

PAPER CHAIN

the story of sappi

Important New Industry for South Africa

Interesting Aspects of New Pulp and Paper Enterprise

A NEW industry, which should have far-reaching beneficial effects for South Africa, is being established at a site close to President Dam, Goshal Mine, in the Transvaal. This new enterprise, which is being developed by the South African Pulp and Paper Co., Ltd., is expected to be completed within a few months. The new factory, which is being built by the South African Pulp and Paper Co., Ltd., is expected to be completed within a few months. The new factory, which is being built by the South African Pulp and Paper Co., Ltd., is expected to be completed within a few months.



Three Big Factories in One

The development of the new factory is a great opportunity for the country, as it will provide a source of raw materials for the production of paper. The new factory, which is being built by the South African Pulp and Paper Co., Ltd., is expected to be completed within a few months. The new factory, which is being built by the South African Pulp and Paper Co., Ltd., is expected to be completed within a few months.

Revolutions in Paper Making

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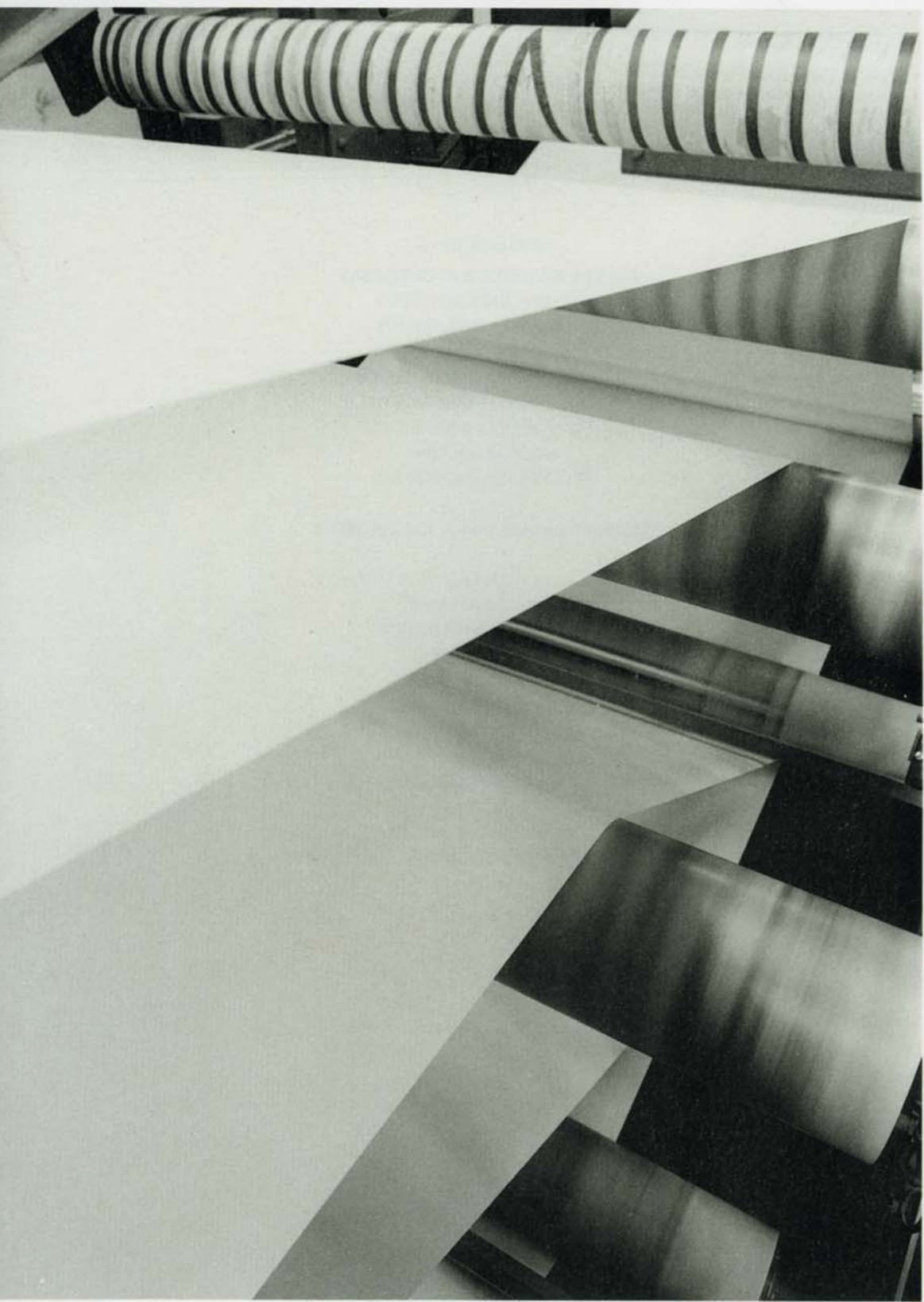
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PAPER CHAIN

The story of Sappi

ANTHONY HOCKING

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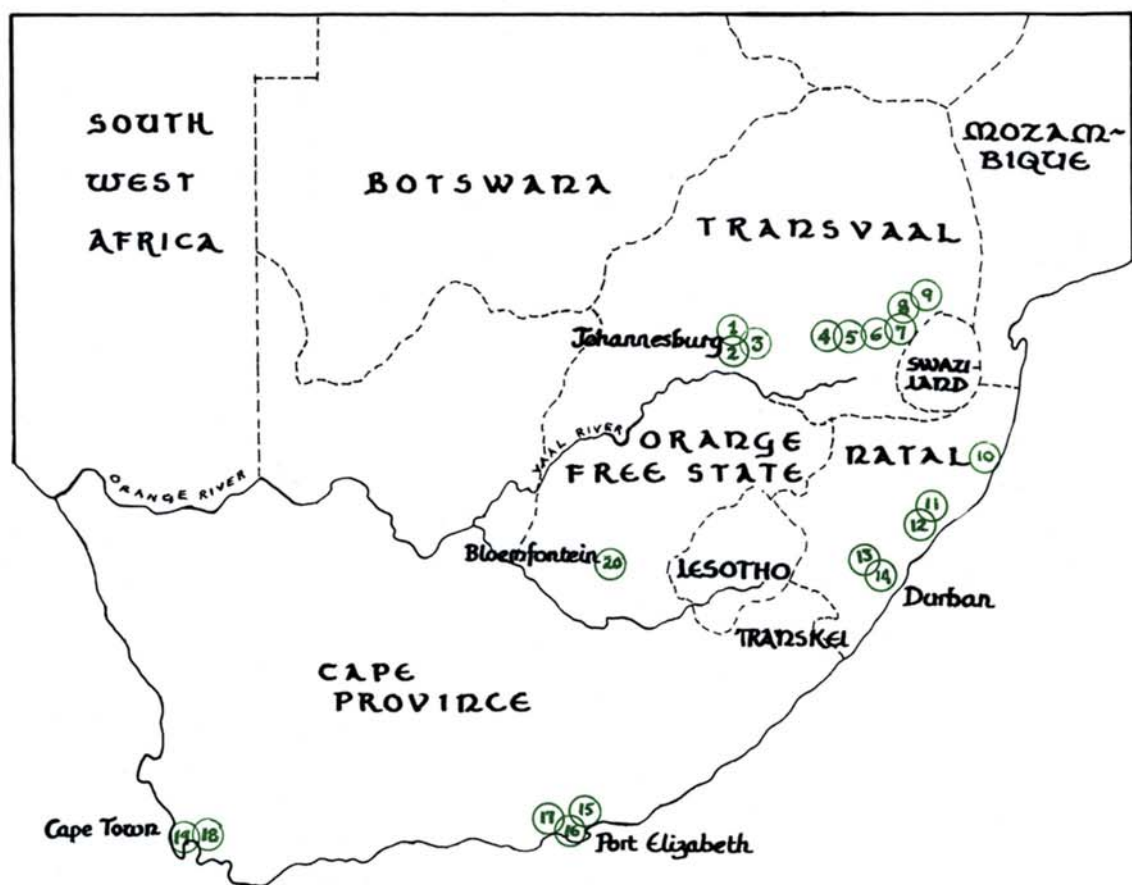
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*If all the world were paper
And all the sea were ink,
And all the trees were bread and cheese,
What should we do for drink?*

ANON 17th Century



SAPPI'S PAPER CHAIN IN THE 1980S

- | | |
|------------------------------|--------------------------------|
| 1 Head office | 11 Tugela mill |
| 2 Rossobord, Wadeville | 12 Stanger mill |
| 3 Enstra mill | Forestry office, |
| 4 Ngodwana mill | 13 Pietermaritzburg |
| 5 Elandshoek sawmill | 14 Durban sales office |
| 6 Barberton Sawmills | 15 Port Elizabeth sales office |
| 7 Forestry office, Nelspruit | 16 Adamas mill |
| 8 Rossobord, White River | 17 Rossobord, Port Elizabeth |
| 9 Timber Packaging | 18 Cape Town sales office |
| 10 Mtubatuba | 19 Cape Kraft mill |
| | 20 Bloemfontein sales office |

