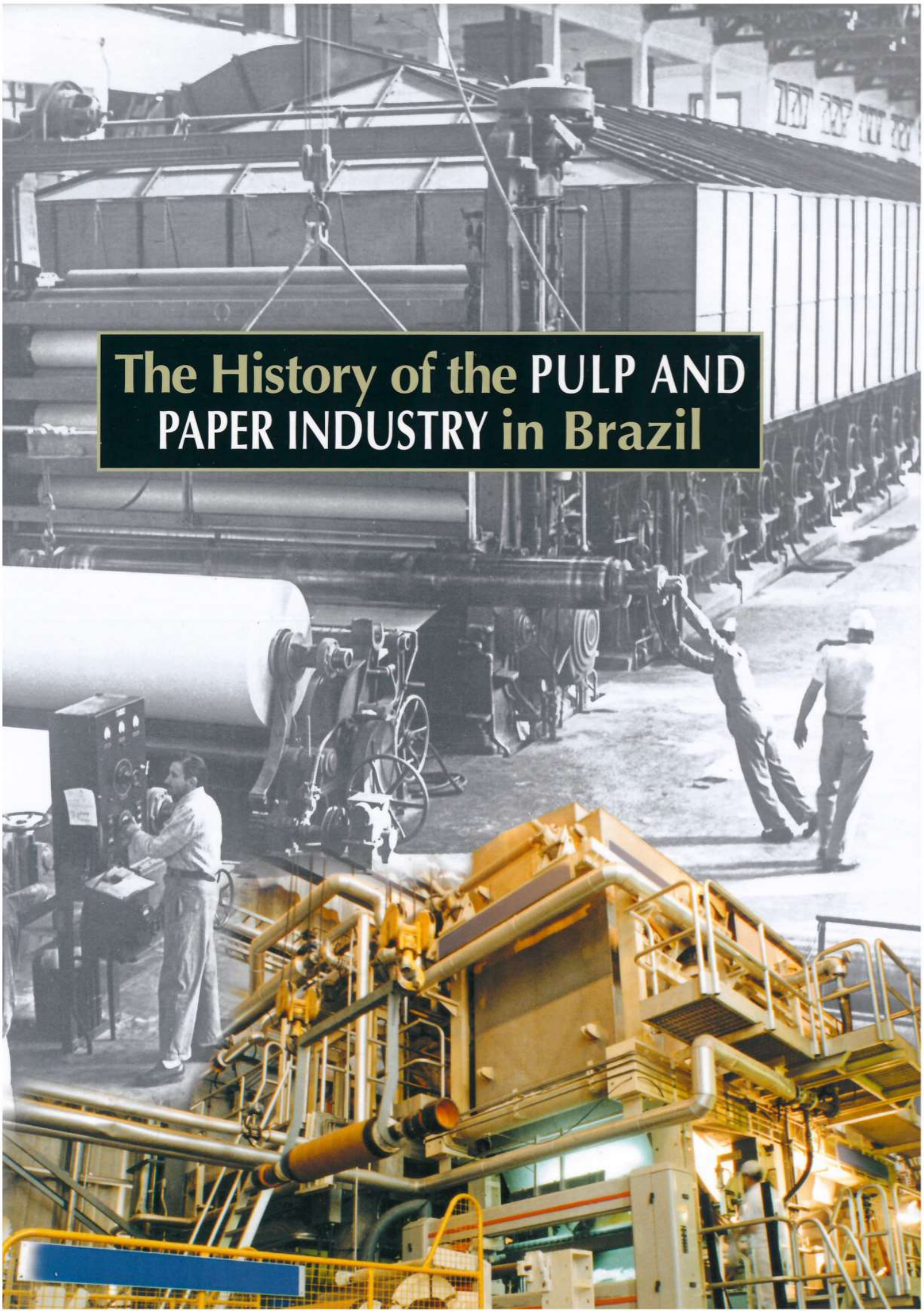
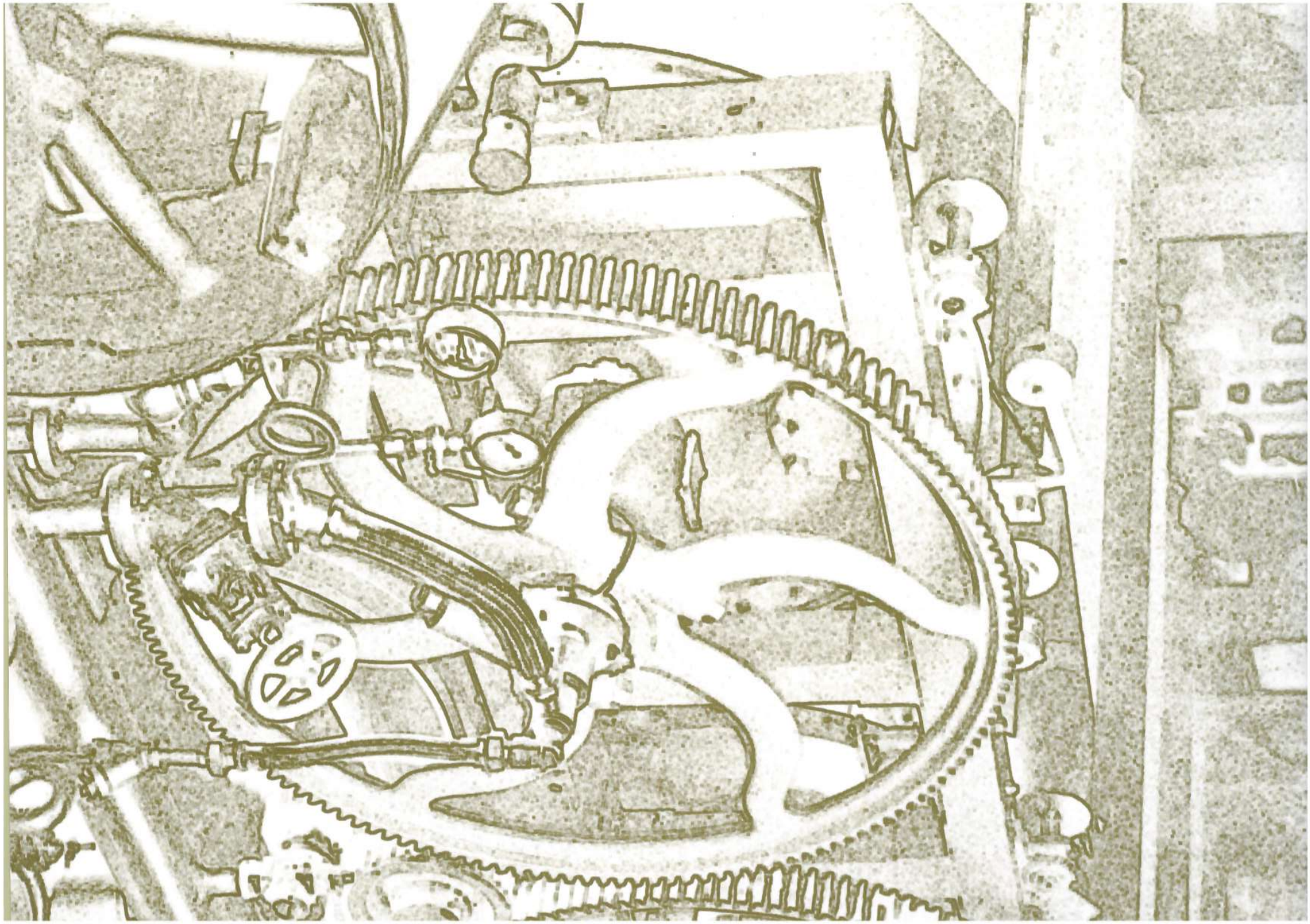
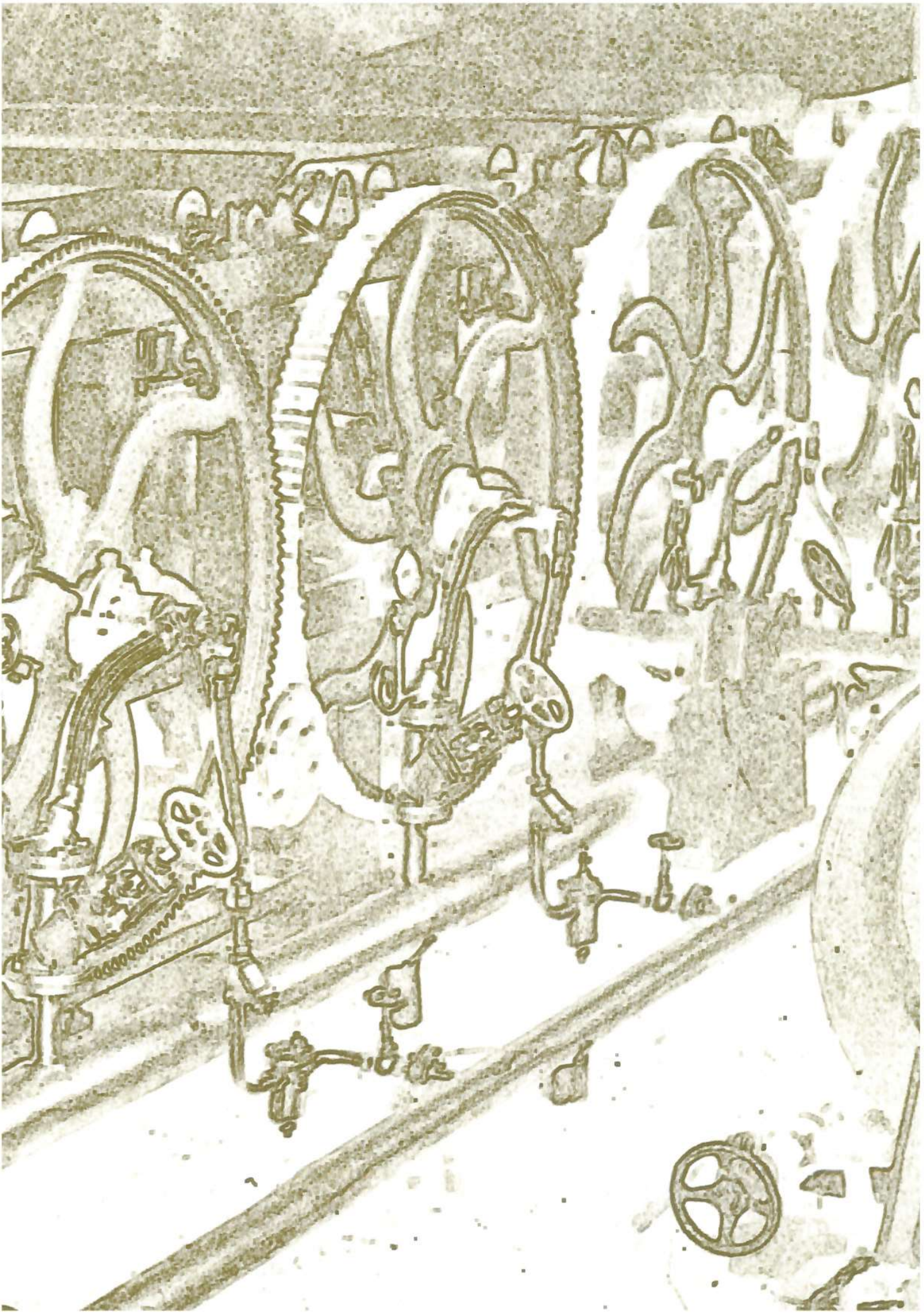


The History of the PULP AND PAPER INDUSTRY in Brazil





THE HISTORY OF THE PULP AND PAPER INDUSTRY IN BRAZIL

ABTCP
Associação Brasileira Técnica de Celulose e Papel

THE HISTORY OF THE PULP AND PAPER INDUSTRY IN BRAZIL

The paper used in the making of this marvelous book tells its own story, coming to life through the hands of the people that make up the pulp and paper sector in Brazil.

Historical facts and photos are indelible marks of the wealth of this sector which has seen tough times throughout the years, but has always known how to overcome them and continue on its mission.

With amazing clearness, this book presents the sequence of events that drove the pulp and paper sector and made it a source of knowledge and development for Brazilian society.

The information documented here evinces the awesome potential of this segment. The method of writing/organizing the material was based in a profound analysis of the documents sent by companies from their historical archives, before the deadline stipulated for this project, without which this book would not have been possible.

Our wish is to support the continuity of this history. We have therefore relied on the collaboration of other companies which have contributed so much to our sector.

Umberto Caldeira Cinque
PRESIDENT, ASSOCIAÇÃO BRASILEIRA TÉCNICA
DE CELULOSE E PAPEL – ABTCP

The careful reader of this wonderful history of our pulp and paper industry will find in these pages many reasons for excitement and a swelling of patriotic feeling, especially if he or she has – as I've had, ever since my childhood – a deep and intimate link with this activity.

The simple narration of the efforts and conquests of successive generations of the families of entrepreneurs, in the continuous struggle for competitiveness and the autonomy of this Brazilian industry, is enough to convince us that we are reading a saga of winners. But the biggest winner in this battle for the affirmation of an entire sector of Brazilian industry has been the Brazilian nation itself.

The publication of this history is particularly timely today, as Brazilian public opinion is reflecting on the challenges of globalization.

This book describes the entire course of an industrial activity that knew how to develop – in a little over 100 years, and thanks to the intelligence and talent of its leaders – all the comparative advantages offered by Brazil's immense tropical land. An industrial activity which – thanks to its faith in scientific research and technology – also knew how to add competitive advantages that not only assured its survival within Brazil, but also resulted in its strong presence at the global level. Today, the global importance of our pulp and paper industry is increasingly evident, as is its spirit of social responsibility. But these victories were not gained just by chance, they were the results of the spirit and courage of the private entrepreneur, supported by the strategic vision of the Brazilian government.

And here we conclude this history, an excellent undertaking on the part of the ABTCP, which, in an easy-to-read and light format, allows us quick access to this saga of an industrial field which is a source of pride for our country.

Horácio Lafer Piva
PRESIDENT, FEDERAÇÃO DAS INDÚSTRIAS
DO ESTADO DE SÃO PAULO – FIESP

ABTCP
Associação Brasileira Técnica de Celulose e Papel
Rua Zequinha de Abreu, 27
01250-050 Pacaembu
São Paulo SP Brazil
Phone: 55 11 3874.2700
Fax: 55 11 3874.2730
www.abtcp.org.br

THE HISTORY OF THE PULP AND PAPER INDUSTRY IN BRAZIL

Project production
Business team - ABTCP
Gastão Estevão Campanaro – General coordinator
Selma Regina Ugolini – Operations coordinator
Celso Foelkel
João Alfredo Leon
Francisco Bosco de Souza
Afonso Moraes de Moura
Maria Luiza Otero D'Almeida

Collaborators
Talita Ramos
Luciana Perecin
Patrícia Féra de Souza Campos

Tempo&Memória
ACT Comunicação Visual Ltda.
Rua Capote Valente, 956 c. 3
05409-002 São Paulo SP Brazil
Phone: 55 11 3062.4561
Fax: 55 11 3082.2847
www.tempoememoria.com.br

THE HISTORY OF THE PULP AND PAPER INDUSTRY IN BRAZIL

Editorial coordination
Dorothy Maia

Research coordination
Clarice C. S. Mendonça

Research
Larissa Rosa Corrêa
Virgínia de Almeida Bessa

Text
Mirian Ibañes

Copy editing and proofreading
Ebe Christina Spadaccini, Rosangela Kirst and Rosemeire Carbonari

Graphic design and art editing
Ana Trevisan Serino

Translation to English
John Norman
Régine Verzbolovskis

English proofreading
Regina Célia Stocklen
Susan Rawlins

Digital pre-press, printing and finishing
Pancrom

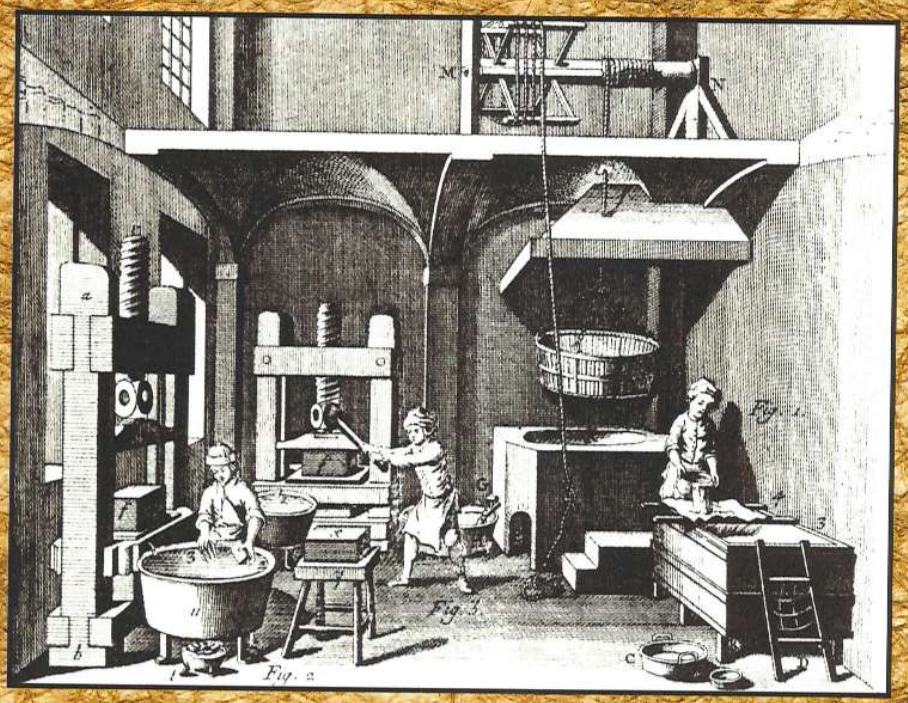


Fig. 1.
Fig. 2.
Fig. 3.

The Search of the Base

THE ADVENT OF PAPER

THOUSANDS OF YEARS PASSED BETWEEN MAN'S FIRST EFFORTS TO REGISTER HIS SENSATIONS UNTIL THE DISCOVERY OF PAPER. WRITING ACCELERATED THE EVOLUTION OF THIS SUPPORT

At the beginning, it was stone. It was also ceramic, wood, bones, and even woven threads, tanned leather, metals and their alloys, such as bronze. The human being has used a myriad of different bases to record and perpetuate his presence on Earth. Thus Man revealed his impressions and sensations on the scenarios and life: he painted figures on cave walls; he drew symbols on tree barks; with mallets and chisels he sculptured characters on pieces of hard stone or on the limestone porous rocks. In the transition from the first expressions of art – the Lascaux and Altamira wall paintings – to the need to communicate with written words, Man experimented with elements capable of absorbing natural paints or molding to the sculpting instruments. Millennia would pass by until arriving at paper, more suitable, since it is light and flexible.

The invention of writing is considered the triggering factor and modifier of the slow but consistent changes and evolutions through which the several bases went until arriving at paper. Writing itself also went through changes to adapt to the necessities of the human being, incorporating elements from several cultures, until reaching the Indo-Arabic alphabet, still used by different peoples today.

The most ancient writing supports known to Man date back to 3000 B.C. and they were neither light, nor flexible at all: they were clay tablets made by the Sumerians, inhabitants of Mesopotamia.

In 2000 B.C. the Minoan civilization used bronze as support. Other peoples, in the same period and with the same objective, started to use plant fibers, particularly those obtained from the maceration of stalks of papyrus, a sort of bush abundant on the margins of the Nile, in Egypt, and also found in Palestine, in Syria, and in the Island of Sicily. The word 'paper' comes from the Latin word papyrus. The papyrus enjoyed a long life, which extended to the 10th century, in Rome.

Other fibers, obtained from similar processes, were also used with the same objective. One of them was the cork. The bark of the tree was soaked in water and beaten until it turned into a sticky paste, consisting of sap and fibers. Then they were transformed into soft and resistant plates free from all moisture. They were called "tapas" and were used in Southeast Asia and in certain regions of the Himalaya. Bamboo, mulberry, hemp, and flax fibers were also transformed into paper, as were the wild fig tree fibers, used by some peoples from pre-Columbian America to produce the *amatl* paper. Friar Toríbio de Benavente, a 16th-century Spanish writer, wrote that the Mayas and the Aztecs made their own paper with

fibers from the wild fig tree, abundant in the region of Mexico and Guatemala where they lived. Paper had been produced among the Mayas since the 2nd century B.C., and later the Aztecs perfected their production method.

Victor Wolfgang von Hagen, one of the most important writers on the matter, stresses the importance of that material in the Aztec culture: *Writers, artists, and priests needed large amounts of paper for ceremonial documents, to record taxes and dues, make notes on trials, for maps and family trees, for historical annals and ritual calendars, for vests in ceremonies and sacrifices (...) forming a significant unit of tradition and symbolism of paper.*

During the conquest of America by the Spaniards, Aztec documents on paper were destroyed, and only fourteen pieces remain from the hundreds of thousands of books produced by that civilization. Hagen also describes the manufacture of *amatl*, based on comments by the *Otomis*, an indigenous people still living in the region.

After cutting 1.5-meter-long pieces of the wild fig tree bark with a cutting instrument, the natives removed the bast, formed by a mass of very complex intertwined fibers, and placed it under water for some time to allow the coagulation of the abundant sap, which could then be easily removed by scraping. After this treatment, the fibers were boiled in water and lime, washed, and stretched out on a flat and smooth surface. After this operation, the fibers were beaten with a stone with parallel grooves, that they called "muito," exactly the same instrument used before by the Aztecs. The paste obtained from this process was dried in the sun and thus the Otomis obtained the precious paper, much like their ancestors.

Still in the 2nd millennium B.C. parchment began to be used

Above, detail of Aztec codex from the year 1400, portraying the life of a local figure. Previous page, detail of papyrus

as the base for writing. The process of transforming the skin of animals, such as sheep and calves, into parchment was developed over the years until reaching a very thin and delicate film called *permagina* by the Romans. This film was more resistant than the traditional parchment and could be used on both sides – front and reverse. Furthermore, it could be reused, after a simple scraping of what had been recorded on the surface.

THE UNION OF ELEMENTS

In China, in the Han Dynasty – which remained in power from 206 B.C. to 220 A.D. – different bases made of bamboos, silk, and certain leaves were used to write or paint. The first formula for the production of an incipient kind of paper is credited to Ts'ai Lun, the Imperial Workshops director. In 105, the Chinese director wrote a complete report on the process by which he mixed rests of fabrics – clothes, canvas, ship sails, and even fragments of cordages and fishing lines – and plant fibers. Lun added some new elements, easy to find and very cheap, to those already known and could expand the production scale. Prior to these alterations, fibers were extracted from plants and few other elements were added, besides water. Lun added lime clay to facilitate the interweaving of the fibers, thus increasing the quality of the material produced as well.

The Chinese skillfully negotiated this invention, which they traded frequently owing to the high demand. In order to assure the control over the product, they tried to keep the formula a secret, however, dominated by the Arabs in 751, they supplied them with key information on their discovery.

Paper production in the Orient

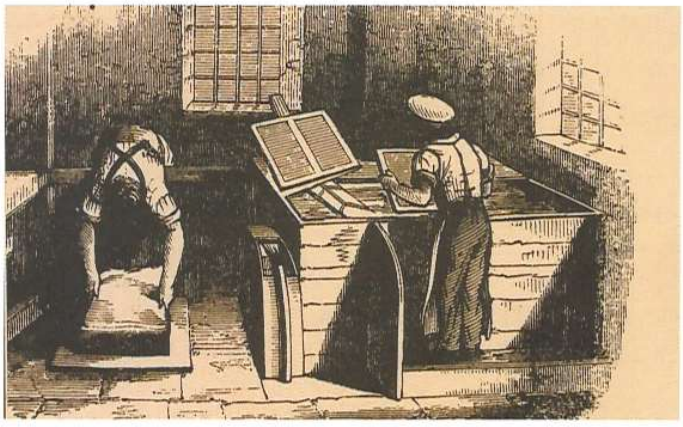
Early 18th-century print showing the interior of a papermaking establishment

As of 793, paper started to be manufactured in Baghdad, with the introduction of other elements, such as starch – a wheat flour byproduct – to glue the fibers. The Arabs monopolized the manufacture during almost five centuries, with several production locations – in Damascus, Tripoli, Yemen, Egypt, and Morocco. Paper was produced in mills where the fiber and rags paste was submitted to "hammering" moved by hydraulic energy; to stick the paper leaves together, they used animal glue. As they added new territories to their conquests in Europe, the Arabs disseminated the paper formula in other countries. In Spain, they established a production unit in Xativa, near Valencia, in 1100. In Italy, in 1250, the city of Fabriano became the main site for paper manufacturing in Europe. There, the first runs exhibiting a mark were produced. This sign was called "watermark" and consisted of a technique that permitted an indelible registration of a symbol on the paper. It was an important improvement, as it allowed the visualization of the manufacturer's signature, ensuring the authenticity of the documents made with that product. Europeans, in general, used hemp and linen rags as raw material. Another innovation in the way paper was being produced occurred when, in the late 16th century, the Dutch developed a machine to undo the rags, moved by eolian energy. It was called "Hollander Beater." The beater worked with cylinder refiners instead of hammer mills moved by hydraulic energy. Later on, wire frames took over the old molds made with rods that gave shape to the paper sheets. Even at this point, production could not yet be considered at industrial level.

THE FORERUNNERS OF PAPER IN BRAZIL

A START WITH A GOOD OMEN

The letter written to the King of Portugal, Dom Manuel, by Pero Vaz de Caminha – the first document of the history of Brazil – was done on paper manually made with rags and was written with ferrogalic ink. Caminha's letter was dated April 1500, and reported the arrival of Pedro Álvares Cabral's fleet to the unknown lands.



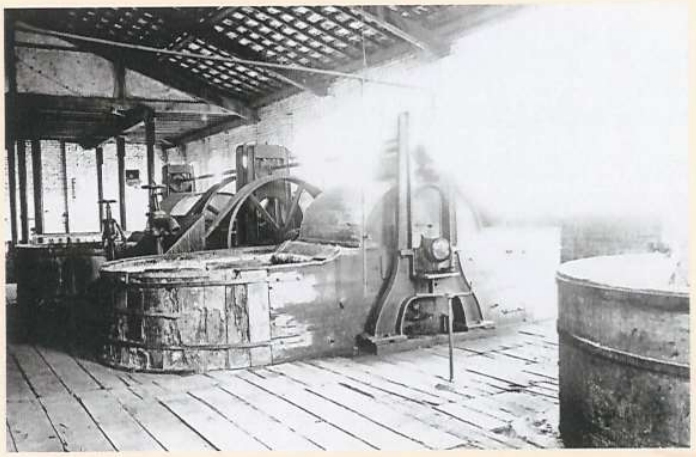
Artisanal production of paper in the mid-18th century

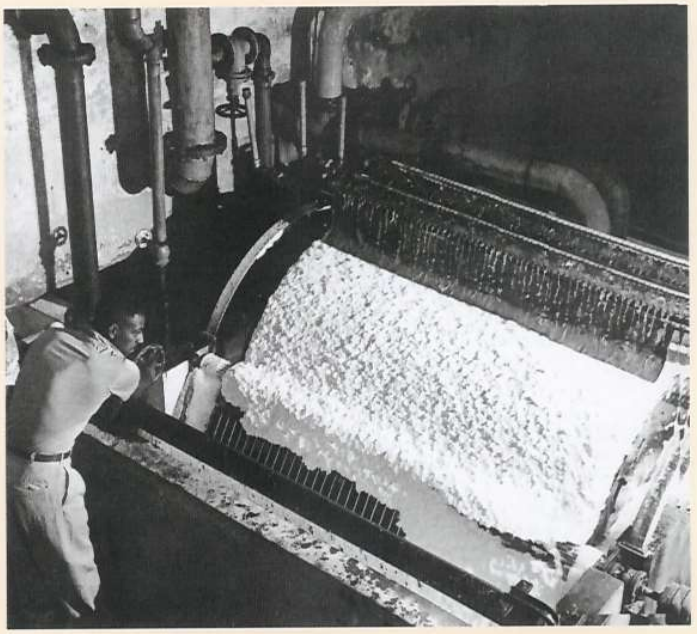
THE RAW MATERIAL

Cellulose is the base substance to manufacture paper. It is a carbohydrate found in the cell wall of plants. Trees have cellulose in their fibers and so do cotton rags. The technique to produce paper from rags of natural fabrics survived the passage of time and is still used in mills from the Middle Ages in Europe for the production of handicraft paper for artists. One of these mills, belonging to Richard-de-Bas, in Ambert, France, is considered a museum and therefore relies on State funding.

Whatever the paper produced, the basic raw material has been cellulose fibers, virgin or from recycled paper, which can be divided into two groups: the long fibers obtained from species such as pines and the araucaria for wrapping papers; and the short fibers derived from eucalyptus, acacia, coombteak, betula, etc. used in the manufacture of printing, writing papers and papers for sanitary purposes.

Although there are no precise indications as to how Brazilian production was at the beginning, it is possible that the experiences were based on the process of papermaking using the "Hollander" beater, the conceptual principles of which are still in use today. An oval container was divided in the middle, lengthwise. On one of the sides there was a cylinder with metal blades on the exterior surface, parallel to their own axis. Under this cylinder, there was a metal plate with blades. In between both plates and under pressure, the basic pulp stock disintegrated rags into fibers. These fibers were used later to manufacture paper.





Above (top photo), a "Hollander" machine used for refining pulp, at Companhia Papel de Salto, 1889. Bottom photo, production of pulp in mill of the Klabin Group, Tibagi, PR, 1950s

It is a milestone and also a good omen, as the scribe, upon describing the scenery, was prodigious in commenting that this land *if one cares to profit by it, everything will grow in it.*

The inhabitant of those lands – initially called by the Europeans the Island of Santa Cruz or Land of Vera Cruz – did not know how to produce paper, as opposed to other peoples in America, such as the Mayas and the Aztecs. They did not know the writing with which they had contact initially in the language of the conquerors, through Jesuit missionaries, who pledged to convert the "infidels" to the catholic faith. This mission – although not always successful – would be put into practice with the elaboration of catechisms, written in Portuguese, with variants in several local languages, organized by the Europeans, who in this way intended to be successful in their endeavor of "soul saving," using the ideas contained in the Bible. With this objective, the Jesuit priests studied diligently the language of the natives and, in 1595, José de Anchieta created a grammar, very popular among his colleagues of the Company of Jesus for the catechesis, in *Nheengatu* or *Brasilica* language – regulated by the Portuguese grammar, with the inclusion of Spanish and Portuguese words. The work was reinforced in 1618 with the publication of the Catechism in *Brasilica* language, in which the key prayers of Catholicism, such as *Our Father, Hail Mary*, and the *Apostle's Creed*, were translated.

The written language communication vehicles and the teaching of the colonizers were, therefore, based on paper imported from Europe, used for drawing maps that indicated the colonial domains and respective distributions made during the first stages of colonization. Several chroniclers – including

The famous "Letter from Pero Vaz de Caminha," written on rag paper, 1500

Cover of the book *Art of the Grammar of the Most-Used Language on Brazil's Coast*, by José de Anchieta, 1595

Cover of the book *History of the Province of Santa Cruz Which We Vulgarly Call Brazil*, by Pero de Magalhães Gandavo, 1576

Cover of the book *Voyage to Brazil told by Hans Staden*, 1557. On following page, playing cards used in the colonial period

Gandavo, Brandônio, and Antonil – used this base to record, in handwriting, their observations and impressions on the New World. However, the availability of paper was lower than the demand, and the cost, high.

OVERZEALOUS

The options for reading were restricted to school textbooks or religious books, novels of chivalry, and legal compendiums. The Portuguese Crown, in the overseas Metropolis, forbade not only the establishment of typographies, but also vetoed the circulation of news publications, fearing that they would bring in propaganda encouraging rebellion and independence. As with all overzealousness, this also generated counter movements expressed by means of clandestine papers very often in sarcastic language, namely the lampoons that circulated during rebellion movements such as the one that took place in the state of Bahia in 1798.

The colonial period was rather limited as far as book culture is concerned, except for short periods in which other colonizers settled in the lands of the Portuguese colony, thus threatening the supremacy of the metropolis. Upon dominating Pernambuco in the 17th century, for example, the Dutch, under the leadership of John Maurice of Nassau, inaugurated a typography shop to record their trading activities. They were successful only for a short time, as the Portuguese soon expelled them.

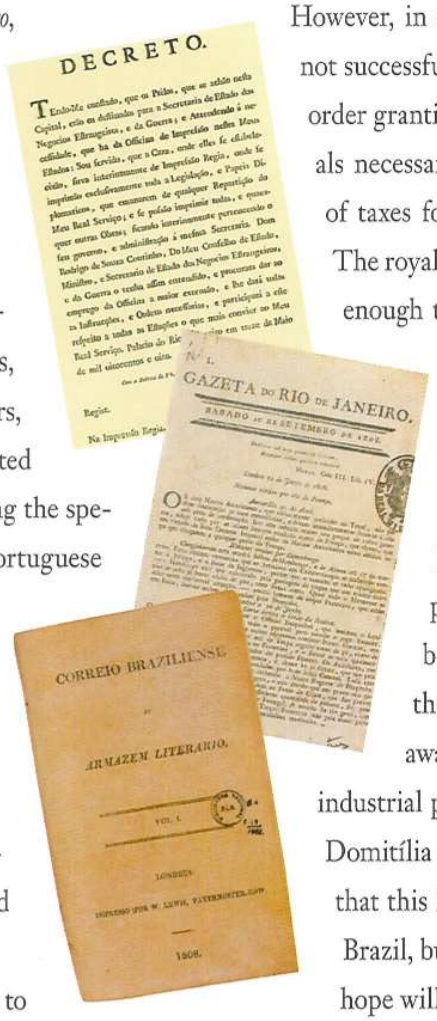
The then province of Recife, where the Nassau group had settled, was destined to be a landmark in the history of the Brazilian press. It was there that, in the early 18th century, trader Francisco de Castro Moraes set up his typography shop, disobeying the Portuguese royal prohibition, with the intention of printing virtuous prayers and bills of exchange. In spite of his noble objective, the undertaking was closed in 1706. Portuguese printer Antônio Isidoro da Fonseca experienced a similar fate in 1746, in Rio de Janeiro: in addition to losing his business, he was deported to his home country. There was only an exception though, during this period, and it cannot be considered cultural or educational whatsoever. As a royal monopoly, the permission to print playing cards was granted to manufacturers from the state of Bahia in 1770.

Paper was a luxury object, imported and accessible only to those using it as a handicraft for the production of handmade documents. It was not by accident that the paper industry had a late development in this region when compared to other countries in America. Mexico, the trailblazer, established its first mill in 1580, followed by the United States in 1690. In Brazil, incipient initiatives took place in 1808, when the Portuguese royal family – the queen, Dona Maria, and her son, prince regent Dom João VI – and the whole Portuguese court settled here. They were fleeing from the troops of Napoleon, the French Emperor, who had declared war on Portugal and had invaded the country. The arrival of the royal family demanded advances in several

areas, what led to the creation of institutions such as the Casa da Moeda – Mint – and Banco do Brasil – Bank of Brazil – as well as other initiatives of cultural nature, such as the creation of the Royal Library and the Royal Academy of Fine Arts. Institutions such as those generated an increased demand for typographies, including the printing and dissemination of official royal documents and of the first newspapers, no longer forbidden. Still in 1808, the Imprensa Régia – Royal Press – was founded and the *Gazeta do Rio de Janeiro*, printed here, and the *Correio Braziliense*, printed in London, started to circulate.

The local population of the city of Rio de Janeiro, upon becoming the seat of the monarchy, started to grow rapidly. Servants and specialized craftsmen, who had good experience in serving the demanding courtesans, arrived: shoemakers, apothecaries, carpenters, watchmakers, and tavern keepers acculturated with the latest European fashion trends. Among the specialized officers that joined the court was Portuguese Francisco Joaquim Moreira de Sá who, in 1798, had started the construction of a paper mill in Cascalheira near the Vizela River in Portugal. Moreira de Sá guaranteed that he was the pioneer in wood pulp papermaking, but the "blabbed" experience did not bear positive effects in his homeland, neither did it yield any results in the colony.

The first individual to request permission to inaugurate a paper mill in Brazil was Friar José Maurício da Conceição Velloso, in a manuscript document sent to Count of Linhares, minister of the Kingdom. Velloso informed that he had experimented using *embira* – a bush from which a resistant fiber is extracted – as a raw material for the extraction of cellulose pulp. Together with the document, he sent a sample of the unbleached paper, "as a first experience." He also suggested a research with other plants for the same purpose.



However, in spite of the incentives, Friar Velloso was not successful, as in 1809, Dom João VI issued a court order granting customs exemptions to the raw materials necessary to the "national mills" and exemption of taxes for exportation of Brazilian manufactures. The royal wishes and those of Friar Velloso were not enough to overcome imports and the competition posed by British products.

Brazil still experienced a deficit in papermaking, even after the royal family returned to Europe, leaving behind Prince Dom Pedro de Alcântara, who proclaimed the Independence in 1822 and became the first Emperor of Brazil, under the title of Dom Pedro I. As a ruler, he was aware of the difficulties of not having a basic industrial product, as shown in a complaint to Dona Domitília de Castro, in 1826: "I had so much wanted that this letter be written to you on paper made in Brazil, but for the time being there is none, which I hope will not be the case shortly."

With the transfer of the Portuguese court to Brazil, the city of Rio de Janeiro became the political and social hub of the Portuguese kingdom. Print by Rugendas, 19th century. Facing page, decree of the creation of the Imprensa Régia [Royal Press] on May 13, 1808, *Gazeta do Rio de Janeiro* and *Correio Braziliense*, newspapers published in Brazil in the first half of the 19th century

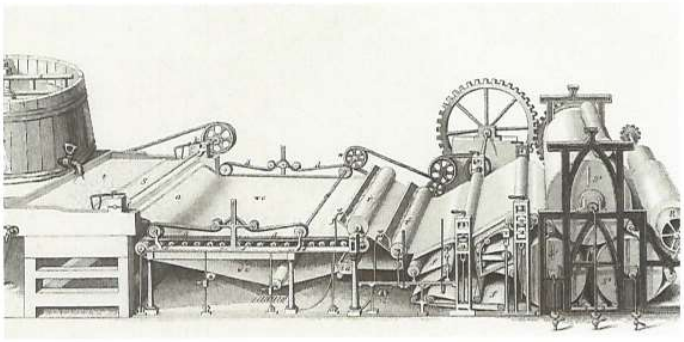
VICISSITUDES OF THE PIONEERS

There are historical indications that some of the pioneers tried to take advantage of the presence and the needs of the royal family in Brazil to set up paper mills in the country. This would be the case of Portuguese entrepreneurs such as Henrique Nunes Cardoso and Joaquim José da Silva, who are barely mentioned in history books, with no further details; the same goes for André Gaillard, who in 1837, opened a paper mill in Rio de Janeiro with machines imported from France. In 1841, sculptor Zeferino Ferrez, a member of the French Artistic Mission of 1816, inaugurated another mill in the parish of Engenho Velho – current Muda da Tijuca – in Rio de Janeiro.

