditions.



Airplane View of KVP—
"The World's Model Paper Mill"

This airplane view shows a portion of the village of Parchment which surrounds the mill.

1—Parchment Manufacturing, Finishing and Printing Departments
2—Paper Mill No. 1.
3—Engraving, Stereotyping and Ink Manufacturing Departments
4—Mill No. 2
5—Waxed Paper Manufacturing, Finishing and Printing
6—Bond and Ruling Departments
7—Community House
8—Public School
9—Site of the New Administration Building
10—Paper Makers' Chemical Plant
11—Kalamazoo River

THE Kalamazoo Vegetable Parchment Company is located at Parchment, just outside of Kalamazoo, a municipal corporation composed largely of employees of the Kalamazoo Vegetable Parchment Company or those who are directly connected with this industry.

The entire interests of this little municipality are centered around this great KVP paper mill, which represents a manufacturing investment of several millions of dollars and a paper making capacity of several hundred tons per day

Printed in U. S. A.

SO HERE THEN ENDETH

THE STORY OF PAPER MAKING

BEING A BROCHURE
PRINTED AND BOUND
BY THE ROYCROFTERS AT
THEIR SHOPS IN EAST
AURORA, N.Y. & THE PAPER
USED THROUGHOUT IS
PROSPERITY OFFSET BOOK
(80 LB. BASIS) AND WAS
MADE BY
THE KALAMAZOO VEGETABLE PARCHMENT
COMPANY
PARCHMENT, MICHIGAN