Introduction

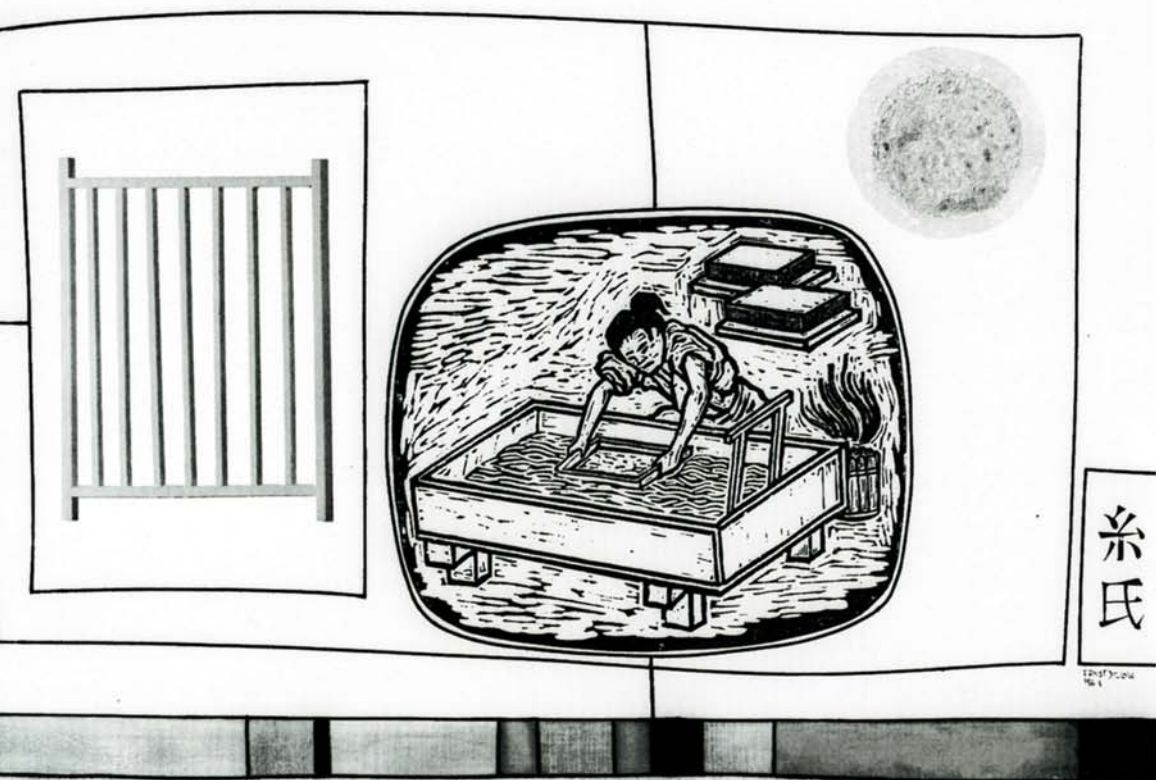
THE BACKGROUND

THE MEN WHO manage South Africa's Sappi Limited describe it as a forest products group which is as dynamic and versatile as any in the world. Sawmilling, chipboard manufacture, plantation management, forest harvesting and mining timber production — all these are parts of Sappi's business, but none is as important as the production of pulp and paper, Sappi's lifeblood since its early days. Sappi's six mills form a paper chain around the country and supply more than half of its fine papers, newsprint and kraft packaging papers. In addition, quantities of paper are exported. Four of the mills also produce pulp, nearly all of it from wood though some is made from the residue of sugar cane.

Of course, paper can be made from virtually any form of vegetable matter that contains cellulose fibre. Historians credit its invention to T'sai Lun, an official at the imperial court in China, who in AD 105 took a bundle of old rags and fishing nets which he boiled and then pummelled into pulp, separating the fibres in the original materials. T'sai Lun spread his pulp over a straining frame made of slivers of bamboo laced with silk, which allowed the water to drain away. He was left with a thin tissue of wet paper which he first pressed with heavy weights, then dried in the sun.

In South Africa, papermaking was first attempted in the 1820s, when a Grahamstown man named Ydlington produced curling papers for the Regency hair styles then in vogue. During the 1860s paper was made from Cape palmiet, a water plant with stiff, sharp-edged leaves, and in the 1870s Natal settlers tried to make writing materials from local papyrus. In 1890 President Paul Kruger of the Transvaal awarded a papermaking monopoly to one Fitzherbert Despard of Johannesburg, though there is no evidence that Despard ever made use of it.

Instead, before 1920 virtually all of South Africa's supplies of paper were imported by paper merchants or 'converters,' the manu-



Chinese papermaking in about AD 200: detail from a lithograph by Ernst de Jong, commissioned for a Sappi calendar.

facturers who used paper as their raw material. Then an Irish-born engineer, William Fulton, brought in an aged 48-inch (1,22m) paper machine supplied by a Scottish company. Fulton set it up in a one-time match factory at Kliprivier, north of Vereeniging, and began making small quantities of coarse wrapping paper and also blue tamping paper for use in mines. The machine's raw material was recycled waste paper, especially old cement sacks which were first beaten by labourers to dislodge what remained of their contents.

Before establishing his mill Fulton had been promised that the South African government would help him by imposing duties on imported paper, but in the event this was not honoured. For years Fulton struggled to keep his Premier Paper afloat but failed to make a profit, so in the late 1920s the mill was sold for a few thousand pounds. The buyer was a young chemical engineer, Hyam Schwartz, who hoped to expand Premier's operations by producing pulp from South African trees. Before he could do anything South Africa fell into the depression caused by the Wall Street crash, and there was no relief until the end of 1932 when the government suspended the gold standard and triggered a spectacular revival.

New opportunities opened up, and Schwartz could see that South

Africa held enormous potential for anyone able to make paper on the spot. Each year the country had to import large quantities of paper from the northern hemisphere, especially from Britain, Canada and Scandinavia. For instance, in 1935 these imports included 16 000 tons of printing and writing papers, 27 000 tons of the strong kraft papers used to make paper sacks and bags and other packaging materials, and 25 000 tons of newsprint for newspapers and magazines.

Elsewhere in the world, the favourite raw material for making paper was wood pulp. Newsprint contained so-called mechanical pulp, produced by shredding wood on a grindstone. Other types of paper contained chemical pulp, produced by pressure-cooking wood chips in chemicals to loosen the sticky lignin that bound the fibres together. In South Africa, wood resources were confined to a few pockets of indigenous forest and scattered plantations of pine, wattle and eucalyptus gum. Most of this wood was earmarked for other purposes, but Schwartz discovered that he could obtain pine 'thinnings,' immature trees removed from plantations to allow others more room to grow.

Schwartz wanted to build a brand new pulp and paper mill close to plantations in the Eastern Transvaal, but was defeated by lack of capital. In Natal, an entrepreneur wanted to make paper from sugar cane bagasse, and in the Northern Transvaal William Fulton was experimenting with baobab, but neither was successful. Then, in 1935, a Johannesburg businessman named Robert Blane met an Italian chemical engineer, Umberto Pomilio, in the course of a trip to Europe. Blane had founded a number of companies, notably a large concern that produced workmen's shovels. He was fascinated to learn that Pomilio had devised a process for making pulp — and therefore paper — out of straw.

The process had a rather sinister background. During World War I Pomilio and a colleague had patented a special electrolytic cell in which an electric current decomposed ordinary table salt and produced three chemicals — chlorine gas, caustic soda and hydrogen. On the strength of his invention Pomilio set up a factory in Naples to make poison gas, which was becoming a key weapon in trench warfare. When the war ended Pomilio was left with a factory and a number of electrolytic cells, but no market for his gas. He began looking for ways of utilising what he produced, and found one in a laboratory technique for isolating cellulose from fibrous materials.

Devised in the 1880s, the technique seemed to work well on all kinds of vegetable matter. First, the material had to be chopped into small pieces and gently pressure-cooked or 'digested' with caustic soda to loosen lignin and other surplus elements and free the fibres — much the same process as was used on wood. After washing, it was treated with chlorine gas to remove still more of the unwanted

residue. The microscopic fibres that remained at the end of the process consisted of virtually pure cellulose, the raw material needed to make pulp and thus paper.

Pomilio believed that the laboratory technique could be industrialised and looked around for a source of fibre. In Italy, the only fibre that was freely available was wheat straw. Years went past before Pomilio was satisfied with his process. He installed pulp-making apparatus at his factory, but there was little enthusiasm or demand for his pulp until the early 1930s when Mussolini's Fascism brought threats of international sanctions. Immediately the Italian government commissioned Pomilio to build a small straw-based pulp and paper mill at Foggia in Italy's wheat-growing area. At the same time, South American industrialists asked him to erect mills in Chile and near Rosario in the north of Argentina — places poor in trees but rich in straw.

The three mills were constructed, and it seemed that Pomilio and his process had a golden future. Soon there were inquiries from entrepreneurs in Brazil, Mexico, Java and New Zealand, all wanting to erect Pomilio-style plants in their countries, and from Robert Blane who invited him to Johannesburg. Blane and two friends, Robert Niven and Alex Aitken, formed an association which they named the African Cellulose Syndicate and persuaded Pomilio to give them exclusive rights to his process for southern Africa.

One of their first ideas was to link up with Hyam Schwartz and his little mill at Kliprivier, but Schwartz was not interested. Next they turned to a Johannesburg stockbroker named Lifgow who had contacts in the prosperous mining houses that administered South Africa's gold mines and collieries. One of the liveliest of these mining houses was Union Corporation, founded in the 1890s and the force behind a number of important mines on the East Rand. Union Corporation's head office was in London but its mines were administered from Johannesburg. On Lifgow's initiative a meeting was arranged between Pomilio, the syndicate and several Union Corporation representatives.

In the past, South Africa's mining houses had taken little interest in manufacturing, but that was changing. Tommy Stratten who was Union Corporation's new consulting mechanical and electrical engineer had earlier worked for Iscor, the state-owned South African Iron and Steel Corporation. A Rhodes scholar, Stratten was intrigued by the idea of pioneering a new industry, and so was Whitmore Richards, a chemistry graduate who served as Union Corporation's secretary. From that point on the two men worked hard to bring the idea to fruition. Even so, the decision on whether to back the syndicate rested not with them but with Union Corporation's head office in London.



Electrolytic cells designed by Umberto Pomilio and capable of producing chlorine gas, caustic soda and hydrogen from salt.

The syndicate entered the negotiations with a firm proposal: that the corporation should set up a papermaking subsidiary and build a pulp and paper mill using a furnish of wheat straw supplemented with pine thinnings, which would make the pulp stronger. To begin with, the mill would have the capacity to make 14 000 tons of paper per year. Straw, pine thinnings and salt for making the necessary chemicals could all be obtained in the Transvaal, and Germiston municipality had offered a site for the mill which was close to sources of power and water and within easy reach of the centre of Johannesburg.

Everything seemed to be falling into place, and Blane and his friend wanted to start as soon as possible. The mining men were more cautious. It remained to be seen whether a South African mill could make paper that would sell for less than the imported article, and if it could, whether paper merchants and the many users of paper would welcome it. These were tricky questions and needed careful answers. On January 2 1936 the Union Corporation men in Johannesburg proposed to those at head office in London that they should authorise a full investigation.



1936-1943 ENTERPRISE STRAW

DURING THE EARLY months of 1936 the world's headlines were dominated by news of three men. One was Edward VIII, the dashing young king who had succeeded to the throne of England (and South Africa too) on the death of his father. The second was Adolf Hitler, whose troops were poised to re-enter the Rhineland in defiance of the Treaty of Versailles. The third was Benito Mussolini, dictator of Italy and the inspiration behind his country's invasion of Abyssinia in a belated attempt to build an Italian empire in Africa.

At the southern end of Africa, Mussolini's behaviour raised such serious questions about anything Italian that the entrepreneurs who had invited Umberto Pomilio were beginning to regret it. There were even suggestions that the dapper engineer might be a Fascist spy. Certainly Pomilio seemed tirelessly determined to see the country, exploring sources of raw materials and searching for an ideal mill site. As the syndicate's enthusiasm waned, Pomilio's became all the livelier as he learnt more about South Africa and discovered its potential.