The records mention that the paper produced both by Gaillard and Ferrez was of poor quality, used only for wrapping and packaging. The two foreigners, who planned to install machines for paper rolls of better quality, asked the Government – and were granted! – funds from lotteries, as stated in Decree 302, dated September 1843. The attempts did not go any further though, due to a lack of specialized labor.

Another experience for the establishment of one of the mills that became part of the history of paper in Brazil took place in 1843 in Bahia at the Engenho da Conceição. The raw material used for the extraction of cellulose pulp was the banana tree stalks. In spite of being properly set up, the small factory was unable to compete with the cost of imported paper, which made the competition even stronger.

In 1851, Guilherme Schuch, a Brazilian engineer who had graduated from the Vienna School of Polytechnics, joined



19th-century papermaking machine

with Azevedo Coutinho to set up a paper mill in Orianda, in the outskirts of Petrópolis, RJ. There is information that for twenty long years the endeavor produced paper from rags. Later on, because of the increase on the price of that material, they used plant fibers to produce cellulose. From 1852 to 1856, the mill would have supplied the National Treasure with official stamped paper and paper to print the newspapers *Correio da Tarde* and *Diário do Rio de Janeiro*, both from Rio de Janeiro, and *Correio Mercantil*, from Porto Alegre, RS. Schuch counted on the friendship of Emperor Dom Pedro II, who granted him not only the title of Baron of Capanema, but also the necessary help to keep the endeavor going. Despite all that, Schuch was unable to avoid bankruptcy in 1874.

In spite of the isolated attempts, the paper industry took a long time to get well established in Brazil and the country was at the mercy of imports until the late 19th century. It was only then that the first Brazilian paper mills started to meet the country's demand.

CARING FOR QUALITY

In the mid-15th century, a technological innovation expanded the demand for paper in Europe. German Johannes Gensfleish Gutenberg created a process of printing with moveable type, rendering it possible for several copies of a writing to be made from a single matrix. However, the increase in printed material production was difficult, because of the lack of raw material, in this case, rags. In addition to that, the increase in demand led to the rise in paper price.

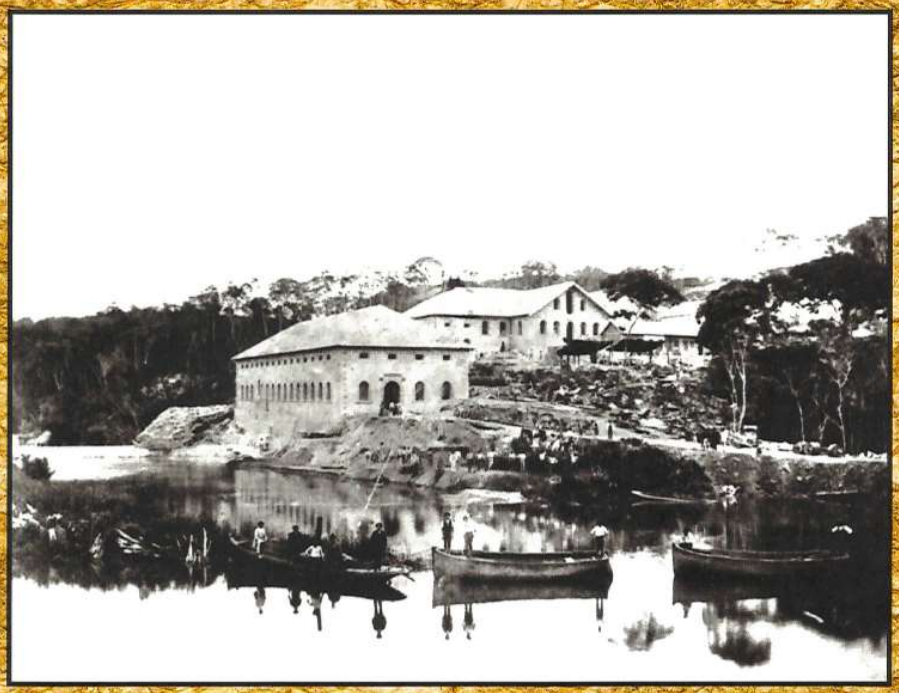
Given these circumstances, research on new raw materials was started. Frenchman René Antoine F. Réamur suggested the use of wood in 1719. Between 1727 and 1730, German Bruckman printed *Marginalia Dei in Locis Subterraneis* on paper made from wood pulp. In the mid-18th century, naturalist Jakob C. Schaffer advocated the use of a mixture of fibers in the production of paper: moss, urticas, seed hair of certain trees, sawdust, fir wood, straw, agricultural residues, and leaves.

The improvement in the processes and the introduction of new raw materials contributed to the expansion of the papermaking capacity, boosted by the Industrial Revolution. It was at that time that the mills and handicraft centers gave way to the factories. A milestone in this evolution was the invention of papermaking machines, in 1798, in Hertford, England, by Frenchman Louis-Nicolas Robert, who transferred intellectual property to the Fourdrinier brothers, Henry and Sealy. In 1809, the first continuous cylindrical machine entered into operation thanks to the tireless work of John Dickinson. The original machine was further developed in 1821 by the Fourdrinier brothers, who added to the process the pressing and drying of the paper, adding steam-heated cylinders – prior to that done separately.

In 1844, Saxon Friedrich G. Keller produced, for the first time, a wood pulp by the process of mechanical defibration, but still using 40% of rags in the paper stock composition. In 1847, a machine to transform wood into fiber was patented and started to be manufactured by Decker & Co., in 1852. The mechanical process for obtaining cellulose, however, presented disadvantages, in spite of allowing the utilization of raw material for papermaking in large quantities and for other purposes. The cellulose pulp produced through this process was neither very resistant, nor too long-lasting, which led to the need for developing techniques for the "purification" of the wood fibers through chemical agents that would solve the problems and reduce costs in relation to those incurred by the production of paper made from rags.

The first attempt to treat wood with chemical agents was done in 1851, in England, following the initiative of Hugh Burgess and Charles Watt, who later immigrated to the United States and patented the process in 1854. The process consisted of producing cellulose pulp by boiling the wood in caustic soda at high temperatures. The process ended up being known as "the soda process."

Later in the mid-19th century, another chemical process was developed, this time by Benjamin C. Tilghman, in 1857. The new process, known as sulfite process, used a solution of sulfurous acid to isolate the cellulose fibers from the wood. The paper resulting from this process was resistant and had a very homogenous texture. In 1884, chemist Carl F. Dahl developed the sulfate process, in which the caustic soda is complemented by sodium sulfate added in the recovery process. This chemical process was less damaging to the fibers than the others, and it is for that very reason that it is also called Kraft process – *Kraft* means 'strength' in German. Less polluting and more economical, it is still the chemical process most currently used.



The First Industries

TIMES OF PROGRESS

BRAZIL'S FIRST PAPER MILLS AROSE IN 1886. BUT THE OBTAINMENT OF RAW MATERIALS WAS ONE OF THE BIG PROBLEMS FACING THE PIONEERING INDUSTRY

The late 19th century was marked by profound changes in the Brazilian society, particularly from 1850 onwards, when the monarchy under the command of Emperor Dom Pedro II went through consolidation, apogee, and decline. Among the important events that marked these transformations is the change of the political regime itself, with the proclamation of the Republic in 1889. The Province of São Paulo was already showing signs of leadership in the Brazilian economy which would be further reinforced by the arrival of immigrants seeking new places to live, driven by the most diverse and different reasons. The majority came from Europe to primarily meet the demands of the implementation of the coffee culture; the enormous development of which would end up boosting the industry.

Elevated to stardom of the Brazilian economy setting, coffee became the most important exportation product, overthrowing sugar, which up until then had ranked number one. The first plantations emerged in the state of São Paulo, in the Paraíba River valley, and later on in the west. The coffee culture was a factor of progress in many ways: in addition to boosting the advent of the indus-

try and encouraging the expansion of the cities, it consequently created a large demand for transportation and communications network. The need to carry the products from the plantations to the port of Santos on the São Paulo State coastline, for example, led to the construction of the railways of the União Sorocabana and Ituana, Mogiana and Paulista companies. At the same time, the government continued to encourage immigration to supply the demand for labor.

The coffee rendered the landowners wealthy, many of them descendents from the colonizers. They became known as "coffee barons" and marked their presence in the rural scene, what can still be appreciated in *fazendas* – ranches – established in the early 20th century, with houses and facilities that attest to the power of their owners. Usually, in addition to the *fazendas*, the coffee barons also had a house in town, in which case their favorite address was Avenida Paulista in São Paulo, (inaugurated in December 1891.) Thus, coffee also ended up interfering in the urban space and the city slowly became a hub of factories with investments from ranchers and other entrepreneurs connected with the industry, who sought to diversify their endeavors.

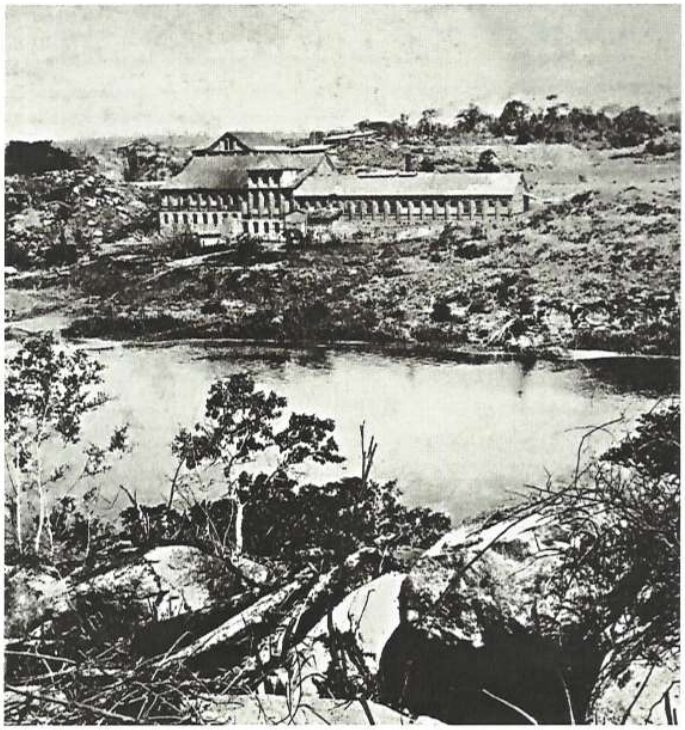
In the mid-19th century, the factory units in São Paulo, as well as in Rio de Janeiro and Minas Gerais, were small and presented a poor variety.

The production concentrated on foods and textiles. However, in the 1870s and '80s, the number of factories increased tremendously and immigration expanded exponentially. In 1885 São Paulo recorded 6,500 immigrants, a figure that in only three years increased to 91,826. With the proclamation of the Republic in 1889, a series of social and economic changes – the institution of the civil marriage, the nonreligious instruction, and the reformed bank system – demanded the creation of a new Civil Code. These changes called for additional paper for documents, sales notes, handwriting, memoranda, etc.

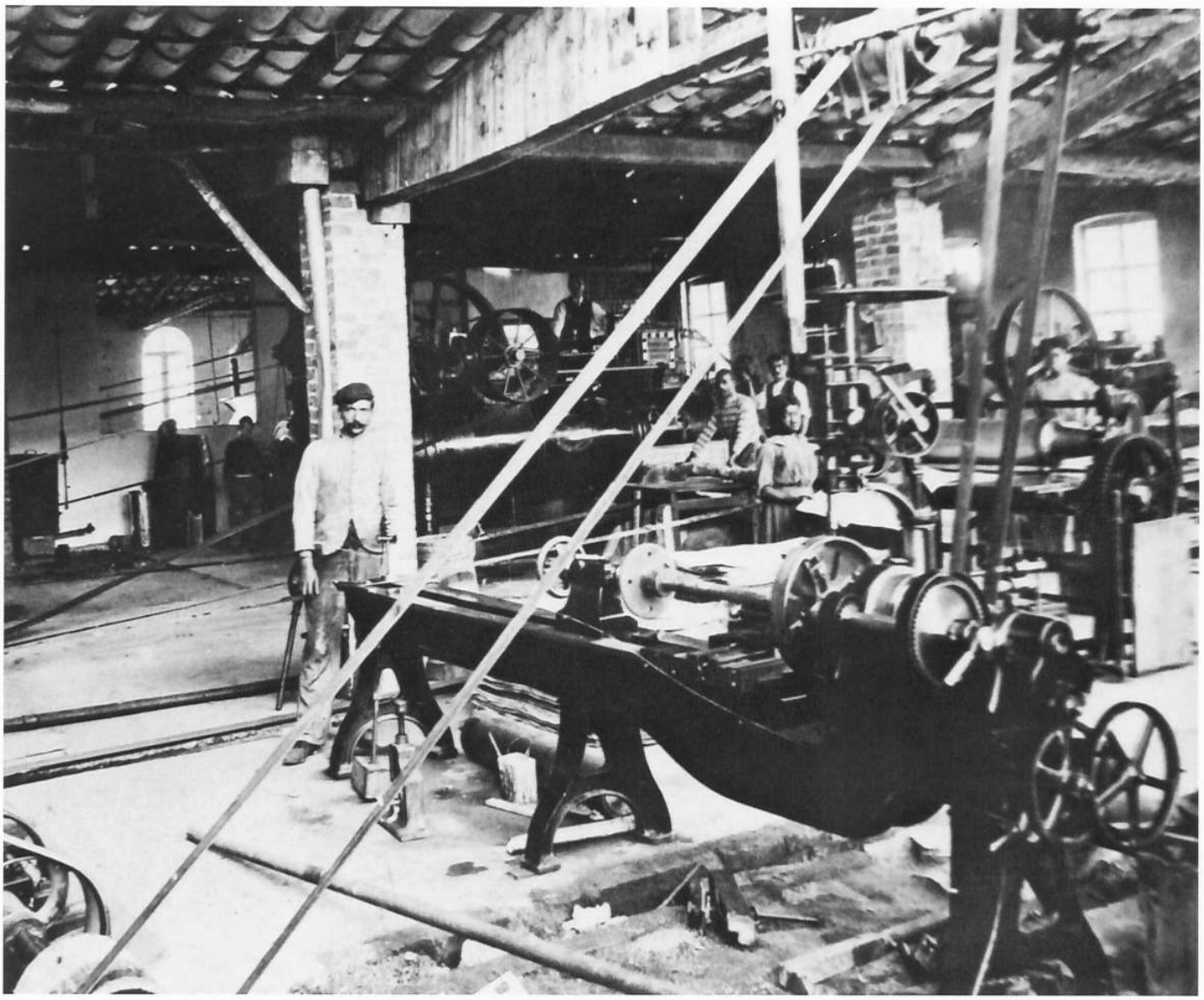
THE FIRST MANUFACTURERS

The first paper mills established in Brazil featured the necessary framework to keep operating for many years. They emerged thanks to the subvention established by Dom Pedro II, in 1886. It was a cash prize granted to two selected proposals. The one which received the highest amount – fifty *contos de réis* – was that of Colonel Antonio Proost Rodovalho, which set off the future Companhia Melhoramentos de São Paulo. Founded in 1887, it started to operate three years later in Caieiras, SP, in an area that Rodovalho intended to urbanize, with streets, sewage system, and a settlement for a workers' village.

Other pioneering initiatives of this period included, in 1873, a project by Baron of Piracicaba, to build a textile on the banks of the Piracicaba River, in the Vila de Salto, Itu, SP. However, the idea did not leave the drawing board. Later on the area was sold to a British company, which, in turn, sold it to the company Melchert & Cia. – owned by Antônio Melchert, Carlos Melchert, and Manoel Lopes de Oliveira. In 1889, the company inaugurated the Companhia Papel de Salto. Papermaking process was based on the use of rags as raw material in the preproduction stage; therefore, they made it a point to advertise in the newspapers that they would buy old linen clothes and other refuses of clothing. However, the measure did not meet all the demands of the factory. When Companhia Papel de Salto started to operate, part of this raw material had to be imported and the rest was obtained from local textile industries in the area.

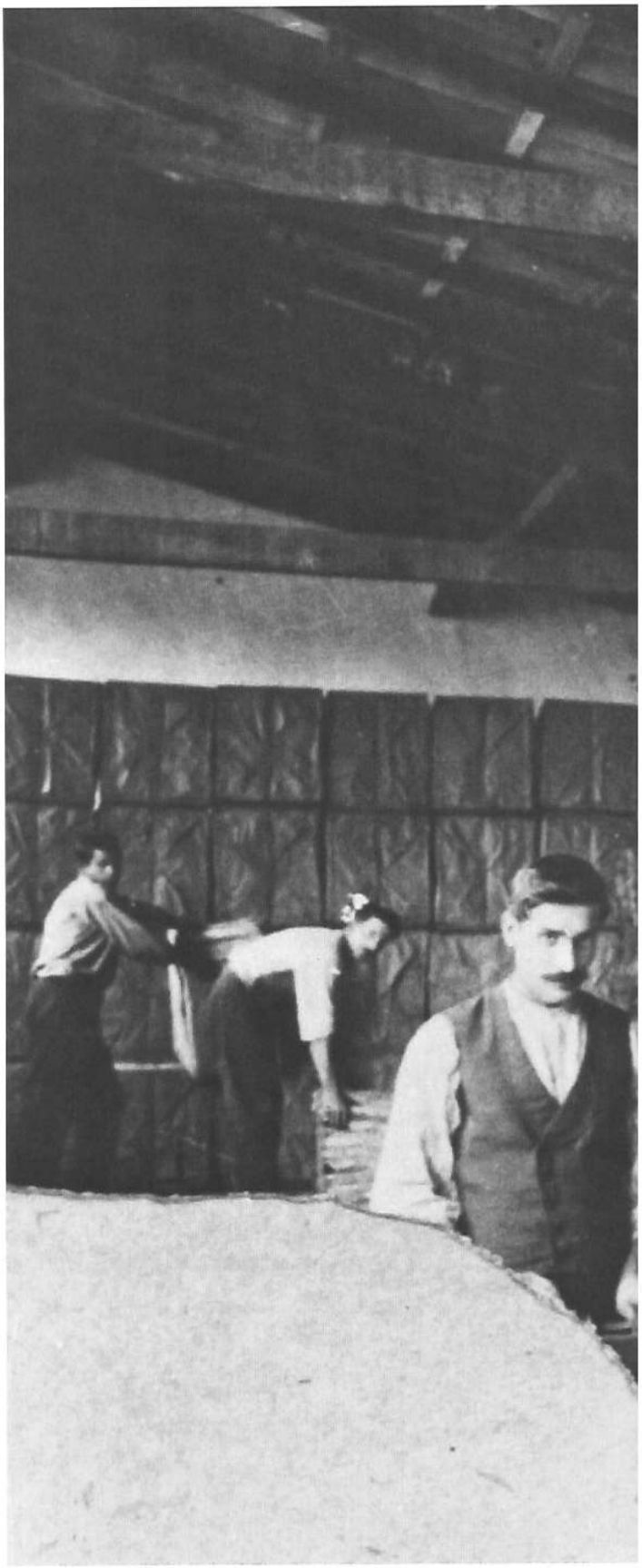


Cia. Papel de Salto, SP, 1889. On previous page, workers in mill of Cia. Melhoramentos, Caieiras, SP, 1900



View inside mill of Indústria de Papel e Papelão Sturlini Matarazzo & Cia., Osasco, SP, 1908

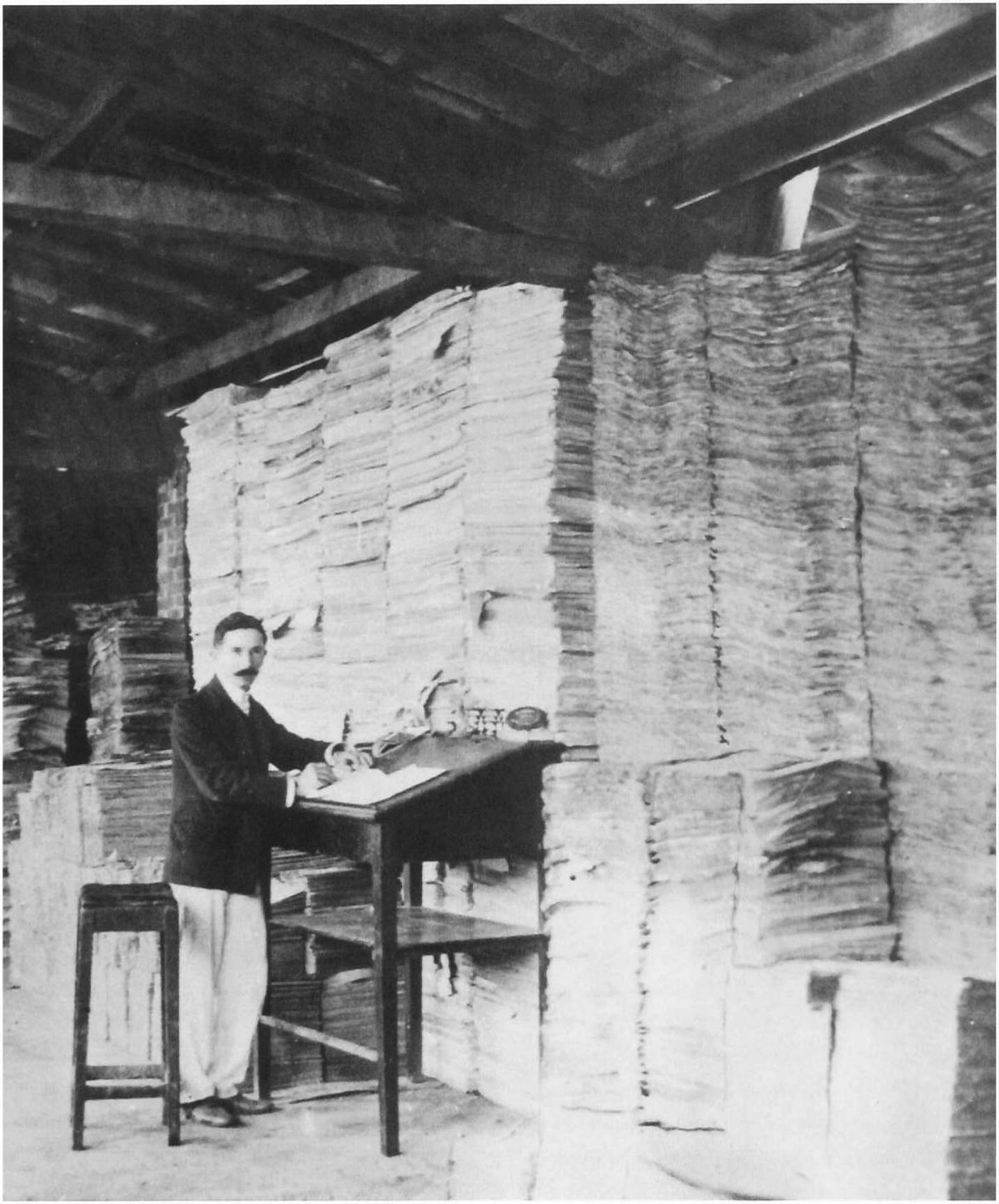
Indústria de Papel e Papelão Sturlini Matarazzo & Cia. was a pioneer in the production of cardboard for packaging, Osasco, SP, 1908



In 1889 the owners of the company started the construction of an adjoining sawmill, as they realized that they would have to focus on wood as a raw material. Their objective was to produce wrapping and printing paper and clients soon turned up. One of the first clients was Oficina Imprensa Ituana, which started to publish books and newspapers with paper manufactured by Melchert. At the end of the century, two new items were added to the initial options: confetti and paper serpentine. Albeit being seasonal products, they were quite important at the time, as the carnival merrymaking on the streets was very popular.

Other initiatives came to life in the turn of the century. Some of them deserve only a brief mention, such as the one in the book *As Regiões Amazônicas*, by Baron of Marajó, about a plant in Belém, PA, which opened in 1884. There are other references about an initiative, in 1898, in Marituba, PA. Italian Narciso Sturlini built Indústria de Papel e Papelão Sturlini Matarazzo & Cia. in 1902 in the municipality of Osasco, SP. In the early 20th century, Fábrica de Papel Araújo started operations in the Tijuca neighborhood in Rio de Janeiro.

In 1906, the Klabin family leased, from the Melchert, the Companhia Papel de Salto in Itu, thus starting activities in the paper business. In 1909, Klabin Irmãos & Companhia started the construction of their first mill, the Companhia Fabricadora de Papel in the Santana neighborhood in São Paulo; production started in 1914.



AN ASSOCIATION OF TOP ENTREPRENEURS

In the beginning, raw material acquisition was one of the major problems faced by the pioneering industrialists. The rags used to obtain cellulose pulp, as well as the pulp itself, came from abroad for the most part. There were very few manufacturers who used cellulose pulp from native plants. One of those mills was installed in 1917, in Morretes, PR, using the fibers of *lírio-bravo*, an abundant plant in the area.

One of the trees most currently used to obtain cellulose pulp – eucalyptus – originates from Australia, and it was introduced in Brazil between 1855 and 1870 in a small scale on an experimental basis. In 1923, Companhia Paulista de Estradas de Ferro had eucalyptus plantations with around nine million trees, distributed along 8.5 thousand hectares divided into eight forest farms. This production, however, was intended for the construction of the railway sleepers and to serve as fuel for the steam engines of the locomotives that pulled the trains. Nonetheless, it is known that in the very first decades of the 20th century, eucalyptus wood started to be tested and used for obtaining pulp and paper in its homeland.

One of the first countries to produce eucalyptus chemical pulps was Portugal, in 1923, an initiative of the Caima company located in Albergaria-Nova. However, this product would only become strong on the market many decades later, in the late 1950s. The fact that this raw material was doubly interesting came to light: from the technical point of view, due to its easy delignification and bleaching and for the end product quality; and from the economic point of view, due to the high productivity and for allowing the production of several types of paper at a lower cost.

Gordinho Braune & Cia. paper mill, Jundiaí, SP, 1925

In the early 20th century, however, papermakers faced a serious problem: the high demand for long-fibered soft wood, like the araucaria, was only concentrated in the south of Brazil at the time. In 1923, Companhia Melhoramentos made its first experiment with araucaria wood in São Paulo. In 1927, Gordinho Braune & Cia. started to produce bleached pulp through a sulfite process from pinus and eucalyptus.

The paper industry in Brazil – perhaps because of the late emergence in relation to the other world producing centers – from the very start had mills able to reach higher production levels. The segment evolved so fast, that the 1907 Brazilian Industrial Census recorded 17 paper and cardboard producing establishments: two in the state of Bahia; five in the Federal District – at the time, the city of Rio de Janeiro –; one in the state of Paraná; two in the state of Rio Grande do Sul; three in the state of Rio de Janeiro; and four in the state of São Paulo.

BRAZILIAN TECHNOLOGY

Originally from Australia and introduced in Brazil in the mid-19th century, eucalyptus gradually gained ground as an alternative for the production of raw material for several sectors of the economy. Its utilization in the paper-making industry dates from the early 20th century, however, the massive industrial production of eucalyptus pulp with its short fibers started only in 1957 and 1958. The "father" of eucalyptus in Brazil was forester Edmundo Navarro de Andrade, who introduced a collection of 150 different species in the country. Eucalyptus proved feasible for the production of cellulose and featured a higher productivity than the Brazilian pine tree. Navarro traveled to the U.S. to test the potentialities of eucalyptus in the renowned Laboratory of Forest Products of Madison, Wisconsin. There he was able to confirm his expectations, against the general belief that short-fiber paper would not resist the pressure of the rolls in the newspaper printing machines. The proof of this conclusion was published in the *Wisconsin State Journal*, dated December 30, 1925, which made the headline: "Our newspaper used to experiment a new newsprint paper."

Navarro's efforts were not sufficient, though, to encourage investors to get involved in large-size projects at the time. There were successful experiences, on a smaller scale, such as that of the Gordinho Braune & Cia. paper mill, in 1927. It was only in 1946 that Hasso Weizsflog, from Companhia Melhoramentos, obtained good results with eucalyptus pulp to manufacture toilet paper. The following year, the paper featured a smoother surface and enhanced opacity. The board of directors of the company then reached the conclusion that eucalyptus pulp could replace the imported pulp called aspen – *Populus sp* –, that presented problems in the stock preparation and had small bundles of fibers. In addition to that, the eucalyptus pulp had other positive qualities: reduced cost, possibility of internal manufacturing and faster milling. In the early 1950s, Cia. Melhoramentos deepened its research aiming at obtaining eucalyptus bleached pulp by hiring for that task forest engineer Albert Hauser and chemical engineer Heinz Kohlerm.

Another factor helped to intensify the pursuit for new sources of raw materials. In the early 1950s, the Korean War triggered the price increase of cellulose 159% on the international market.

In 1954, Cia. Suzano, with the help of chemist Benjamin Solitrenick, also tested the eucalyptus pulp. As a result, in 1957 they produced for the first time in the country 120 metric tons/day of short-fiber pulp in industrial scale. However the production of cellulose was higher than the demand. The solution was to buy another mill – Indústria de Papel Rio Verde, in Poá, SP – to be able to consume the pulp produced by the company. With this example, new purchasers started to wager on the product until the moment came when demand went beyond supply. Suzano was not the only one to pick up the challenge, also faced by competitors such as Papel Simão and Champion Celulose e Papel S.A., both in the state of São Paulo. With the improvement of the "sulfate process" in the mills built by Cia. Suzano, Champion and Indústria de Papel Simão, eucalyptus gradually became the main raw material for the pulp and paper industry in Brazil.

Nevertheless, the extent of this alternative went beyond the national borders. Brazil entered the international market as an exporter of eucalyptus hardwood pulp and paper and attracted the interest of new entrepreneurs.

The First Industries

The enterprises in Rio de Janeiro and São Paulo together made up almost 80% of the production gross value. This data already indicates the inclination of both states towards the business, because of the use of capitals from the coffee culture, which were also destined for other types of businesses. At the time, there was no government policy for incentives on production, therefore initiatives were isolated and remained at the mercy of the persons in charge.

This will be typical of the Brazilian industrial development, generally speaking, in its first stage, with a serious aggravating factor: the dependence on imports. Paper was no exception to the rule, justifying the classification of this industry as an industry of transformation of imported raw material, mostly from the United States or European countries. That is the reason why some experts considered it an "artificial industry" totally subject to the impact of fluctuations in the world trade and tariff and exchange rate policies. Such a situation demanded high investments from whoever wanted to get involved in the industry. Without a credit system to finance the establishment of factories and importation of machinery and raw material, the paper industry ended up in the hands of big investors, in general of family origin.

Most forerunners of the paper industry in Brazil had previous experience in timber mills, typography, paper sales or office supplies importation. Names of families such as Adami, Aidar, Bonet, Bressler, Celani, Cícero Prado, De Zorzi, Derani, Ermírio de Moraes, Feffer, Fernandez, Haidar, Justo, Klabin, Mandelli, Matarazzo, Melchert, Miguel Forte, Morganti, Novacki, Oliveira, Pisani, Piti, Racy, Ramenzoni, Ribeiro Parada, Silva Gordo, Tannuri, Tedesco, Trombini, Tuffy Habib, Velhinho, Weizsflog, Zarzur, and Zogbi became well known in the industry. A good part of these families of entrepreneurs were of foreign origin. The technicians that initially came to the country to set up the machineries were not Brazilian either, and many of them ended up staying here, due to scarcity of specialized labor to solve any technical or maintenance problem, to train other professionals, and due to many working opportunities. Since almost all the machines for the paper industry came from Germany, a country with a tradition in research and development in this industry and its correlates, operation manuals and other technical books were mainly written in that language. Therefore, there was a predominance of Germans in this sector, since even the immigrants with no experience in papermaking were absorbed by the growing industry on account of their knowledge of the German language.

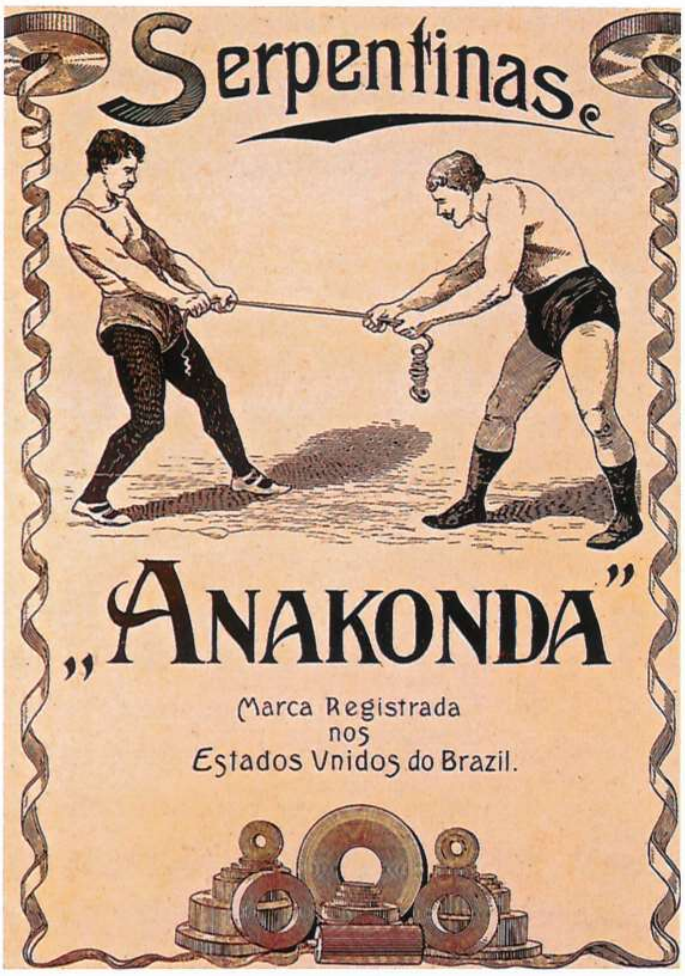
Also in the early 20th century, there was another factor to highlight the importance of foreigners in the area. The Societá per l'Exportazione e per l'Industria Italo-Americana purchased the Companhia Papel de Salto, in 1908. The company absorbed the local labor but also brought foremen and workers from the Italian headquarters, which only reinforced the noticeable trend regarding the company staff: in 1901, the staff consisted of 44 people, of which only ten were Brazilians. Not to mention a certain male numeric superiority, women were only in charge of cutting and folding papers.

Selection room of Cia. Fabricadora de Papel do Grupo Klabin, São Paulo, SP, 1938

INCISIVE DENUNCIATION

"The National Paper Manufacturers Center comes to Your Excellency to applaud enthusiastically the sanctioning of the law that calculates the public revenue for the year 1926 and abolishes the regulation which will once and for all put an end to the unrestrained smuggling done under the shade of favors granted to the press. (...) In the defense of foreign interests, contrary to those of the national paper industry, or for not knowing how to conciliate the interests of the paper industry with those of the Revenue Office and of the other industries that need similar material, some journalists and congressmen have stated that papermaking in the country is insignificant 'less than incipient, rudimental, and ridiculous.' God help us with so much injustice ... (...) ... the national paper industry which started much before the Republic, went through a long period of adversities, particularly owing to the lack of official protection; it benefited slightly from the difficulties of importation during the first years of World War I, but this advantage was soon invalidated, due to the facilities created to benefit the publishing industry, and in spite of the unfavorable conditions, with which it has been struggling from 1917 to this date, this industry – that of papermaking, perfectly adapted to Brazil, we should repeat – is one of the most significant ones today, thanks to the efforts of those that have therein invested their capitals. (...) the plants of this type in Brazil amount to more than 20 units, of which 7 are located in São Paulo, 4 in the state of Rio de Janeiro, 4 in Minas Geraes, 2 in Paraná, and the others in Santa Catarina, Pernambuco, Rio Grande do Sul and the Federal District. (...) It has been claimed that, in spite of this, the national paper industry cannot compete with its foreign rivals. It prospered during the war, but was unable to adapt and cope with the current market conditions (...). During the first year of the war, from 1914 to 1915, when the newsprint paper still paid the same duties as those of trade in general, 10,079,006 kilos were imported by the newspapers, and 31,774,506 kilos by commerce. From 1916 to 1919, during the reduction and exemption period, the newspapers imported 31,430,812 kilos, and the commerce, 5,932,270 kilos. We do not have the means and it would be rather gauche to demonstrate herein how much the fraud is an incentive to the increase of this clandestine imports, detrimental to the Internal Revenue Service, and the national industry."

Source: "A Marca D'Água no Papel de Imprensa e a Industria Nacional do Papel," a document of the National Paper Manufacturers Center (Centro dos Fabricantes Nacionais de Papel). Written Record (Memorial) presented in 1925 to the then President of Brazil, Arthur da Silva Bernardes (1922-1926).



Rolled paper streamers made the Brazilian carnival look more like its European counterpart. Before this, it looked more like the *entrudo* – a Portuguese festival that was a precursor to Carnival

As the industry organized in units with their workers' centers, the market needs diversified. Initially, there was an ample local demand for plain papers for popular use, for packaging, wrapping, box and suitcase linings, envelopes and stationery, confetti, paper serpentine and cardboard boxes. Only a small part of what was being produced was destined for printing. Most of these papers, just like the other more sophisticated high-quality varieties had to be imported. In 1899, Customs Office in Rio de Janeiro recorded the entrance of approximately 7,000 metric tons of paper and 1,455 metric tons of paper by-products, including photograph, stamps and drawing albums, books, maps, geography atlases, magazines, newspapers, etc.

FROM RANDOM TO PLANNING

The substitution of Brazilian imports in the manufacturing sector and in the paper industry, in particular, was the result of the difficulties in acquiring industrialized products on the foreign market, during World War I (1914-1918). This substitution process was not immediate but rather gradual. In the paper sector, top quality and special papers were still imported, as was paper for news printing. In spite of the war hardships that rendered the European production difficult in several sectors, imports maintained attractive prices owing to tax exemption policies. This circumstance, allied to the price increase in the domestic pulp, was a serious hindrance for a more accelerated development in this sector of the Brazilian industry.

Although rather slowly and with difficulties (in relation to the number of plants registered in the Industrial Census of the

first decade of the 20th century indicating 17 paper and cardboard producers) there was a certain expansion in 1923 with 23 established mills. The papermaking segment was gradually firming up and was heading towards a significant relevance, even counting on a specific representation: the National Paper Manufacturers Center (created in 1923) and later substituted by the Federation of Paper Manufacturers. In 1925, the entity celebrated – with an incisive document – the announcement of a legal mechanism that put an end to the concessions granted by the government, by means of custom duties exemption or reduction for newsprint paper importation. The document mentioned the companies existing in the country:

In São Paulo – Companhia Melhoramentos de São Paulo; Companhia Fabricadora de Papel; Companhia Fabril Cubatão; Gordinho Braune & Cia.; Brasital S.A.; Fábrica Accacio Prado; Fábrica Prado & Cia.

In the state of Rio de Janeiro – Companhia Industrial Santo Antônio; Fábrica de Papel Petrópolis; Companhia Industrial de Papel Pirahy.

In the Federal District – Fábrica José Silva Araújo; Companhia Indústria Papéis e Cartonagem.

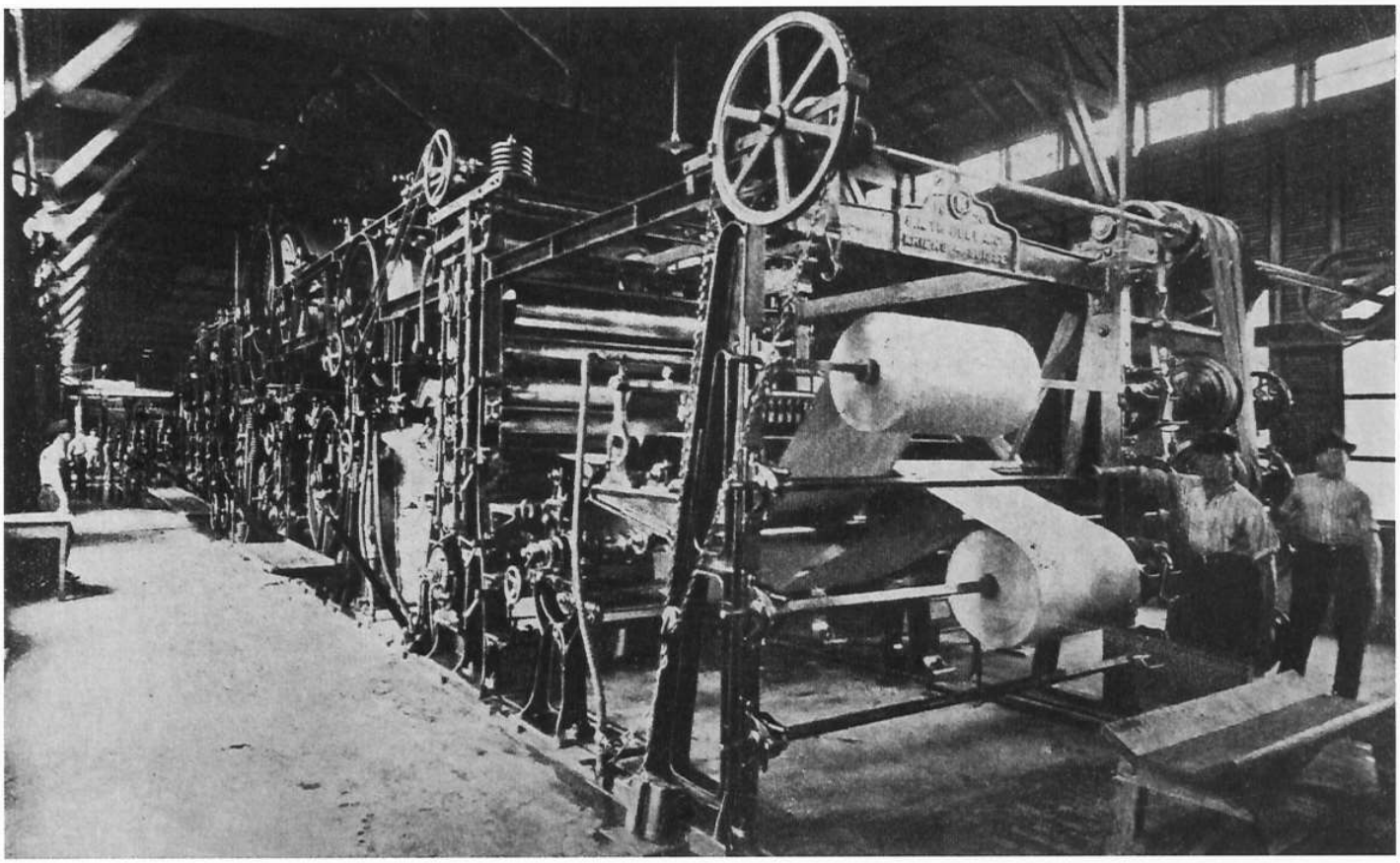
In the state of Minas Gerais – Dollabella e Portella; Fábrica de Papel Santa Maria; Pedro Janetti; and Fábrica de Papel Juiz de Fora.

In other states – Companhia de Indústrias Brasileiras Portella, PE; Companhia Pedras Brancas, RS; Companhia Fabricadora de Papel Jacarezinho, PR; and Fábrica Morretes, PR, and, finally, Fábrica Itajaí, SC.

Right after that, in the wake of the disastrous effects of the 1929 Crash and threatened by a lower consumption that could lead to the closing of their mills, in 1931 the Brazilian industrialists were able to convince the government to forbid the importation of machines intended for the establishment of industries considered at "over-production" levels, such as those of textile, hats, footwear, sugar, matches, and paper. However, import of machineries to modernize the already existing plants was not vetoed; leaders of other sectors considered this a negative resolution, particularly the agriculture sector, that had enough capital available to invest in new industrial plants.

Other government measures were of fundamental importance to the industry as a whole, with positive effects also in the paper industry. In 1937, the Carteira de Crédito Agrícola e Industrial do Banco do Brasil – Banco do Brasil Department of Agriculture and Industrial Credit, local acronym CREAI – was founded and in 1940 started to operate as an industrial development bank, granting loans for the acquisition of machinery and equipment. In that same direction, the Special Plan for Public Works and National Defense Equipment, dated 1939, stressed the importance of the development of the industrial primary sectors, such as oil, steel, paper, etc.

With these government measures, the pulp and paper industry was one of the very few that could be spared, so to speak, from the negative impact of the Great Depression of 1929.



Above (top photo), Cia. de Papéis e Papelão Yazbek, Mogi das Cruzes, SP, 1940s. Bottom photo, papermaking machine at Cia. Fabril de Cubatão, SP, 1922. Facing page, cigarette packages of Cia. Industrial de Papel Pirahy, in the state of Rio de Janeiro, 1920s

From 1929 to 1932, the paper industry grew at an annual rate of 0.8%, while seven of the eleven segments into which the transformation industry in Brazil was divided recorded a production downfall. In the following period, from 1933 to 1939, the paper industry maintained its leadership in the generalized expansion of the transformation industries. It was, however, an occasional phenomenon. The growth started to be planned, with the support of the State only as of the 1940s, when the effects of the incentive policies enforced in the 1930s started to be felt.

THE MARKET PROFILE

A hygiene product found an enormous demand in Brazil in the 20th century: toilet paper in rolls. The product had been launched in the United States in 1871, but started to become popular only from 1888 onwards. In Brazil, it was sold as a deluxe item and at the beginning there were only imported options. In 1927, seeking a suitable use for the idle time of the machinery that cut carnival paper serpentine, Cia. Melhoramentos – which in 1909 had started to produce school supplies, such as regular copybooks, calligraphy books, maps, and books – launched the first line of toilet paper under the brand Sul-América, which was to remain on the market for more than 60 years. In order to transform this novelty into a consumption item for the low-income population, as was its objective, the company embarked on a huge elucidation campaign, including lectures in schools, women's clubs, and other types of associations. In spite of the sarcastic comments, Melhoramentos created a new demand for this special paper. To the great surprise of the company, the barbers, especially attracted to the novelty, asked them to develop an alternative product that could be used in their barbershops for cleaning blades. This is how the Volga paper emerged, in loose sheets, which conquered an enormous success in the major Brazilian cities at the time. Another innovation would happen in 1936, with the production of the Onibla paper towels, an initiative of engineer José Correa Teixeira de Carvalho, who founded the Sociedade de Artigos Higiênicos Onibla Ltda. One year later, the product was granted the approval of the Federal Public Health Agency, as a hygiene product complying with the sanitary regulations.

The most positive aspect observed in the first decades of the 20th century was the consistent increase in the participation of domestic paper production, simultaneously to the decline of importation from 58.3% to 37.5% of the total domestic consumption. From that time on, the trend was maintained with the Brazilian production accounting for almost 60% of the domestic supply until 1946.

A Voith MP V machine, imported by Cia. Melhoramentos in 1939, for the production of parchment and special papers. Facing page, label of South America's first rolled toilet paper, introduced in 1927

The Organization of the Sector

BUILDING UP THE STRUCTURE

IN BRAZIL, THE VICISSITUDES OF THE SECOND WORLD WAR BROUGHT ABOUT INCREASES IN THE PRODUCTION OF RAW MATERIALS, MACHINES, EQUIPMENTS AND COMPONENTS

In the first years of the 1940s, as a consequence of the events of World War II (1939-1945), the paper industry – among others – experienced a dramatic instability. Imports of the finished products or of the pulp were affected by the battles that devastated Europe. In Brazil however, the vicissitudes of paper shortage represented an incentive to the country's own raw-material production growth, what ended up contributing to gradually reducing its dependence on the foreign market.

On the local political and social settings, big changes took place, in the 1940s and '50s. Getúlio Vargas, who had reached office in 1930 by means of a takeover, extended his administration until 1945, having installed, in 1937, the Estado Novo – New State. Characterized by the nationalist interventionism and by the nationalization of the economy, the Estado Novo had its industrial policy regulated by the development of the sector based on the establishment of protectionist measures towards the national industry and by measures to replace imports. With an enhanced participation of the State, new industrial sectors emerged and developed. In 1934, the National Department of Mineral Production was created and, in 1937, the National Oil Council, the Companhia

Siderúrgica Nacional – metalworking –, and the Vale do Rio Doce mining company. Until the late 1950s, more democratic governments followed the dictatorial Vargas' period. The decade saw a strong expansion of industrialization, according to the objectives established by the administration of President Juscelino Kubitschek (1956-1961).

For the papermaking industry, during these two decades, the key challenge was to find autochthonous plants with the suitable fibers from which to obtain the cellulose. The government strove to stimulate research, that sought options such as sisal, bamboo, babassu, caroa, rice husk, *lírio-do-brejo* – common gingerlily –, and even the banana tree fiber. A successful tree had already been used since the 1920s for the manufacturing of the mechanical pulp and sulfite pulp: the araucaria. Also known as Brazilian pine tree, the importance of the araucaria is linked to the leading producer of newsprint paper of the country at the time: Klabin, from Paraná, designed and constructed with government support. In spite of the efforts, the domestic component of papermaking mills raw material stocks, in an estimate of 1940, did not go over 3% of the total pulp. There was, however, a significant alteration in the origin of the foreign purchase. In the late 1930 s, the key and traditional suppliers of cellulose pulp and newsprint paper to Brazil – Norway, Finland, and Sweden


Celulose de Palha

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de ARROZ e outros vegetais
com processos italianos (Pat. Universal) os unicos que garantem resultados economicos, mesmo com pequenas

Instalações desde 5 toneladas diarias

Celuloses branqueadas de 1.ª, especial para papeis finos, pergaminhos, cartolina, mataborrões, etc.
Concessionarios:

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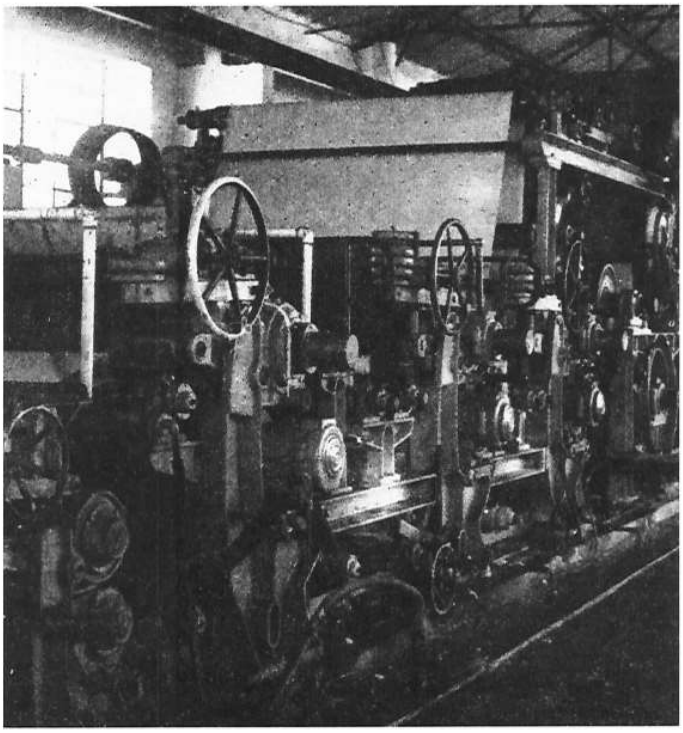
ESCRITÓRIO DE ENGENHARIA INDUSTRIAL
PORTO ALEGRE (HOTEL JUNG)

– were replaced by Canada and the United States, mainly as the result of the "good neighbor policy," which favored the relations among the countries of the American continent. In 1938, North American paper pulp exports to Brazil – at the time already the leading importer of the continent – amounted to 2,228 metric tons and, in 1940, they reached the surprising figure of 32,907 metric tons. Later on, the purchase of machinery, also from America, was needed and added to the enormous import volume of the product.

Interested in preserving raw material production on a local basis, the Brazilian government decided to encourage this activity by means of financing and different kinds of support, such as the law from the Federal Caretaker Government, which granted exemptions of taxes for five consecutive years to the companies willing to work with the new fibers. At the same time, a reforestation policy was enforced, with the foundation of the National Pine Institute, in 1943. That same year Companhia Melhoramentos de São Paulo intensified the production of chemical sulfite pulp using its *Araucaria angustifolia* forests. Researches on eucalyptus and sugarcane bagasse started to be intensified only in the early 1950s. The bagasse was already being used in a pioneering experiment by the Refinadora Paulista S.A. followed by Companhia Celulose e Papel Fluminense S.A.

The industry engaged in the paper pulp preparation – despite the incentives and the enormous quantities of good standing timber – did not progress satisfactorily in the 1940s, particularly owing to the high cost of freight in the country. However, the factories producing machinery and equipment for the sector, such as defibrators for mechanical pulp, expanded tremendously. The joining of efforts aiming at the approximation of the raw material productive park and that of the end product manufacture was not just a mere coincidence. Owing to the period conjuncture, integrated industrial complexes were organized for the production of raw material – pulp – and the end product – paper. There were, however, nonintegrated mills, small-sized and focused on specific demands. That was the case of Companhia Nacional de Papel, inaugurated in Petrópolis, RJ, in 1942, supplier of the *Diário da Noite*, a daily newspaper from Rio de Janeiro.



Machine of Refinadora Paulista, Piracicaba, SP, 1940s. On previous page, an advertisement concerning the manufacture of pulp from sugarcane residues, 1940s

Production of newsprint paper in a factory of the Klabin Group, Tibagi, PR, 1940s

The Organization of the Sector

From 1940 to 1950, the total amount of pulp-, paper-, and cardboard-producing mills soared from 54 to 117, with a high geographic concentration in the south and southeast of Brazil.

On the political setting, the government kept its promise admirably well. On the one hand, by stimulating the technological development and, on the other, by fostering and planning the sector organization, based on representative entities. In this process, the paper mills got a head start and founded, in 1923, the National Paper Manufacturers Center. This institution gave origin, in 1932, in Rio de Janeiro, to the Federation of Paper Manufacturers, the denomination of which was altered, in 1944, to National Association of Paper Manufacturers-ANFPC. Later, owing to the difficulties caused by the international crisis, the initiative of the organization of the sector was a key factor for joint action aiming at claiming from the government measures to ensure its own survival. In 1938, the National Confederation of the Industry-CNI was created – the maximum instance of employers' agencies congregated in federations and unions or associations, in decreasing order. The workers, on their part, also organized several institutions, controlled at several levels by the State, which tried, in this way, to avoid the contestation movements against its authority, enforced without vote acclaim.

In 1939, to celebrate the first initiatives of the sector then being organized, the first specialized publication on paper and pulp was launched, a magazine by José Carlos Benko, with the objective of supplying information and helping in the training of technicians. In order to launch another magazine, *O Papel*, in November of that same year, Benko joined three other business partners: Américo Kende, André Tibor and Paulo Herlinger. The periodical was an acknowledged reference in the industry, what ensured its long life.

The exchange of information and data on the segment was fundamental for the analysis of the conjuncture and contemplation of business opportunities that always existed, even as an initiative of the State. In 1940, president Getúlio Vargas passed a law by decree that ensured government incentives to the national industry of cellulose and mechanical pulp. The government guaranteed financing at very low interest rates to both individuals and legal entities, owners of forests or woods for the construction of cellulose and mechanical wood-pulp-producing mills, provided all specific requirements intended for the preservation of the natural environment were met. The mill should have its own water sources – which would be used in the obtention of cellulose and in generating energy – and would have to be set up near a densely populated area. The waste waters should be neutralized "and sent to an area where they could not cause damages" and the exploited vegetation areas should be reforested. The decree also ordered the establishment of forest parks in water springs protecting areas.

Vargas' dictatorship ended right after World War II, but in the early 1950s, Getúlio Vargas was back in power, this time by elections and the country underwent a new period of institutional instability. However, the decade passed by in perfect order and political legality, and industrialization expanded thanks to important initiatives.

PRESERVATION IS A MUST

A special chapter in the papermaking history is the availability of paper for printing newspapers. In such a large country, it was mandatory to be able to circulate the news quickly and provide information to the citizens. A proposal for the solution of the problem was to have the Executive Power itself invest in a raw-material plant. However, in this case, the government could be perceived as using authority as the main supplier by occasionally suspending delivery and showing some sort of fickle opposition. The State then decided to offer tax incentives to the entrepreneurs willing to invest in the industry. The first offer was made to the owner of the leading newspaper chain at the time, Assis Chateaubriand. He did not accept it. However, he appointed as a possible interested party, the Klabin family, owner of lands in Monte Alegre, in the eastern state of Paraná, intended for the plantation of pines. The proposal was accepted. In addition to offering advantages, such as loans and market guarantees, the government took over the responsibility of building a railway branch to transport the production, which was not restricted to newsprint paper, but also included bleached pulp, mechanical pulp, bristol board, chlorine, and caustic soda. The cornerstone of the mill was laid in 1942 and it was inaugurated in 1946.

Even with the increase of supply in the early 1950s, the newsprint paper domestic production was not sufficient to meet even half of the domestic demand in Brazil, reaching only roughly 38%. The production expansion had to face the opposition of many entrepreneurs who did not approve of it, considering it expensive and of low quality.

Notwithstanding the opposition, the history of Klabin proved that it was possible to manufacture a good product which was profitable for the country. And even more: it ratified the feasibility of an activity that would become extremely important from then on – reforestation – fundamental to avoid the destruction of the native forests.

Until the end of the First Republic, governments had done nothing to preserve natural vegetation, considered only a source of income through timber extraction, particularly hardwood, such as brazilwood, *peroba* and *jacarandá-da-baía*. A timid initiative to handle this issue at the national level took place in 1921, when the Brazilian Forest Service was created. The next step towards preservation awareness happened some twenty years later, in 1943, with the installation of the Brazilian Pine – Araucaria – National Institute, in charge of organizing the cultivation of this species in some states of the country: Paraná, Santa Catarina, Rio Grande do Sul, and São Paulo. The idea was to avoid, in a systematic way, the devastation of the natural forest, as the state of São Paulo alone used to consume 43 thousand m^3 of wood per month, a volume higher than that of entire Argentina. The choice fell on the *Araucaria angustifolia,* or the Brazilian pine tree, because that species was more resistant and also for its multiple application possibilities.

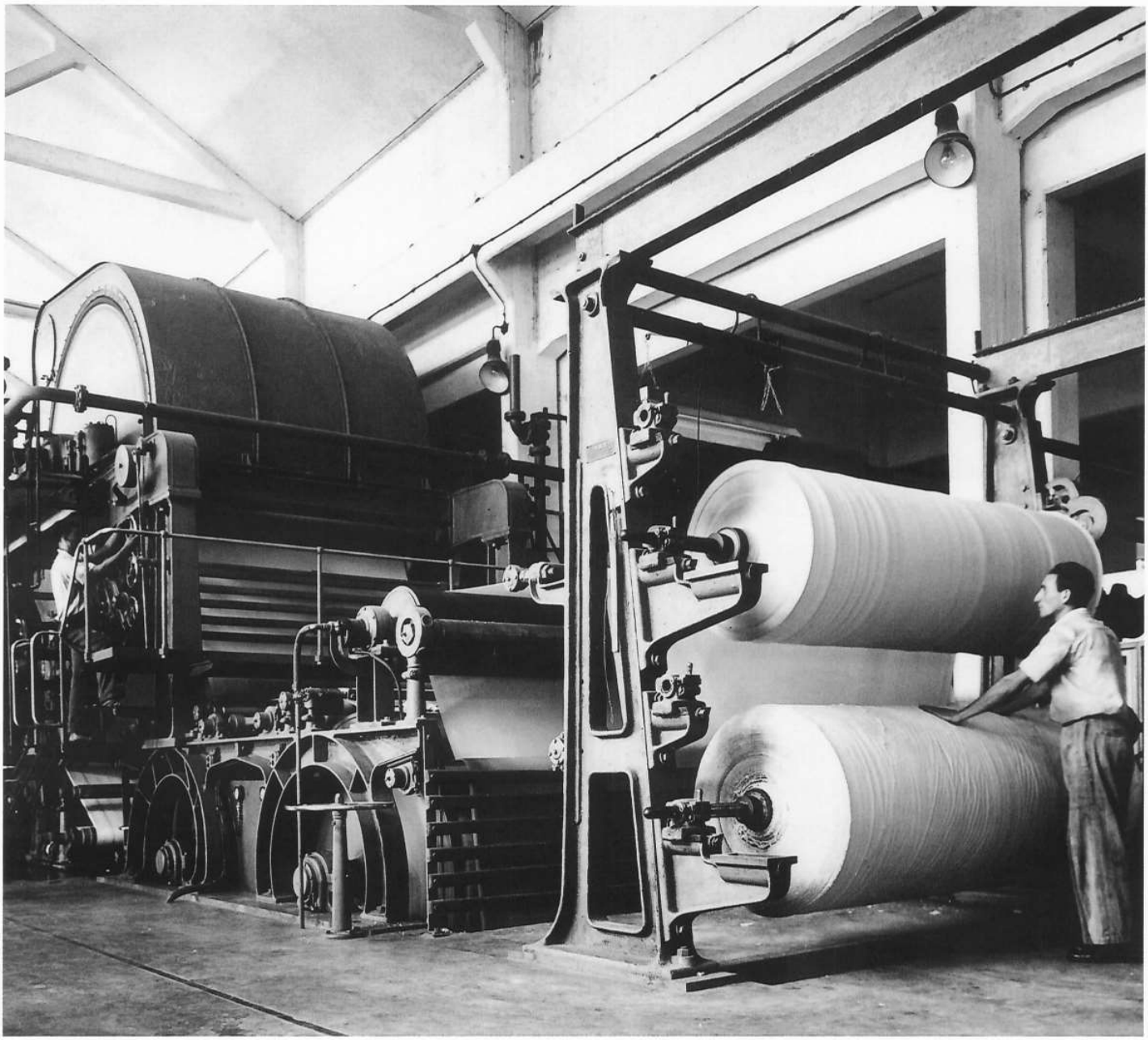
Another relevant initiative of the government was to create the Ministry of Agriculture Forest Service, featuring three divisions: Botany, Protection to Forests, and Biology. For a country that had done practically nothing to save its forests from devastation, these two movements were sufficient proof of its good intentions.

"GOLDEN YEARS"

The 1950s became known, and justifiably so, as "Golden Years." Their beginning was not perfect, though: in soccer, despite being the hosts, the Brazilian team lost the final World Cup match. Only eight years after that were they able to win the cup, in Sweden. In the period between both dates, there were other national sorrows: the death of singer Carmen Miranda, in 1955, for example. On the other hand, significant conquests occurred: to start with, the first television broadcasts, on September 18, 1950. The feat opened new horizons and the dream of every family was now to have a TV set at home, next to the refrigerator and the washing machine. The consumer society was already being established abroad; in Brazil it was just starting to exist. There were good opportunities for investors ready to take a chance. For those entrepreneurs, the proposal of the new President of Brazil, Juscelino Kubitschek, who had been elected in 1955 was fundamental: "50 years in 5." For this purpose, Kubitschek combined state interventionism with the incentive of opening to foreign capital in the country. His "Targets Plan" foresaw substitution of imports only of durable goods – especially automobiles – and of intermediary goods – liquid fuel, metallurgy, aluminum, pulp and paper. Thirty-one targets were divided into five groups of investment: Energy, Transportation, Food, Basic Industries and Education.

In the group of Basic Industries, thirty sectors were chosen as priority to receive the financing and for which there were specific targets to be reached by the end of the year 1960, according to studies of demand forecast.

In the rotary pulp grinders, through the pressure and friction of the rotating grinding wheels, the raw material was broken down to form small uniform particles. Rotary pulp grinders installed in mill of Adamas do Brasil S.A., Osasco, SP, 1956



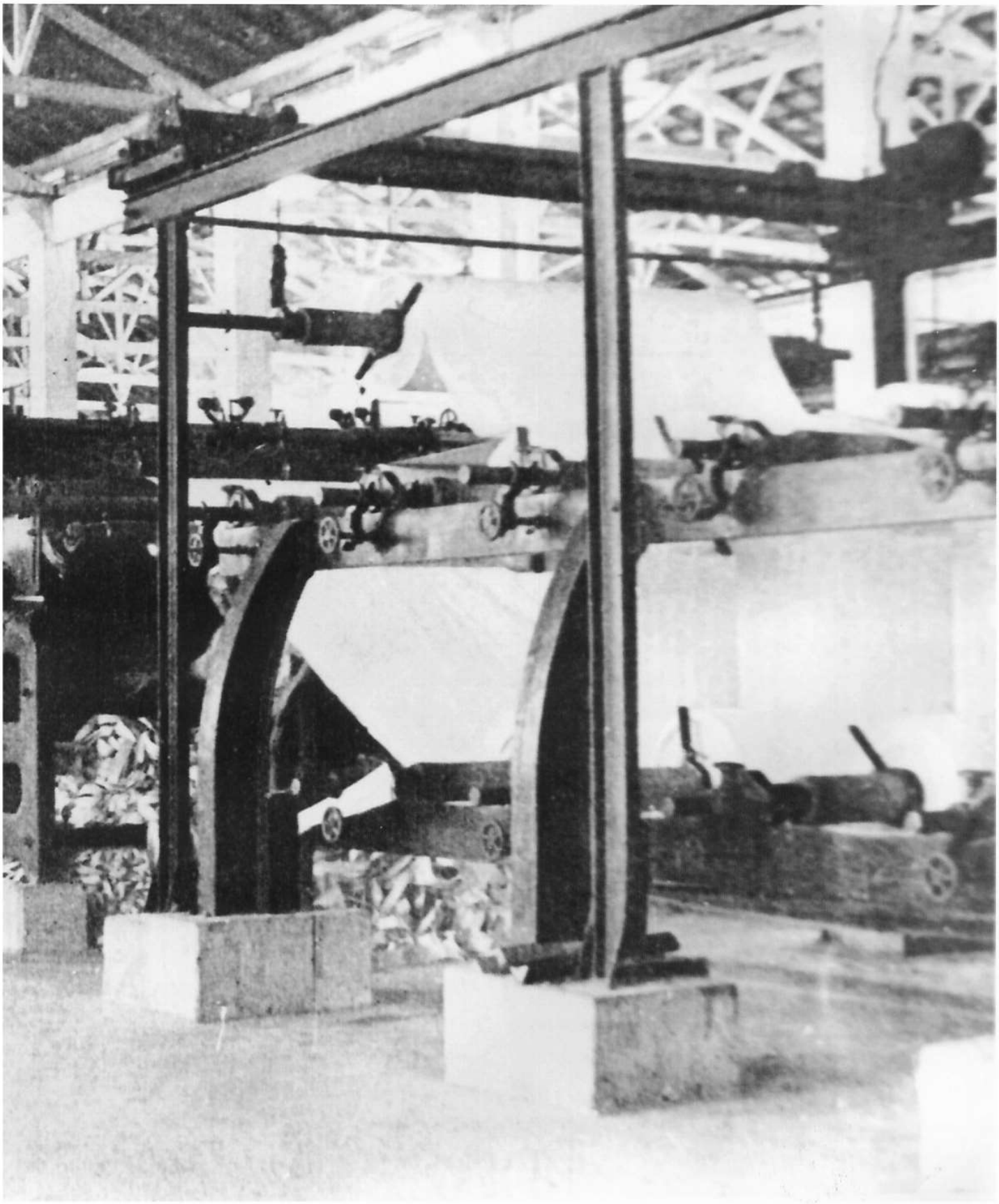
Paper Machine #6, Cia. Melhoramentos, Caieiras, SP, 1949

Machine for the production of paper for writing and printing, in mill of Ripasa, Limeira, SP, undate

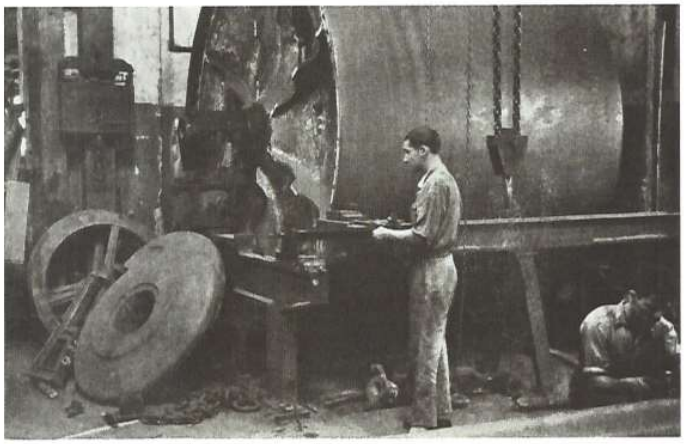
Pulp and paper ranked among these sectors and it was intended that in 1960 the country would have reached self-sufficiency in cellulose pulp with a yearly production of almost 260 thousand metric tons, practically three times the total of 1955 that had amounted to approximately 90 thousand metric tons. As regards newsprint paper, the leap should be from 40 thousand metric tons to 130 thousand metric tons with an estimated consumption of 215 thousand metric tons. The sector would have to count on private capital in about 80% of the amount forecasted to be able to reach those targets.

In 1959, the government recognized that they had overestimated the targets, particularly as regarded newsprint paper, and established new objectives, this time more realistic. Costs with transportation, in the case of paper, amounted to 20% of the price paid by the consumer, an amount much higher than that of sea freight, which was used by foreign competitors. However, as concerned papers of lesser quality and paper pulp, the Brazilian industry met the demand in a satisfactory way. In 1956, for example, the domestic consumption of cardboard and papers in general reached almost 910 thousand metric tons, fully supplied by the domestic industry; for the newsprint paper, percentage of imports reached 78%.

The steps that followed would be mainly to modernize project management and implement new technologies. Among the measures settled for the adjustment were the reconsideration of the protective policies enforced on imported paper and long-fiber cellulose with compensatory subsidies, and the funding of the National Bank for Economic Development-BNDE, created in June 1952, for the production expansion projects.



In the first case, the government guaranteed compensatory subsidies to the newsprint and printing paper manufacturers and customs protection to the other paper and pulp producers. On the second, the Superintendence of Currency and Credit-Sumoc provided the sector with investments originating from the United States, thus enabling the establishment of multinational companies in Brazil. In addition to that, in 1959, Sumoc authorized the Department of Foreign Trade-Cacex to grant authorizations for the importation of second-hand goods, machinery and equipments for the paper mills.



Lathing of a dryer cylinder for a papermaking machine of Irmãos Cavallari, São Paulo, SP, 1941

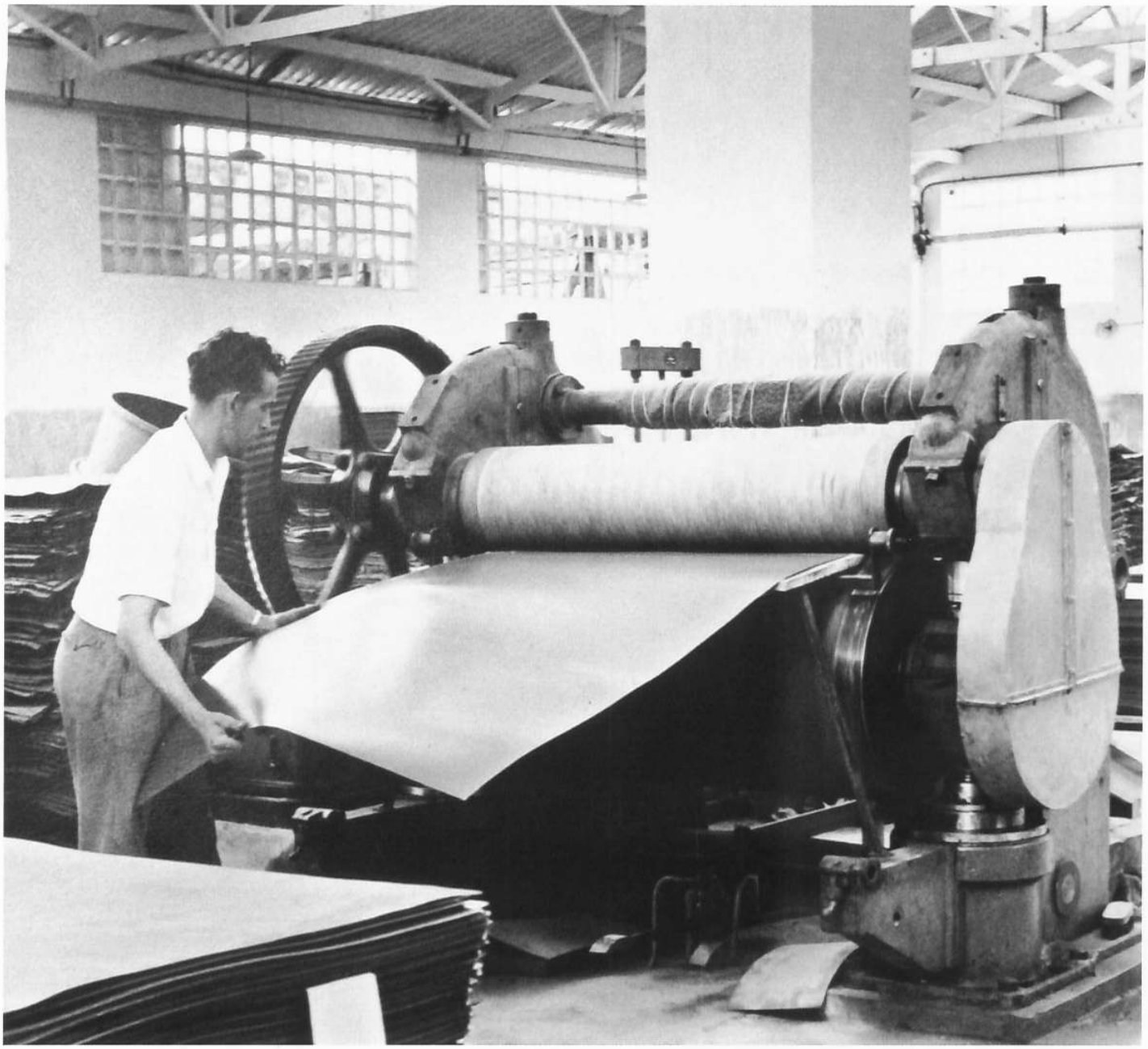
MACHINERY DEVELOPMENT

In a world free of war, paper production started to expand in such a way that in the more industrialized countries a serious concern was raised on the end of the natural resources of fibers, basically the softwoods in Europe. Expectations for the supply of raw material turned to Brazil as the perfect acclimation of the eucalyptus was already a known fact; later it was also confirmed as a strong alternative for short-fiber cellulose pulp. A natural result of this adaptation was the incentive to the production of local technology, without affecting the research on the potential of other autochthonous – native – plants.

Paper industry obtained such an enormous projection in Brazil that one of the leaders of the sector, Horácio Lafer, from the Klabin group, was appointed Minister of Finance from 1951 to 1953, during Vargas' administration, and afterwards he was appointed Minister of Foreign Affairs (1959-1961) in Juscelino Kubitschek's administration.

BNDE played a key role in the expansion of the pulp and paper industry, which was underscored in President Kubitschek's Targets Plan, aiming to turn the country into an exporter. The goal was not really overconfident as Brazil had practically reached self-sufficiency in almost all types of paper, except for newsprint paper.

From the mid-1930s onwards, with the launching of the first fully Brazilian machines to manufacture pulp and paper, the country already counted on machinery developed locally. The initiative was taken by Irmãos Cavallari & Filhos. It had been founded in 1905 and operated based on the British technology by Millspaugh Ltd., from Sheffield. In 1939, the Cavallari company started to manufacture defibrators, a key equipment for the production of mechanical pulp. They had as followers in this item the Irmãos Müller from Curitiba, PR, a company that had been established in 1941. But the pioneer Cavallari experienced such an incredible evolution that they ended up dominating the segment: by 1956 they had already installed 47 machines all across the national territory.