Much of Pomilio's time was spent with Union Corporation, where Whitmore Richards was investigating the syndicate's proposals in the light of instructions from London. On most points Richards was positive. There were adequate raw materials, or so it appeared; there were several possible mill sites; and Pomilio had convinced him that a pulp mill using his process would produce minimal effluent which could easily be disposed of. Richards's only reservation was that the dominant merchants in the paper trade were sceptical about a local mill's chances and intended to continue importing from outside.

Richards's conclusions were forwarded to London and compared with those of a British consulting chemist brought in to assess

Wheat straw for making paper: labourers extract straw bales from a stack at the Enstra mill, near Springs.

Pomilio's processes. He too was positive, and in April 1936 Union Corporation announced that it was ready to back a paper mill, provided there were no problems over raw materials. Then came a bombshell. Without warning, Mussolini's Fascists nationalised Pomilio's mill in Foggia and claimed world rights to his patents. Faced with having to go to the Fascists for permission to build the mill, Union Corporation coldly dropped the whole project.

That might have been the end of the affair, but Pomilio refused to give in without a fight. Within days the Italian was on his way to London to ask Union Corporation's head office to think again. Once there, he used all his powers of persuasion to convince everyone that he was in no way tied to Mussolini's regime and that its claims on his patents could be ignored. Indeed, he offered to sign a three-year consultancy agreement with the mining house and to provide trained men to help erect and operate the South African mill. Pomilio's energy won the day, and Union Corporation announced that in view of his assurances, the project was being revived.

Again the spotlight swung back to Johannesburg, and again it was Whitmore Richards and Tommy Stratten who were given most of the work. Stratten's task was to decide where the mill should be and how it should be designed and supplied. He had already rejected the site offered by Germiston municipality as it was awkwardly located, and was instead exploring the Parys area of the Orange Free State, where water could be drawn direct from the Vaal River. In making his plans Stratten worked closely with Pomilio, who had many practical suggestions based on his experiences in Italy and South America.

Richards's brief was to set up a public company to erect and operate the mill. The company was to have an initial capital of £750 000 (the equivalent of R1 500 000 at the time South Africa's currency was decimalised in 1961, at the rate of £1 to R2) which was expected to cover construction costs and leave a surplus for later expansion. This entailed issuing 1 500 000 ordinary shares each worth 10s, of which 60 000 were allotted to the African Cellulose Syndicate in return for rights to Pomilio's processes. One million were taken up by Union Corporation, which planned to resell 400 000 in a public rights issue. The remainder were offered to other mining houses and to companies and individuals who had contributed to the project.

Logically enough, the new company was named South African Pulp and Paper Industries, Limited, and was formally registered under South Africa's Companies Act on December 17 1936. On the next day its board of directors held their first meeting at Union Corporation's offices in Johannesburg. It was largely an in-house occasion. In the chair was one of the corporation's rising stars, a mining engineer named P M Anderson who was already on the boards of several gold mines and had now been made responsible for the paper



*Umberto Pomilio (left), inventor of the Pomilio process;
and Josef Gutsche, first manager of Enstra mill.*

*The reduction works at Union Corporation's Geduld mine
near Springs on the East Rand, close to the site
chosen to build the new pulp and paper mill (overleaf).*

venture. With him were five more directors,¹ among them Whitmore Richards and Umberto Pomilio.

At this early stage the board only needed to authorise the steps taken to organise the new company. The financing arrangements were approved, and Union Corporation was appointed the company's secretaries and technical advisers — exactly the position it occupied in relation to its gold mines and collieries. There was little else to talk about, for as yet there was no decision on the mill's location. Tommy Stratten was now looking at Viljoensdrift near Vereeniging, which seemed even better than Parys. Besides being on the Vaal, Viljoensdrift was perched on a coalfield.

All this time Stratten's design team had been drawing up plans for the mill, broadly based on the patterns followed in Italy and South America, though the South African version was to be larger and would include a wood-pulping section. Already Stratten was ordering equipment. The electrolytic cells needed to make gas were being provided by Pomilio. Otherwise it was tempting to buy from Hitler's Germany, where the Nazi government was trying to boost exports by offering subsidies of 30 per cent. Even so, Stratten appreciated that





obvious patronage of the Nazis would do little to enhance Union Corporation's good name.

That was why the two paper machines which were to be the largest items of equipment were ordered from the Bertrams company of Edinburgh in Scotland, a well-respected firm that had been in business for 120 years. Even so, drives for the machines were discreetly ordered from Siemens of Germany at prices far below those asked by British companies. Later, German suppliers also provided most of the required filters, pumps and pulping apparatus, though less specialised items came from South African sources.

In January 1937 South African Pulp and Paper Industries, Limited, was listed on the Johannesburg Stock Exchange and the 400 000 shares reserved for the public were offered for sale. Within two hours the issue was oversubscribed, and the share quotation soon rose in value. A month later P M Anderson chaired the company's first statutory meeting and reported on progress. Viljoensdrift was still considered the most promising site for the mill — but then the Rand Water Board intervened and said it could not afford to take chances with effluent, so any pulp and paper venture would have to be well away from the Vaal River.

At about this time the company's first manager was appointed — Dr Josef Gutsche, a chemical engineer who had recently retired as general manager of a dynamite factory in the Cape. Gutsche was new to pulp and paper, so almost immediately he was sent off to Europe for three months to visit as many mills as he could. Already, equipment for the South African project was arriving in Johannesburg, but there was still no decision on where it would be located. Now that Viljoensdrift and Parys were out of the running, Stratten was considering a site near Pretoria.

Once again there was disappointment. Pretoria municipality said it could not cope with effluent. In some desperation Stratten turned to a site that Union Corporation already controlled: the farm Geduld near Springs east of Johannesburg, once owned by President Paul Kruger but now the setting of two thriving gold mines — Geduld proper, where mining had started in 1909, and East Geduld, in operation since 1926. For Stratten, one of Geduld's key attractions was a vast quantity of underground water which continuously seeped into the workings and had to be pumped to the surface.

Geduld's water seemed pure enough to be used for making paper, and purer water for boilers and for drinking could be tapped from the Rand Water Board's arterial pipe which ran along Geduld's boundary. Further advantages of the site were that Johannesburg was not far away, and that electric power and a rail service were close by. 'Black liquor,' the chemical effluent that resulted from the pulping process, could be pumped to the mines for use in gold recovery. Coal

for boilers and supplies of straw, wood and salt could be railed in with ease.

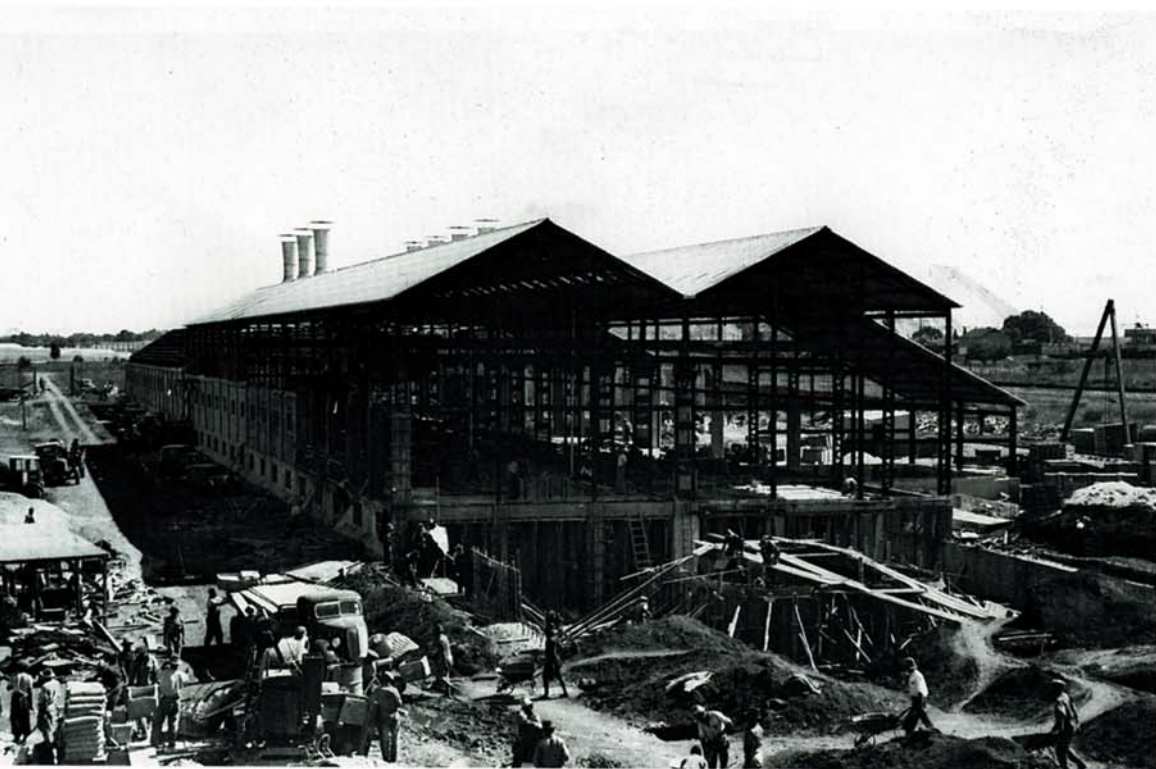
The decision to build the mill on Geduld was taken in May 1937, and construction began in the following month. The area allotted for the mill covered 19 hectares just south of Geduld railway station, and one of the first tasks was to lay tracks for a siding connected with the main line. Another was more gruesome. Years earlier, part of the site had been used as a cemetery for indentured mine-workers who had been drowned in an underground flood in 1908. Before building could begin, their remains had to be exhumed and moved to another part of the property.

First Arrivals

IN THE COURSE OF 1937 Britain's Imperial Airways introduced a weekly flying-boat service between Southampton and Durban, cutting the travelling time between South Africa and Europe to six days and eight hours. Even then, airmail took at least eight days from

Construction on the mill site: (from left) the straw preparation plant, chemical plant and boiler plant.





The machine house at Geduld, large enough to hold two paper machines ordered from Scotland.

door to door, and relations between Union Corporation's offices in Johannesburg and London were less than close. Often letters crossed in the post, and engineers working on the Pomilio project in the two centres sometimes found themselves at cross purposes.