Production area of Adamas do Brasil S.A., Osasco, SP, 1956

In order to meet the needs of these industries, other companies emerged, which focused on the production of components. It was the case of the first manufacturers of felts in the country, M. Llobera & Companhia, located in Petrópolis, RJ. During World War II, their products were greatly consumed by the paper industry as a replacement for imported material. In 1942, Carlos Weit's Lanifício Anglo-Brasileiro also started to produce felt and eventually it started to export to Uruguay and Argentina. Prior to the existence of both manufacturers, felts had to be imported from Europe, what increased the mills costs. Unable to import equipment, Weit designed and built the machines based on those with which he used to work in his home country. Thus he ordered parts and pieces from several workshops and set up his own industrial park, which started operations in April 1942. The Weit felts were immediately absorbed by the local market.

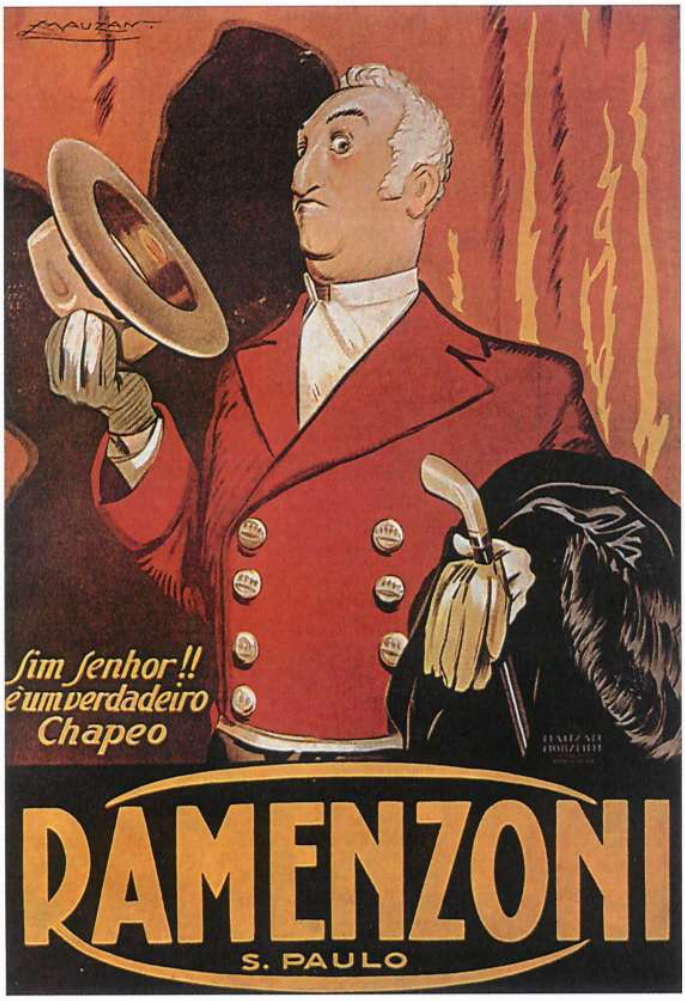
The following year, the Sieberth family started the production of blades and similar products, with the company Aços Brooklin S.A., which became market leader in the 1950s. They were responsible for the training of several professionals.

Indústrias Químicas Eletro Cloro, a subsidiary of the Solvay group, started operations in 1948. It was the first caustic soda and chlorine plant in Brazil. It was the pulp and paper industry main supplier of those products for a long time.

The metallic paper machine wire started to be manufactured in Brazil as of August 1955, with the inauguration of Itelpa S.A., the first manufacturer in South America, created by the Morganti Brothers located in Piracicaba, SP. The Morganti Brothers also owned Celulose e Papel Piracicaba and they strived for self-sufficiency, to protect their undertakings from circumstances too often adverse. They were especially encouraged by the Bulka plant, located in Rio de Janeiro – at the time, the Federal Capital –, and producer of phosphor bronze, with which the cycle to produce 100% Brazilian wire was closed. Itelpa's production had the quality of its foreign competitors and was planned for papermakers of all kinds, including the most sophisticated ones, as well as cardboard and market pulp. The company always tried to keep updated, since the quality of the paper depends on the excellence of the wire. Therefore, a constant exchange between technicians of both parties was necessary to keep harmony in the demand.

SUPPLY DIVERSIFICATION

During World War II, paper expanded its presence in people's everyday lives, also because of the needs imposed by the conflict itself. For example, it was necessary to have a more resistant paper to be used in the production of maps, overhandled and examined by the strategists, and also to wrap ammunition and foodstuffs that were transported under rather adverse conditions. It was also necessary to have different paper varieties for the production of documents, with a high security margin, displaying identification marks that would attest to their authenticity. In short, the need for diversification emerged not only on account of the conflict, but also to meet everyday details in places where life was peaceful. The production aimed at wrapping and packaging



Papirus Indústria de Papel S.A. has its origins linked to the hatmaking industry and, like many other companies, entered the papermaking sector to supply its demand for packages

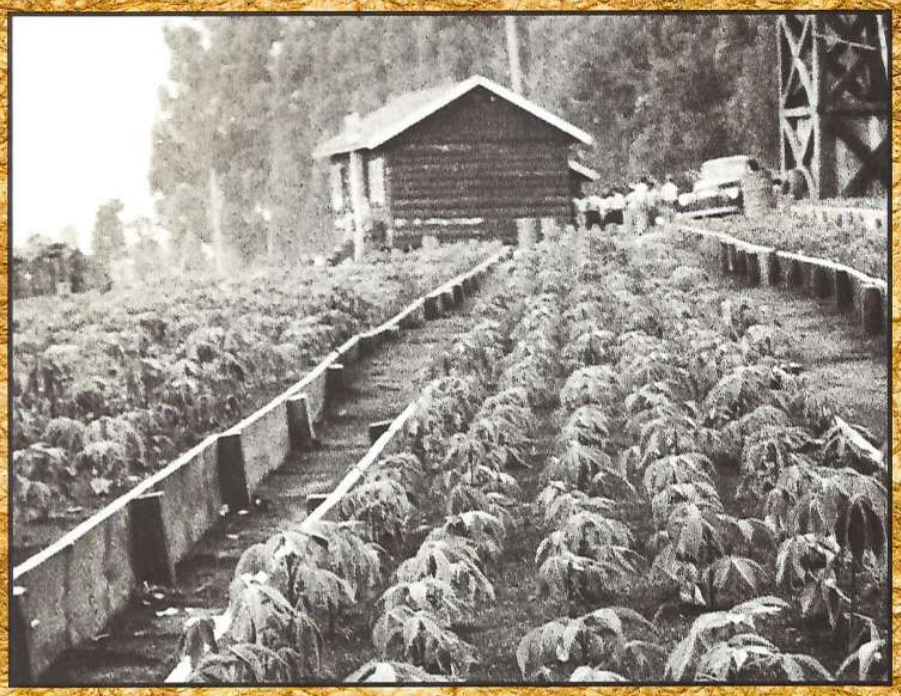
experienced a special evolution, with suitable kinds of paper to pack frozen food and/or fresh fruit and vegetables. Paper started to be used in combination with other elements, with the advantage of being a support that allows impregnation and coating.

Starting in 1940, research for the manufacturing of new kinds of paper was developed in Brazil and very soon even sophisticated papers reached the final consumer. Cotton linter was used by the Cia. Melhoramentos mill as an added component to the wood pulp for toilet paper production. At that same time, experimental novelties emerged, like waterproof bags and containers that could replace the traditional metal cans. At the end of the war, in 1945, Companhia Papel de Salto started to supply some varieties that up until then had only been available by means of importation, such as the 30-g/m² flor-post, used to make invoices, and the 40-g/m² waterproof opaque glassine paper, used in animal fat packaging. The growing urbanization and the increase in average income of the population were decisive factors for the expansion of paper products supply.

In the 1950s, the corrugated paperboard consolidated its market share becoming popular, particularly because it was excellent for the manufacture of boxes. The corrugated paperboard had been patented in the U.S. in 1871. It started to conquer space on the Brazilian market from the mid-1930s onwards, when it started to be used to pack furniture, avoiding freight damages from factories to the stores. Space saving and easy handling, sparing the presence of freight technicians, up until then necessary exactly to avoid major damages during the

transportation, were among the advantages of this product. The production of paper towels was also boosted in that period. Although known since 1870, they were not sufficiently absorbent and were very fragile. It was only in the mid-1950s that they started to feature an enhanced quality, owing to a change in the raw-material pulp, to which tiny doses of plastic material were added, and thus, when submitted to heat, it worked as a kind of glue to adhere the paper fibers. It was a process similar to that developed for making paper for maps, which were capable of resisting moistened surroundings without falling apart. The existence of this new mixture allowed the expansion of research for the use of paper even in disposable garment items. Although at the time the use of this kind of paper for the production of everyday clothes was not well accepted, the technological innovation gained importance in hospitals, for example, as it permitted the development of a variety of rolls that substituted advantageously the sheets made of rubber.

The companies of the Matarazzo Group and the Sociedade Vinícola Riograndense saw in the papermaking sector a good opportunity for the diversification of their activities. They therefore established Indústria Matarazzo de Papéis S.A. and Celulose Irani. Their products included labels for beverage bottles. On facing page, a production line for corrugated cardboard at mill of Rigesa, Valinhos, SP, 1950s



Times of Expansion

CONSOLIDATION OF THE INDUSTRY

BRAZIL'S PULP AND PAPER SECTOR UNDERWENT SWEEPING CHANGES IN THE 1960S AND '70S. THE INDUSTRY FIRMED UP ITS BASES AND ATTRACTED THE ATTENTION OF FOREIGN INVESTORS

Brazil entered the 1960s with the perspective of new elections for president. The office of President Juscelino Kubitschek was coming to an end, with his effort for industrialization. His successor, Jânio Quadros, took office in January 1961, but resigned in August of the same year. Quadros' resignation triggered a dramatic crisis. His vice-president, João Goulart, took over but was unable to finish his term of office. He was deposed by a *coup d'état* in April 1964, and the military seized power. The presidential succession would be discussed and determined by the military for the following 25 years.

The politically disconcerting 1960s and '70s brought significant changes to the pulp and paper sector. The industry expanded with the support of the State and it slowly firmed up, on very solid bases, attracting the attention of international investors willing – at a given moment – to take over risks together with the Brazilian entrepreneurs. At the same time, there was an effort to expand the geographical bases in which the major industrial units were concentrated – southeast of the country. Therefore, new fronts were opened in the south, north and northeast.

On the political scene, each stage corresponded to a series of measures that affected in a dramatic way the papermaking industry, except during Quadros' term, which was so short that did not even leave a mark on the sector. João Goulart, however, proceeded with the investments started by Juscelino Kubitschek and took over new and fundamental initiatives in 1962 with the Government Plan and the Triennial Plan for the Economic and Social Development prepared by economist Celso Furtado. These plans predicted the increase in pulp production on a local basis, from 300 thousand metric tons to 400 thousand metric tons in 1965. Incentives were offered to meet that goal – namely tax and duty exemptions for five years – to the newsprint paper manufacturers. At that time, they only supplied one-third of the domestic demand and it was estimated that it would reach two-thirds by 1965. One of the actions to reach this objective, with resources from Banco Nacional de Desenvolvimento Econômico-BNDE was the inauguration in 1963 of the Machine #6 of Klabin in the state of Paraná. The capacity of this equipment was 300 metric tons/day what meant the possibility of supplying 80% of the domestic newsprint paper market.

The exemption of taxes to finished product importers, who strongly resisted to the claims of the industry since 1951, was one of the major obstacles to the autonomy of the domestic market. Thus it was cheaper to buy imported paper than to manufacture it domestically.

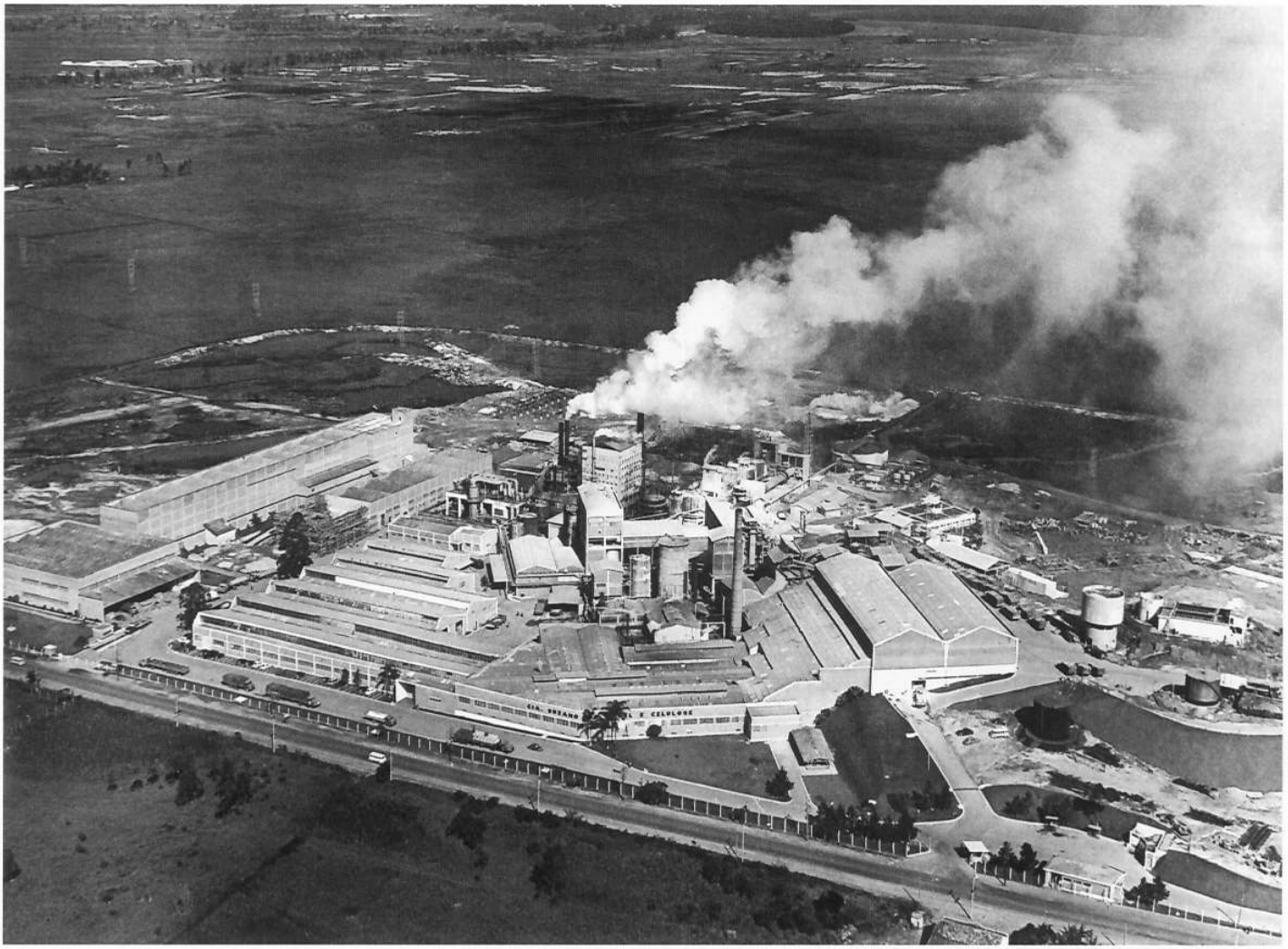
Gradually, however, the government cancelled the currency exchange advantages that caused so much distortion to the domestic market. The equilibrium movement of the balance of payment, with measures to reduce imports had to be carried out with utmost care to avoid shortage of paper and its negative impact in the freedom of the press. This, in fact was the excuse used by the newspaper and magazine owners to maintain the incentives on importation. Actually, the autonomy in disseminating information would be hampered during the whole period of the military dictatorship, not because of the cost and availability of the newsprint paper, but because of the censorship installed, much in the same way as what had happened during the Estado Novo of Getúlio Vargas.

GROWTH PERSPECTIVES

Until the mid-1960s, however, the credits granted by BNDE – permitting the continuity of the incentive policies of Juscelino Kubitschek's Targets Plan – were not on a regular basis and brought benefits only to a few companies. The major investments of the Bank were intended for the infrastructure activities, such as distribution of energy, construction of railways and highways, installation of silos and warehouses.

Among the leading supporters of the papermaking activity expansion, in addition to BNDE, were the Council for Industrial Development-CDI and the Executive Group of the Paper Industry and Graphic Arts-Geipag created by the government to set up for the first time the planning of the activity. But there was also the significant work of the São Paulo Association of Paper and Pulp Manufacturers-APFPC founded in 1964. Together with Geipag, APFPC contributed to having many industries from São Paulo exempted from taxes and obtaining authorizations to get privileged financing with the guarantee of official banks. It should be recalled here that the proliferation of sectorial executive groups such as Geipag led to the establishment in 1969 of the Council for Industrial Development-CDI comprised of representatives of the economic ministries, Armed Forces, BNDE, Banco do Brasil and entities and agencies of the private sector.

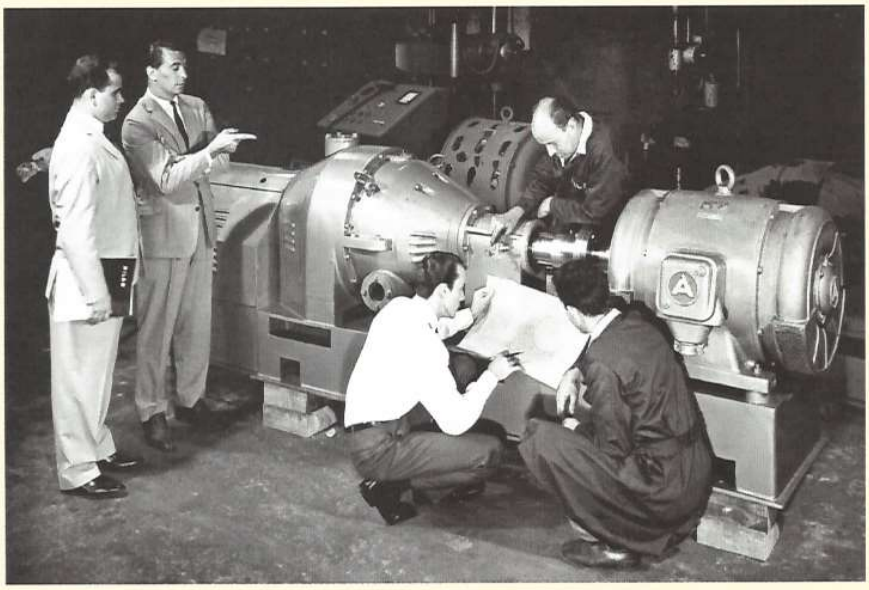
An initiative of APFPC, together with BNDE, was fundamental to boost the papermaking industry: in 1966, a study was requested – concluded in 1967 – to the company José Carlos Leone & Associados, the objective of which was to carry out a survey that would disclose the situation of the existing enterprises. The analysis of this study was used as a parameter for the government to determine to which sectors the financing should be directed. Among the recommendations there was that of establishing targets for production scales, reducing costs, and increasing efficiency. At the same time the introduction of modern administration techniques was encouraged. In the case of pulp mills, for example, they would have to extract at least 100 metric tons/day, twice as much as what had been settled for paper. Another recommendation was the definition of technical standards by the Brazilian Association of Technical Standards-ABNT.



Aerial view, mill of Cia. Suzano de Papel, Suzano, SP, 1960. On facing page, currency made from imported paper and a ten-cruzeiro bill, the first to be produced with Brazilian-made currency paper. On page 63, a partial view of one of the Klabin company's reforestation areas, Fazenda Monte Alegre, PR, 1960s

PARTNERSHIPS AND GROWTH

The 1960s and '70s saw the consolidation of the pulp and paper industry in Brazil, with the new companies and the expansion of the already existing production capacity. This scenario ended up attracting major world suppliers of machinery, equipments and chemicals, which ended up becoming partners in the pulp and paper industry. In addition to that, several Brazilian manufacturers expanded their operations, very often developing products to tackle the difficulties of importation and cutting costs.



Refiner produced by Aços Pilão, São Paulo, 1960s

In the 1980s, the suppliers felt the effects resulting from the drop in investments in new projects, particularly from 1981 to 1984, a period in which companies had to reduce their payroll and new investments. This situation started reverting only by the end of the decade, with the increase in the demand of consumer goods in general, what led the paper industry to expand its production capacity again.

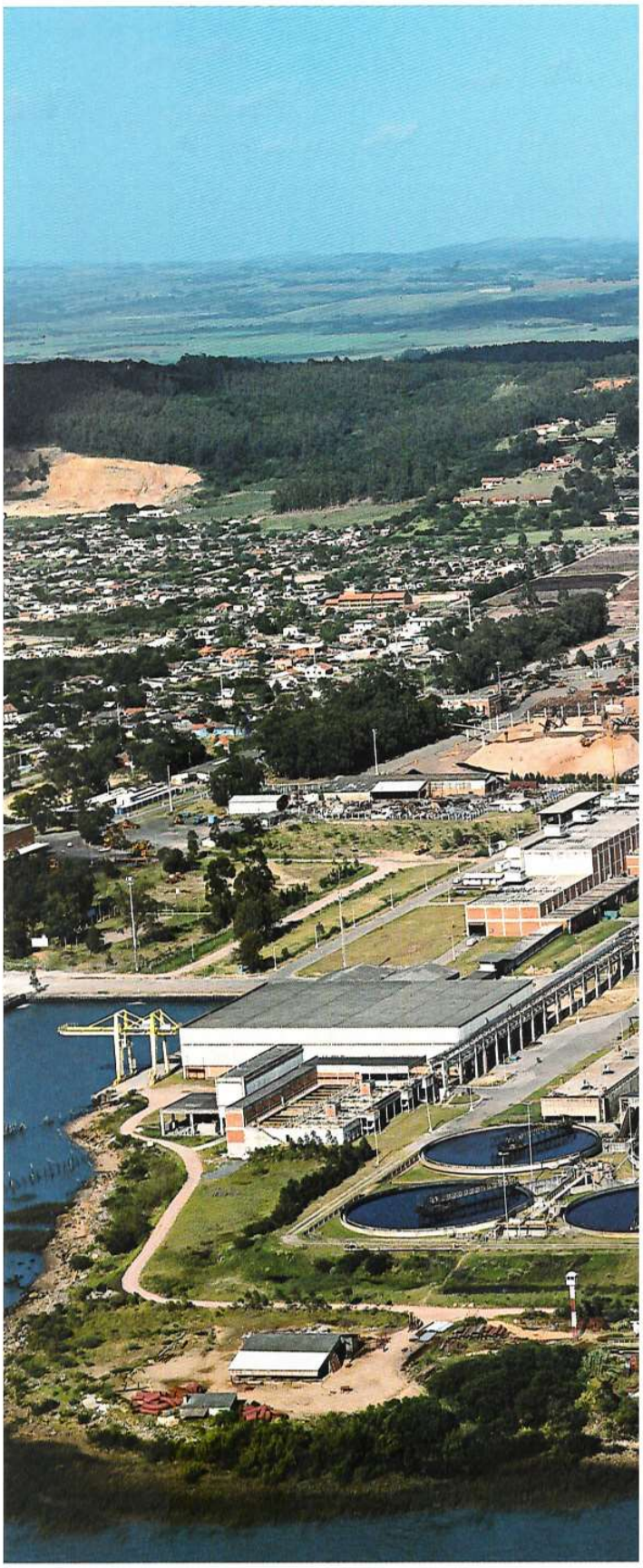
Today, the partnership built between industry and suppliers operates according to the demands of new technologies that meet the increase in the production scale, to the commitment to environment conservation, power and raw-material savings and reduction of production costs.

A separate item was to stimulate reforestation, as BNDE would only grant resources to projects self-sufficient in wood supply. With the enforcement of Law 5.106, dated September 2, 1966, regulating the fiscal incentives granted to forestry undertakings, companies and individuals could cut from their Income Tax the amount invested in said activity, up to a limit of 50% the amount due the IRS. To be entitled to the benefits of the law, the individuals or legal entities with no ties to the forestry activity would have to register at the Brazilian Institute for Forestry Development-IBDF created in 1967. This initiative boosted enormously the interest for the reforestation activity. There was, therefore, an institutional basis at full blast. They were not sufficient, though, to generate more significant changes, what would only occur after the first succession of the military government.

As a result of the establishment of a new industry policy that granted privileges to the activities of implementation of forest plantations by means of fiscal incentives, the interest of foreign groups willing to invest in the area increased. As an example, it is worth mentioning the case of a Norwegian company which decided to exploit the potentials of the eucalyptus and the black acacia. The latter, a species rarely mentioned in traditional studies, is a variety from which bark tannin is extracted and it is easily found in the state of Rio Grande do Sul. Therefore, its wood was an inexpensive by-product. The government would not permit exportation of wood only, and presented a counteroffer for the setting up of a mill, producing unbleached pulp for export in the country. The undertaking – Indústria de Celulose Borregaard – installed in Guaíba, Rio Grande do Sul, started operations in 1972.

Poster encouraging the planting of pine and eucalyptus, early 1960s

Aerial view of Riocell, Guaíba, RS, 1980s



In 1974, the Council for Economic Development-CDE organized a Working Group to elaborate the National Plan of Pulp and Paper-PNPC which was included in the priority targets of the federal government as stated in the 2nd National Plan for Development-II PND for the 1975-79 five-year period. Among other measures of this Plan there were proposals of support for the technological development, incentives for the implementation of manufacturing units based on nontraditional raw materials such as sisal, and involvement in workers' training and development. A highlight of this Plan was the concern of preservation of the environment which demanded the use of antipollution techniques.

PNPC set up targets for self-sufficiency of the industry on a national basis and was getting ready to struggle in the international market. The idea was to reach a production of 3.6 million metric tons of paper, 650 thousand metric tons of mechanical pulp, and 4.2 million metric tons of pulp by 1980. However, this was just the first stage. Gradually, targets would expand until year 2000, with an ambitious 20 million metric tons of pulp and paper. CDE also recommended the implementation of forestry districts to increase the exportable pulp surplus, aiming for 25 million hectares of planted areas by 1980.

From the planning perspective, everything was perfect. But the real world brought surprises that put the completion of what had been planned to jeopardy. One of the most relevant obstacles to hinder the goals was, in 1973, the oil crisis that caused serious damages to the world paper production: an average drop of almost 14%, between 1974 and 1975.

The main producers – Japan, Canada, and the United States – dropped an average of 13% to 23% of their production rate at the time – owing to the economic recession.

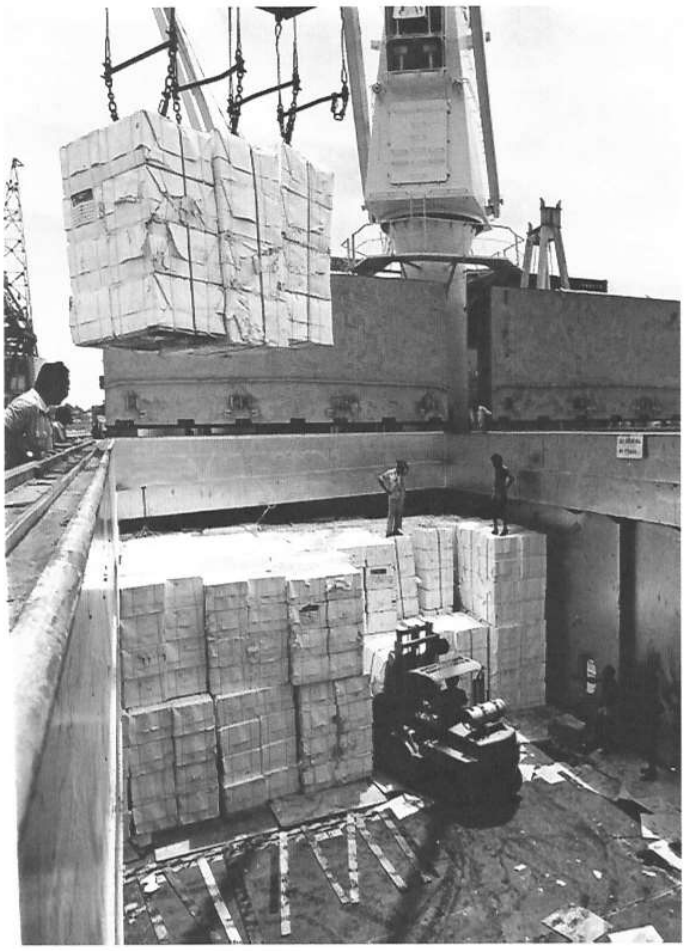
MAJOR TURNING POINT IN THE BRAZILIAN PULP INDUSTRY

The insertion of Brazilian pulp in the international market was not an easy task. Purchasers looked at the nontraditional supplier Brazilian producers with caution because of the lack of information and promotion on the efficiency of pulp made from eucalyptus.

At times there were also some aggravating circumstances, with the offer of surplus from other countries at very low prices. The difficulties were tackled slowly and in due course, and undisputed leadership of the former long fiber was replaced by the short fiber of eucalyptus, also produced in Portugal, Morocco, South Africa and Spain. This major turning point changed the profile of the international market.

In the wake of the inspiring and successful project of Indústria de Celulose Borregaard in Brazil – which was nationalized under the name Rio Grande Companhia de Celulose do Sul-Riocell – other companies started production aiming for the international market. Among the most significant companies were Celulose Nipo-Brasileira S.A.-Cenibra, Aracruz Celulose S.A. and Jari Celulose S.A., located respectively in Minas Gerais, Espírito Santo and Pará.

In 1976, Aracruz, Cenibra, and Riocell created the Brazilian Association of Pulp Exporters-Abecel with the objective of studying, following up, and conquering the foreign



First shipment of pulp made by Cenibra, Porto Vitória, ES, 1977

Aerial view of Aracruz, Barra do Riacho, ES, undate

market. Shortly Bahia Sul Celulose S.A. and Jari joined in. Later on, in 1997, Abecel proposed to merge with the National Association of Pulp and Paper Manufacturers-ANFPC and the board accepted. Subsequently ANFPC altered its bylaws and official name becoming the Brazilian Association of Pulp and Paper-Bracelpa aiming to facilitate internationalization, a process that was being developed by the former entities.

ADJUSTMENTS IN THE INVESTMENT POLICIES

BNDE policy underwent several adjustments. From 1968 to 1973, its objective was to encourage expansion of domestic markets via installed capacity in the different mills and to encourage them to have their own raw material resources in private reforested areas. The steering adjustments started after a visit of BNDE technicians to Japan and Sweden in 1971. During their visit, the specialists went to pulp mills with a

THE ORGANIZED SECTOR

The power of a group lies in its capacity for organization. This was the idea shared by a group of entrepreneurs of the paper industry, which, in 1923, created the National Paper Manufacturers Center. Just one single document, dated 1925, remained as an indicator of the institution operation. It was addressed to the then president of Brazil, Arthur Bernardes. All the problems being faced by the industry at that moment were explained therein.

Headquarters of entities representing the pulp and paper sector, São Paulo, SP, 1980s

In 1932, in the city of Rio de Janeiro, the Federation of Paper Manufacturers was founded; its first president was Cícero da Silva Prado. The denomination of the Federation was changed in 1944 to National Association of Paper and Pulp Manufacturers-ANFPC. In 1959, a section was created in the city of São Paulo, in charge of rendering services to the companies established in the state. It operated until 1964, when it was suppressed owing to the establishment of the São Paulo Association of Paper and Pulp Manufacturers-APFPC.

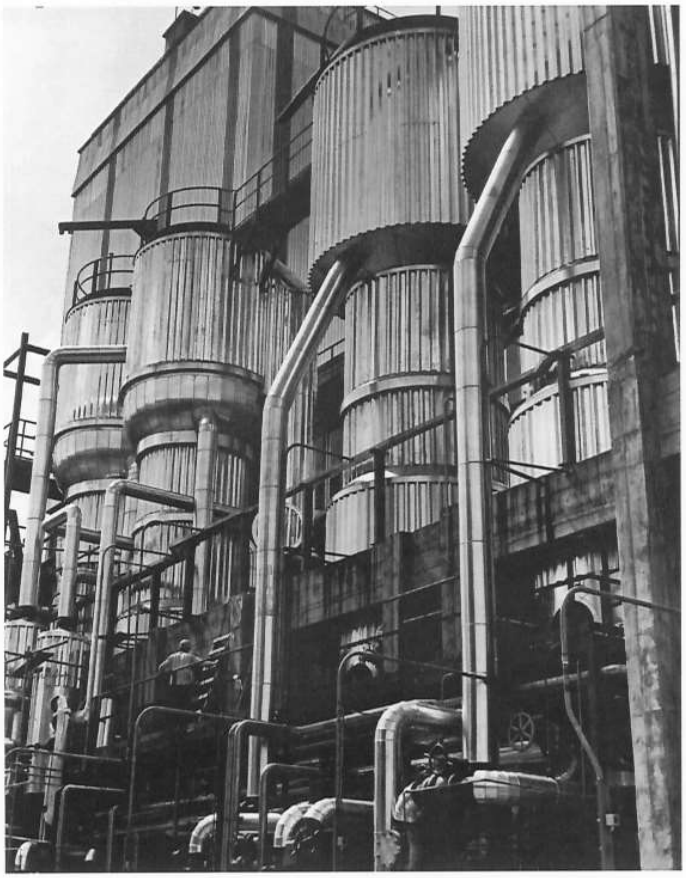
The transfer of the headquarters of the National Association of Paper and Pulp Manufacturers to São Paulo took place in 1971, with the task of representing the sector. Moreover, it was exactly aiming at the strengthening of that function that, in 1997, the Brazilian Association of Pulp Exporters-Abecel joined ANFPC, to set up the Brazilian Association of Pulp and Paper-Bracelpa, an entity that gathers all segments of the industry.

capacity of one thousand metric tons/day that rendered the paper – especially the packaging type – highly competitive. The following year, BNDE determined that they would only grant financing to projects starting at that minimum volume. Papermakers complained immediately requesting a reduction in the production minimum. They were able to obtain, through a supplementary decision, only an extension of deadline to reach that target in two stages.

As of 1974, the regular support to the pulp and paper industry by the BNDE system firmed up and was extended to the following decade. That same year, the Aracruz Celulose project was approved and involved investments beyond US$ 400 million, for a production capacity exceeding one thousand metric tons/day.

This would in fact be the trend for the future: the establishment of gigantic complexes for the time, such as Cenibra, created in 1973 to produce 750 metric tons/day of pulp. Located in Belo Oriente, in Doce River valley, in Minas Gerais, the company started operations in 1977 and sent its production to the port of Portocel – specialized in pulp handling and loading – in the Barra do Riacho, which was also being used by Aracruz. Cenibra was a binational joint venture encompassing Companhia Vale do Rio Doce-CVRD, owner of 51.48% of the capital, and Japan Brazil Paper and Pulp Resources Development Co. Ltd.-JBP, with the remaining 48.52%.

BNDE also directed resources for the expansion and technological modernization of the park already in operation. Certain mishaps had to be overcome in the process, namely the case of Companhia Celulose da Bahia-CCB planned to produce pulp



Factory of the Ripasa Group, 1970s

and paper from the sisal long fiber. Although the company obtained excellent results, with a high-quality product – long-fiber pulp for specialty papers – the project did not show to be economically viable, as the price of the raw material became too expensive. In 1979, the control of CCB was transferred to the now Banco Nacional de Desenvolvimento Econômico e Social-BNDES and it would be reprivatized ten years later.

ENHANCEMENT OF THE TECHNICAL KNOWLEDGE

To be able to count on a source of financing was only one of the paper industry's needs. As in any other field of production, it also had to expand its perspectives by introducing new methods and components. Thence, the participation of the São Paulo Technological Researches Institute-IPT. With a sound tradition in the area of knowledge, IPT, established in 1899, devoted its first studies to the paper and pulp industry starting in 1940. At that time what were being incipiently studied were the properties and characteristics of woods used in pulp making as well as the quality of papers. In the 1950s, IPT made good advances in the analyses on the use of woods available in Brazil for the manufacture of pulp and paper. In 1962 their researches turned to the utilization of plants acclimated in the country – eucalyptus, pinus, sisal, and bamboo – or pulp extraction. In 1967, studies concentrated on researches of exogenous species, obtained in large scale thanks to the fiscal incentives that the government offered for the reforestation. In 1976, IPT set up the Pulp and Paper Technical Center-CTCP, which consolidated as an important nucleus for research in the papermaking industry.

It is also worth mentioning as an important contribution for the setup of the basic knowledge of the industry the initiative of a group of Brazilian and foreign papermaker technicians who created an association aiming at the discussion of the problems and improvement of the industry. Thus, in 1967, the Brazilian Pulp and Paper Association-abcp was created, later on named the Technical Brazilian Association of Pulp and Paper-ABTCP. IPT started to work in close cooperation with ABTCP and with the University of São Paulo-USP through the Department of Chemical Engineering of Escola Politécnica, and the Department of Silviculture of Escola Superior de Agricultura Luiz de Queiroz-ESALQ. This was the beginning of joint ventures that completed the needs of developing and training specialized people to service the growing necessities of the industry, either in the mill operational area or in the testing laboratories.

IPT and the National Industrial Educational Service-Senai, founded in 1942, also published a theoretical essay in two volumes that became a reference book for the industry: *Tecnologia de Fabricação da Pasta Celulósica* and *Tecnologia de Fabricação de Papel*, published in 1981.

Since the late 1950s, Senai maintained a "Training Program" geared to the papermaking industry with a minimum of six classes per week in companies' facilities. At the same time extremely specialized units were organized, such as the Theobaldo de Nigris School of Graphic Arts in São Paulo, SP, and the Senai Technical Center in Telêmaco Borba, PR, which, in 1973, started the Technical Course in Pulp and Paper, a pioneer of its kind in Brazil.

Reforestation area of the Ripasa Group, 1970s

The technical school in the state of Paraná expanded and is today the Center for Pulp and Paper Technology-CET-CEP of the Senai system geared to teaching and researching in the industry.