One bright note for the Johannesburg team was the arrival of three men who had experience of Pomilio mills in other countries. The first was named Deisz and had been in charge of assembling equipment at the mill in Argentina. The others were Italians, Count Piscicelli and Dr Giuseppe Raimondo, who were chemical engineers and close associates of Pomilio. Raimondo was fresh from the Pomilio project in Chile, and he and Piscicelli were to work with Tommy Stratten and his men in organising the chemical and pulping sections of the new mill. When they reached Geduld, the only sign of progress was a neat grid of foundations dug into the veld.

Like its counterparts in Italy and South America, the South African mill was to consist of a number of separate components, each contributing to a continuous production flow from raw materials to finished paper. At least, that was the idea. The components were organised in three main groups or plants, chemical, pulping and paper-making, though some stood outside this arrangement. These included an administrative office block with an adjoining laboratory, stores and an engineering workshop, a steam boilerhouse to be fuelled with

coal, and an electrical sub-station.

Once the foundations were dug, a legion of builders and contractors moved in, and with them a small band of electricians and other artisans signed onto the mill's permanent staff. Gradually the components of the mill rose above the flat landscape. The first to be tackled were the stores building and a home for the two paper machines, and others followed thick and fast. When Gutsche returned from Europe he set about arranging supplies of straw, wood, salt, coal, lime and other raw materials. Coal was available from the Witbank coalfields east of Springs, salt from a pan north of Pretoria, and lime for bleaching from quarries in the Western Transvaal and Northern Cape.

Wood was to be supplied from estates around Sabie and Graskop in the Eastern Transvaal. Straw was obtained from wherever farmers harvested wheat, especially from the Brits irrigation scheme west of Pretoria. The straw was cheap but the harvest season came only once a year. The company had to make the most of it, so supplied farmers with baling machines and tractors to power them. Because the straw had to be baled dry to prevent rotting, many crews worked by night as well as day, with the balers lit up by electric lamps mounted on the tractors. The lamps were such a novelty that local farm families organised impromptu dances on the veld.

Both straw and wood arrived at the mill site by rail and were stored in a special park beyond the pulping section. It was now 1938, and a reservoir close to the mill site was filling with water pumped from the mines. Several buildings were up and machinery was being installed. In the chemical and pulping plants much of the work was entrusted to Italians² who were familiar with Pomilio's way of doing things and in many cases had worked at his mills in Italy and South America. Operators for the papermaking plant were being recruited from Britain by the mill's freshly-appointed papermaking superintendent, Hans Loebecke, who during World War I had commanded a German U-boat.

After the war Loebecke had settled in Britain to run a paper mill and had eventually become a naturalised British subject. Now his task was to find experienced papermakers who were prepared to spend three years in South Africa and put the mill on its feet. Those chosen would be expected to train South Africans who would take over their jobs when they returned home. The same applied with the Italians recruited to work in the chemical and pulping plants. As a first step, Loebecke contacted various papermakers who had worked with him at Gravesend in Kent, one of the busiest papermaking centres in Britain.

Next Loebecke travelled to Edinburgh to interview a number of Scottish papermakers, most of them from a fine papers mill at Inver-

keithing in Fifeshire. Word of the South African project had reached Inverkeithing months earlier when a Vereeniging couple had visited Scotland on holiday. Two of the Inverkeithing men, Bob Burns and Jock McDonald, had been so intrigued that they made a special trip to Edinburgh to see the paper machines being built, then wrote to South Africa to ask if there might be jobs. Loebecke was meeting them and others on the instructions of Union Corporation's head office.

The Edinburgh interviews went well, and as a result Loebecke accepted no fewer than nine of the men from Inverkeithing. Most had already planned to emigrate, though they had been thinking of India or Australia. Loebecke took four men from Gravesend as well as one from Wales and two from Northern Ireland, men known to him from his Gravesend days. All were summoned to London to sign contracts and to receive passage tickets for themselves and their families.³ They were to travel in three parties, two on successive sailings of the

Stacks of straw and a pile of hardwood in the mill's storage yard, awaiting pulping.



Warwick Castle and the third on an Italian vessel, the *Dulia*, which was departing from Genoa.

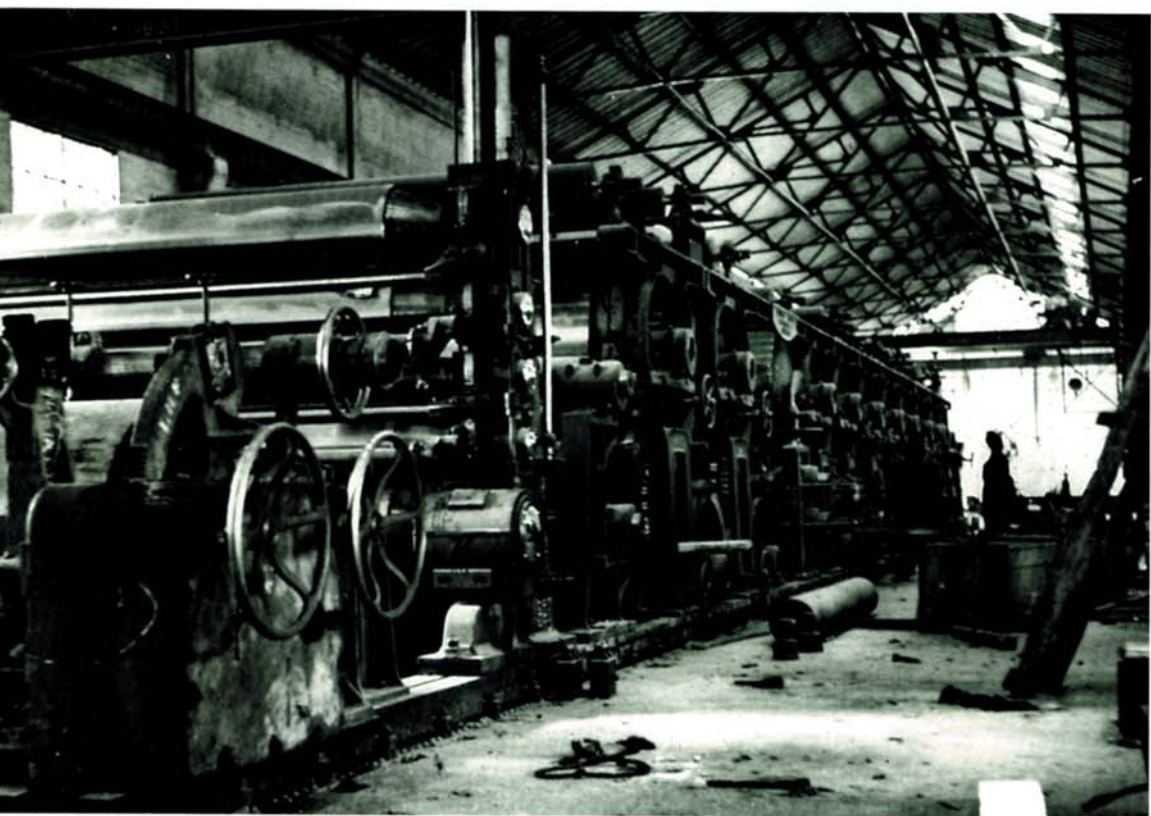
Once in South Africa the papermakers and their families reached Johannesburg by train, then changed for Geduld and reported to the mill. Like the Italians before them, they were left to find their own accommodation, and most opted for boarding houses in the suburbs lying between the mill and the centre of Springs, about five kilometres away. As for work, they found that No 1 paper machine was nearly assembled, but much of No 2 was still in packing cases. Contractors' men were everywhere. To keep the new arrivals occupied Loebecke asked them to help sort waste paper.

After a time the papermakers grew restless and looked around for diversions. Some made a ball of paper laced with string and kicked it around as a football until Loebecke arrived and gave them a dressing-down. What would Dr Gutsche say if he caught them? As yet the men had not met the manager, but when Loebecke went away they made a smaller ball and with it a wooden bat to play cricket. This time they were watched by a small man in a hat who sat on a box and clapped whenever someone played a good stroke. Loebecke returned and was beginning to complain when he spotted the man in a hat. It was Gutsche.

The papermakers came into their own during November 1938 as sections of No 1 paper machine were tried out. Like its fellow it was a standard Fourdrinier⁴ machine which turned near-liquid pulp — it was 99 per cent water and only one per cent cellulose — into reels of paper. At the 'wet end' a headbox spread pulp over a horizontal travelling screen of wire mesh, an endless belt propelled by high-speed drives and mounted on vibrating rollers which caused the cellulose fibres to interlink and form a mat. At the same time, most of the water drained through tiny holes in the mesh, some by gravity and the rest through the action of suction pumps.

At the start of the 'dry end,' a travelling felt 'blanket' snatched the wet mat from the wire mesh and fed it to press rolls that squeezed out yet more water. Next the mat began a rollercoaster ride over 22 large steam-heated cylinders that dried the cellulose web as paper and delivered it to the machine's final section, a mangle-like calender that ironed the paper and made it smooth. From end to end the machine was 57 metres long and it could make paper at any speed between 20 metres and 120 metres per minute, depending on the thickness and quality required. The eventual reel was 104 inches (2,64m) wide.

The first paper made on No 1 machine consisted largely of recycled waste paper and was produced on December 3 1938. A month later the machine was ready for its first white furnish — half white waste paper and the other half bleached wood pulp imported from Scandi-



navia. As yet there was no chance of making paper from pulp produced at the mill. A few sections of the pulp plant were operating, but pulp quality still fell far short of what it should have been. The Pomilio process was not as straightforward as it had seemed.

Patience Rewarded

THE FIRST SERIOUS setback at the mill came in the first week of 1939, when Umberto Pomilio had an accident. Pomilio had climbed on to part of the chemical plant when he overbalanced and to avoid falling ten metres grabbed a cable, not realising that it served an overhead crane and carried 380 volts of electricity. Pomilio was stuck to the cable for four minutes before the current was switched off. His hand was badly burnt and took months to heal. All that time he had to carry it in a sling — for him a serious handicap, as like many Italians he found it impossible to argue without waving his arms.

Argument had become a way of life at the new mill, much of it concerning problems in the pulp plant. The straw pulping units were functioning after a fashion but were producing only one-quarter of the pulp expected. This was partly due to nodes in the straw which made much of it unusable, and partly because one of the straw cooking towers had bulged out of shape and threatened to burst, so was out of action. There was an even worse situation in the wood pulping section. There, chips had to be cooked not in towers but in sealed spherical digesters, yet at the end of the cycle seemed to be unchanged except for having a darker colour.

Pomilio insisted that the digesters had worked well in laboratory tests. When the results were checked, it was found that his technicians had used not wood chips but shavings from a carpenter's plane, which needed much less penetration. One of the Italians, Vincenzo di Paolo, suggested treating the wood chips with a stronger caustic solution and cooking them at higher pressures than the digesters had been designed for. There were improvements, but the management's faith in Pomilio and his process was rapidly disappearing.

Considering what was happening it was no surprise that costs were much higher than anticipated. It was taking £42 to make a ton of indifferant wood pulp, whereas prime bleached pulp from Scandinavia was being brought into South Africa for £12 10s per ton. Because

A group of S A Pulp's British papermakers on arrival at Geduld in 1938.

Inside the machine house, with the No 1 paper machine ready for commissioning.

much of the mill's straw pulp was substandard, a ton of acceptable straw pulp cost £39. It took £34 to make a ton of paper using a blend of local and imported pulp, compared with the £22 that was the average invoiced price of imported printing paper sold in South Africa.

In spite of the discouraging figures, production went forward. Pomilio insisted that all would be well when everything was functioning smoothly, and blamed the problems on inefficient operators. The papermakers decided that until the pulp improved it was better to go for quantity rather than quality and produced nearly 40 kinds of paper in different grades and thicknesses. These included writings and printings, embracing duplicating paper, ledger paper and envelope paper, and various kinds of wrappings. Even then a high proportion of the paper had to be rejected and piles of 'broke' awaited repulping for use on a small cardboard machine.

Samples of the paper were slipped into special printed folders and delivered to the company's first sales manager, Jimmy Learmonth, who had an office in Johannesburg. Learmonth then distributed the folders to potential customers, especially the paper merchants or supply houses as they described themselves. These merchants were powerful. With few exceptions, South African printers undertook to buy all their paper from the supply houses, which in turn promised that they would only deal with the established printers and not with newcomers who might want to steal their customers.

Several of the supply houses were subsidiaries of overseas paper companies, and even the independent merchants liked the flexibility of being able to buy from around the world. As a group they ordered only token quantities of paper from the local mill, even when its products were heavily subsidised so that they could hold their own against imports. The only substantial orders received by Learmonth came from the Government Printer in Pretoria and from Union Corporation mines, all instructed to use the mill's products. As a result the papermaking plant was working at less than half its capacity.

Union Corporation watched its offspring's progress with foreboding. Construction of the mill had cost far more than expected, and the company's capital had been exhausted before the end of 1938. The mining house had come to the rescue by providing a loan of £40 000, and later this was increased until eventually it stood at more than £200 000, yet it would be a long time before the paper company could hope to pay it back. A wag at Union Corporation commented that the mill could not have been in a more suitable place, for 'geduld' is Afrikaans for 'patience.'

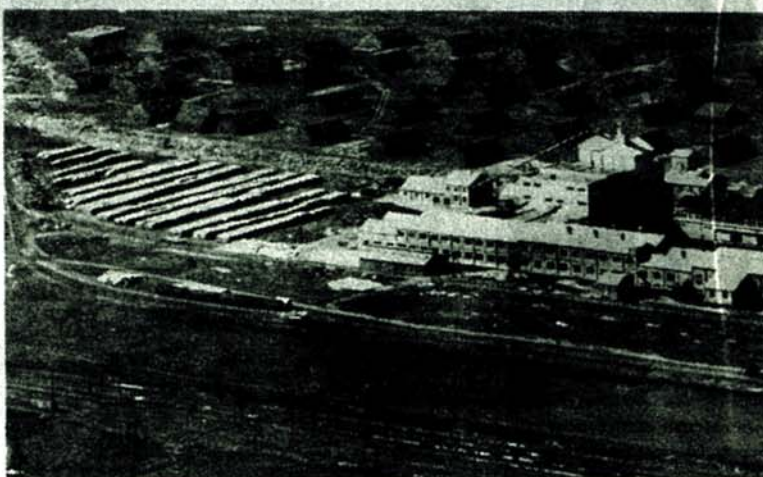
The mill might well have been named Geduld just like the farm



Capital £750,000

Directors:

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*Advertisement from a special feature on S A Pulp in
the Rand Daily Mail, April 24 1939.*

and its two gold mines, but it was not to be. A small post office set up at the mill needed a name of its own as there was already a Geduld post office serving the mines. The company organised a competition and the prize went to an entry suggesting Enstra, short for Enterprise Straw. Soon employees were referring to the whole plant as Enstra Mill, and that is still its name today. At the same time, the company's



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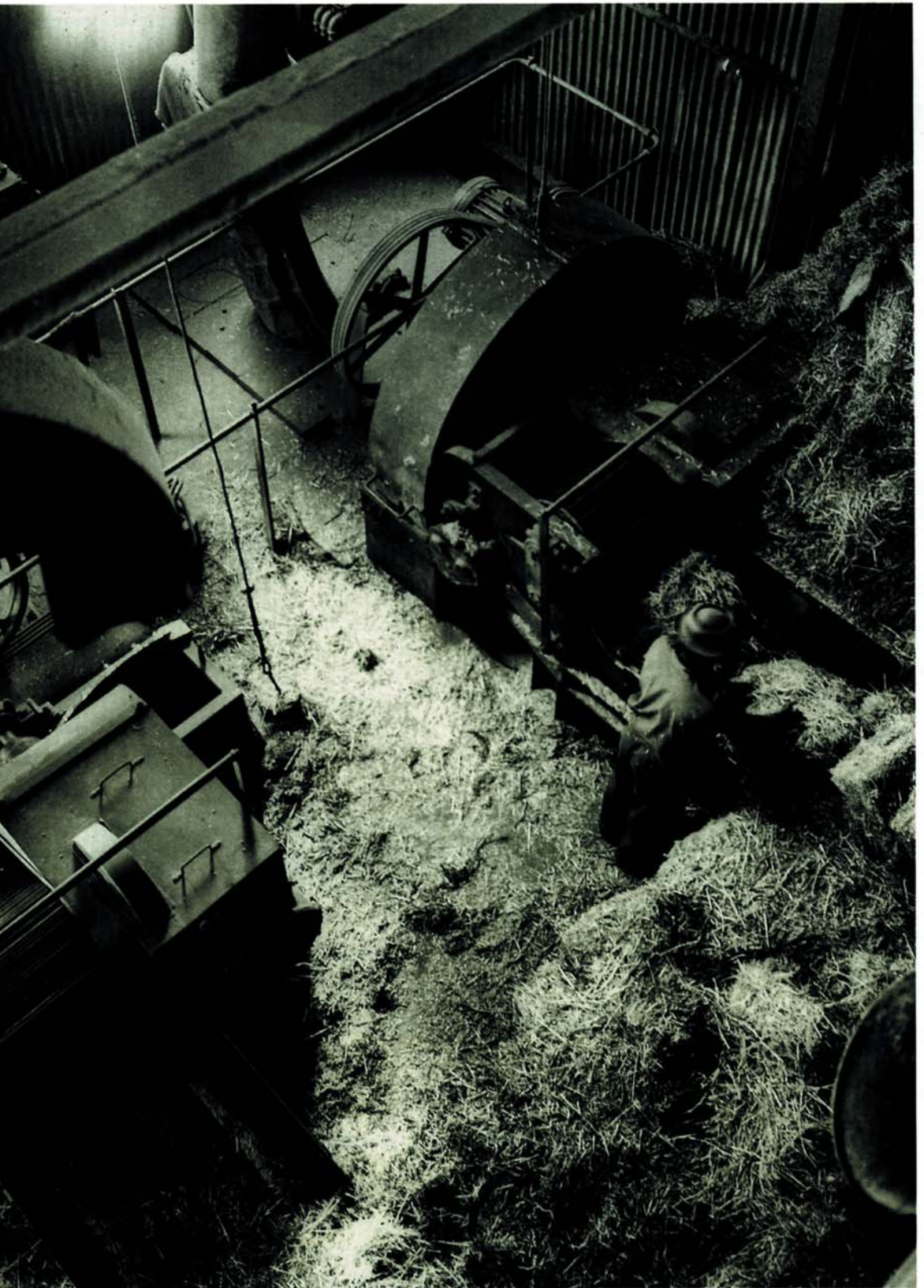
& Paper Industries

TED

Siding No. 1331. GEDULD.
BRITAIN, Transvaal.

rather unwieldy name was often abbreviated to S A Pulp or in some circumstances to Sappi.

Enstra mill was already well-known as one of the largest industries on the East Rand, and numbers of would-be employees were asking for jobs. The majority were still in their teens and some came from as far away as Cape Town and East London. Among the arrivals were



young graduates, especially chemists, who had answered Union Corporation advertisements. Black and coloured labourers were recruited too, most of them drawn from townships on the edge of Springs. By the middle of 1939 the mill's employment roster included 22 staff, 164 white artisans, operators and technicians and 432 black and coloured labourers.⁵

By August 1939 it was clear that Europe was on the brink of war, and the South African supply houses frantically imported quantities of paper in case the lines of communication were broken. For Enstra and S A Pulp, that meant sales dropped still further — though as employees admitted, the company had only itself to blame. Some grades of paper were so weak that they could not be creased without breaking — if a large coin was dropped into an envelope, it went straight through the bottom — and there were wide inconsistencies between one making and the next. The papermakers blamed Enstra's pulp, and the pulp plant operators blamed Pomilio.

Britain declared war on Germany during September 1939, and South Africa followed suit a few days later. A number of Enstra employees joined volunteer regiments that drilled near the mill, and Union Corporation sent word that Enstra's workshops might be needed for making munitions. Otherwise the only evidence of war was a sudden lack of imported pulp. A Swedish ship carrying pulp to Britain had been sunk, and future shipments to countries such as South Africa were being diverted to Britain in case there were further mishaps.

This meant that Enstra was going to be thrown on its own resources. To encourage everyone, there was a sudden improvement in sales. The supply houses could no longer rely on imports, so each placed orders with S A Pulp. Taking advantage, the company raised its prices by an average of £10 per ton, meaning it was no longer making a loss. There were few complaints and paper merchants appreciated that they were lucky to have a local supply, the more so as there was talk of rationing. As an extra windfall, the company found customers for chemical by-products including hydrochloric acid.

Early in 1940 Gutsche resigned as Enstra's manager because of ill health. His successor was to be Joseph White, the manager of a cyanide factory in Witbank, but he was not coming for another six months. In the meantime Whitmore Richards moved to Enstra as

In the straw preparation plant, bales are broken open and straw is fed to cutters to be chopped fine for the pulping process.

Partially digested straw is fed into the top of the chlorination towers (overleaf).





caretaker manager. As hostilities were stepped up, employees' leave was limited to one week per year with a cash payment to make up for the balance. A number of men left on active service and more wanted to join them, but Richards worked hard to persuade them that they would do more good if they stayed at their jobs.