Consequently, the training of workers acquired an increasingly more professional profile. Gone were the times when a company had to bring in good collaborators from abroad or from within the staff of competitors. Knowledge was being established at the same time that the demand for specialized technicians and engineers increased, in the mills as well as in the forestry areas. The intensive use of planted forest species, on the other hand, demanded locally developed technology. Institutes started to grow and multiply all over the country, as well as professional schools and centers for technical development, managed by the government and by the companies or in partnership with both.

The industries also joined in this task, sharing knowledge from several sources, even from abroad. In 1980, Riocell was able to get financing for US$ 1 million from the Financer of Studies and Projects-Finep, created in 1967, and injected another US$ 1 million in its Captive Research Center. In 1977, Cenibra supported the creation of an internationally recognized graduation course in Paper and Pulp at the Federal University of Viçosa, MG.

The same trend was experienced in the forestry sector. Planting trees with a potential to produce pulp was not enough: it was mandatory to get to know them and enhance their culture, considering the ecological principles in the sense of respecting biodiversity and the ecosystems of the reforested regions. The species themselves needed improvements to enhance their

The São Paulo Technological Research Institute-IPT. São Paulo, SP, 1980s

resistance to pests and diseases, and to increase their productivity. Initially, the challenge was tackled by hiring foreign specialists, but soon, in the 1960s and '70s, courses to train forestry engineers popped up in several states of the country. Concomitantly with the universities and acting together with them, other autonomous centers started to operate: the National Institute of Technology in Rio de Janeiro, RJ; the Institute of Researches and Forestry Studies-IPEF in Piracicaba, SP; and the Society of Forestry Investigations- SIF in Viçosa, MG, among others. They studied not only the forests but also the best applications for woods. In 1971, the National Researches Council-CNPq created a Work Group for Pulp and Paper Research.

All the movement of creating the knowledge and the technicians had as a complement the change in technology and adaptation of machinery. Around the 1950s, the old Hollander beater – the machine to crush rags – was replaced by a conical refiner moved by electrical energy. At that time the company Aços Pilão started to specialize in repairing the knives from pulp refiners and later on, they began to produce and export their own refiners.

In the 1970s the Swedish chemi-thermo-mechanical process appeared on the market. In Brazil it would be introduced by Companhia Melhoramentos for manufacturing tissue papers replacing the semichemical pulp, thus increasing toilet paper production. At that time, studies were carried out for the utilization of eucalyptus chemi-mechanical pulp in the manufacturing of newsprint and packaging papers, a process that Klabin even produced and utilized.

Façade of the Luiz de Queiroz Agricultural School, Piracicaba, SP, undate

While the training centers for specialists developed and the culture of forest species was enhanced, mobilization was on its way to professionalize administration as management complemented the activities and many demands of the mill operations. The command was to keep on the leading edge, also in terms of management technology. Therefore, in the 1970s, data processing systems were introduced and the old Personnel Services became departments of Human Resources. From the legal point of view, there was plenty to be done, with the advent of the Corporations Law – Law 6.404, of 1976 –, which enforced the Boards of Directors to define and coordinate the strategies of the companies.

Cia. de Indústrias Brasileiras Portela, one of the pioneers in the sector, Jaboatão, PE, 1971

READJUSTMENT OF INCENTIVES

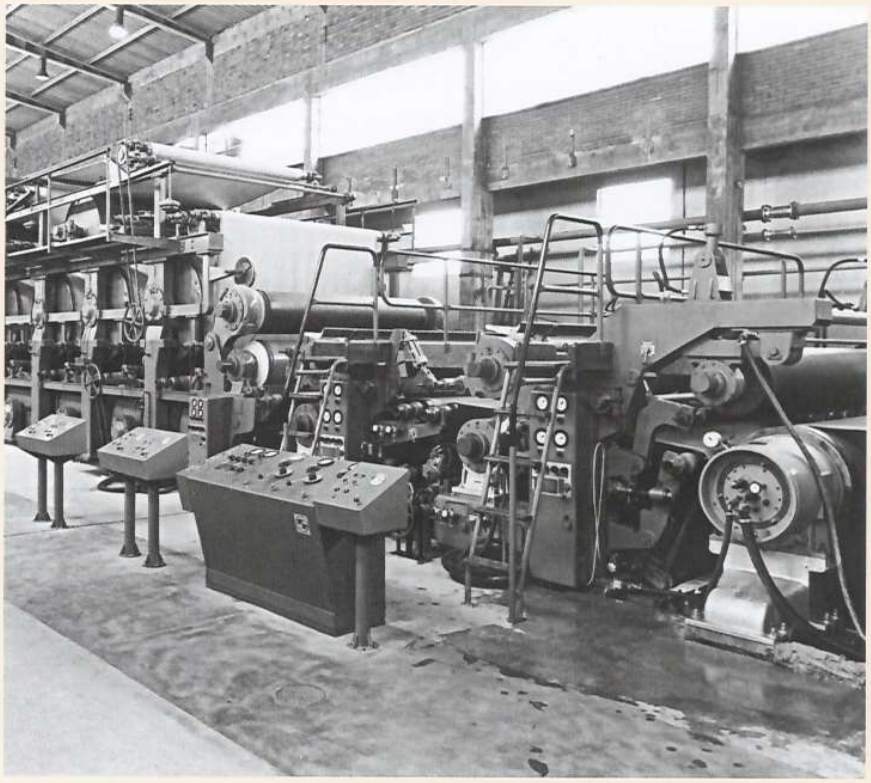
Because of the abuses and the lack of suitable planning for the reforestation activity, the forestry legislation underwent changes as of 1974, with a gradual reduction of incentives for the projects outside the scope of the Superintendency of Development of the Amazon-Sudam and Superintendency of Development of Northeast-Sudene. The idea was to decentralize production, forcing migration from the south and southeast regions to areas in which there was not so much concentration.

Among the papermaking initiatives in the northeast, it is worth mentioning the Papelão Ondulado do Nordeste-Ponsa, established in 1967 in the municipality of Goiana, PE. Using the sugarcane bagasse as raw material, the industry started operations in 1973, with a complex divided into three separate units: paper and pulp mills, boxes, and corrugated cardboard.

CHANGE IN PROFILE

There was a moment in the paper industry history in Brazil in which the profile of the segment was altered due to scale reasons. Whilst the demand for pulp extraction equipments was small, the existing units were sufficient. In the late 1960s, however, when new and larger pulp units were set up demanding machinery with higher complexity, enterprises of foreign origin started to participate in the local machinery and equipment market.

One of the first coming to Brazil was German Voith S.A., in 1964. Its performance grew along the years, and, in 1972, it showed a capital corresponding to three times that of its rival Companhia Federal de Fundição-CFF, and ten times that of Irmãos Cavallari & Filhos which, in that same decade, changed its focus to the area of maintenance and manufacture of components.



Papermaking machine manufactured by Voith, installed in mill of Cia. de Celulose e Papel do Paraná-Cocelpa, in Araucária, PR, 1967

Some companies focused on specific segments, such as Pilão, geared to the production of disks and pulp refiners, which invested in the development of new technologies and started to export. From 1967 to 1975, the Brazilian industrial park absorbed 92 papermaking machines. Out of these, 85 were Brazilian, comprising the following brands: 26 D'Andrea units; 20, Voith; ten, Cavallari; ten, Ikemori; six from CFF; and the remaining, from other manufacturers. In the mid-1970s, there were some 300 papermaking machines in Brazil.

Companhia de Celulose da Bahia-CCB had a proposal to develop pulp from sisal, but it only started production after a long period of adjustments to fine-tune its profile to the requirements of Sudene. It had resources from BNDES which, in 1979, took over total control of the company, through the company Insumos Básicos S.A.- Fibase. CCB fostered the development of sisal pulp production by continuous process, in addition to obtaining an excellent long-fiber product for specialty papers, with perfect acceptance in the most demanding foreign markets like Japan. But it had negative aspects because it never reached the expected goals, not even that of a major job generator. Later on, it was reprivatized, joining the Klabin group, under the name Klabin Bacell, which adapted the mill to the manufacturing of dissolving short-fiber pulp from eucalyptus. Today the stockholder control of Bacell is owned by RGM International under the name Bahia Pulp.

The effort to take enterprises to the Amazon was part of a strategy of the military governments – who took over in 1964 – to occupy that area for national security. However, there were basic hardships. The two major highways that permitted an easier access – Belém-Brasília and Cuiabá-Porto Velho – had been inaugurated in 1960, but did not provide safe transport, due to the poor pavement quality. The federal government started the construction of the Transamazônica highway, while it was trying to encourage forestry, mineral, and cattle sectors. Benefits offered attracted the interest of large Brazilian and multinational groups, which effectively started to settle there. However, the attempts to settle workers coming from other regions were not very successful.

Among the experiences amidst the tropical forest, it is worth mentioning the Jari Celulose S.A., a mega project from investor Daniel Ludwig installed in Monte Dourado, on the border of the states of Amapá and Pará, on an area equivalent in size to that of the state of Sergipe – 22,000 km². The objective of the project was the extraction of gmelina pulp used initially as raw material, which, due to technical difficulties, was later replaced by pinus and eucalyptus.

In spite of the federal government's effort to decentralize the production in the country, there were problems that prevented the full achievement of that ideal. By the same token, the effort of ensuring the forestry activity by means of incentives ended up generating so many irregularities that, in the late 1980s, the government cut the fiscal incentives and launched the Forest-Industry Integration Plans-Pifi. It was a new stage, with new concerns and complementary legislation.

View of mill of Projeto Jarí, Belém, PA, undate

Consecration and Perpetuation

GOING OPPOSITE WAYS CAN BE HEALTHY

IN THE 1980S, BRAZIL'S PULP AND PAPER INDUSTRY WAS STRENGTHENED AND EXPANDED DUE TO THE INCOMPARABLE RAW MATERIAL, EUCALYPTUS, CULTIVATED FOR A LONG TIME NOW THROUGH PROGRAMS OF REFORESTATION

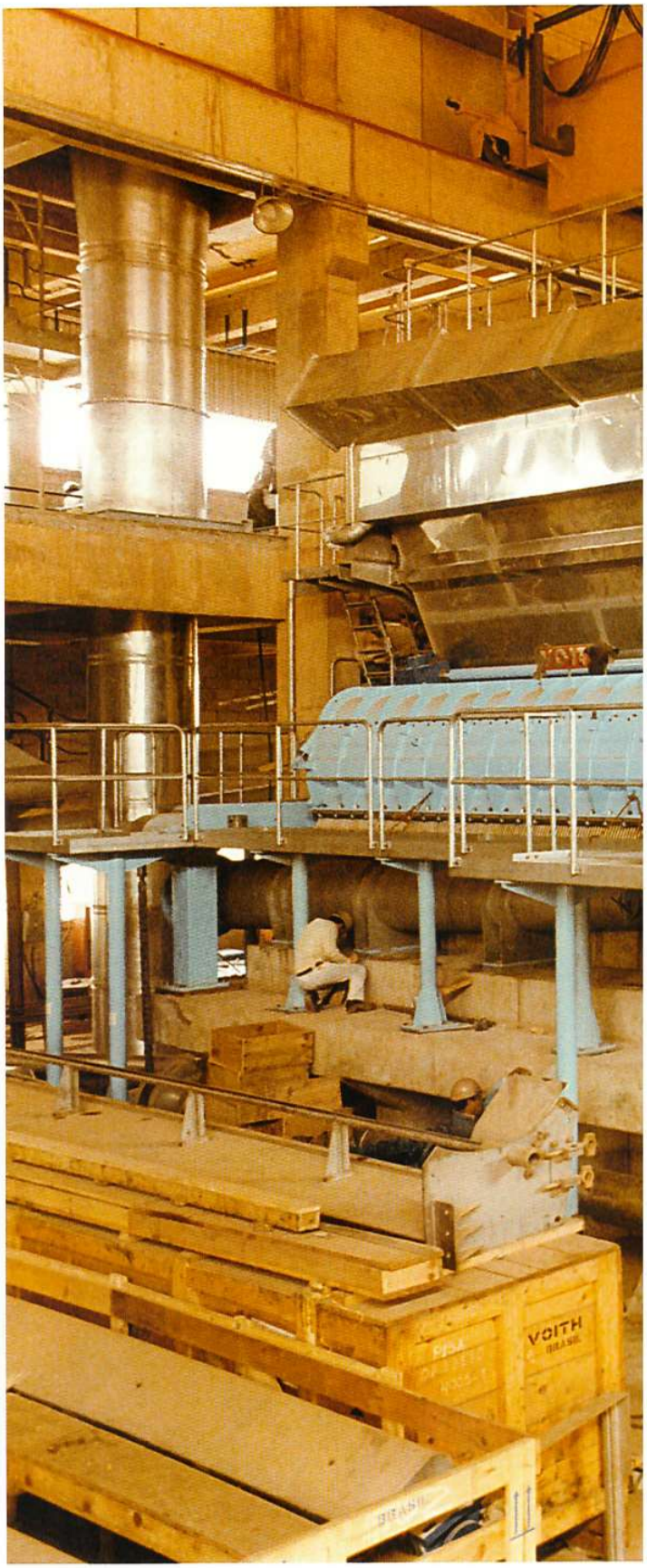
The 1980s witnessed the Brazilian economy practically at a standstill, owing to the high inflation and the impact of the foreign debt, among other factors. The situation of Brazil was not, however, an isolated phenomenon, it corresponded perfectly well to the contours of the world recession. Against this state of affairs, however, the papermaking sector, with an average 4.8% growth/year, presented a counterflow to the other economic sectors. In that period it consolidated and expanded, in such a way to occupy a significant space, with sound competitive advantages, thanks to the positive conjunction of two essential factors: the incomparable raw material – eucalyptus – and the right production technology.

Brazil then settled competitively in the world ranking as the 8th leading country in pulp production, with a leap from 3.1 million metric tons in 1980 to 4.3 million metric tons in 1989. The local paper industry, in its turn, reached 12th on the world ranking, thanks to the increase in international demand, particularly for the printing and writing grades. The exception in this successful picture continued to be the newsprint paper, which had not presented any signs of expansion since 1964 and accounted for 68.4% of the total

outside purchase of paper. It was only in the mid-1980s that the facts changed, with the inauguration of Papel Imprensa S.A.-Pisa. In spite of this, the expansion of the other items of the pulp and paper industry was very significant, as had been predicted in the 2nd Pulp and Paper National Plan-II PNPC, drawn in 1986 by the National Association of Pulp and Paper Manufacturers-ANFPC, showing an unmistakable change in the attitude of the government, which, in the first edition of these targets, had taken over the task of drawing the objectives without first consulting the businesspeople. Approved by the then president of Brazil, José Sarney, in 1987, the set of objectives – to be reached with the support of the state – predicted that between years 1987 and 1995, the supply of pulp would have to rise from 3.4 million to 6.6 million metric tons/year; the supply of paper, from 4 million to 8.4 million metric tons/year; and the mechanical pulp, from 312 thousand to 848 thousand metric tons/year.

Once again the sector growth was due mainly to the support of the Banco Nacional de Desenvolvimento Econômico e Social-BNDES which, over those two decades, authorized approximately 98 financial operations for the industry. The effort of the State was fundamental to ensure the production within an adverse conjuncture. The companies, at the same time that they counted on a sound support from the government, were trying to respond efficiently to

Workers setting up a Voith machine in mill of Pisa, Jaguariaíva, PR, 1980s. On previous page, a roll of paper

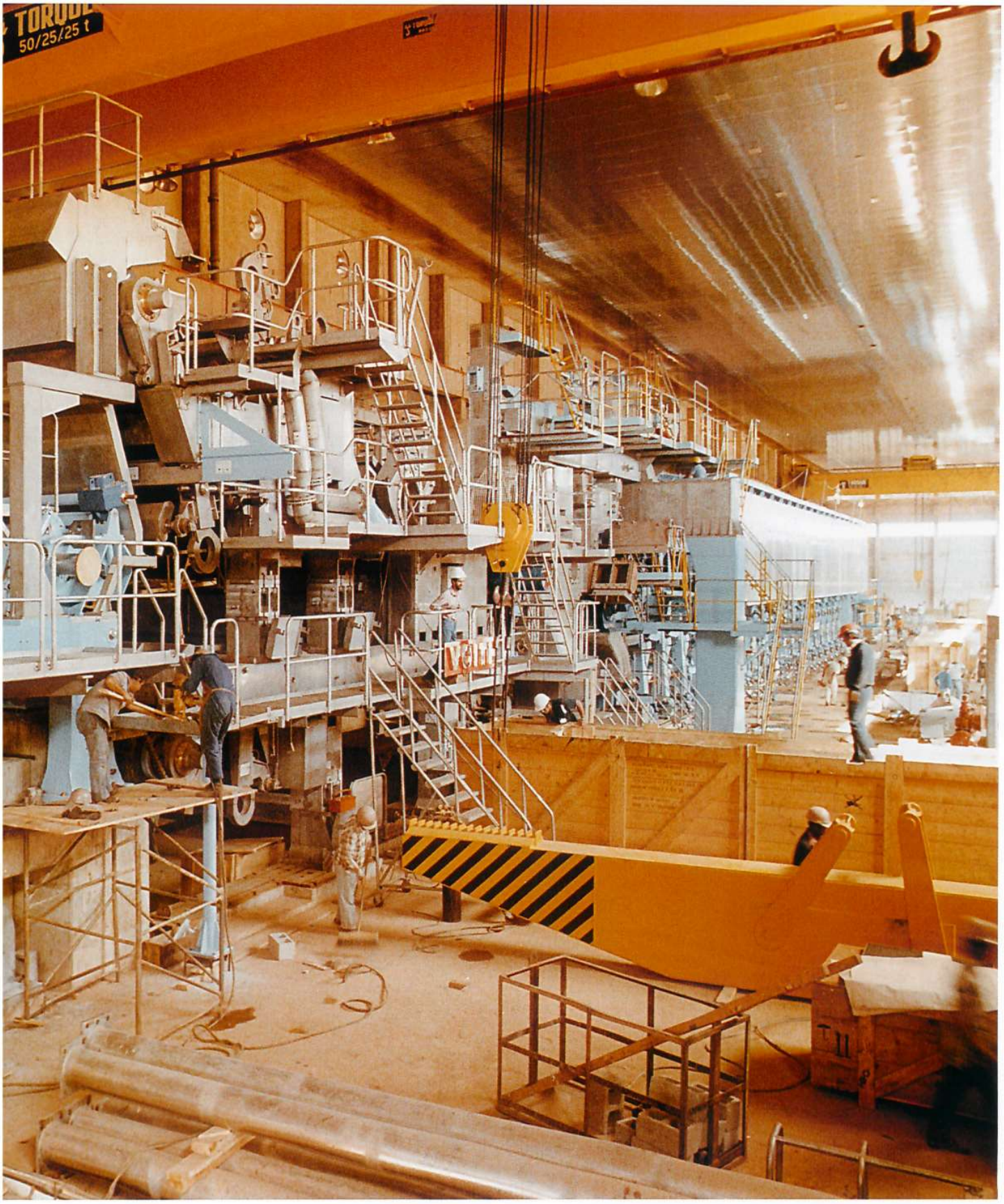


what was expected from them, taking the initiative, for example, of trying to solve their finances and opening capital at the stock markets to those interested in taking over the risks of the projects.

The project Bahia Sul, set up in the city of Mucuri, BA, is an example of this period. With a capacity for 500 thousand metric tons/year of pulp and 250 thousand metric tons/paper/year, the project met the needs of expansion, in paper production as well as for pulp exports. It was the result of the association of Cia. Suzano de Papel, Cia. Vale do Rio Doce-CVRD, BNDES Participações S.A.-BNDESPAR and the International Finance Corporation-IFC, and its objective was to obtain short-fiber bleached eucalyptus pulp. The pulp mill started production in 1992, followed by the paper mill the following year.

In 1993, in Arapoti, PR, the Indústria de Papel Arapoti S.A.-Inpacel started operations. It was the only company in the southern hemisphere to produce light- and medium-weight coated paper, with high brightness, excellent surface strength, and fine gloss, smoothness, and hue finishing. On account of those characteristics, it was the most used paper for printing magazines, flyers, gift papers, and special supplements. In 1998, Champion International purchased Inpacel and International Paper Company currently owns it.

Simultaneously to the development and industrial and technical growth, there was a continuous effort towards the administration and managerial professionalization, a trend that had already given signs. An example is the fact that paper companies were pioneers in a modality of hiring professionals that only much later would conquer many adepts: outsourcing, which means delegating activities to qualified partners.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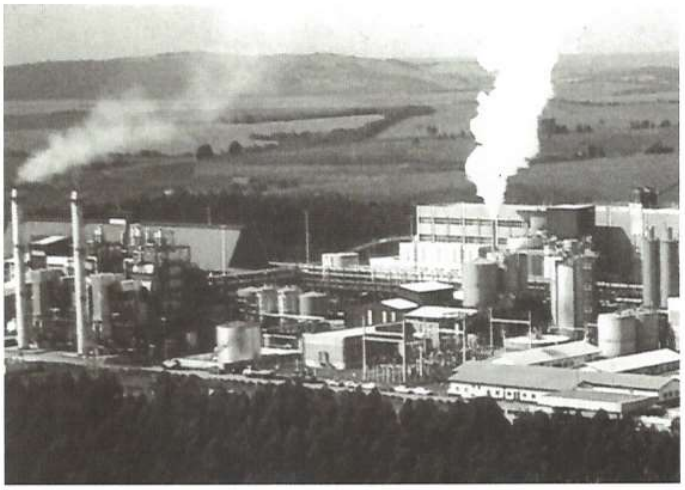
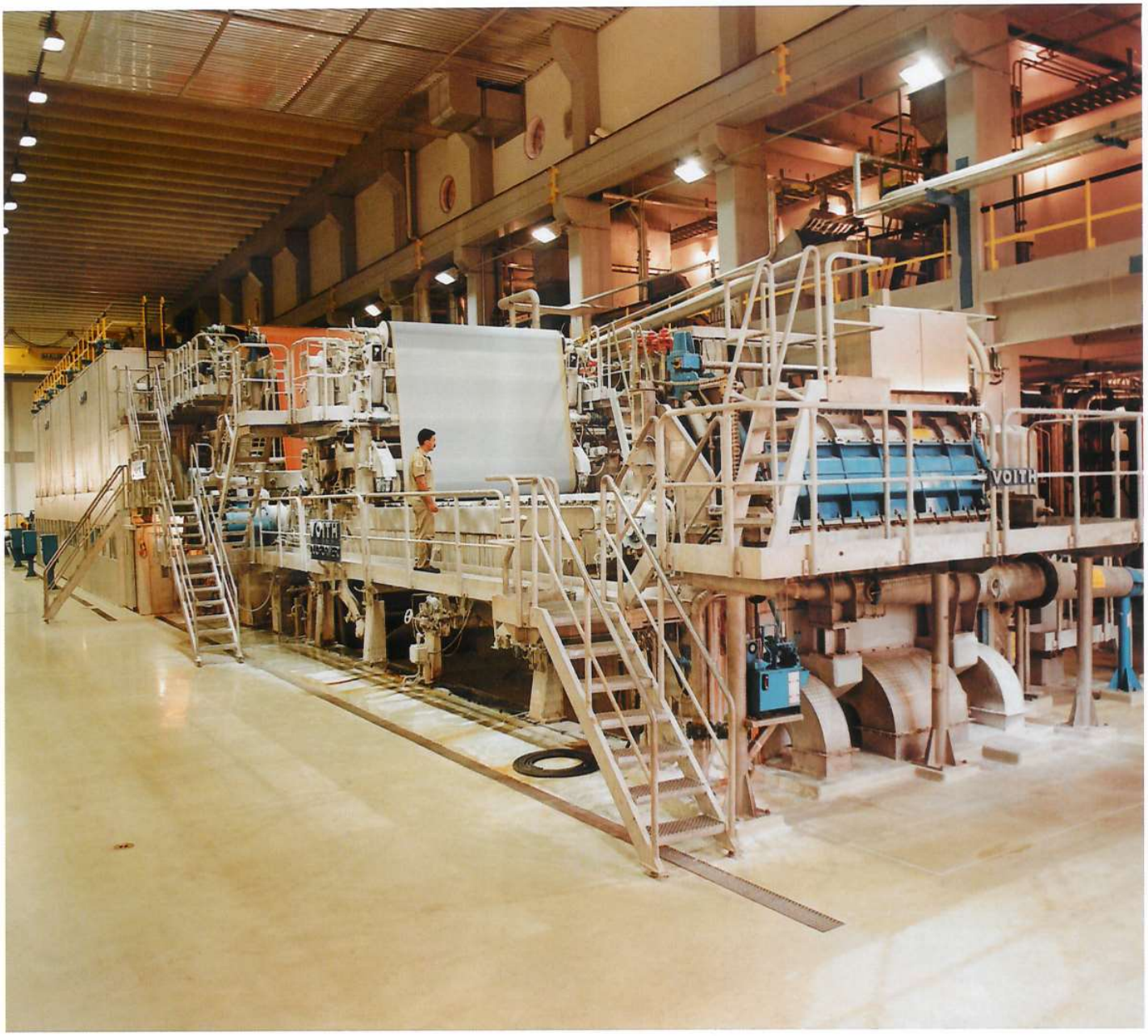


Above (top photo), Voith machine in mill of Inpacel, Arapoti, PR, 1988. Bottom photo, mill of Inpacel, Arapoti, PR, 1990s

In addition to that, in the 1980s the biggest industrial parks in Brazil went through processes of technological updating, which included automation and Information Technology. All these factors coincided to form an efficient and powerful circle of advances involving important achievements, such as raw material and basic material quality control, reduction of obstacles that hindered productive flows, and the continuous decrease in the equipment wearing off by the enhancement of preventive and well-planned maintenance.

CONSOLIDATED SUCCESS

For the international pulp and paper industry the 1990s represented a world stagnation, mainly during the last years of the decade. The United States, considered the stablest market, did not escape recession either, as they lost a significant part of their production, with negative impacts on the financial health of the companies to an extent that some of them had to close down their activities or their production units. Brazil, however, was a brilliant exception to the rule. The country started the decade as a participant of relevant importance on the world scenario. In 1991 it ranked 11th in world paper production, with almost 4.8 million metric tons. It was also the 10th largest apparent consumer, absorbing some 4.1 million metric tons. Five years later, in 1996, it was the 4th largest pulp exporter in the world and the indisputable leader in manufacturing pulp from eucalyptus. The dissonant note, however, was the low yearly per capita consumption: only 34 kg per inhabitant, almost ten times less than that of the United States, where such an index reached 332 kg during the same time.



Voith machine in mill of MD Nicolaus, Caieiras, SP, undate

Two major factors contributed particularly to our growth. One of them was the competitive price of wood in the forests planted using Brazilian technology. The other factor was the significant devaluation of the Real vis-à-vis the U.S. dollar, in 1999, when the strong control on currency lost ground to the free market speculation, thus diminishing our manufacturing costs and increasing the margins of contribution. In addition to that, the entrepreneurs' attitude was also crucial for the accomplishment of the targets of the 2nd Pulp and Paper National Plan-II PNPC as from 1989 to 1993, the segment had invested over US$ 5.5 billion.

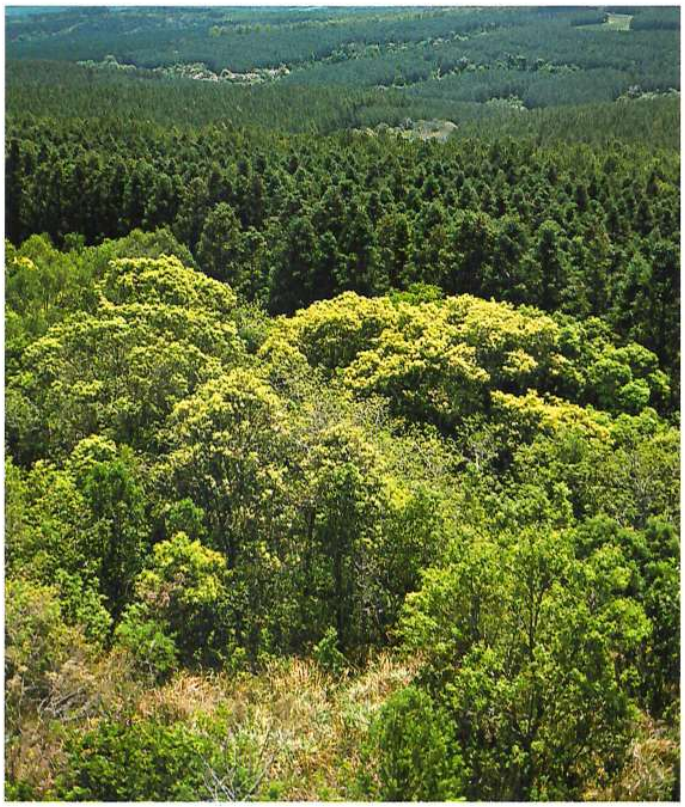
On this world scenario of weakened economies – mentioning only two examples, it is worth recalling the Mexican crisis in 1995 and the Asian, in 1997 – globalization was a movement that spread impressively, changing the economic relations among countries and among companies in such a way that many consecrated theories were severely questioned and not all of them resisted. This phenomenon, on the one hand, was pointed out as a source of apprehension, because of the increasing presence of international capitals in Brazil; on the other, it ended up impregnating the profile of the megacompanies with indelible traits of the local cultures.

The pulp and paper sector figures significantly in Brazilian exports. View of a shipment of products produced by Ripasa, 1990s. Facing page, view inside mill of Paraibuna Papéis, Juiz de Fora, MG, 1994

Concern for the conservation of native plant life is an essential point in the sector's environmental policy

The trend reached quite fiercely the papermaking industry, where merges and acquisitions took place, aiming at uniting and joining forces to resist the alterations in the world scenario, by enhanced participation of the market-leading companies. These initiatives yielded positive results on the stock market, in the case of public companies, which started to be regarded as decisive competitors on the international scenario. In order to participate in equal conditions in the negotiations, Brazilian producers had to enhance quality, seeking excellence based on the orientations standardized by the International Organization for Standardization-ISO and, furthermore, using production processes acknowledged as environmental- and ecosystem-friendly, duly certified by seals such as the environment and forestry certifications. The international market in general became more demanding as regarded contract prerequisites, in such a way that the candidates to exports had to prove their attitude of nonpolluters and environment preservers.

The search for excellence encountered severe obstacles in the late 1990s when the country went through critical economic difficulties that required a profound restructuring. The sector entered the Third Millennium hungry for new investments to increase its competitiveness, dramatically threatened by industries of countries such as Indonesia and South Korea, which were previously not representative at all in the industry. The infallible remedy to recover the lost ground and expand the chances of success was to wager on innovation and efficiency enhancement: two major challenges for the Brazilian industry, at all levels and sectors.



Reforestation area of the Klabin Group, PR, 1990s

GRADUAL ENVIRONMENTAL AWARENESS

In the early 1970s, worldwide pulp and paper companies were requested a special "citizen" attitude. Generally speaking, up until that time, world producers used to throw wastes of their product in the rivers and in the air, with a relatively high level of pollution. In developed countries, special care towards threatened autochthonous forests was added to the environmental concern, something that did not occur in Brazil, where raw material for production came, already for a long time, from reforestation. This aspect, albeit important, did not mean exemption of responsibilities concerning the global environment. On the contrary, papermaking companies were very often heavily criticized by local communities and experienced pressure from the media and from the public agencies in charge of environmental control. In due time, they tried to correct and adjust the production processes causing the problems: sometimes, emission of strong odors; other times, throwing substances in the riverbeds and in solid residue landfills.

Awareness on how to eliminate several types of residues generated in the production process gradually increased, so they would not cause damages to the communities and to the natural resources. At the same time, specific antipollution legislation, rather restrictive and efficient, was improved, for example, regarding the obligation to install recovery boilers, waste water treatment plants, and filters for the gas discharge. All through the 1990s there were also movements and conferences involving almost all world countries, which led to agreements of vital importance, such as Agenda 21, the ecological labeling

View of native forest of Veracel, Eunápolis, BA

or green stamps, the standards of the ISO 14000 series, and the standardization of the environmental regulations in the North American Free Trade Agreement-Nafta and in the European Union. Companies, well aware of their responsibility, improved production processes. The pioneer in the Brazilian papermaking industry to be granted the environmental certification ISO 14001 was Bahia Sul. In 1998, Klabin was the first company of that industry to accomplish sustainable management certification of its forests operations located in the state of Paraná by the Forest Stewardship Council-FSC.

At the beginning of the 21st century three pressure areas push the pulp and paper industry as concerns the environment: the struggle against the use of timber without sustainable management of the forests, restrictions on the use of chlorine gas for fiber bleaching, and the incentive to use recyclable fibers.

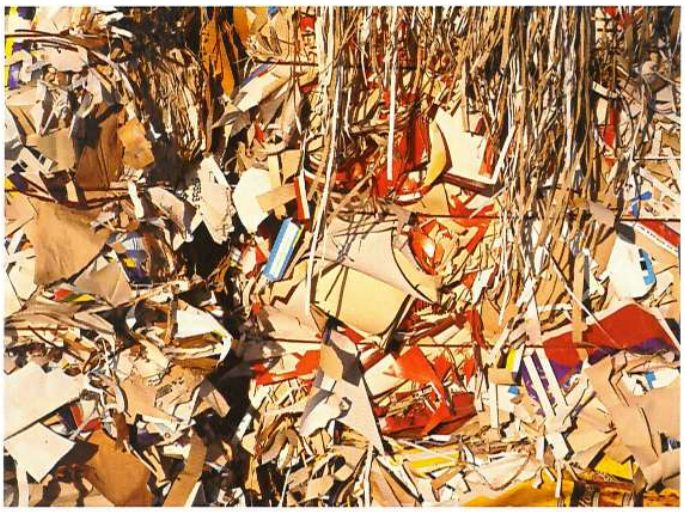
Brazil has been engaged in consuming only wood from planted forests, with a high rate of productivity and proper management techniques, ever more guaranteed in terms of environmental quality and social responsibility by the processes of certification. However, there are also oppositions to reforesting under the argument of supremacy of monoculture. The proper forest management and the forest certification are a good answer to the solution of those arguments against the planted forests.

From the production process point of view, a lot has been achieved regarding the preservation of the environment. As of the 1990s, the gradual substitution of chlorine for oxygen compounds in pulp bleaching stood among the innovations

introduced in the processes. New technologies made additional water-closing measures possible, what reduced significantly the generation of effluents. High-yield pulps were also developed by means of a more economical and ecological process. The resultant paper, albeit losing some of its whiteness over time, is suitable for magazine printing.

Recycling is another important aspect of the conservation philosophy that leads to benefits for both the companies and the community. Naturally, this is not an innovation in the process, as the materials used for centuries – even wastepapers and old rags – have been reused in the manufacturing of new products. Currently, the recovery rate of materials is much higher, from newsprint paper to paperboard. Among other advantages, this means not only a mere reduction in the amount of waste, but also the generation of currency, with the opportunity offered to export surplus pulp. Collecting recyclable material, on the other hand, can generate new work fronts, through cooperatives of street scavengers which, if properly organized and managed, could represent an opportunity to enhance life of the members of the cooperative.

The industry has also invested in reutilization technology. There is a specific glossary for recyclable fibrous raw material, prepared in 2001 by the Brazilian Association of Pulp and Paper-Bracelpa, together with the National Association of Wastepaper Collectors-Anap. It is a fundamental task, as the existence of many materials for recycling led to the need for defining very specific terms for the participants in the process.



The growing use and production of recycled material has resulted from the overall rise of environmental awareness within Brazilian society in recent years. Above, paper scraps

In spite of all necessary steps and efforts, the sector witnesses, at the beginning of this millennium, an increase in the domestic consumption and therefore the danger of diminishing exports. Resuming expansion of the foreign sales will depend on investments in new mills as well as in research and development, just as was the case in the period of the development of technology for the use of eucalyptus. Universities and both autonomous research centers and those connected to companies of the sector have been investigating solutions for specific needs. The challenge, as usual, is to produce more, better, and cheaper with an added variety of items, in order to suitably serve a wide range of clients, worldwide.

In this sense, a field where the studies have been highly positive is that of forestry development. The cloning technique brought genetic improvements, with significant upgrades in productivity and fiber homogeneity. At the beginning of the 21st century, eucalyptus reaches a productivity of 50 to 55 m^3/hectare.year and the pinus, 30 to 42 m^3/hectare.year.

Eucalyptus, with its gradual genetic enhancements, raised the country to the status of world leader in forestry productivity. Having as a starting point the experience accumulated over many years, project Genolyptus was launched jointly by the government, the industry and the universities in April 2002. Genolyptus is a project for the eucalyptus DNA sequencing, aiming at an in-depth study of the plant, its production capacity, the optimization of the quantity of wood obtained by planted area. Above all, the idea is to get better acquainted with the physical-chemical characteristics of the raw material, from which a better yield and the best possible quality can be obtained.

The companies in the sector have invested in tree breeding, seeking productivity increases and more consistent raw material. Above, eucalyptus seedlings

With the in-depth analysis of the data acquired in sequencing the genome, researchers will be able to correct problems such as the variation in quality, to be able to get woods with a high level of uniformity and maximum yield in pulp production. Even before the inception of the project, the experts had already obtained 112,000 Expressed Sequence Tags-ESTs, i.e. fragments of the genetic code. They expect that the majority of the new genes be specific to the eucalyptus.

Another precaution in the research area is the effective combat to plagues, an activity that brings together the producers, the Brazilian Agricultural Research Corporation – Embrapa-Forests – and the National Fund for the Management of Wood-Wasp-Funcema. There are also efforts, among others, to try to obtain nonwood raw material, as is being done at the Center for Pulp and Paper Technology – Senai-Cetcep – among other institutions.

Tree nursery of Veracel, Eunápolis, Bahia, 2002

THE ENIGMAS OF THE FUTURE

In 2002, Brazilian pulp production was 8 million metric tons, which meant an increase of 7.9% in relation to 2001. Apparent consumption of paper, in its turn, increased 1.2%, if compared to the previous year, reaching a total of 6.8 million metric tons or 38 kg per year per capita. This indicator should grow to 50 kg/year, according to estimates by Bracelpa, in the second decade of this century, when exports are expected to expand significantly, thanks to a specific program of investments. Among other initiatives, there are plans to foster activities of reforesting, which in 2003 occupied 1.4 million hectares for the pulp and paper industry companies only.