The papermaking superintendent, Hans Loebecke, was in an unfortunate position as it was well known that he had commanded a German U-boat in the earlier world war. As a naturalised Briton, Loebecke had every right to continue working at Enstra, but he was a strict disciplinarian and in some quarters was less than popular. A group of men who objected to Loebecke's presence approached the mill's chief engineer and threatened to go on strike unless he was removed. The engineer told Whitmore Richards, who explained the position to Loebecke. There and then the superintendent packed his belongings and departed.

For some months it had seemed likely that Mussolini's Fascists would eventually enter the war on Germany's side, and S A Pulp made arrangements for the Italian operators to leave the country. Even so, several stayed. As the situation deteriorated, armed police arrived at the mill and escorted the Italians as they went about their duties in case they had any thoughts of sabotage. War with Italy came in June 1940 and the remaining Italians were taken away for internment. Umberto Pomilio was already out of the country, but in terms of war regulations he was regarded as an enemy subject resident in Italy, so was automatically discharged from S A Pulp's board.

Occupational Hazards

DURING THE FEW months preceding September 1939 S A Pulp had been losing between £10 000 and £20 000 a month. Following the increase in prices, in March 1940 the company made a profit of £4 000 and by June this had risen to £16 000. There were gratifying orders from the Government Printer and also from the supply houses, together with compliments over the way in which Enstra's paper was improving. At long last the pulp plant was performing more successfully.

Right at the beginning of the project — even before the company's formation — Whitmore Richards had been told that a local mill should aim to provide only bread-and-butter grades of paper, but should make sure they were available in many finishes. That was the policy adopted now, with advice from the Government Printer who had a special interest in S A Pulp's success. For the first time, Enstra paper was being exported — to East and North Africa, where the Government Printer was setting up field printing shops to support the



Enstra office staff in 1942: in the front row (from left) Jack Job, Jimmy Learmonth, Joseph White, Stan Carlsson-Smith and Frank Totney; and at the back Leonard Job (seventh from left, partially hidden), Grant Robertson (eighth from left), Dick Gray (fourth from right) and Ben Coetzee (third from right).

South African forces sent to fight the Italians.

Enstra's sudden popularity made all the difference to morale at the mill, not least among the British papermakers. Following Joseph White's arrival, three of the Britons had been allowed to break their contracts and return home, and three more had joined up, but the remaining ten — most of them Scotsmen — now had the support of a cadre of South Africans and kept the two paper machines running around the clock and all through the week. Some of the South Africans complained that the Scotsmen liked to keep their secrets close to their chests, but were told it was tradition.

There was a lot to learn. In the absence of instruments, papermakers assessed quality by look, feel and taste. They could tell everything they needed to know about paper's quality by holding it up to the light to test its opacity; by rubbing it between forefinger and thumb to measure its grammage or mass; and by touching it with the tip of the tongue to test for ink absorption. All old-time papermakers prided themselves on a keen eye, soft fingers and sensitive taste buds. The same was true of the beatermen, the operators responsible for blending the pulp before it was fed to the machines.

At Enstra, a beaterman had to deal with a variety of raw materials,



not only short-fibred straw and long-fibred pine which was included to give the paper strength, but also waste paper and perhaps a little imported pulp though this was used only sparingly. On night shift, beatermen sometimes smuggled in imported pulp from the stacks outside — something their day shift counterparts could not attempt for fear of being caught out by the management. As a result, night production was much more effective and there were puzzling short-falls at stocktaking time.

The beatermen had to work closely with the machine crew — a machineman at the wet end, a dryerman and his assistant at the dry end, a 'press boy' who was usually a papermaking apprentice and had to keep the machine clean, and a foreman in control. The machines were so big and made such a noise that those in the crew usually communicated in elaborate sign language. At Enstra there were two independent crews on each shift, watching for faults and problems such as a break in the web of paper, and ready to take remedial action by catching a 'tail' of moist paper on the palm of the hand and slapping it towards the next aperture.

Hand-feeding was dangerous, and missing finger-tips were commonplace. One dryerman's assistant lost his whole arm. There were similar dangers in the finishing house among those working with guillotines and the super-calender, a rack of highly-polished, steam-heated rollers that gave paper extra smoothness. Even so, accidents were few, and the papermakers appeared well off when compared with those working in the chemical and pulping sections. There, Pomilio's poison gas was living up to its name, and besides that men were suffering from burns caused by caustic soda or lime.

In both these sections, chlorine gas leaked from badly-joined earthenware pipes. Many labourers went about their work with wads of cotton waste pushed up their nostrils. A few gasmasks were available in the chemical section, but these were usually spurned because they were hot and uncomfortable, and because it was rumoured that they had been taken from dead soldiers. Instead, operators came to accept runny noses and constantly sore eyes as part of the job. Many developed coughs and some were frequently sick.

Much of the trouble stemmed from the concrete chlorination towers in the pulping plant, where the tile linings were cracking and allowing chlorine to seep through to the outside. The gas had a yellow-green colour and was often clearly visible, so when operators spotted a leak they tried to plug it with putty. On several occasions the labourers sent to shovel straw into the open holes at the top of

Chlorination towers in Enstra's pulping plant, with straw shovelled in at the top and treated with chlorine gas to separate its fibre.



Enstra as it looked in the early days, with Geduld station in the middle distance and Geduld mine beyond.

the chlorination towers took unauthorised naps, meaning that the level of straw steadily dropped and they woke to find themselves choking in escaping gas. The labourers fled, and it was left to supervisors with handkerchiefs clutched to their noses to rush in and shovel straw for all they were worth.

Gas was an occupational hazard at Enstra, and so was an unpleasant odour that spread through the surrounding countryside. The culprit was 'black liquor,' now being pumped to an evaporation dam between the mill and East Geduld mine. In time, solids in the effluent had putrefied, gassy bubbles were forming on the surface, and wind or rain burst these bubbles and released a vile smell. Once the source was tracked down, the mill stopped using the dam and instead piped the effluent to agricultural land where a tenant farmer



claimed it was good for his crops.

The smell was much reduced, but Springs municipality insisted that there was still an 'obnoxious nuisance' and demanded that S A Pulp should take further action. The company wanted to be helpful but pointed out that at least part of the problem was a new sewage works which had gone into operation not far from the mill. In fact, Enstra was using the works' recycled water which was softer than the water pumped from underground. The chief reason for the change was that underground water had caused dolomitic build-up in pipes, one of a number of unforeseen problems that were forcing S A Pulp to arrange new sources for several of its key materials.

For instance, it had been found that salt from north of Pretoria had the wrong chemistry, so the mill now drew supplies from pans near

the Orange River in the Northern Cape, where Union Corporation had set up a special salt extraction works. Pine thinnings still came from the Eastern Transvaal, in spite of occasional transport hiccups, but supplies of Transvaal straw were erratic so much of it was now bought from farmers in the Orange Free State. Even then there was a setback, for in 1941 there was a serious fire at Enstra in which 1 450 tons of straw were destroyed. The fire had apparently been caused by a careless smoker.

Straw supplies had been a headache for some time, and Enstra's management wondered if they could be supplemented with other forms of fibre. One possibility was the wild tamboekie grass of the Eastern Transvaal, which looked similar to esparto grass successfully pulped by a number of mills in Europe. A harvesting team was put to work in the Elands River valley west of Nelspruit, but though the cutters were told to stick to the roadsides and the edges of the rail line, one enthusiast harvested a field of hemp and the company had to compensate an angry farmer. Even then the project was disappointing. Transport made the grass expensive, and it contained even more nodes than straw so was difficult to pulp.

Another possible feedstock was waste paper, though Enstra used less than it might have because of general scarcity, and because much of what was available was going to two other mills: the little Premier Paper at Kliprivier which was still in business though it had new owners, and a Durban operation known as National Pulp and Paper which made board. In 1942 S A Pulp, Premier and National joined forces in setting up a Waste Paper Recovery Association to co-ordinate salvage. At one point waste paper reaching Enstra included quantities of reject petrol rationing coupons, which were eagerly scavenged by mill employees.

For some raw materials like size and colouring matter S A Pulp had originally relied on overseas sources, but for most of the war had to go without them. Mill chemists did their best to find substitutes — for instance, a home-made size produced from ordinary yellow soap dissolved in water. This was mixed with the pulp to give paper a better writing surface. Mill engineers had to use all their ingenuity to devise spares for the pulping plant and paper machines, but for some precious items like wire forming screens the company depended on imports and could only pray that they were not interrupted.

In the event, most ships carrying cargo for S A Pulp reached South

Bleached pulp uptake machine in Enstra's bleaching plant.

Papermakers at the wet end of No 1 machine: back row (from left), Doug Cox, Fred Whitehead, Dolf Michelley, Geordie King, George Peden and Harry Gibson.



Africa without incident. The one exception carried sections of a plant for liquefying chlorine gas, a new initiative at Enstra as it was believed that liquid chlorine would be a valuable by-product. For security's sake the plant's sections were divided among several ships, one of which was sunk. Replacements had to be ordered and there was a long delay before they arrived, but when they reached Enstra they were quickly assembled, and S A Pulp's first liquid chlorine was produced in 1942.

That same year saw a change of managers, as Joseph White's two-year contract came to an end. In his place S A Pulp appointed an experienced British papermaker, but wartime restrictions made it difficult to find him a passage to South Africa. In the interim Whitmore Richards again filled the breach — this time as managing director, with an acting works manager based at Enstra. The new manager eventually arrived in March 1943 and Richards relinquished his temporary title. As a lasting memorial of the period he left a thatch-roofed works canteen, built in the style of a Cape Dutch homestead.

'Old' Harry Smith beside the super-calender in Enstra's finishing house, used to 'iron' paper extra smooth.





2 1943–1952 A SECOND CHANCE

DURING THE WAR years South Africa appointed a number of special civilian officials to prepare the country for all eventualities. They included a Price Controller, a Controller of Imports and Exports, and Tommy Stratten — seconded from Union Corporation — as Director General (Technical) of War Supplies. There were also controllers of various strategic commodities, among them a Paper Controller who turned out to be the Government Printer under another hat. As Paper Controller he was given wide powers over the whole paper industry and was expected to steward available supplies for the good of all.

At first, paper control was directed at imports. Shipping was at a premium, so the only paper stocks allowed in from outside were types that were in short supply and could not be made locally. In consequence Enstra was besieged by customers who ordered far more paper than the mill could deliver. As it was, Enstra was producing paper at the rate of 11 000 tons a year, well down on the 14 000 tons it had been designed for but all it could manage in the face of its production difficulties. To help ease the pressure, the Paper Controller urged users to consume paper more sparingly.

Setting an example, the Post Office introduced half-size postage stamps to cut down its consumption of gummed paper. The wine industry identified bottles with paper strips instead of the generous labels favoured before the war. Many businesses converted to half-size stationery, and envelopes were used again and again. Virtually all printed material was set in smaller type than would have been normal. At S A Pulp, as at many other companies, this affected the annual reports sent to shareholders, which were downgraded to single sheets carrying the chairman's remarks and relevant accounts.

Feeding logs to a chipping machine in Enstra's wood preparation plant, c 1943.

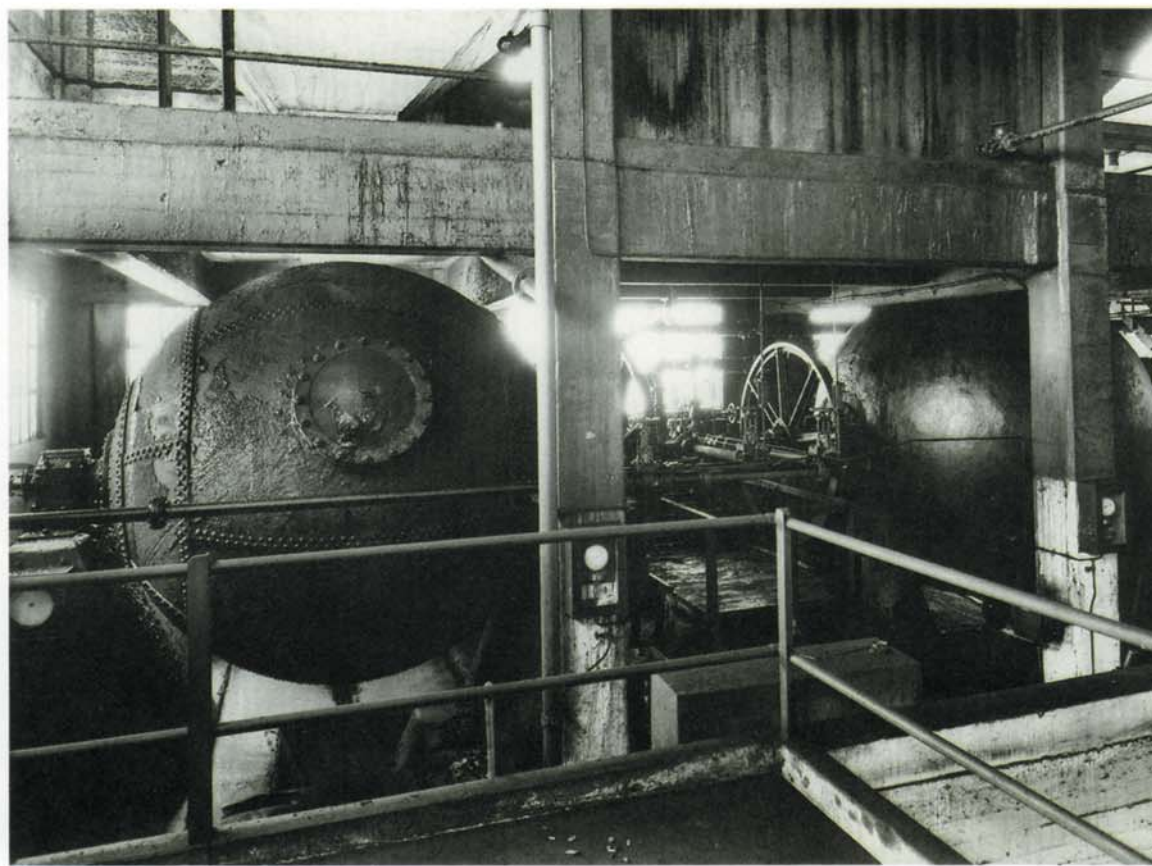
Even with economies, demand for Enstra's products continued to outstrip supply — an echo of the situation in World War I, when shortages of paper had brought about serious dislocations and even bankruptcies. In 1943 the Paper Controller stepped in and introduced a quota system by which S A Pulp's customers were rationed to a fixed proportion of Enstra's output. Users still grumbled about the poor quality of some products — paper thickness was inconsistent, leading to misfeeds on printing machines, and tints on the top surface sometimes differed markedly from those on the bottom — but most knew very well that without Enstra they might have no paper at all.

The new form of paper control meant that S A Pulp was sure to sell all it made. The sales department's role was reduced to placating frustrated customers and helping them to locate extra paper in emergencies. As a result, the sales team moved from Johannesburg to Enstra. Prices were fixed by the Price Controller and were lower than S A Pulp would have liked, but the company was now making steady profits of roughly £100 000 a year. Following a maiden dividend of 6d (5c) paid for 1941 the board had been awarding regular dividends of 9d (7.5c) a year and shareholders could see a return on their investment.

By the later months of 1943 it was clear that the war was approaching a climax and that peace might soon follow. Looking ahead, the paper merchants suggested that some form of paper control should continue even after hostilities ended, to give the trade time to adjust to the new conditions. S A Pulp's management was naturally delighted, the more so as the move was unsolicited; but all realised that the stay might be temporary, and that one day Enstra paper would again have to compete with imports of far better quality. If the company was to survive, it needed expert advice on ways to improve its products and cut its costs.

One source of advice was a new firm of consultants in Britain, the Cellulose Development Corporation or Celdecor for short, formed by Union Corporation on the urging of Umberto Pomilio and Giuseppe Raimondo. Pomilio was still in Italy but Raimondo was living in Britain, having spent nine months in an internment camp on the Isle of Man. Raimondo had teamed up with Denis Pott, the son of a Union Corporation director, to manage Celdecor with the aim of promoting straw pulping throughout the world. S A Pulp's board decided to send Whitmore Richards to see Celdecor in London and find out if Raimondo had any new ideas, and if appropriate to invite him back to Enstra.

In view of this arrangement Celdecor was appointed technical consultant to S A Pulp. Richards set off for Britain in December 1943, but was apparently less than satisfied with what Celdecor had to say. He obtained permission to extend his trip and went on to Canada and



Spherical digesters for pressure-cooking wood chips, as recommended by Umberto Pomilio.

Mill on the veld: Enstra in the 1940s (overleaf).

the United States, where he was put in touch with Oury Hisey, associate professor of pulp and paper at the New York State College of Forestry at the University of Syracuse. Richards and Hisey discussed Enstra's problems, and the American agreed to visit South Africa in the course of his next long vacation, so that he could offer advice on the spot.

Before returning home Richards went to Argentina to visit the Pomilio mill at Rosario, but learnt nothing new. Back in South Africa he passed on a tip of Hisey's, that S A Pulp should consider pulping hardwoods as well as softwoods, even though the fibres were shorter. Hardwood was denser than softwood and load for load produced more pulp, an important consideration when the spherical digesters had a limit of only two tons. As a result the company began buying hardwood wattle from plantations in the Piet Retief district of northern Natal. Wattle had been introduced to South Africa in the nineteenth century for the sake of its bark which was used in tanning.

Oury Hisey arrived in South Africa in July 1944, and a single visit





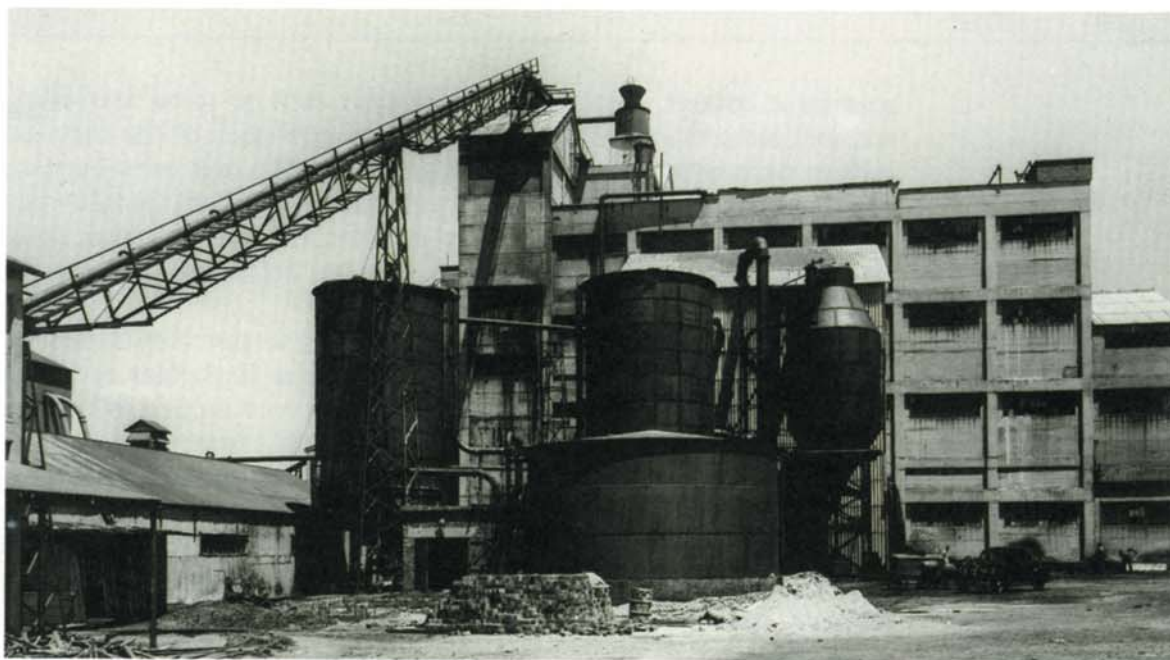
to Enstra convinced him that there was no future in straw. That confirmed the suspicions of many who worked for S A Pulp, among them Whitmore Richards. Hisey was more impressed by the potential of wood. He and Richards made a lightning tour of the tree-growing areas of the Transvaal and Natal, and Hisey noted that in addition to pine and wattle there were large quantities of eucalyptus gum, introduced to South Africa from Australia to produce mining timber. Only recently an Australian mill had begun using eucalyptus to make paper, and Hisey saw no reason why S A Pulp should not follow suit.

During August 1944 Hisey submitted an interim report recommending that the company should start eliminating straw as a raw material and should instead use wood, retaining the soda pulping process. The directors agreed, even though it was known that a Celdecor delegation was about to visit South Africa and would no doubt dismiss Hisey's ideas as nonsense. The conversion would be relatively simple as S A Pulp was already increasing its orders of wood and had just installed two vertical digesters as alternatives to the spherical cookers. The vertical digesters held more pulp and were stationary but otherwise worked on similar principles.