SURVIVAL AND RE-CREATION

Certain "prophets of the Apocalypse" have imagined a world without paper, when telematics changed the face of the planet, with countless possibilities of recording data on electronic means. There were also those betting on the extinction of this millenary base for writing. Much against the dark forecasts, not only did paper survive, but its utilization became more intense, owing to the facilities created by the advent and popularization of the computer. Virtually any original can be printed from a home workstation – even photographs – thanks to the sophisticated resources that are at the disposal of the consumers.

The popularization of the computer has increased the use of paper and widened the variety of types offered. Above, rolls of paper

Paper has survived exactly because it follows the sinuous paths of modernity, as can be attested by the variety of products created after the PC boom: different textures, sizes, grammages and types.

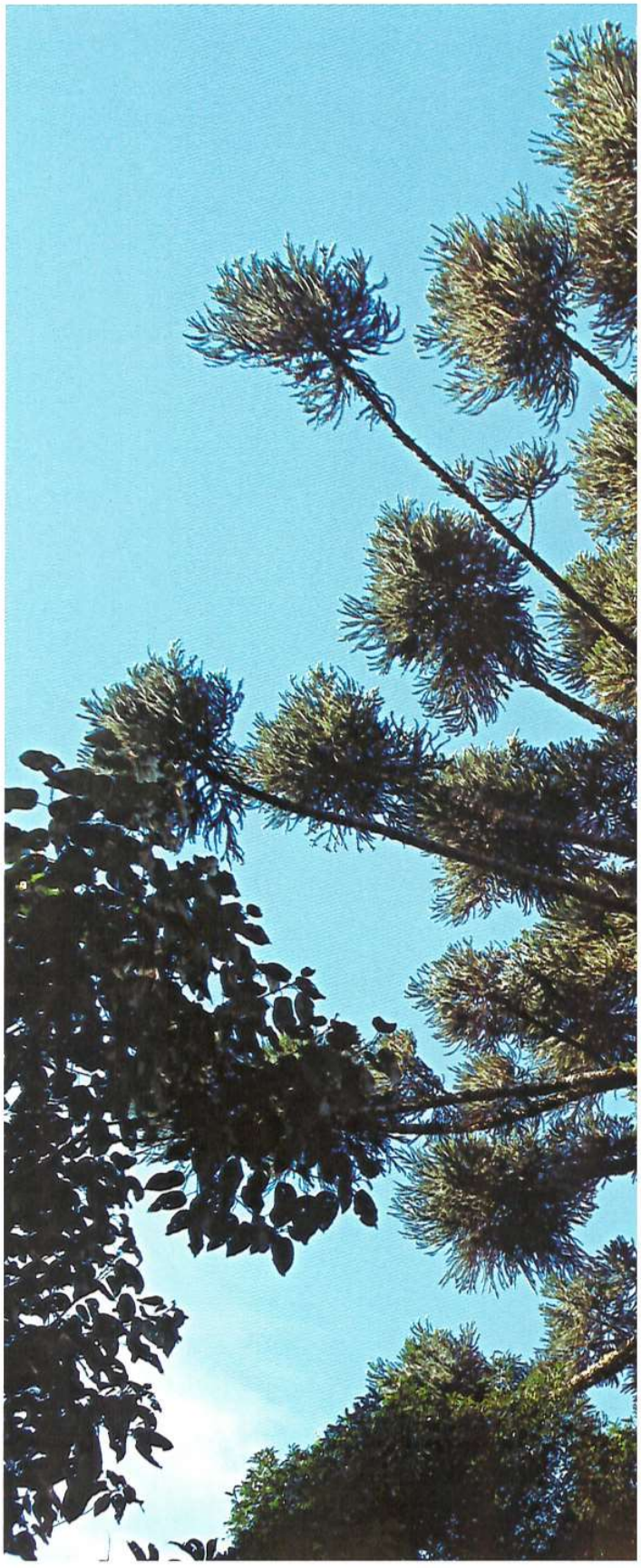
Today, it is possible to produce business cards, stickers, envelopes, letterhead papers, etc. at home. With the digital print shops it is possible to even publish a book with only one copy printed. In short, the base will always adapt, and this is the reason why not only does it survive, but it re-creates itself and reconstructs itself.

Of that total, 69% is eucalyptus, 29%, pinus, and the remaining 2% divided among other types of trees. The industry faces a series of challenges, aggravated by the lack of isonomy with its international rivals. To tackle such a difficulty depends, among other things, on the government initiatives of support to the necessary forest expansion and reduction of the excessive tax burden imposed on the segment, in addition to proper lines of financing. Furthermore, certain precautions should be taken especially for the increase in paper recycling for reuse as raw material, for the time being an activity which is well developed only in the south and southeast.

In Brazil, the segment of pulp and paper has a yearly turnover of US$ 6 billion, although the country stands among the ten leading producers in the world, with the advantage of planting 100% of the raw material it consumes for pulping. In direct turnover, the pulp and paper world industry represents a US$ 400 billion business a year. In terms of companies, it is a sector of giants, in which the world leader, International Paper alone has a US$ 30 billion turnover/year. Analyzing these figures gives an idea of the size of the challenge being faced by the domestic companies, also confronted with the irreversible phenomenon of globalization, which brings along mergers and enormous increases of conglomerates. Therefore, careful planning is mandatory, for the near as well as for the distant future, to consolidate conquests and add victories. Care with competitiveness is a vital issue from which depend complex and expensive actions, such as leading to and keeping operation at levels of excellence.

Mill of Aracruz Celulose, Barra do Riacho, ES, 1990s. Facing page, mill of Votorantim Celulose e Papel, Jacareí, SP, 2002

The sector's challenge is to balance technological development with environmental preservation



The recipe for long-term success will be to combine operation efficiency with the capacity of managing the organizations. The large companies are engaging correctly in increasing their production scale. However, there are small- and medium-size companies geared to diversifying the preparation of pulp, refining and drying, in the production of pulp and paper, in order to enhance their efficiency and develop new niches of users for their products and technical services.

After centuries of work, paper technology has reached an excellent level of development. We are talking about a consecrated product, of daily and diversified use, that has not lost ground, not even with the expansion of Information Technology, which brought about electronic files. In fact, there are new ways to disseminate words and images, and the printed form not only bravely resisted the diversification of processes, but also had its margin of utilization increased because of the added facility of printing texts as well as photos and illustrations. Even the predicted invasion of the so called e-books did not materialize and primacy is still in the hands of the traditional printing on paper. Nonetheless, thorough reflection should be done on the paths of this product. The challenge is to create hybrid options that conquer the consumers with solutions they did not even dream of. Therefore, just as in the beginning, when human beings started from the principle that the stone, wood, cooked clay were the best base for the dissemination of their ideas, now the time has come to create new uses for the paper, that perpetuate in time.


ABTCP
Associação Brasileira Técnica de Celulose e Papel

ABTCP

THE LONG JOURNEY

THE ABTCP WAS FOUNDED ON JANUARY 16, 1967, WITH THE AIM OF DISCUSSING THE PROBLEMS AND THE BEST TECHNIQUES RELATING TO THE PAPER INDUSTRY IN BRAZIL

The Brazilian Pulp and Paper Association-abcp, this is how the first name and logo were when it was founded on January 16, 1967. (The word "Technical" was only incorporated to the original name of the organization on February 13, 1967 and the logo ABTCP started to be used only in 1987.) The creation of abcp sprang from the need – realized by a group of young engineers, chemists, and economists that were working in companies connected to the papermaking industry – to create an institution that would enable the discussion of issues as well as the best techniques regarding the paper industry in Brazil.

In fact, the embryo of abcp was a series of long chats of a group of former students from the Paper School of Munich (Germany), including Reynaldo L. Bronnert and Arthur Erat. As they got together for informal talks at renowned bars on Avenida São Luis (in São Paulo), those young men, among other topics, exchanged ideas about the difficulties each of them faced in the company where he worked. The 1950s were just beginning.

Gradually, those conversations became consistent. The demand for training qualified professionals in those companies was enormous. All

those who were at the basis of this movement were convinced that it was necessary to create an entity capable of promoting the technological development of the industry. In their daily routine, entrepreneurs and technicians felt the difficulty in acquiring know-how expertise and in particular accessing research capable of providing a good foundation for the proper choice in steering the management decisions.

By and by the informal meetings of that group of pioneers became rather formal. They were held on a regular basis in the house of one of them, Roberto Barreto Leonardos. It was then that emerged the idea of organizing an association, in the shape of what was already being done in other countries, like Mexico.

With the support of the São Paulo Association of Pulp and Paper Manufacturers-APFPC, an entity that later on would reach national scope, the meetings started to take place at Praça da República, at the headquarters of APFPC. In the meeting of January 16, 1967, when the association was created, the bylaws were defined, as was the Board of Directors.

The first General Assembly of abcp was held on January 23, 1967, one week after its formation, with 90 representatives of the papermaking industry – including companies and individuals – at the Othon Palace Hotel, Praça do Patriarca, downtown São Paulo.

FIRST BOARD OF DIRECTORS, FIRST CONGRESS

The "Brazilian miracle," an optimistic inspiration by Delfim Netto, the then Finance Minister, was from 1968 to 1974. It was a time of high growth rates with a decline in inflation, reaching a stability of 20% to 25% a year. Those were expansion times for the paper industry, too, thanks to the sound basis built on the effort of the first decades of the 20th century. Brazil dominated the process of manufacturing pulp from eucalyptus, being also the pioneer in papermaking with that fiber. There was a new Forestry Code encouraging planting of industrial forests. However, certain obstacles prevented a stronger pick-up, particularly the reduced scales of pulp production – that led the industries to import raw material from several other countries. The outdated equipment technology, in addition to the lack of proper qualified labor, generated disruption in the standard quality of the final product.

No sooner had abcp started operations than its first Board of Directors – formed by Roberto B. Leonardos, president; Ernesto Rosenfeld, vice-president; Reynaldo L. Bronnert, Membership Division; Marcello Pilar, Promotion Division; Ovídio da Silva Sallada, Standards and Specifications Division; and Benjamin Solitrenick, Technical Division – started working on several fronts. After every movement or action there were more followers; many of them were technicians willing, above everything else, to learn with each other without worrying about industrial secrets. The mentality was not one of competition, but rather of mutual help, to have everybody grow and, in so doing, the industry would undergo reasonable progress.

It was not mere coincidence that one of the first tasks was to organize the First Annual Pulp and Paper Congress, in 1968 at Hotel Danúbio in São Paulo. From then on, the event would become a brand of the organization with yearly occurrence. The main mission of the events was the debate on issues relating to the industry and the promotion of technical exchange. Attendance at the first event reached approximately 200 professionals, with the presentation of 30 technical papers. The studies disclosed the concern with the discovery of new raw materials for the production of cellulose.

The congress hosted technicians from Europe, Latin America, Australia, and Asia. They were all anxious to find out about the works that were being carried out in Brazil with eucalyptus.

In addition to all that, abcp was eager to train high-quality personnel in order to meet the market demands, therefore they started the publication of a monthly newsletter which circulated inside the magazine *O Papel* with the objective of publishing important events of the industry, including an event schedule and a technical paper. Much of the content of that publication was translated from foreign papers, as there was no information available in Portuguese. At that time, very few professionals were familiar with technical English. Hence the association's concern with working towards the standardization fine-tuned to the Brazilian market demands.

According to Article 4 of Chapter 1 of the Bylaws of the Brazilian Pulp and Paper Technical Association, the objectives of the entity were, among other things, to promote the progress of pulp and paper technology aiming at the enhancement of its production, converting and finishing processes; to improve its quality and utilization; to encourage scientific and technical researches; to maintain exchange with technicians and technical associations from abroad; to hold congresses, seminars and meetings; to promote education and development of human resources; to gather and disseminate technical, statistical, and other interesting information to its members; and to work on the pulp and paper Technical Standards, etc. There was a lot to be achieved!

FIRST INITIATIVES

The first initiatives of ABTCP focused on the development and training of qualified labor. Therefore, the entity engaged in frame-working specific professional courses for the pulp and paper area. They signed an agreement with the São Paulo Technological Researches Institute-IPT for that purpose and, in February 1969, they created the Commission of Studies for the Development of Medium-Level Technicians and Specialized Labor for the Pulp and Paper Manufacturing Industry.

Another objective of the association was the standardization of the Brazilian productive process based on standards suitable for our market. In the 1960s, and for a long time, the papermaking segment in Brazil worked based on rules issued by the Technical Association of the Pulp and Paper Industry

Above (top photo), professionals present at the First Annual Conference of the abcp – Paper Week, São Paulo, SP, 1968. Above (bottom photo), meeting of the technical commission, an opportunity to discuss themes of relevance to the pulp and paper sector. On facing page, a report in the magazine *O Papel*, listing those present at the inauguration of the abcp, São Paulo, SP, 1967. On page 107, detail of Associação Brasileira de Celulose e Papel-abcp's inauguration ceremony

-TAPPI, USA that were translated by the association and adapted to the Brazilian setting. In the late 1980s and early '90s, the quality control in the Brazilian industries in general required full attention from technicians and managers. In 1986, the Second National Pulp and Paper Plan-II PNPC experienced a period of investments in production capacity and equipment modernization.

By the end of the 1990s, the national industry had to modernize its industrial plants rather fast; at the same time, a high level of quality was demanded from the domestic product to compete with foreign products and to find good sales possibilities via exports on the international market. It was the arrival of globalization which, among other requirements, demanded the ISO 9000 certification of quality for the products looking for a place in markets outside Brazil. ABTCP was one of the first associations to obtain this certification of quality in the country.

The First Cycle of Technical Standards held in 1996, revised, developed, and approved specific standards for the sector

STANDARDS IMPLEMENTATION

In 1994, ABTCP restructured the Nucleus for Technical Standards with work developed together with the National Pulp and Paper Manufacturers Association-ANFPC.

The Agreement of Mutual Cooperation between ABTCP and the Brazilian Association of Technical Standards-ABNT was signed in 1995, aiming at invigorating the works on standardization in the pulp and paper area. With the agreement, the Brazilian Committee for Pulp and Paper Standards-CB 29 was established and it was in charge of discussing and approving of standards at the national level.

UNFORGETTABLE MOMENTS

Aware of the important role it had to play in the Brazilian pulp and paper market, ABTCP has always strived to organize events that would enhance knowledge to the professionals of the sector. Therefore, immediately after it was established, it created in 1968 the 1st Annual Congress of abcp – the Paper Week held at Hotel Danúbio, in São Paulo. The success was so unprecedented that the event became a trademark of the association. Its most important mission was, and still is, to discuss issues relating to the industry and intensify the technical exchange.

Two hundred professionals of the area attended the first event, and 30 technical papers were presented. The studies revealed the concern with the discovery of new raw materials for the production of cellulose.

The 4th edition of the Congress, held from November 16 through 19, 1971, introduced as an innovation an area for the companies supplying machinery and equipment for the pulp and paper industries: an exhibition site in which 15 companies could display their products and launchings to the visitors.

The 4th Congress was highlighted by press coverage and further dissemination of the industry. One of the guest speakers was Marcos Pereira Viana, president of the Banco Nacional de Desenvolvimento Econômico-BNDE.

The 10th Annual Congress of abcp hosted two thousand participants and 80 papers were presented. The event reflected the moment experienced by the pulp industry with the launching of the 1st Brazilian Congress on Eucalyptus Pulp and Paper and the attendance of European, Latin American, Australian, and Asian technicians, who wanted to learn more about the works carried out in Brazil. Another event held simultaneously with this congress was the Symposium on Energetic Issues, a relevant subject at a time when the world was still under the impact caused by the oil crisis.

From 1984 to 1986, the events began to be called abcp Annual Pulp and Paper Congress. Studies on quality continued to be the core of discussions and culminated with the 1st Brazilian Congress on Quality Control, held during the 19th abcp Congress, which also presented a panel on the development of human resources.

If the accomplishment of the 1st Congress in 1968 was an important step for the technicians in Brazil, the 33rd event was the corroboration that, for ABTCP, there were no more frontiers. An agreement signed with the Technical Association of Pulp and Paper Industry-TAPPI, USA launched the ABTCP-TAPPI 2000, an exhibition held parallel to the 33rd International Pulp and Paper Congress.

Until 2003, ABTCP organized 36 congresses and exhibitions uninterruptedly, with the involvement and participation of professionals and managers of the papermaking industry nationwide and worldwide. Thus ABTCP ratifies annually its commitment with the dissemination of information, promotion of technology, fostering research, exchange of knowledge, and, above all, it confirms its calling as an entity that promotes the Brazilian industry all around the world.

The responsibilities of the Standards Committee included elaborating and reviewing methods for testing paper, cellulosic pulp, wood, and other fibrous materials, based on international standards; developing, approving, and reviewing the specific standards for a specific segment of the industry; and keeping an exchange channel with federal, state, and municipal technical bodies and agencies, trade entities, and other representative bodies.

MANAGEMENT STRATEGIES

Over its first 20 years of activity, ABTCP created a series of instruments for internal management to permit the evolution of its work. In the beginning, the entity worked with four Divisions: Technical, Membership, Promotion, and Standards and Specifications. Eventually, the structure evolved and new Divisions were added: Association Assets; Education; Congress; Cultural; Foreign Exchange; Workplace Hygiene and Safety; and Human Resources Development.

In 1987, the management of the entity was professionalized, which endowed it with quality both in service and service rendering. The Technical, Human Resources, and Membership areas were granted priority by the Board. The Divisions were now encompassing the following areas: Membership; Congress; Promotion; International; Marketing; Standards and Specifications; Association Assets and Technical. There was an Executive Board of Human Resources, comprised of the areas of Development and Training; Safety; Occupational Health and Medicine; and Forestry.

From its first general meeting, held on January 16, 1967, until today, the ABTCP has been widening the scope of its activities. Above, two of the association's headquarters

While consolidating operations in São Paulo, ABTCP tried to open fronts in other states, each one with its own challenges. The Paraná regional Board, in which 160 mills are concentrated, was the first to be established. The one in Minas Gerais focused on the mapping of its field of action, focusing particularly on the realm of small-size companies spread over the state. In addition to those, Regional Boards were established in the states of Amazonas, Bahia, Pará, Pernambuco, Rio de Janeiro, Rio Grande do Sul and Santa Catarina.

ABTCP also strived to expand horizons outside the country, as it has international directors focusing on different geographic areas in North America, Latin America, Europe and Asia. Foreign activities have gained increased importance over the last years. For instance, in 2002 ABTCP took part in the Swedish Association of Pulp and Paper Engineers-SPCI, an event held in Sweden, with a wide program of visits to companies and local research centers, such as the Swedish Pulp and Paper Research Institute-STFI, in Stockholm. In Finland, during the PulPaper 2002, the organization took part in an agreement for the ongoing exchange of engineering and graduation students with training programs in companies of both countries.

The ABTCP's Regional Seminar, held in the state of Paraná in 1976, was aimed at meeting the needs for new fronts of activity in other states

EXPANSION OF KNOWLEDGE

Among the outstanding initiatives of ABTCP in the field of technical qualification, the specialization courses deserve special mention, such as university extension for the experienced professionals or Exact Sciences students, in order to enable their working as process engineers in the industries.

This guideline allowed the creation of the Education Commission, under the Technical Division. Two different bodies – one for Direct Labor Training and the other dedicated to Technical and University level personnel – made up the Commission. In its initial program, the implementation of at least one training course for medium-level technical workers was developed, in accordance with the plan in cooperation with National Industrial Educational Service-Senai and the carrying out of the 2nd Basic Pulp and Paper Technology Course. In 1973, the Commission was instituted as the Education Division.

In the very first years of its existence, the association already provided one or two courses a year. In 1977, 15 different courses were organized, in which more than 500 students took part.

There was also the concern to develop the activities in close cooperation between the Technical and Education Divisions, and the state directors.

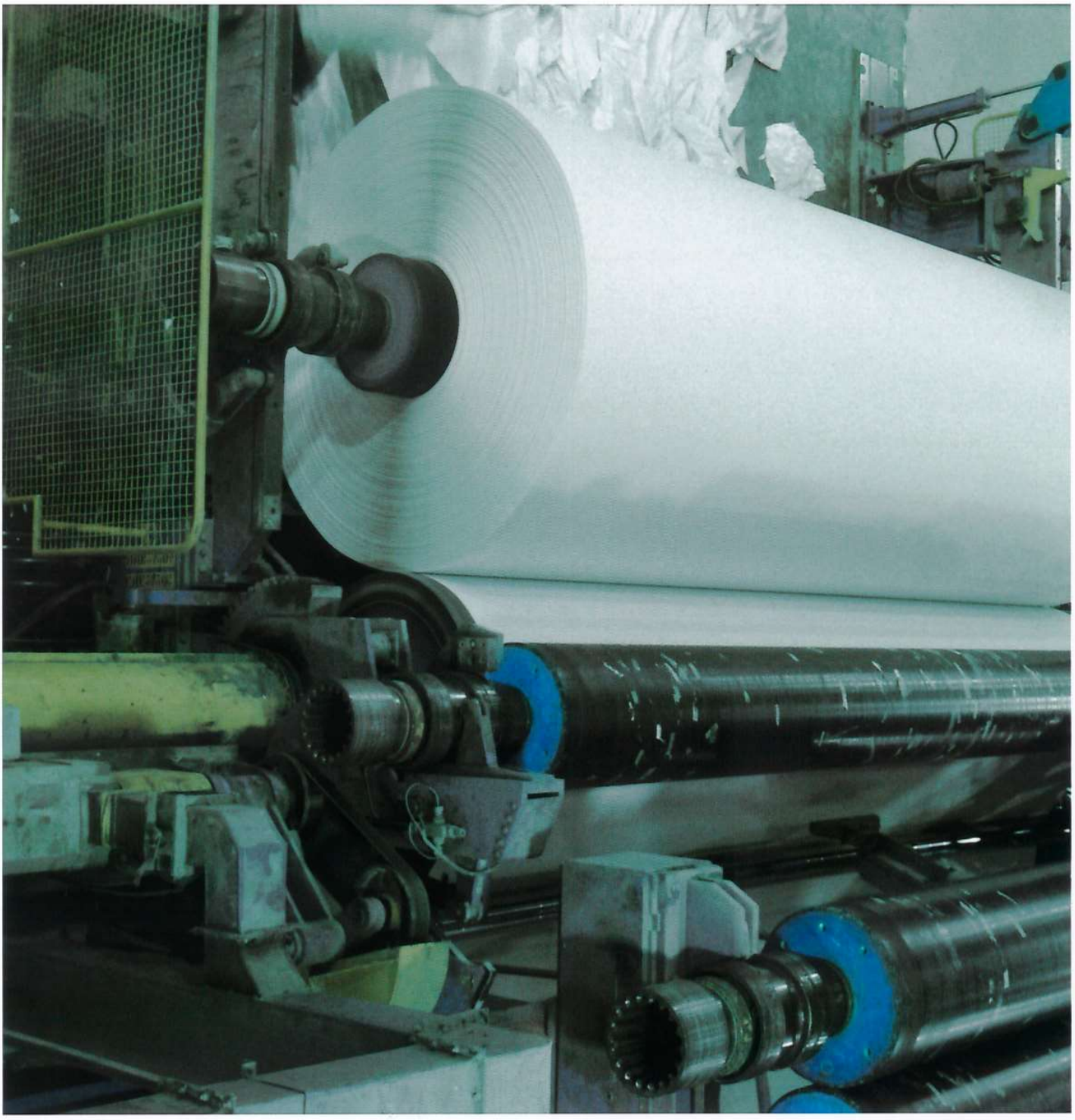
In May 1988, a pulp and paper specialization course started as the result of an agreement signed by ABTCP, ANFPC, APFPC, and the Foundation for the Engineering Technological Development of the University of São Paulo – School of Polytechnics – Epusp. The objective was to form process engineers and this was a pioneer initiative in Brazil.

On August 2, 1989, ABTCP started a course of university extension, "Pulp and Paper Manufacturing" at Faculdades Oswaldo Cruz School of Chemistry, in the city of São Paulo. The aim was to convey to the participants the fundamental know-how on the processes for the extraction of cellulose and papermaking, as well as the specific terminology of the industry.

In 2002 the Specialization Course on Paper, promoted by ABTCP and the Federal University of Viçosa, MG, was able to commemorate the graduation of the 7th class, thus fulfilling the project that had started on May 28, 1997.

This kind of activity became a tradition in the association, as an updating and enhancement tool, as well as a source of contact among the employees of different companies. The participation of suppliers willing to show their new products as an instrument of expanded knowledge was also very important at this time.

ABTCP has always been very keen on keeping its members updated with leading-edge technology worldwide. For this purpose, the association always brought in foreign experts for short courses. The first of the list was Hans Giertz, chemist and professor at the Norwegian Institute of Technology, who explained and elucidated the details on the chemistry and control of the bleaching process, and the basics of papermaking. The program was reinforced by the presence of another foreign lecturer: Antonio Filipe Pinheiro de Campos, then head of the service of production and pulp of Empresa de Celulose e Papel de Portugal-Portucel. Later on, events like those were promoted on a regular basis, thus ensuring technicians' ongoing training of the analysis on ways to improve the ongoing productive processes. The entity had been created under the auspices of information and knowledge.



The ABTCP has played an important role in the development of production techniques, keeping its members up to date on new processes, technologies and equipment

The foreign interchange was not limited to the occasional presence of foreign professors, but also to agreements with institutions of other countries to exchange publications and technical papers. It was not by chance, then, that along the years it was possible to set up a library with an enormous amount of relevant publications that is constantly being replenished: the Technical, Information Nucleus-NIT.

MAJOR GOALS

For its 35th anniversary, in 2002, ABTCP released a series of goals for the following years. Among them, the innovation in management and training of talents. As usual, its commitment with the promotion of knowledge and the maintenance of quality in the papermaking industry has led the association to create actions that will enhance the level of excellence of both professionals and companies.

ABTCP is now organized in three major nuclei in order to be able to meet all the planned demands: Organizational Development, Technical and Business.

ORGANIZATIONAL DEVELOPMENT NUCLEUS

ABTCP has progressed in its policy of organizational development to be prepared to provide services to all the members and for the technological growth of the pulp and paper industry in Brazil and worldwide.

In order to maintain a motivated team in search of excellence, the association employs important tools of human resources to assess the motivation and involvement of its staff in their mission to service the industry. Therefore, the association is always attentive to the organizational setting, carrying out frequent surveys in that direction, appraising the performance and maturity of the human talents in search of added value, and investing in training with the aim of broadening and intensifying knowledge, abilities, and the experience of each collaborator.

ABTCP created Continuous Improvement Groups aiming at an improved commitment of people, the good relationship, and the quality of life everybody expects.

The Sustainability Project, aiming at budget control, fostering the search for results, and safer and more efficient decision making, also deserves mentioning.

The development and technological innovations are also part of the scope of activities of ABTCP. In its search for agile and efficient solutions for the services rendered with quality and excellence, the association is committed to permanent updating of the Corporate Management System and of its website. Restructuring of the site in 2003 provided easier management of its content and fast communication with the outside public, through different relationship channels: forums, researches and surveys, chats, news, etc. The resources made available allow an increased interaction with the members and people interested in information on the Pulp and Paper industry.

ABTCP Management System-SGA is a software combining all activities related to businesses and processes of the entity in a single solution, which allows centralization and handling of information in real time, providing better control and management in the Administrative, Financing, Technical and Business areas.

The ABTCP offers support for the technical updating of its members. At left, a meeting room where national and international courses and seminars are held. At right, a look at the up-to-date library that is part of the Núcleo de Informações Técnicas-NIT (Technical Information Nucleus)

The utilization of those tools enables the global visibility of businesses and operations, fostering a more rational and optimized decision making. ABTCP is assimilated into the Digital Era.

TECHNICAL NUCLEUS

ABTCP's Technical Nucleus acts in the training and development of professionals of the pulp and paper industry and has contributed with this same function since its inauguration. The first activities of the association were already related to the exchange of experience among experts and technicians of the industry. Because of the good work, the association never stopped growing and never put aside its concern to provide the market with the best technical knowledge in the pulp and paper sector.

ABTCP provides its members with a Technical Information Nucleus with everything related to pulp and paper: it promotes the exchange of students; organizes management and technical courses, congresses, local and international seminars.

With the aim of meeting the demands of the professionals, companies, and suppliers in an ever better way, the association does consulting work in the fields of environment, maintenance, logistics and processes. Thus it intends to contribute to the increase in efficiency of the companies. ABTCP is also involved in the project of the Sectorial University. This is a training program that encompasses all areas of knowledge of the industry at all levels of the companies, including the corporate strategic planning.

Very aware of its social role, ABTCP, in partnership with com-

panies and government agencies, is developing projects aiming at the generation of benefits for the industry companies staff and their families, as well as supplying technical training for the community.

BUSINESS NUCLEUS

ABTCP is the organizer of one of the most important pulp and paper professional events in the world, as it has always tried to enhance the launchings of promotional opportunities within the industry.

Since it was created in 1967, the Association organizes the Annual Pulp and Paper Congress and Exhibition, an event presenting innovations in the leading-edge technology for the companies in the industry. The exhibition, which initially numbered 60 companies, today hosts more than 200 companies worldwide.

The Congress, a parallel event to the exhibition, is acknowledged as the best in the country for addressing issues that encompass the productive process from forest to finished products. In 2003, the event had an attendance of 1,700 professionals.

O Papel magazine, founded in 1939, was purchased by ABTCP in 1993, with the aim of disseminating and exchanging technological information. The magazine is an icon in the industry. The publication displays important data for professionals, managers and students. It is a premium editorial and commercial publication. In addition to the monthly issues of the magazine, ABTCP offers annually a *Pulp and Paper Purchasing Guide*, a virtual X-ray of the companies in the industry. With more than 250 advertisers, the guide is a reference to all industries.

In the business area, ABTCP is responsible for maintaining more than 980 members (individuals and companies). The promotion of membership is achieved by means of campaigns and with professional awareness towards the importance of becoming a part of this important relationship within the domestic and international markets.

The international performance of ABTCP is being implemented concomitantly by the business and technical areas, presenting the Brazilian sector to the world and bringing in novelties and innovations for the Brazilian industries.

THE POWER OF A CONCEPT

The conjuncture is now diverse to the one at the time ABTCP was founded. Instead of expanding, like in the past, the number of companies has diminished. There are also other requirements, such as the immediate supply of technology, something that before could be done in the medium or long term. The need for professional qualification continues and it is becoming more and more of a priority. The sophistication of the processes does not allow the existence of any kind of amateurism any longer. One of the major challenges for the association now is not to simply prepare for changes, but to predict what those changes are going to be. The technological issue – to develop, enhance, train, discuss – will always be on top of the agenda, in the same way it was with abcp in the early days. In modern times, therefore, it is a matter of deciding which tools to use and how to go about it. However, the association has always had the principle of promoting new technologies and their applications, and contributing to the development of the sector.

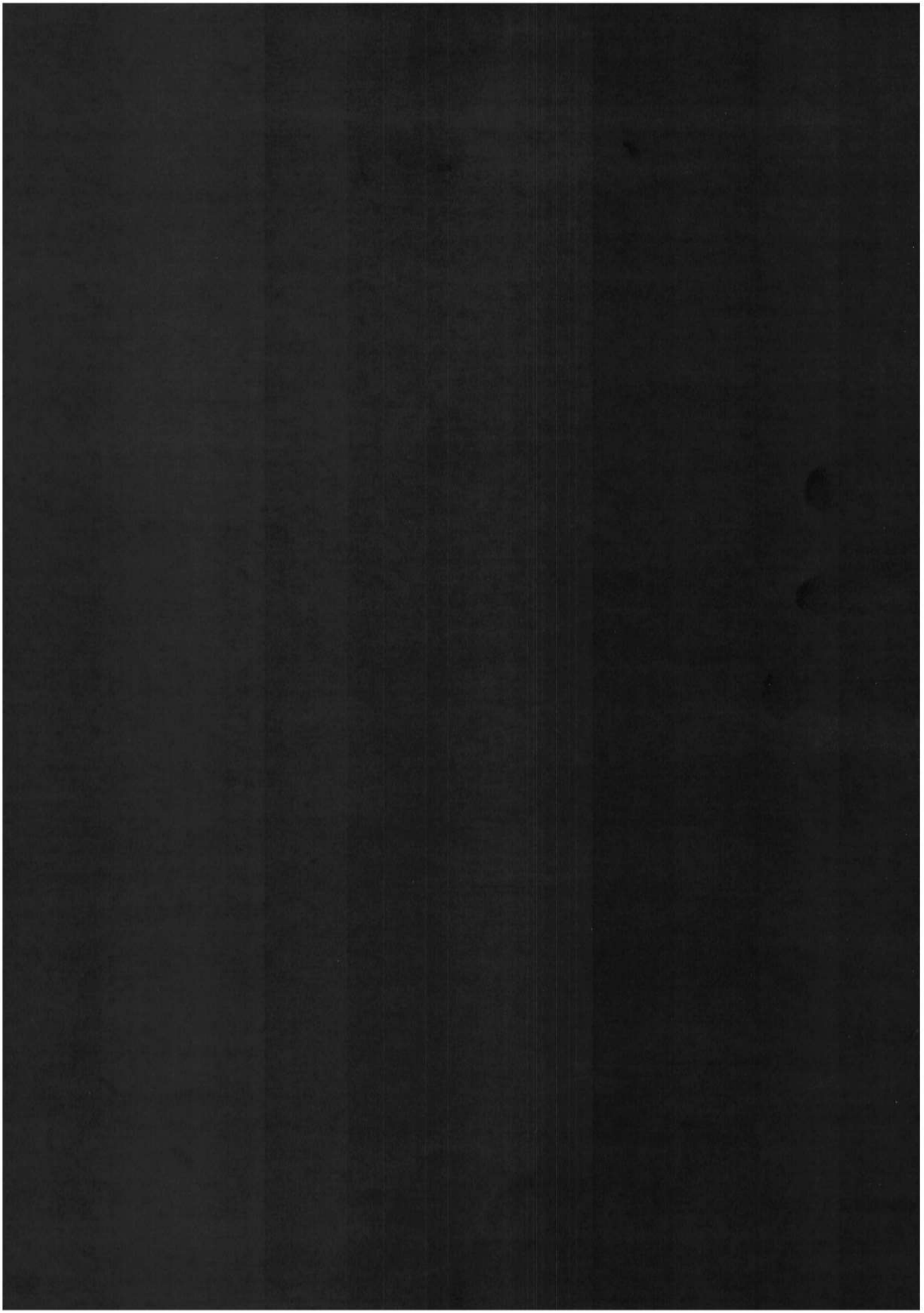
DOOR TO THE WORLD

O Papel magazine was created in São Paulo, in 1939, as a result of the entrepreneurial spirit of Editora Orientador. This means that it started circulating three decades before the foundation of the Brazilian Pulp and Paper Technical Association-ABTCP. It was the only one of its kind in Latin America and it contributed significantly to the growth and strengthening of the paper-making industry in Brazil.

In 1993, ABTCP, eager to expand communications with its members, purchased the rights of property to the magazine *O Papel*, which up until then had been published under the responsibility of Paulo Jorge Engelberg. The association implemented certain changes that adapted this vehicle to its objectives, in such a way as to become the answer to the members' queries.

Today, *O Papel* plays the important role of stimulating the technological development of the Brazilian paper industry, contributing with quality information, which reaches professionals, technicians, and entrepreneurs of the industry by means of reports and articles of international scope. It was for that purpose that, as of 1999, part of its content started to be published in both Portuguese and English.

Together with the *Pulp and Paper Purchasing Guide*, published by ABTCP since 1999 and currently one of the most important reference directories of the industry, *O Papel* has accomplished in a remarkable way its function of informing, disseminating, and expanding the performance of ABTCP in Brazil and abroad.



Time Line

Time Line

1889

Cia. Papel de Salto – Salto, SP
The company belonged to Melchert & Cia.

1890

Cia. Melhoramentos de São Paulo – Caieiras, SP
Enterprise of the Weizflog family

1897

Fábrica de Papel Paulista – Salto, SP
This name arose with the acquisition of Cia. Papel de Salto by General Couto de Magalhães and Leopoldo Couto de Magalhães

1898

Cia. Pedras Brancas – Guaíba, RS

1902

Indústria de Papel e Papelão Sturlini Matarazzo & Cia. – Osasco, SP
Klabin Irmãos & Cia. – São Paulo, SP
Leased the Fábrica de Papel Paulista, in Salto, marking the Klabin family's entrance into the industrial area

1908

Cia. de Salto – Salto, SP
In 1908, Cia. de Salto was acquired by Societá per l'Exportazione e per l'Industria Italo-Americana

1910

Cia. Industrial de Papéis e Cartonagem-Cipec – Osasco, SP
Formerly Indústria de Papel e Papelão Sturlini Matarazzo & Cia., which came under the control of Cia. Industrial Itacolomy

1917

Fábrica Paranaense de Papel – Morretes, PR

1918

Cia. Brasileira de Papel Cachoeirinha – Arapoti, PR
Cia. de Indústrias Brasileiras Portella – Jaboatão, PE
Cia. Fabril de Cubatão – Cubatão, SP

1923

Refinadora Paulista S.A. – Piracicaba, SP
Cia. Industrial Paulista de Papéis e Papelão – São Paulo, SP

1925

Cia. Industrial de Papel Pirahy – Piraí, RJ
Fábrica de Papelão Simão e Cia. – São Paulo, SP
S.A. Gordinho Braune Indústria de Papel – Jundiaí, SP
Tannuri S.A. – Rio de Janeiro, RJ

1929

Cia. Agrícola e Industrial Cícero Prado – Pindamonhangaba, SP

1930

Fábrica de Papel e Papelão Justo S.A. – Bento Gonçalves, RS

1931

Cia. Santista de Papel – Cubatão, SP

1934

Cartonifício Valinhos S.A. – Valinhos, SP

1935

Indústria de Papel Simão S.A. – São Paulo, SP

1936

Sociedade de Artigos Higiênicos Onibla Ltda. – Mogi das Cruzes, SP
S.A. Indústrias Reunidas F. Matarazzo – São Paulo, SP
Fábrica de Papel Nossa Senhora Aparecida – Aparecida, SP

1938

Fábrica Papel Tijuca S.A. – Rio de Janeiro, RJ
Fábrica de Papel Santa Therezinha S.A.-Santher – São Paulo, SP

1939

Primo Tedesco – Caçador, SC
Leon Feffer & Cia. – São Paulo, SP

1940

Cia. Industrial Paulista de Papéis e Papelão – São Paulo, SP
The company was acquired by the Zarzur family

Cia. Brasileira de Papel Cachoeirinha – Arapoti, PR
The enterprise became a state-run company

1941

Celulose Irani S.A. – Campina da Alegria, SC

Indústria de Papéis Independência – São Paulo, SP

1942

Fábrica de Papelão de Campinas – Valinhos, SP
The company was founded by Gerin Focesi e Cia. and Mac Hardy Manufatureira

Cia. Nacional de Papel e Celulose – São Paulo, SP

Cambará S.A. – Cambará do Sul, RS

Indústria de Papel Santo Amaro Ltda. – São Paulo, SP

1943

Indústria de Papel Salus Ltda. – Rio de Janeiro, RJ

Ribeiro Parada S.A. Indústria de Papel e Papelão – Limeira, SP

Indústrias Reunidas Irmãos Spina – São Paulo, SP

Ipsa S.A. Indústria de Papel – Guarulhos, SP

Cia. de Papéis e Papelão Yasbek – Mogi das Cruzes, SP

1945

Limeira S.A. Indústria de Papel e Cartolina – Limeira, SP

Cia. de Celulose e Papel Guaíba-Celupa – Guaíba, RS

1946

Indústria de Papel Euclides Damiani S.A. – Suzano, SP

1947

Indústria de Papel e Papelão São Roberto – São Paulo, SP

Dianda Cia. Ltda. – Ribeirão Pires, SP

Fábrica de Papel Carioca – São Paulo, SP

1948

Ribeiro Gerin Ltda. – Valinhos, SP
The Ribeiro Parada Group acquired a 50% ownership interest in Fábrica de Papelão de Campinas, whose name was changed to Ribeiro Gerin Ltda.

1949

Indústrias de Papel Rio Verde S.A. – Suzano, SP

1950

Ribeiro Gerin S.A.-Rigesa – Valinhos, SP
The enterprise became a corporation, changing its name to Ribeiro Gerin S.A.-Rigesa

Cia. Pedras Brancas – Guaíba, RS
Acquired by the Votorantim Group

1951

Adamas do Brasil S.A. – Osasco, SP
Installed in the locale of Cia. Industrial de Papéis e Cartonagem-Cipec

Indústria Americana de Papel S.A. – São Paulo, SP

Marombas Indústria e Comércio de Madeiras e Papelão – Curitibanos, PR

Indústria e Comércio Luiz Olsen S.A. – Rio Negrinho, SC

Cia. Fábrica de Papel Itajaí – Otacílio Costa, SC
Company formed by members of the Hering and Deeke families, owned a paper mill in the city of Itajaí, SC, and decided to invest in a new mill in the city of Encruzilhada, today called Otacílio Costa

1952

Papirus Indústria de Papel S.A. – Cordeirópolis, SP

1953

Ribeiro Gerin S.A.-Rigesa – Valinhos, SP
Rigesa became part of the Westvaco Corporation Group

1956

Cia. Santista de Celulose – Cubatão, SP

Indústria de Celulose e Papel Bandeirantes S.A. – Mogi das Cruzes, SP

Cia. Brasileira de Papel-Ibema – Turvo, PR

Cia. Suzano de Papel – Suzano, SP
With the acquisition of Indústria de Papel Euclides Damiani S.A. by the Feffer Group, there arose Cia. Suzano de Papel

1957

Fábrica de Celulose e Papel Fluminense S.A. – Campos, RJ

Indústria Cataguazes de Papel Ltda. – Cataguazes, MG

Time Line

1958

Olinkraft Celulose e Papel Ltda. – Otacílio Costa, SC
Cia. Fábrica de Papel Itajaí was sold to the US company Olinkraft Pulp and Paper Inc.

Limeira S.A. Indústria de Papel e Cartolina – Limeira, SP
A controlling interest was acquired by the group formed by the Derani, Zogbi and Zarzur families

1959

Champion Celulose S.A. – Mogi Guaçu, SP

Inpal Amazonas Papel para Embalagem – Belém, PA

Currently named Fábrica de Celulose e Papel da Amazônia-Facepa

Pinho Past Ltda.– Guarapuava, PR

Santa Clara Indústria de Cartões Ltda. – Ivaí, PR

1960

Manikraft Guaianazes Indústria de Celulose e Papel – Suzano, SP

Indústrias de Papel Rio Verde S.A. – Suzano, SP
Was acquired by the Suzano Group

Cia. Paduana de Papéis-Copapa – Rio de Janeiro, RJ

1961

Indústrias de Embalagens Santana S.A.-Inpa – Pirapetinga, MG

1962

Paraibuna Embalagens – Juiz de Fora, MG

Indústrias de Papel Racy – São Paulo, SP

Madeireira Miguel Forte Ltda. – União da Vitória, PR

1963

Cia. de Celulose e Papel do Paraná-Cocelpa – Araucária, PR

Gretisa S.A. Fábrica de Papel – Rio de Janeiro, RJ

Fábrica de Celulose e Papel da Amazônia-Facepa – Belém, PA
New name of Inpal Amazonas Papel para Embalagem

Santa Maria Cia. de Papel e Celulose – Guarapuava, PR

1964

Indústria Mineira de Papéis S.A.-Impasa – Governador Valadares, MG

Ribeiro Parada S.A. Indústria de Papel e Papelão – Limeira, SP

The group, formed by the families Derani, Zogbi and Zarzur, acquired the company that owned a pulp mill, Ripasa S.A., which became the name of the group

1966

Fábrica de Celulose e Papel S.A.-Facelpa – Fraiburgo, SC
In January 1993, Facelpa was acquired by Trombini Papel e Embalagem S.A.

Três Portos S.A. Indústria de Papel – Esteio, RS

Trombini Papel e Embalagens S.A. – Curitiba, PR

1967

Indústria de Papel Santa Bárbara-Inpasbal – Santa Bárbara do Oeste, SP
Belonged to the Ikemori family, manufacturers of machines for the paper industry

1968

Cia. Santista de Papel – Cubatão, SP
Acquired by the group formed by the Derani, Zarzur and Zogbi families

1971

Fernandez S.A. Indústria de Papel – Amparo, SP

Cia. de Papéis-Copa – Mendes, RJ

Iguaçu Celulose, Papel S.A. – Curitibanos, PR

Indústria de Papéis Santo Amaro S.A. – Santo Amaro da Purificação, BA

1972

Meliorpel – Caieiras, SP
A joint venture of Cia. Melhoramentos with the German company MD Papier

Aracruz Celulose – Barra do Riacho, ES

Indústria de Celulose Borregaard S.A. – Guaíba, RS

Celulose e Papéis do Maranhão-Cepalma – Coelho Neto, MA

Cia. de Indústrias Brasileiras Portella – Jaboatão, PE
Acquired by the João Santos Group

1973

Kassuga do Brasil Indústria de Papel Ltda. – Sorocaba, SP

Celulose Nipo-Brasileira S.A.-Cenibra – Belo Oriente, MG
Joint venture of Cia. Vale do Rio Doce with Japan Brazil Paper and Pulp Resources Development Co.

Sovel da Amazônia Ltda. – Manaus, AM

Indústria de Papel e Papelão Louveira – Louveira, SP

Cambará S.A. – Cambará do Sul, RS
Acquired by the De Zorzi Group

1974

Adami S.A.-Madeiras – Caçador, SC

Celulose e Papéis do Maranhão-Cepalma – Coelho Neto, MA
In November 1974 the company was acquired by the João Santos Group

Sociedade de Artigos Higiênicos Onibla Ltda. – Mogi das Cruzes, SP
Acquired by the Klabin group in 1974

1975

Cia. Guatapará de Celulose – Luís Antônio, SP

1976

Cia. de Celulose da Bahia-CCB – Camaçari, BA

Jarí Celulose S.A. – Monte Dourado, PA

Itapagé S.A. Celulose, Papéis e Artefatos – Coelho Neto, MA

Indústria de Papel e Celulose de Salto – Salto, SP
This name arose with the acquisition of Fábrica de Papel Paulista, in Salto, by the Papel Simão Group

Cícero Prado Celulose e Papel S.A. – Pindamonhangaba, SP
Cia. Agrícola e Industrial Cícero Prado separated its agricultural activities from its industrial ones. The resulting industrial complex gave rise to Cícero Prado Celulose e Papel S.A.

Rio Grande Cia. de Celulose do Sul-Riocell – Guaíba, RS
This name arose with the acquisition of a controlling interest by Montepio da Família Militar

1978

MD Nicolaus – Caieiras, SP
This company was formed when Cia. Melhoramentos withdrew from the Meliorpel partnership, leaving MD Papier in control

Rio Grande Cia. de Celulose do Sul-Riocell – Guaíba, RS
Became controlled by the holding company Riocell Administradora S.A., whose capital was formed by Banco do Brasil and Fibase, in equal parts

1979

Astória Papéis Ltda. – Gravataí, RS

Papel de Imprensa S.A.-Pisa – Jaguariaíva, PR
A company of the O Estado de S. Paulo Group

Astória Papéis Ltda. – Gravataí, RS

Itapagé S.A. Celulose, Papel e Artefatos – Coelho Neto, MA
The company Celulose e Papéis do Maranhão-Cepalma had its name change to Itapagé S.A. Celulose, Papel e Artefatos

Manville Produtos Florestais Ltda. – Otacílio Costa, SC
The company Olinkraft Celulose e Papel Ltda. was acquired by Manville Co., and its name was changed to Manville Produtos Florestais

1980

Indústria de Papel de Piracicaba – Piracicaba, SP
A company of the Simão Group which arose with the purchase of Refinadora Paulista S.A.

Cia. de Papéis e Papelão Yasbek – Mogi das Cruzes, SP
This company was acquired by Ripasa

1982

Cia. De Zorzi de Papéis – Pindamonhangaba, SP
Cícero Prado Celulose e Papel S.A. had its ownership interest transferred to the De Zorzi Group, and its name was changed to Cia. De Zorzi de Papéis

Rio Grande Cia. de Celulose do Sul-Riocell – Guaíba, RS
Banco do Brasil's ownership interest in Rio Grande Cia. de Celulose do Sul-Riocell was purchased by KIV, a joint venture of the groups Klabin, Iochpe and Votorantim

Time Line

1983

Filiperson Papéis Especiais – Rio de Janeiro, RJ

Cia. Brasileira de Papel Cachoeirinha – Arapoti, PR
The Bamerindus Group acquired the company

Orsa Embalagens – Suzano, SP

Mili Distribuidor de Papéis S.A. – Três Barras, SC

1984

Indústria de Papel e Papelão Louveira – Louveira, SP
The company was acquired by the MD Papier Group

C.V.G. Cia. Volta Grande de Papel – Rio Negrinho, SC
Indústria e Comércio Luiz Olsen S.A. had its name change to C.V.G. Cia. Volta Grande de Papel

Indústria Mineira de Papéis S.A.-Impasa – Governador Valadares, MG
Acquired by Fábrica de Papel Santa Therezinha-Santher

1986

Lwarcel Celulose – Lençóis Paulista, SP

1987

Bahia Sul Celulose – Mucuri, BA

1988

Celulose e Papel Votorantim-Celpav – Luís Antônio, SP
This name arose with the purchase of Cia. Guatapará de Papel e Celulose by the Votorantim Group

1989

Klabin Bacell S.A. – Camaçari, BA
This company was formed by the acquisition of Cia. de Celulose da Bahia-CCB by the Klabin Group, at auction

1990

Cia. de Papéis-Copa – Mendes, RJ
Acquired by the Klabin Group

Indústria de Papel Sovel da Amazônia Ltda. – Manaus, AM
A company of the Sovel Group

1992

Indústria de Papel e Celulose-Inpacel – Arapoti, PR
The old factory of the Cia. Brasileira de Papel Cachoeirinha, after upgrading work begun in 1989, was inaugurated under the new name Indústria de Papel e Celulose-Inpacel

Votorantim Celulose e Papel – São Paulo, SP
Company created through the integration of the pulp and paper units of the Papel Simão Group, acquired that same year

Igaras Papéis e Embalagens – Otacílio Costa, SC
Manville Produtos Florestais Ltda. had its name changed to Igaras Papéis e Embalagens

1993

PSA Industrial de Papel S.A. – São Leopoldo, RS
PSA arose from the acquisition of Fábrica de Papel e Papelão Justo S.A.

1995

Ahlstrom Papéis Ltda. – Louveira, SP
This company arose from the acquisition of Indústria de Papel e Papelão Louveira by Ahlstrom

Votorantim Celulose e Papel-VCP – Luís Antônio, Jacareí, Piracicaba and Mogi das Cruzes, SP
Formed by the merger of the mills of the Votorantim Group: Papel Simão, Votorantim Celulose e Papel, and Celulose e Papel Votorantim-Celpav

Igaras Papéis e Embalagens S.A. – Otacílio Costa, SC
The name of this company was changed to Igaras Papéis e Embalagens S.A. due to the participation of Cia. Suzano, which acquired a 50% ownership interest. In 2000 it was acquired by the Klabin Group, becoming one of the mills of the Corrugated Cardboard Division

1996

Nobrecel S.A. Celulose e Papel – Pindamonhangaba, SP
Cia. De Zorzi de Papéis had its name changed to Nobrecel S.A. Celulose e Papel

1997

MD Papéis Ltda. – Caieiras, SP
With the acquisition of MD Nicolaus by the Gusmão dos Santos Group, the company's name was changed to MD Papéis Ltda.

BN Papel Catarinense Ltda. – Benedito Novo, SC

1998

Veracel Celulose S.A. – Eunápolis, BA
A joint venture of the companies Odebrecht and Stora Enso

Indústria de Papel e Celulose-Inpacel – Arapoti, PR
Acquired at auction by Champion Papel e Celulose

Schweitzer-Mauduit do Brasil – Piraí, RJ
The acquisition of Cia. Industrial de Papel Pirahy by Schweitzer-Mauduit gave rise to Schweitzer-Mauduit do Brasil

1999

Indústria de Papel e Celulose de Salto – Salto, SP
Arjo Wiggins assumed a controlling interest in the company, in which it had participated since 1977

2000

International Paper do Brasil – Mogi Guaçu, SP
This company arose with the acquisition of Champion International by Grupo International Paper

Veracel Celulose S.A. – Eunápolis, BA
Aracruz entered the undertaking

Jarí Celulose S.A. – Monte Dourado, PA
Acquired by the Orsa Group

Norske-Skog Pisa – Jaguariaíva, PR
This company arose with Norske-Skog's acquisition of Papel de Imprensa S.A.-Pisa

2001

Indústria de Papéis da Bahia Ltda.-IPB – Santo Amaro da Purificação, BA
After Indústria de Papéis Santo Amaro S.A. was acquired at auction by Química Fina, its name was changed to Indústria de Papéis da Bahia Ltda.-IPB

2002

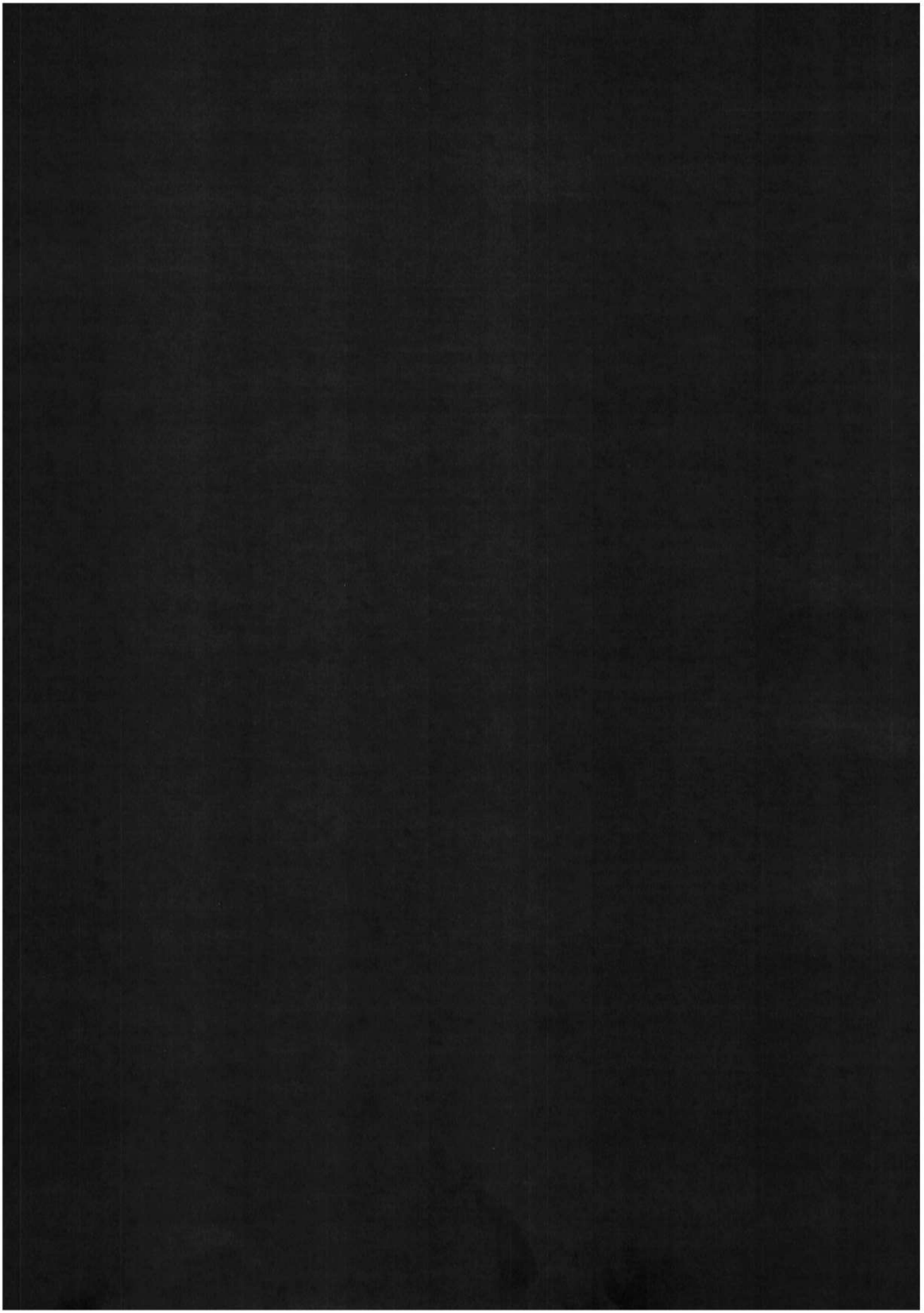
Brancocel – Boa Vista, RR

2003

Rio Grande Cia. de Celulose do Sul-Riocell – Guaíba, RS
The Klabin Group sold its controlling interest in Riocell to Aracruz

Bahia Pulp S.A. – Camaçari, BA
This name arose with the acquisition of Klabin Bacell S.A. by RGM International

Kimberly-Clark do Brasil – São Paulo, SP
Established in 1998 through a joint venture between Klabin S.A. and Kimberly-Clark Co., its ownership control was later acquired by the latter. The Kimberly-Clark brands had already been present on the market since 1977, through a joint venture with Cia. Melhoramentos



Sponsors

Albany International Tecidos Técnicos Ltda.

Albany mill in the city of Indaial, SC, with area of over 30 thousand square meters. On facing page, the corporate headquarters in the United States

A CAREER IN PULP AND PAPER

In 1890, the banks of the Hudson River in the city of Albany, USA, were dotted with various paper mills, whose production accounted for nearly all of the paper produced in America.

Attracted by the rapid growth in this sector, in 1895 a group of local entrepreneurs founded the Albany Felt Company. The original goal of this company was to produce paper machine clothing for the American market.

The success of the undertaking and the opportunities for growth and expansion to other countries led to new opportunities for the firm.

In the 1950s the company established factories in Canada and the Southeast USA, with an eye to providing products for export. And, by way of joint ventures, the expansion extended to overseas locations such as Scandinavia, Latin America, the Netherlands, France and Australia.

A significant milestone for the company came in 1969, when due to its process of expansion its name was changed to Albany International Corporation, integrating the operations of the Albany Felt Company with those of Appleton Wire Works, America's largest manufacturer of forming fabrics, and with Nordiska Maskinfilt, Europe's leading supplier of paper machine clothing.

In the 1970s, Albany International established a research and development center near the city of Boston, Massachusetts, which is currently a provider of cutting-edge solutions for the paper, pulp, and textile industries, the solid and liquid residue filtration fields, and other markets which the company has come to serve.

Albany International Tecidos Técnicos Ltda.

In 1999, Albany International acquired Geschmay, a German manufacturer of fabrics and felts for papermakers.

After more than a hundred years of operations, Albany International continues to maintain its corporate ideals. It has become the world's leading supplier of paper machine clothing, with factories in 15 countries, and committed to helping its clients to achieve their goals.

Albany International in Brazil

The industrial growth and pioneering in the production of short-fiber pulp led Albany International to establish a factory in Brazil. Albany International had already been supplying the Brazilian market from its factory in Canada, and in 1970 it acquired Asten, a factory located in the city of Guarulhos, state of São Paulo, SP, thus beginning its operations in Brazil.

On January 10, 1975, optimistic about Brazil's economic context, the company transferred its location to Blumenau, state of Santa Catarina, SC. This strategic location within a hub of textile manufacturing facilitated the obtainment of inputs, allowing the company to offer new solutions in paper machine clothing.

The floods of 1983 and 1984 hit the factory, damaging a large part of the equipment and raw materials. These difficulties were overcome, and a new manufacturing unit was built in the city of Indaial, SC, entering operations on June 16, 1986.

Aware of the importance of its role in the Brazilian market, Albany International invested continuously in the enlargement and modernization of its manufacturing center, whose total area grew to more than 30 thousand square meters.

Keeping up with the technological revolution in the pulp and paper sector was never an easy task. After more than 30 years in Brazil, Albany International is proud of the part it has played in this history. Its pioneering products, such as triple-layer forming fabrics, multilayer monofilament dryer fabrics, seamed multiaxial felts, and many others, offer manufacturers the necessary reliability for investments in faster machines and product enhancements.

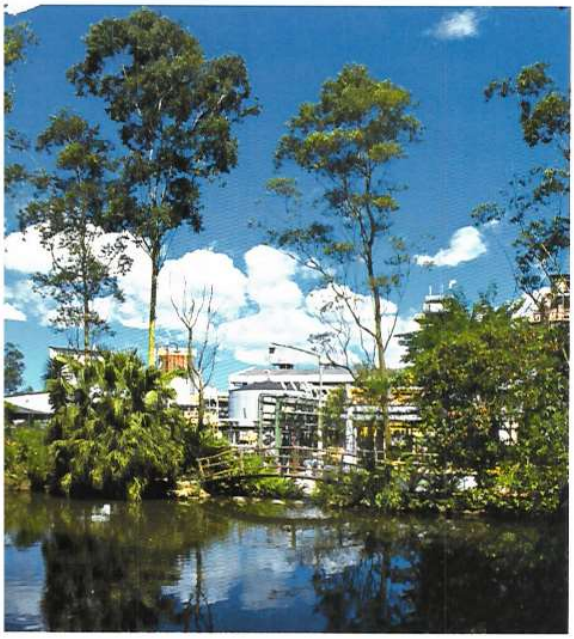
Besides being the market leader in paper machine clothing, Albany International Brazil has become a benchmark in customer service, consulting and technical assistance.

Albany International Brazil takes pride in being the first unit within the corporation to achieve certification under ISO 14001 (environmental) in 1996, and ISO 9001 (quality) in 2000, as well as winning twice consecutively the Outstanding Performance Award within its sector.

Albany International has always believed in Brazil and, especially, in its pulp and paper industry. A sector that contributes increasingly to Brazil's gross national product, directly employs more than 100 thousand workers, and contributes significantly to Brazil's balance of trade needs suppliers to assure competitiveness, and Albany International is committed to fulfilling this role.

Approaching its 30th anniversary in the state of Santa Catarina, Albany International feels honored by the confidence that has been placed in it throughout these years, and reciprocates by promising to continue the commitment and dedication that have always characterized its relations within the industry.

Carbocloro S.A. Indústrias Químicas



The headquarters of Carbocloro are located in a large ecological area, where nature is cared for and preserved

RESPECT FOR THE NATURAL ENVIRONMENT

At the beginning of the 1960s, Brazilian President Juscelino Kubitschek's programs for industrial development opened new perspectives for the chemical industry in Brazil. The Mesquita Sampaio family took advantage of this opportunity by creating Sipes do Brasil S.A.-Industrial de Produtos Eletroquímicos e Sintéticos (Electrochemicals and Synthetics). At that time, the repressed demand for caustic soda in Brazil encouraged the partners to construct a modern chemical plant for the production of caustic soda and chlorine.

On May 10, 1960, the stockholders held a special general meeting and established the company Carbocloro Indústria Química Ltda., with the dissolution of Sipes. This new company was joined by Diamond Alkali International Co., Química Industrial Medicinalis S.A., Brasil Warrants Cia. de Comércio e Participação – a company of the Moreira Salles Group – and by Ibis International Industrial Inv. Inc. This modern project brought to Brazil the most advanced technology for chlorine and soda, developed at that time in Italy by De Nora.

The year 1962 brought changes in the composition of stockholders with the exit of the Medicinalis Group; leaving a new corporation composed by Diamond Alkali International Co., Brasil Warrants and the De Nora Group. This was the birth of Carbocloro S.A. Indústrias Químicas.

April 12, 1964, saw the startup of operations at the first manufacturing plant, with a production capacity of 17 thousand metric tons of chlorine/year. By 1966 this production had risen to 35 thousand metric tons of chlorine/year.

In 1969, the Moreira Salles Group and Diamond Alkali – renamed as Diamond Shamrock Corporation – bought out the ownership interest of the De Nora Group, each retaining 50% of Carbocloro's ownership equity. In this same year, the Moreira Salles Group joined with the Soares Sampaio Geyer Group to found Unipar União de Indústrias Petroquímicas S.A., transferring their ownership equity in Carbocloro to this new company. In 1970, Carbocloro expanded its plant, adopting the modern technology of titanium anodes. In the 1980s, the company invested more than US$ 150 million in the duplication of its industrial complex, increasing its capacity to 200 thousand metric tons of chlorine/year.

In 1986, Diamond Shamrock Corporation was acquired by Occidental Chemical Corporation (OxyChem), the chemical division of Occidental Petroleum Corporation and the largest supplier of chlorine and caustic soda in the United States. Carbocloro's ownership equity thus became the property of OxyChem.

Today, Carbocloro is an association of Unipar with OxyChem, each with 50% stock ownership, and has an effective capacity of 253 thousand metric tons of chlorine/year and 284 thousand metric tons of caustic soda/year.

In its 40 years of operations it has become a solid company, the largest supplier of chlorine in the Brazilian market and the leader in Brazil's South-Southeast region. Total output of its entire line of products has reached one million metric tons per year, providing basic raw materials for important segments of Brazilian industry. Its products are also widely used in the water treatment and basic sanitation areas.

In regard to social responsibility, in the 1970s, even before the enactment of specific legislation concerning the natural environment, Carbocloro launched its program of environmental management, a set of measures for the treatment of liquid effluents, gas emissions and solid wastes generated in its activities. The company is certified under ISO 9001:2000 and ISO 14001, and is in the certification process for OHSAS 18000.

Carbocloro now celebrates 40 years of operations. Present in the life of people. And present in the history of the Brazilian pulp and paper industry.

Corn Products Brasil Ingredientes Ltda.

A LONG-STANDING PARTNERSHIP

Tradition and Technology – two nouns that characterize Corn Products Brasil's long track-record together with Brazil's paper industry, a partnership that began in the mid-1940s, with the registering of the PAPELMIL® brand, the first Corn Products starch product to be used in papermaking.

The history of Corn Products goes back a bit further. It began on February 5, 1929, when Brazil's then-president, Washington Luís, signed the law that authorized the operation of the first large corn-processing company in Brazil. It was Refinações de Milho Brasil (RMB), a subsidiary of the US firm Corn Products Refining Company, in existence since 1906.

The mill of Corn Products Brasil, in Mogi Guaçu, SP, is the group's second-largest in the world, only surpassed by the group's main mill in the United States

In 1930 the first factory was opened, in Vila Anastácio District of the city of São Paulo. From that moment on, the company grew constantly. It expanded its activities in terms of corn milling and production of industrial supplies, as well as in the manufacture of food products.

In its first decade of existence, the pioneering factory in Vila Anastácio District surpassed all expectations, becoming a supplier to Brazil's main industrial producers. After World War II, the company went through a phase of rapid expansion in production capacity as well as product diversity and technological evolution. By the 1960s, RMB had become an enormous business complex, with new industrial spaces, modern technologies and a wider range of products. To allow for continuing business growth, the decision was made to establish a new unit to enlarge the company's productive capacity.

Therefore, in 1963, Corn Products Brasil's second unit was opened, in Mogi Guaçu, in the interior of São Paulo State. In the 1960s, the factories at Vila Anastácio and Mogi Guaçu together constituted the world's second-largest corn processing complex, surpassed only by the United States.

The company's process of expansion continued and, in January 1975, a new unit was opened, this time in Brazil's Northeast region, in the city of Cabo de Santo Agostinho, state of Pernambuco. In 1982, taking advantage of the opportunity for expansion and the possibility of fuel-cost savings utilizing the most advanced technologies in corn milling, the company established another factory, in the city of Balsa Nova, state of Paraná.

Corn Products Brasil Ingredientes Ltda.

The Mogi Guaçu mill in its first years

Over time, that first factory in Vila Anastácio became inadequate and its physical structure restricted the company in meeting its demand. For these reasons, in 1993 its activities were terminated. Part of its production line was transferred to the new factory in the city of Jundiaí, state of São Paulo, opened that same year. The expansion continued in 1998, when the company acquired a factory in Conchal, in the interior of São Paulo State, for the processing of manioc.

In 1997, after a process of strategic reorganization, the activities of the old RMB were split up into the production of consumer products and products for industrial supply. Thus, the year 1998 saw the emergence of Corn Products Brasil, one of the world's largest corn processing companies, headquartered in Chicago, US, and present in 18 countries on the five continents.

Since it started up operations, Corn Products Brasil has been continuously offering new options in products made from corn and manioc, as well as other agricultural products.

Its line of ingredients includes native and modified starches; dextrines; adhesives; glucose, maltose and fructose syrups; syrup and saccharose blends; maltodextrines; liquid, anhydrous and monohydrated dextroses; caramel colors and protein ingredients for animal feed.

In the papermaking industry, its AMIDEX®, PENETROSE®, FOX-HEAD®, and FLUIDEX® product lines are applied in the manufacture of papers for printing and writing, papers for packaging, boxes, cardboard tubes, press paper, paper for sanitary uses, and other special applications, paperboard, corrugated cardboard and other paper goods.

Its products are also used in the chemical, food, pharmaceutical, cosmetic, textile, animal-feed, mining, and foundry industries.

With five factories distributed strategically throughout Brazil, Corn Products invests constantly in improvements of ingredients and processes as well as in the development of its professionals, seeking to anticipate expectations and meet the technological needs of the market. These investments include the optimization of processes and costs, the development of new products and concern for the preservation of the natural environment.

Its factories are certified under ISO 9001 and ISO 14001, assuring its clients safety and reliability.

For Corn Products, continuing its benchmark role in the competitive paper market requires that it remain in tune with the challenges and needs of the market, supplying it with integrated solutions for products and services. With this aim, it places at the disposition of the market its team of technical consultants and expert salespeople, who make recommendations and give advice on the optimized use of its ingredients, seeking to innovate the development of products and technology by way of processes with total quality assurance.

Corn Products is proud of its role in the history of papermaking in Brazil, and has taken part in the processes of growth and innovation that have led to the sector as we know it today. Corn Products, always guided by its values of integrity, excellence, respect, and success – the pillars of its business ideals committed to Brazil's papermaking sector – is honored to have participated in this historical undertaking.

Iguaçu Celulose, Papel S.A.

Iguaçu Celulose, Papel S.A. produces pulp, kraft papers, multi-ply bags, and cardboard in its four mills, located in the cities of Frei Rogério and Campos Novos, SC; São José dos Pinhais and Piraí do Sul, PR

A REVOLUTIONARY IDEA

The Imaribo Group arose from an idea that was revolutionary for its time, and modern even for today. It brought together various businesspeople, involved in different activities, in a remote location, with the goal of harnessing the synergy arising from their combined inputs. They created a company with a high degree of verticalization, aimed at the manufacture of a more industrialized product, which would offer great economic advantages, mainly in relation to railway transport, which was the only means available at the time, and with an emphasis on higher value-added products.

Through the combined efforts of araucaria-wood sawyers Marino Pisani, Francisco Nardi, Clemente Bridi, Ângelo Ponzoni and Carlos Mazzochi, capitalists Gerônimo Arlindo Fuganti, Jô Fuganti and José Fuganti, and real-estate owners João Martelli and Loduvico Martelli there arose the Indústria de Madeira Rio Bonito Ltda. (Rio Bonito Wood Company). Rio Bonito was the name of the locality where the company was founded, in the northeast of the state of Santa Catarina, on the banks of the Peixe River and along the São Paulo-Rio Grande railroad track. Later, when it became a township/county, this locale received the name of Tangará.

The initial goal of the undertaking was to produce wooden crates for fruit, vegetables, and beverages, using the raw material provided by its wood-sawing stockholders, with the money for investment and working capital provided by its capitalist stockholders, and with the lands provided by its real-estate owning stockholders. The company commenced activities in September of 1943, but it was in 1946, when Marino Pisani's youngest son Nelson Pisani took over the general direction, that it began to expand into one of Brazil's largest groups, due to the management skills of Nelson, who became one of Brazil's leading businessmen, until his death on September 19, 1990.

The group established itself not only in forest-based industries, changing its name to Imaribo S.A. Indústria e Comércio in 1958, but also in the automobile retail segment – General Motors, Fiat, and Volvo; automobile consumer purchasing pools – Consórcio Nacional Volvo, Consórcio Nacional Caterpillar, etc.; as well as furniture – Imaribo Móveis and the former Móveis Cimo.

In the forest-based industry sector, the group owns a lumber company (selling sawn and dressed wood) in the city of Monte Carlo, SC, where it produces palettes, blockboards, plywood, veneers, etc.

In the pulp and paper area it operates under the name of Iguaçu Celulose, Papel S.A., which possesses four units:

Frei Rogério unit: Located in the county of Frei Rogério, SC, which produces mechanical pulp and special paperboards.

Ibicuí unit: Located in Ibicuí, county of Campos Novos, SC, which produces 80 and 100 g/m² kraft paper and multi-ply bottom-glued bags.

São José dos Pinhais unit: Located in São José dos Pinhais, metropolitan region of Curitiba, PR. Produces special fine papers including OTC-type paper (base for carbon paper), finish papers (papers for decorative uses), tissue paper for napkins and others.

Piraí do Sul unit: Located in the city of Piraí do Sul, PR, this mill is the group's main pulp producer, supplying the group's other mills with long-fiber pulp and unbleached short fiber pulp.

For its wood supply the group relies on approximately 36 thousand hectares of planted forests, mainly pine.

International Paper do Brasil Ltda.

International Paper, located in Mogi Guaçu, SP, holds to the principles of ethics, partnership with clients and suppliers, environmental conservation, and sustainable social development

A COMPANY COMMITTED TO ETHICS

International Paper began its operations in Brazil in the year 2000 due to a deal made abroad between two large US companies – Champion International Corporation and International Paper Corporation. Because of this deal, the name of Champion Papel e Celulose Ltda. was changed to International Paper do Brasil Ltda. However, it was in the 1950s that Champion Paper & Fibre Co. first began its commercial transactions with Brazil, and in 1954 the company's president began to think about opening a Brazilian unit.

Once the basic issues of opening a company Brazil were settled, there began the phase of finding the best location for the mill, taking into account the economic demand, the availability of workers, and the supply of raw materials, water, and transportation, including railway transport. The decision was made to establish the mill in the city of Mogi Guaçu, SP, about 160 km from the city of São Paulo.

Testing-phase operations were started up in 1959, with a pilot batch of unbleached pulp for paper.

At the beginning of February, 1960, the mill began to produce 120 metric tons of pulp per day. The first shipment of pulp took place that same month, with the sale of 10 metric tons to a company in Pindamonhangaba, SP. Also in 1960, the company achieved its first international sales of pulp, with exports to Argentina.

In July 1962, the company celebrated its accumulated production of 100 thousand metric tons of pulp. Another historical milestone was the packaging of 200-kilo bleached eucalyptus pulp bundles.

The 1960s, the first decade of Champion's operations in Brazil, saw a series of expansions of productive facilities, operational support and reforestation activities.

September of 1964 brought the inauguration of the company's restaurant and part of its office buildings. Work on the building to house Paper Machine #4 was begun that same year.

In 1970 the company launched Chamex, its first cut paper destined for general office use. Chamex was packed in cardboard boxes containing four or five packaged and labeled reams.

The company entered the international market for paper in July 1970, with the shipment of two batches to Paraguay. Up to then it had exported only pulp.

Its production of paper was doubled in 1976 with the startup of Machine #5. At that time, the new equipment was considered to be the fastest in the world for the manufacture of fine papers, with

a productive capacity of 700 meters per minute, or the equivalent of 1,000 kilometers per day.

Chamequinho, a brand of sulfite paper that comes in white and other colors frequently used by students, was launched in 1979.

In 1983, the company's exports reached the one-million-dollar mark, and the following year it was awarded a certificate for its contribution toward the Brazilian government's goal of encouraging exports and achieving a favorable foreign trade balance.

On August 15, 1984, Champion achieved the record of 8,226,600 man-hours-worked without any lost-time accidents. This amazing number is a world's record in the pulp and paper sector. For this feat the company earned the Eco Prize for Corporate Contribution to the Community and a special certificate from the Consejo Interamericano de Seguridad.

July of 1985 saw the startup of Paper Machine #6, which integrated the entire production from pulp to paper, resulting in a 40% increase in the daily production of white paper for writing and printing.

With the aim to maintain its pioneering status in the markets where Chamex was present, in 1986 the company began to establish a complete production line for more efficient finishing of cut-size papers. This production line outputted Chamex that was properly cut, wrapped, labeled, boxed and palletized.

The company was a pioneer in forest genetics research. The first cultivation of seedlings took place in laboratories in 1986, in partnership with the Agricultural School of the University of São Paulo-Esalq/USP. These were preparatory studies of species as well as methods of planting and cutting, for the immediate improvement of eucalyptus groves.

In 1993 the Environmental Project was begun, aimed at modernizing the company's mill production in environmentally friendly ways. That same year, the company received the ISO 9002 Certificate of Quality from Bureau Veritas Quality International (BVQI) becoming the first Brazilian company with integrated production of pulp and paper to obtain this certification.

In 1996, Champion arrived in the state of Amapá, with its acquisition of Amapá Florestal e Celulose S.A.-Amcel, a producer and exporter of wood chips. By acquiring Amcel, the company received not only the wood-chip mill located in the Port of Santana, on the banks of the Amazon River, but also an established forest of tropical pines.

In January 1998, at an auction held at the Rio de Janeiro Stock Exchange, the company acquired Indústria de Papel Arapoti S.A.-Inpacel located in Arapoti, in the state of Paraná. Inpacel is Latin America's only producer of low- and medium-weight couché papers – known as LWC and MWC – used for the printing of magazines and commercial inserts in printed media.

The acquisition of Champion International Corp. by International Paper Co., on June 19, 2000, gave rise to one of Brazil's largest paper manufacturers.

Today, International Paper is one of the largest owners of tree farms in Brazil, possessing around 605 thousand hectares of land in five states: São Paulo, Mato Grosso do Sul, Amapá, Paraná and Minas Gerais. It is one of Brazil's largest producers of forest seedlings, with three nurseries in the cities of Três Lagoas, state of Mato Grosso do Sul (MS), Tartarugalzinho, state of Amapá (AP), and Mogi Guaçu, SP, growing around 40 million new trees per year. Its forests in the states of São Paulo and Paraná are ISO 14001 certified.

Throughout the 42 years of its operations in Brazil, the group assumed by International Paper has established itself successfully in the market, based on its principles of ethics, partnership with clients and suppliers, environmental preservation and sustainable social development.

Employing more than 3,200 people in its units, International Paper in Brazil is also committed to safety, the quality of life of its workers, and the support of the communities where they work and live.

International Paper manages its forests according to principles of sustainable forest development. Its Sustainable Forestry Initiative Program provides for continuous planting, growth, and harvesting of trees while protecting wildlife, plants, and soil as well as air and water quality. The worldwide headquarters of International Paper is located in the United States, in Stamford, Connecticut. The company has operations in 40 countries in the Americas, Europe, and Asia, and exports to more than 120 countries.

KLABIN S.A.

With 105 years of tradition in the integrated production of wood, pulp, paper, and paper packaging, Klabin has nineteen industrial units in Brazil and one in Argentina. Above, mill in the city of Telêmaco Borba, PR

TRADITION, MODERNNESS AND GROWTH

Klabin's century-long path began in 1899, when the Klabin and Lafer families founded Klabin Irmãos & Cia., in São Paulo, for the importation and commercialization of office and printing supplies. Their business grew, and four years later the company entered the segment in which it would make history: paper production. It rented a small paper mill and began to produce sheets of paper for use in printing.

In 1909, Klabin established its own mill, the Companhia Fabricadora de Papel, and by the 1920s was already ranked among the largest paper manufacturers in Brazil. The hallmark of these entrepreneurs was innovation, which required regular trips to Europe in search of new production techniques. In this spirit, the company made its great leap in 1934 with the founding of Klabin do Paraná, Brazil's first mill for the integrated production of pulp and paper. This ambitious project undertaken at Fazenda Monte Alegre, in the state's western region, resulted in the production, in 1947, of newspaper-grade and packaging paper.

The need to obtain raw materials locally led Klabin to research the possibility of establishing forests to supply the mill. Klabin's first reforestation project was begun in 1943, first with araucaria and eucalyptus, and then, in the 1950s, with pinus. This concern resulted in the current mosaic, which intersperses reforestations with the various native forest species.

In terms of its mills, Klabin garnered industry recognition by the introduction of modern technologies, such as process-integrated recovery boilers, which significantly enhanced productivity and environmental protection. Already at that time, Klabin was upholding its philosophy and practice of sustainable development.

In the following decades, Klabin strengthened its leadership and expanded its markets, founding and acquiring other companies. In the 1970s it made strong advances into the packaging segment, producing corrugated cardboard boxes, bags, and envelopes to become Latin America's largest manufacturer with integrated production of pulp, paper and paper products. The 1990s saw investments in disposable papers, along with continuing investments in bags and envelopes.

Klabin was the first company in the world to achieve certification with the Forest Stewardship Council-FSC, for the management of medicinal plants in its forests in Paraná. This certification attests to the sustainable management of its forestry operations in harmony with nature.

In 2003, a financial restructuring and the definition of a business growth plan shifted the company's focus into areas of strategic significance for the packaging industry: wood, paper, paperboards and paper packaging.

With its 105 years of experience in innovation and technological development for the integrated production of wood, pulp, paper and paper packaging, Klabin has achieved worldwide recognition as a leader in the Brazilian industry. It is Latin America's only producer of paperboard for the packaging of liquids. With nineteen industrial units in eight states throughout Brazil and one unit in Argentina, Klabin provides 12.8 thousand direct and indirect jobs.

Norske Skog Pisa S.A.

LEADERSHIP AND CITIZENSHIP

The history of Norske Skog Pisa is directly linked to important facts in Brazil's political and economic context. Originally named Pisa Papel de Imprensa S.A., it was conceived in the mid-1980s by newspaper companies headed by the newspaper *O Estado de S. Paulo*. But everything had begun much earlier than that, during the so-called Estado Novo period, in which the government had responded to criticism from newspapers by raising taxes on paper imports.

In the 1960s and '70s, the program to encourage reforesting – implemented by the federal government – was very important to the company's history. With the availability of wood and the idea of independence in the supply of paper for the press, the group of newspapers constructed the mill in the county of Jaguariaíva, in the state of Paraná. The project was supported by the Banco Nacional de Desenvolvimento Econômico e Social-BNDES and the mill was inaugurated in December of 1984.

In 1987, the New Zealand company Fletcher Challenge Ltd.-FCL joined the group, adding important forestry assets to Pisa's operational basis. The company thereby gained 60 thousand hectares of pinus plantations on almost 100 thousand hectares of land.

The mill's excellent operational performance has always placed it among the ten most efficient in the world, according to the ranking by the Canadian Pulp and Paper Association-CPPA. From an initial production of about 96 thousand metric tons of paper in 1985, the company reached the mark of 180 thousand metric tons in 2004, supplying raw material for the production of newspapers, magazines, newspaper supplements, books and other printed matter.

In July 2000, the Norwegian company Norske Skog acquired all of Pisa's stock with the aim of investing in the Brazilian publication paper market. Norske Skog is the second largest producer of publication paper in the world. It owns a total of twenty-four mills in fifteen countries, on the five continents. Its annual production is 8.6 million metric tons, controlling a 13% market share in the sector of papers for newspapers and magazines.

Norske Skog Pisa's goal is to be a leader in the publication paper industry. The group's strategy is to concentrate on its main activity – the production of publication papers from mechanical pulp – with a focus in publication paper in emerging markets and high value-added papers in established markets.

Its concern for the community, the natural environment, work safety, and improvements to the quality of life of its workers are registered trademarks of Norske Skog Pisa, which has been thanked by way of important public awards recognizing its corporate citizenship and its preservation of the natural environment.

Leader in the production of publication paper in Brazil, Norske Skog Pisa holds strictly to its principal of operating in conformity with environmental policies. Its mill is located in Jaguariaíva, PR

Papirus Indústria de Papel S.A.

Opting for the use of recycled papers in its productive process in total or partial substitution of virgin pulp, Papirus assumes its social responsibility. Mill in Limeira, SP

SUCCESS AND SOCIAL RESPONSIBILITY

The name Papirus associates the company with the paper industry. However, this company's history began with a simple and small production of hats.

The origin of Papirus Indústria de Papel S.A. is linked to the arrival of the Ramenzoni family in Brazil in the 1890s, having emigrated from the city of Parma, Italy, motivated by a rare sense of opportunity and a vision of the future. In 1894, Ramenzoni family founded a hat factory and their business rapidly grew.

Due to a serious crisis in the paper sector, the companies of the Ramenzoni family found it more and more difficult to wrap their products, leading these pioneering entrepreneurs to invest in a new industry: they acquired an inactive paper mill in the city of Cordeirópolis, in the interior of the state of São Paulo.

Inaugurated in 1952 under the name Papirus, the new mill soon met the family's industrial needs, and the surplus was sold to other markets.

As the papermaking segment appeared very promising, in the 1970s the Ramenzoni family decided to concentrate their efforts in this sector, giving up their hatmaking activities and opening a new mill for the production of recycled packaging cardboard in Limeira, SP. Their goals were to increase production and continuously improve the quality of their products.

Today, Papirus relies on 400 workers for an annual output of 88 thousand metric tons of recycled cardboard, and has established itself as one of the market leaders in this sector and Brazil's largest exporter of this product.

Ever since its founding, Papirus has displayed a high degree of environmental awareness. It currently employs one of the most modern technologies for paper recycling.

By its decision to use recycled papers in its productive process – totally or partially substituting virgin pulp – the company evinces its social responsibility, promoting the economizing of water and power as well as minimizing the volume of its solid wastes.

In its aim to offer high-quality products, Papirus uses select raw materials, composed on average of 25% virgin pulp – bleached or unbleached – and 75% recyclable paper scraps supplied by rejections from paper resellers, page-shaping scraps from print shops and publishing houses, duly separated waste paper from offices, stores, and supermarkets, and wastepaper from selective collections and recycling centers.

Its line of products is made up of duplex, triplex, and special cardboard for frozen goods as well as blister and skin cards, plus items specifically developed for special needs, on request. In this way, Papirus supplies the most demanding industrial segments: food, sanitation and cleaning, cosmetics, pharmaceutical, electric appliances, cutlery, infant care, household utensils, shoes, clothing, cigarettes, advertising, publishing, notebooks, toys and others.

Besides supplying the Brazilian market, Papirus exports approximately 40% of its production to countries on the five continents.

In recent years, Papirus has also evolved in terms of social responsibility. In 2004, it created the program *Ser Papirus* (Be Papirus), which actively promotes social inclusion and responsibility, human development, quality of life, volunteer activities, and leisure, as well as integration with coworkers, family members and the community.

Peróxidos do Brasil Ltda.

Peróxidos do Brasil's plant in Curitiba, PR, supplies hydrogen peroxide and its derivatives for the paper sector, using clean technologies

A HISTORY MARKED BY COURAGE AND PIONEERING

Peróxidos do Brasil, Brazil's largest producer of hydrogen peroxide (H_2O_2), is Latin America's leading supplier of this product, and has its history linked to pioneering production in Brazil.

In 1954, chemist Nicolas Makay, having arrived from Hungary, observed that the Brazilian textile industry was growing and used 400 metric tons of hydrogen peroxide annually to bleach fabrics. The product was imported, while demand for it showed clear signs of growth. Taking advantage of this opportunity, Makay and his son, Nicolas Makay Jr., began to produce H_2O_2 in Brazil. With this initiative, Produtos Químicos Makay became Brazil's first producer of hydrogen peroxide, initially producing 300 kg of the product per year.

Years later, growth was inevitable and to continue its development the company needed a more efficient production technology. Thus, in 1974, there arose the successful business and technological undertakings of Peróxidos do Brasil, which sprang from the joining of the Brazilian company Produtos Químicos Makay with the Interox Group, made up by Solvay, from Belgium, and Laporte, from England.

Its production was at first limited, but it began to grow. Brazil's textile industry was prospering, offering strong signs of in-creased consumption of hydrogen peroxide. The company started up its operation with a production of 4,000 metric tons of the product per year.

As time went by, the market grew significantly, mainly in the pulp and paper sector. Use of the product in the pulp and paper segment arose at the end of the 1960s. Paper producer Companhia Suzano de Papel began producing pulp from eucalyptus and, in partnership with Nicolas Makay's company, developed the use of hydrogen peroxide for bleaching the product. Thus, hydrogen peroxide came to substitute hypochlorite since it of-fered a cleaner production process. In this same period, Companhia Melhoramentos de São Paulo was already using hydrogen peroxide in the bleaching of high-yield pulp that it produced in its mill in Caieiras, SP.

A pioneer in the production of hydrogen peroxide in Brazil, Peróxidos do Brasil's productive unit is currently located in Curitiba, PR, within a 220-thousand-square-meter green area, directly employing more than 90 workers.

These three decades of constant evolution are directly related to the company's efforts to bolster the success of its clients, along with its ability for successive production increases, contributing toward the growth of various industrial sectors in Brazil and Latin America.

In this history, it is worth noting the intrinsic qualities of H_2O_2, a product that breaks down into water and oxygen, leaving no traces in the natural environment. In various concentrations, the product is present in the pharmaceutical, textile, mining and, especially, in the pulp and paper industries, for the bleach-ing of pulp.

Peróxidos do Brasil holds to a philosophy of working to construct a better world. The company believes that hydrogen peroxide and its derivatives, used in conjunction with new clean technologies, will play an important role in the transition to a society with sustainable growth, and therefore better.

Fábrica de Papel Santa Therezinha S.A.-Santher

The mill in Guaíba, RS, is one of Santher's four industrial units. The other three are located in the cities of Bragança Paulista and São Paulo, SP, and Governador Valadares, MG

DARING TO INNOVATE

The company Fábrica de Papel Santa Therezinha S.A.-Santher was founded in 1938 by the Haidar family, in the city of São Paulo, SP. It has become one of Brazil's largest producers of pulp and paper, through a series of important events and accomplishments.

A 100% Brazilian-owned company, in 2003 Santher reported annual gross revenue of R$ 800 million. The company owns four mills located in Bragança Paulista, SP; Governador Valadares, MG; Guaíba, RS; and São Paulo, SP; directly employing more than 1,200 workers.

Its combined production is approximately 200 thousand metric tons of paper per year, placing it among the fifteen largest companies in this sector in the world.

Aiming to modernize its management to allow for high growth rates, in 2003 Santher completed its process of professionalization begun more than five years before. This well-planned strategic decision was made in response to increasingly demanding and segmented markets. Today the company operates with a focus on each of its main business areas: consumer products, professional products and special papers. Each of these business units has specific targets and goals, all linked to the technological know-how and effectiveness that have made Santher one of the most successful companies in the paper sector.

The Consumer Products Business Unit is made up of nationally recognized brands, most of which are leaders in their respective markets. This is, for example, the case with the Personal brand, the uncontested leader in the toilet paper market, which established its dominance through innovations based on consumer preferences, such as colors, scents, and extracts, thereby transforming low value-added toilet paper into a valued product recognized by consumers.

Santher is also the leader in the paper-towel market, with the Snob brand, introduced to the market in 1989 with wide consumer acceptance.

In the napkin market its leadership is assured by the brands Gala, Snob and Santepel. Finally, completing the portfolio of tissue products, the Kiss brand is a leader in the facial tissue sector.

As part of its growth strategy, in 2001 Santher expanded its operations beyond paper products and entered the competitive, high-end market of feminine pads and panty liners with the brands SYM and Lingerie Fit, respectively, rapidly achieving a significant position in these segments.

The Professional Products Business Unit is specialized in the supply of materials for bathrooms, industrial kitchens, hospitals, hotels, shopping malls, schools, and restaurants, offering products under the brands Inovatta and Eco. The Eco line, made with recycled papers, evinces the commitment that Santher assumed long ago in respect to the natural environment and society, working harder all the time to preserve and improve the quality of human life.

Finally, the Special Papers Business Unit is focused on the sector of papers for use as direct or indirect inputs in industries ranging from food, packaging, tags/labels, and tobacco, both in the Brazil market and abroad. Few companies have survived more than six decades, three generations, successive crises, and technological revolutions. Santher, without a doubt, is one of them.

Specialty Minerals do Brasil Comércio e Indústria Ltda.

INTERNATIONAL EXPERIENCE
IN THE HISTORY OF THE PAPER INDUSTRY

In the mid-1990s, the Brazilian paper industry, inserted within the globalized market, decided to provide for the worldwide demand for whiter paper, and opted for the use of calcium carbonate as a pigment to achieve this aim.

To support this undertaking, Specialty Minerals do Brasil, a producer of precipitated calcium carbonate for use as a filler or coating pigment, presented itself to the paper industry and, based on its international experience, offered producers its know-how and technological support to foster better practices in the manufacture of the product in an alkaline environment.

Since then, Specialty Minerals, a subsidiary of the US company Specialty Minerals Inc.-SMI a worldwide leader in the technology of the synthesis of calcium carbonate, has strengthened and widened its presence in the Brazilian papermaking market.

SMI's leadership was achieved through intense and continuous research and development, which has characterized the company's operations since 1936, when it began producing precipitated calcium carbonate. Its expert handling of the conditions of the process and the design of the product, whose format and size are developed under absolute control, allow for the production of a greater diversity of homogeneous particles – which has stirred interest within the market.

Due to SMI's high degree of specialization and technical excellence, the international market for paper fillers and coating pigments has increasingly decided to forge technological links with the company.

The Specialty Minerals plant in Mucuri, BA. The company also has productive units in the cities of Luiz Antônio, Jacareí, and Suzano, SP

In light of this demand, SMI enlarged its operations, and in 2004 had 54 industrial units in 18 countries. Four of these are in Brazil, in Luiz Antônio, Jacareí, and Suzano, in the state of São Paulo, and in Mucuri, in the state of Bahia. Many of these units are satellite plants that operate within the clients' mills, furnishing precipitated calcium carbonate directly to their production lines, thus assuring quality efficiency, guaranteed supply and cost competitiveness.

Precipitated calcium carbonate for coating purposes is a technological innovation resulting from a profound knowledge of the physical phenomena involved in papermaking technology and intense process engineering conducted on a permanent basis by the 140 scientists, engineers, and technicians working in the company's research centers in the United States and Europe. This effort has led to the production of a precipitated calcium carbonate offering a glossy appearance, made possible by the use of cutting-edge production and process control techniques throughout the synthesis of the product in a way that results in glossy paper that assures a first-rate sheen for printed material.

SMI is continuously attuned to the demands for enhanced competitiveness within the paper industry and to the demands for quality increasingly specified by printers and publishers: more whiteness, greater opacity, and enhanced gloss of paper before and after printing. This is why papermakers can rely on Specialty Minerals as their partner in meeting these challenges.

Specialty Minerals do Brasil is proud of the part it has played in Brazil's papermaking industry.

VOITH PAPER MÁQUINAS E EQUIPAMENTOS LTDA.

Service Unit of Voith Paper São Paulo, a benchmark for the group. On facing page, inauguration of the factory with the presence of then-state governor Laudo Natel, São Paulo, SP, 1966

ORIGIN, HISTORY AND EXPANSION

Voith Paper Máquinas e Equipamentos Ltda. is a company of German origin, a manufacturer of equipment for the production of pulp and paper, whose headquarters are located in Heidenheim, southern Germany. Initially, it was only a sawmill, headed by Johann Matthäus Voith, who performed repairs on water wheels, used to power machines, especially those destined for papermaking. At the end of the 19th century, the Industrial Revolution led to increased demand for paper, leading Voith to found a factory for the production of machines and equipment to be used in this segment. The company expanded and entered other areas of business as well.

To understand the history of Voith Paper in Brazil, it is necessary to consider the other businesses of the Voith Group – turbines for hydroelectric plants, as well as automotive and industrial drives. Up to the year 2000, the Brazilian subsidiary was called Voith S.A. Máquinas e Equipamentos and each of these segments was considered a division of the company.

Arrival to Brazil and Implantation

Voith's first contact with Brazil was at the beginning of the 20th century. In 1903, Voith Germany exported to Brazil a 46-kW hydraulic turbine. This was followed by a series of other sales that assured the company's presence in the area of turbines and machines for the production of pulp and paper.

In 1923, Voith sold a machine with a Yankee cylinder to a company in the Ripasa Group. Two years later, the company Gordinho Braune & Cia. installed a Voith machine for the production of fine papers, with a 2250-mm-wide forming fabric. These first sales were followed by the sale of higher capacity machines: 1931, Cia. Melhoramentos de São Paulo, white-paper machine, 2450-mm-wide forming fabric; 1934, Indústrias Reunidas Matarazzo, machine with a 2700-mm-wide forming fabric; 1939, Cia. Melhoramentos de São Paulo, machine for the production of parchment, 2600-mm-wide forming fabric; 1953, Indústrias de Papéis Santa Therezinha, machine for production of carbon paper, tissue paper, and machine-glazed paper, 3300-mm-wide forming fabric.

By 1957, Voith Germany had exported to Brazil 330 turbines with a combined capacity of 700 thousand kW, and 10 complete

papermaking machines. This demand indicated Brazil's potential for industrial development, sparking Voith Germany's interest in operating locally and Brazil. Therefore, in that year, Voith became partners with Bardella, a traditional Brazilian capital-goods company. The Voith department at Bardella was made up of workers from Germany together with others hired in Brazil. In this way the company produced a significant number of machines produced partially in Germany and completed in Brazil.

Perceiving Brazil's huge potential in hydropower and forestry, the Voith Group's then-president, Hugo Rupf, convinced the Voith family to invest in the construction of their own factory in Brazil. Once this decision was made, a separation agreement was made between Bardella and Voith.

The Brazilian subsidiary was Voith's first industrial plant constructed outside Europe, strategically installed with the aim of gaining other markets for the company's main products.

Almost 100 years after Voith's founding in Germany, on July 16, 1964, a general shareholders meeting was held to constitute Voith in Brazil, as published in the state of São Paulo's official journal of record and legal notices, the *Diário Oficial*.

In that same year, the company acquired a 300-thousand-square-meter area in Jaraguá District, far from São Paulo's downtown, in a rather inaccessible location. Communication between the building site and the office in downtown São Paulo was conducted only by means of a radio. During the construction, 2.2 km of roads were opened and 400 thousand cubic meters of earth were moved, resulting in a constructed area of 134 thousand square meters. Already in the first semester of 1966, Voith had a considerable industrial park, where it was possible to weld, anneal and machine pieces weighing up to 100 metric tons.

On September 22, 1966, the factory was officially inaugurated with the presence of then–state governor, Laudo Natel, becoming the Voith Group's largest subsidiary in the world.

The first two papermaking machines completely manufactured by the company in Brazil were the Cocelpa, for the production of kraft paper, with a 2750-mm-wide forming fabric and productive capacity of 25 to 50 metric tons per day, in 1969, and the Gretisa, with a 2750-mm-wide forming fabric and productive capacity of 60 metric tons of machine-glazed paper per day, in 1970. With the quality it had achieved, Voith also began to export to other countries in Latin America, the United States and Canada.

The 1960s saw the company's implantation, the 1970s were its time of development with the startup of a foundry to supply the high demand for cast parts. Today, Voith's foundry in São Paulo is considered to be South America's largest for stainless steel. Voith brought to the papermaking sector the most modern technologies for the manufacture of higher-quality paper from short fibers, making Brazil a worldwide supplier of this product.

The 1990s were celebrated with acquisitions and partnerships. In 1994 an agreement was signed for the merger of J.M. Voith GmbH and the Swiss company Sulzer AG, two dominant groups in various areas of paper technology who resolved to unite their worldwide experience, capacity and global presence in a single company: Voith Sulzer Paper Technology.

This partnership continued until 1999, when the Sulzer AG Group expressed its interest in closing its activities in the pulp and paper sector, leading to the change in the name of the Paper Division to simply Voith Paper.

Also in the 1990s, Voith São Paulo began its expansion into Brazil at large, creating new service units for the pulp and paper industry, one of these being in the city of Ponta Grossa, PR, to serve

VOITH PAPER MÁQUINAS E EQUIPAMENTOS LTDA.

The forests under VCP's ownership and management have inscribed this company's name in the history of Brazil's pulp and paper sector

the South and Southeast region, and another in Mucuri, installed within the Bahia Sul Celulose mill, to serve the Northeast and Central-West regions. Besides this, the year 2000 saw the creation of Voith Paper Argentina.

Research and Development

In 1994, the Brazilian subsidiary was chosen as the headquarters of the Technological Research and Development Center for the manufacture of tissue paper, becoming part of the network of five centers that the group has throughout the world and the only center focused on the tissue paper sector. This center relies on a pilot machine and all the infrastructure necessary for the operation of a tissue paper mill on a pilot scale, plus two laboratories. It has thus become a reference within the group for the development of new technologies for this market segment.

In 1999, a joint venture agreement was announced between the groups J.M. Voith GmbH and Siemens AG in regard to their hydroelectric generation divisions, with 65% and 35% stock ownership, respectively.

This was a key factor in the decision taken by the directors of the Brazilian subsidiary to divide Voith S.A. Máquinas e Equipamentos into three distinct companies, according to their areas of activity, in accordance to how the company is organized around the world. Thus, beginning in April of 2000, in place of Voith S.A. Máquinas e Equipamentos there arose the three companies Voith Paper Máquinas e Equipamentos Ltda., Voith Siemens Hydro Power Generation Ltda. and Voith Turbo Ltda.

The technology employed and the technical competence of its workers led to the respect of the Brazilian subsidiary within the group as a manufacturing and product center for dryer cylinders, Yankee cylinders and rolls. The company therefore began to furnish these types of equipment for all the paper machines sold by the group on a worldwide basis. The productivity gains obtained for the manufacture of rolls in nearly four decades of activity have been extraordinary. From 1964 to 1986, one thousand rolls were produced; from 1987 to 2003 there were nine thousand.

Today, Voith Paper do Brasil is the leading supplier of cutting-edge technology for the Brazilian pulp and paper industry, and it is estimated that 80% of the Brazilian production of printing and writing paper is processed on Voith machines. The technical and professional abilities of its workers have made it a supplier of high technology machines and equipment for every continent.

VOTORANTIM CELULOSE E PAPEL S.A.

A YOUNG COMPANY IN THE SECTOR AND ONE OF THE LARGEST IN THE MARKET

The Votorantim Group, one of the largest private-sector groups in Brazil, celebrated its 85th anniversary of activities in 2003. Its areas of activity include cement, pulp and paper, mining and metals, chemical products, packaging films, orange juice, financial services and risk capital investments. Its companies play outstanding roles in all of the markets in which they are present. Votorantim Celulose e Papel-VCP created in 1995, is one of the youngest companies in the group.

VCP's history began in 1988 with the acquisition of Companhia Guatapará de Celulose e Papel-Celpag at an auction held by BNDES, but this only became Votorantim Celulose e Papel after it was restructured with the purchase of the stock of Papel Simão. This transaction was not only the purchase of a company, but also the acquisition of valuable corporate know-how obtained through the activities of Papel Simão's key executives and professionals. The profile of workers in 2003 was approximately 3,700 direct employees and 4,700 third-party workers.

VCP is one of Latin America's largest producers of pulp and paper, with sales of 1.2 million metric tons in 2003, net revenue of R$ 2.5 billion and total assets of R$ 7.3 billion. It leads the Brazilian sector of special papers and papers for printing and writing, and is one of the world's main producers of eucalyptus pulp. VCP invests heavily in research and development of new products, as a means of increasing competitiveness, and uses technologies suited for each process. It exports to more than 55 countries on five continents from its own terminal in the Port of Santos, Latin America's largest port. Pulp and paper constitute the group's third-largest business area.

Its operation is totally integrated – it has its own forests, two pulp and paper mills in the cities of Jacareí and Luiz Antônio, plus two others dedicated exclusively to the production of high value-added papers in the cities of Piracicaba and Mogi das Cruzes, all located in the state of São Paulo. The distribution of its products is guaranteed by means of an advanced logistical system, which integrates over-the-road transport with railway and marine shipping, a key factor in productivity and competitiveness.

Its raw material – eucalyptus trees – is obtained 100% from 115 thousand hectares of groves owned by the company in the state of São Paulo. VCP employs a high degree of mechanization throughout its entire forestry process. It operates with an integrated system of chipping, chip transport and chip feed for pulp production. In 2004, the company took an important step: it acquired 40 thousand hectares of forest reserves in the state of Rio Grande do Sul to expand its activities.

The forests under VCP's ownership and management have inscribed this company's name in the history of Brazil's pulp and paper sector

VCP has been committed to respecting the natural environment ever since its founding. Pulp and paper are products obtained from inputs derived from nature, and the conservation of natural resources, such as water and soil, is essential for productivity and continued operations. Votorantim goes beyond the Brazilian legislation and preserves one-third of its forest areas. With more than five million native seedlings planted and cultivated, it is one of Brazil's largest reforesters of native plant life.

In 1999, VCP went public with its stock, and five years later it was twenty times more valuable. In April of 2000, the company's stock began to be traded on the New York Stock Exchange, the largest center of stock trading in the world.

This history and profile has boldly underscored the name of Votorantim Celulose e Papel within the history of the pulp and paper sector in Brazil.

Acknowledgments

The future of any nation is directly related with its history. A society that does not know its origins runs the risk of repeating its errors.

With this in mind, the ABTCP took up this ambitious and challenging project to recover and document the History of the Pulp and Paper Industry in Brazil. To reach its objectives it needed the help of key people, who had made their lives the life of this industry. Their love for their work, their determination to succeed, and their courage to confront the new and the unknown transformed these professionals into remarkable figures who could not be left out of this important undertaking.

The challenge was met. The proof is this publication, which tells a little about the history of an enterprising group of people, documenting and recovering the memory of the pioneers of the pulp and paper sector. To them goes all our respect.

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LEAD-INS AT BEGINNINGS OF CHAPTERS

PAGE 10 – Papermaking in the European tradition; **PAGE 24** – Mill of Companhia Melhoramentos de São Paulo, Caieiras, SP, 1890s; **PAGE 42** – View inside mill of Indústria Klabin do Paraná de Celulose-IKPC, showing Machine #2, Fazenda Monte Alegre, PR, 1950s; **PAGE 60** – Tree nursery at mill of the Klabin Group, Telêmaco Borba, PR, 1960s; **PAGE 82** – View of reforestation area of Klabin's pulp factory at Fazenda Monte Alegre, in Telêmaco Borba, PR, undate; **PAGE 104** – Headquarters of the Associação Brasileira Técnica de Celulose e Papel-ABTCP, in São Paulo, SP, 1990s

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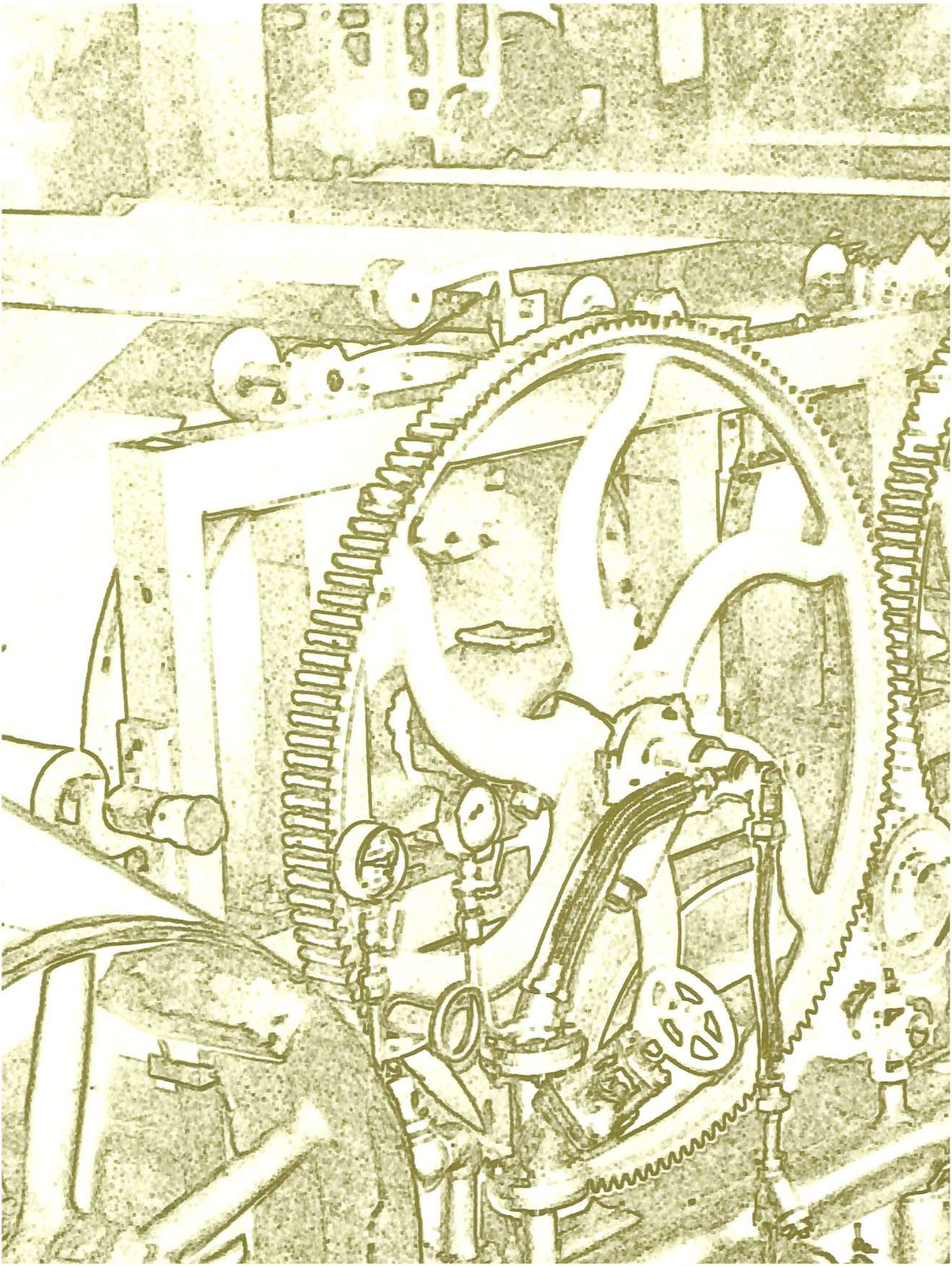

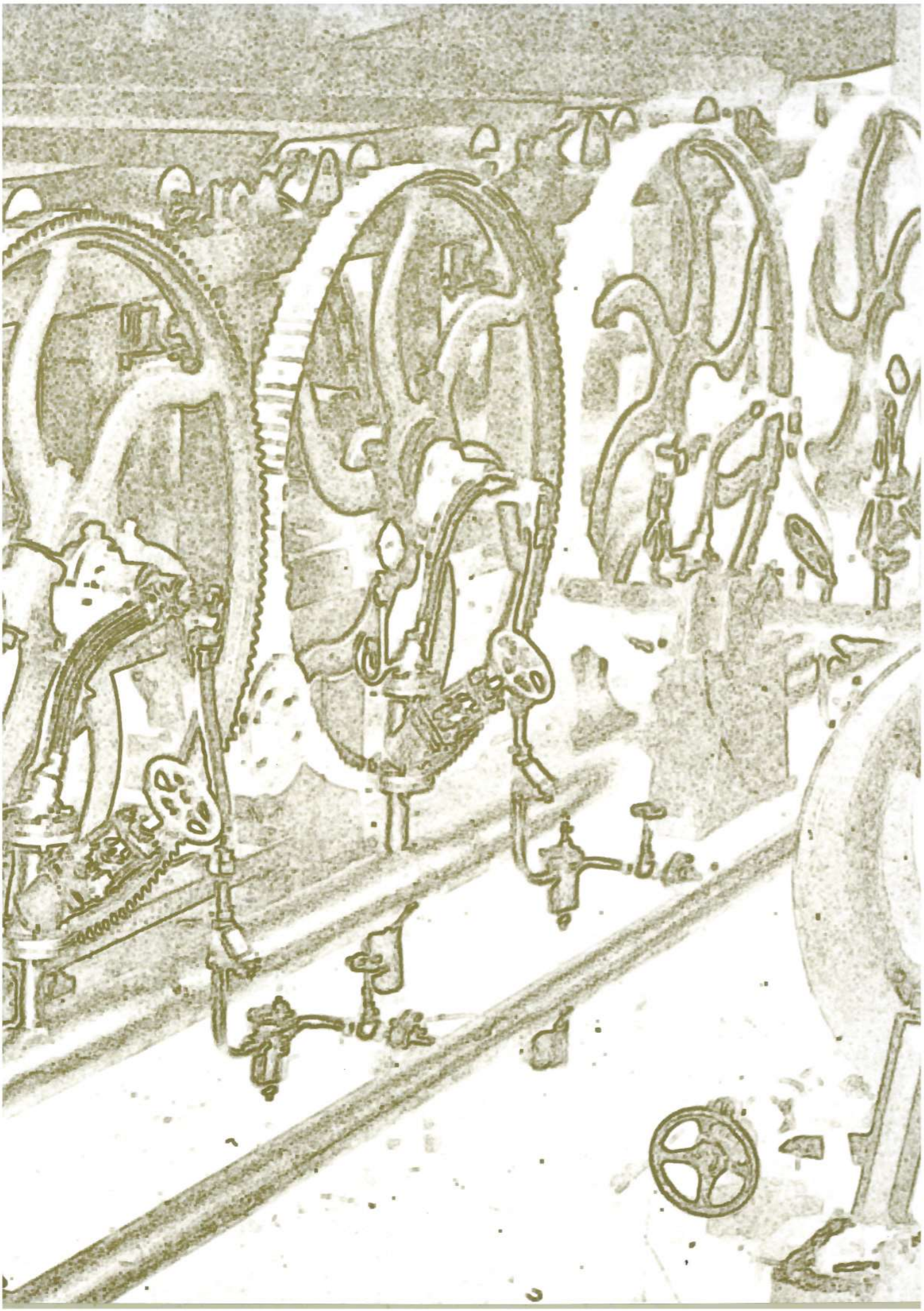

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