Once wood chips were cooked in the vertical digesters they were ejected into an adjoining blow tank, and there was dismay when this exploded on its first blow. Apparently it was not strong enough. Repairs were made and the new digesters soon began to earn their keep, so much so that a third was ordered and installed. Enstra men referred to the three as Faith, Hope and Charity. In the meantime Oury Hisey had returned to the United States to prepare for the next teaching year, but S A Pulp's board hoped he would agree to return to South Africa during the next North American summer.

Enstra men were intrigued by the new developments, but even the promised switch to wood was not enough to boost morale which had been at a low ebb for some time. Part of the trouble was that many resented being designated as key men, which meant they had been obliged to stay at Enstra throughout the war when they would have preferred to join up. Apart from that, the mill manager was a bad influence, picking fights with all and sundry, and either firing them or making life so unbearable that they resigned. The manager spent much of his time in a local pub together with his favourites, and as gaps appeared in the mill hierarchy these favourites were promoted to fill them.

Matters came to a head when the manager summarily fired Arnold Clark, the superintendent of the pulp plant, who like several of the papermakers had joined Enstra from Gravesend. In protest the pulp plant men walked out and refused to return to work until Clark was reinstated. The manager backed down, but word of the unpleasantness reached Union Corporation where Tommy Stratten and Whit-



Enstra's pulp preparation building fronted by pulp storage chests and the blow tank (right) which exploded on its first blow.

more Richards decided that it was time to intervene. In October 1944 the manager was given an opportunity to resign. Two of his favourites resigned with him, and the three set up a new paper supply house in Pretoria.

To put the mill back on its feet S A Pulp's board appointed a young South African recommended by Tommy Stratten, a graduate chemist named John Henderson, who was new to pulp and paper but had come into contact with Enstra before the war when working in the research laboratories at East Geduld. In fact, in 1938 Henderson had been asked to conduct experiments with Pomilio's pulping processes and had found they did not work, only to be assured that he must have made a mistake. In sending him to Enstra Sappi's chairman, P M Anderson, made it clear that Union Corporation was unhappy with the mill's performance and that it was up to Henderson to improve matters. If he failed, then he too would be out of a job.

The Hisey Touch

EVER SINCE 1936 Union Corporation had treated Enstra like a mine. Working hours were the same, at least for those not on alternating shifts — five full days and a half day on Saturday, ending at 11h30 to allow plenty of time for shopping. The mill's buying was done through the mining house, and stores were classified according to

gold mine listings. Enstra employees were sent on mine firefighting and first aid courses, and in case of emergencies men of the chemical section were issued with breathing apparatus like that worn by mine Proto teams. Enstra families were welcome to join East Geduld mine recreation club — just down the road from the mill — where there were tennis courts, bowling greens, playing fields and a swimming pool.

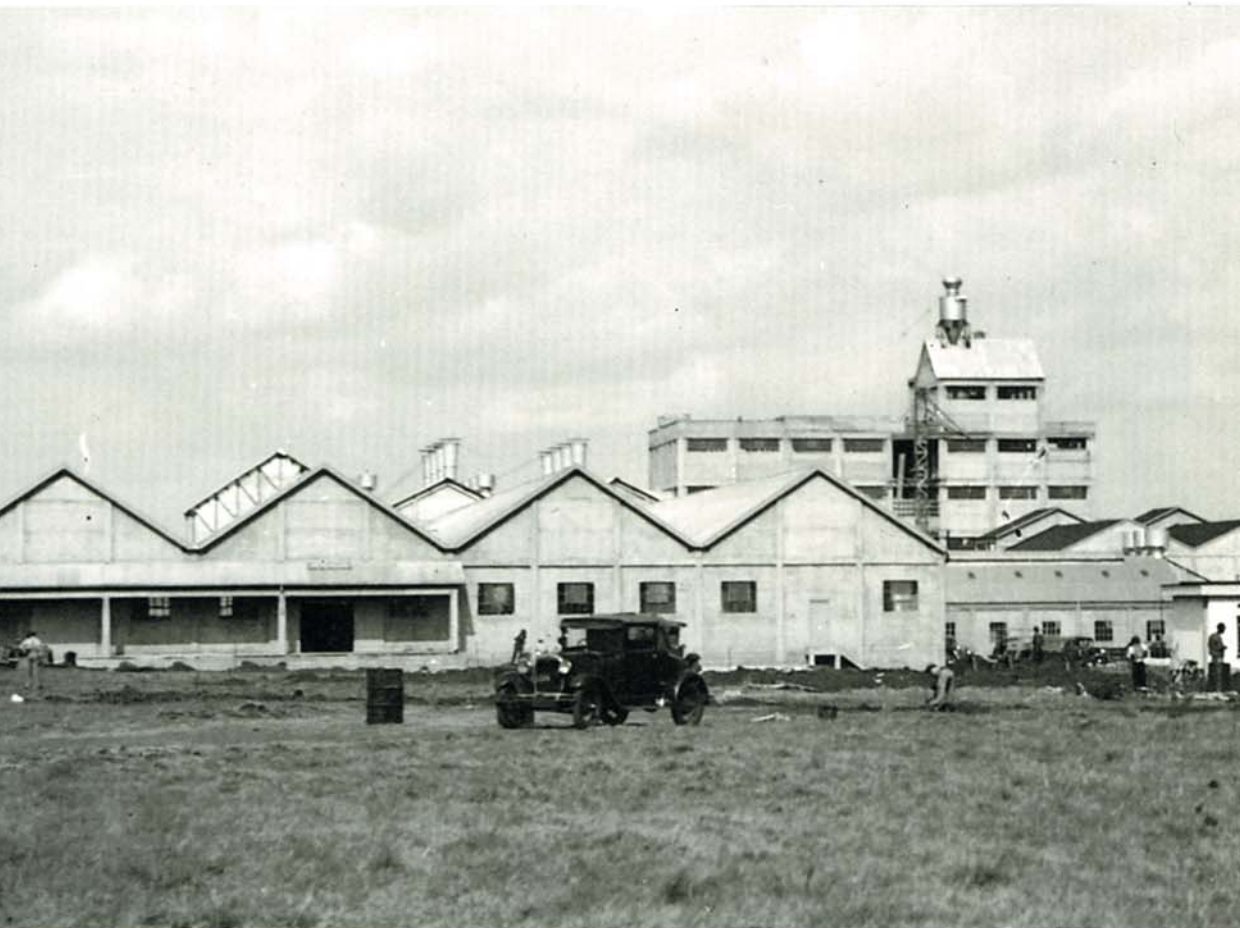
At the start of the war S A Pulp had taken to throwing an annual ball at the recreation club, for many the most important event on Enstra's calendar. At the mill, social life revolved around Whitmore Richards's canteen. Especially on night shift, foremen from the paper, pulp and chemical sections met over bacon and eggs and informally compared notes on their difficulties. Often they were able to sort out problems without having to trouble their superiors — as when a papermaker asked for a subtle change in pulp, or a pulp man asked for special service from the chemical operators.

Tucked away in one corner of the mill was an all-female department, the sorting house. Several of the sorters had husbands or fathers at the mill. Their chief task was to count sheets of paper ready for packing and despatch and at the same time to check for flaws. Women were much more adept at this job than men as their fingers were more nimble, fluffing the paper and fanning out the sheets and running their fingers down the edges. Each sorter wore a rubber thimble and used an L-shaped sorting frame to square up edges ready for guillotining. Once paper was counted it was put on a trolley and wheeled away.

More women worked in the mill administration block, where secretaries, clerks and typists outnumbered the male staff. One of the secretaries, Ellen Masséy, was engaged to Dennis Masson of the accounts department, who had returned to Enstra after several years in prisoner-of-war camps following capture at Tobruk. Soon the couple married, and it seemed that the whole of Enstra was at the wedding. Everyone wanted to kiss the bride. To bring Enstra's womenfolk closer together John Henderson's wife Mary organised a vegetable club whose members pooled their money and received baskets of fruit and vegetables bought direct from Springs market.

Henderson himself had a man-sized job on his hands as he tried to restore Enstra's fortunes. It seemed to some that he never left the mill, forever dropping in on the various sections to encourage those at work and obviously wanting to lead by example. As a chemist himself, he was particularly keen to build up Enstra's chemical strength. Under his predecessor, chemists had been neglected, as the





accent had been on papermaking and its reliance on look, feel and taste. Several Enstra chemists had resigned in disgust, and in their place the manager had appointed a single chemical engineer who he thought might have practical solutions to the mill's problems.

The man appointed seemed all the more impressive when it was realised that he had a doctorate. Chemical engineers of any kind were rare, so for the company to find one with such high qualifications was something special. At first the chemists still on Enstra's staff regarded the newcomer with awe, but then he made several elementary mistakes and it gradually dawned on them that he was a phoney. Even then it was some time before the manager dismissed him. It later emerged that the closest the man had come to chemical engineering had been a job selling heavy chemicals in Europe, before the war.

The memory of that episode had still been fresh when Henderson arrived, and to counteract it he brought back Leonard Job, a gifted young chemist with an MSc degree who had worked at Enstra during



The profile of Enstra, with the finishing house on the left, administration block on the right and the pulp plant in the background.

the start-up period. The two had become friends during Henderson's stay at East Geduld. In 1943 Job had left Enstra and had since worked under Tommy Stratten in war supplies, but now Henderson needed his help in deciding where S A Pulp was going. Job's personal view was that at least in the short term, the company should concentrate all its efforts on making paper, if necessary importing pulp from the northern hemisphere.

Before Job had time to press the point, Oury Hisey resigned his teaching post in Syracuse and returned to South Africa to take up a full-time appointment with S A Pulp. Celdecor viewed this move with suspicion and late in 1945 Giuseppe Raimondo arrived back at Enstra, instructed by his partners to make sure that S A Pulp continued processing straw, for otherwise Celdecor would be discredited. All too soon Raimondo realised it was a lost cause. Straw supplies from the Transvaal and Orange Free State had dwindled to a trickle, not least because government officials were urging farmers to plough



straw into their land as compost.

Early in 1946 Hisey and Raimondo teamed up to look into Enstra's problems and wrote a joint report recommending that the company should take immediate steps to make the plant independent of straw by increasing its capacity for pulping wood. To save money, sections of the straw plant could be utilised for pulping as an interim measure; but they pointed out that it was essential to bring in a full-scale chemical recovery plant, both to save having to install extra plant for making caustic soda and chlorine and to cut down on effluent, which would otherwise be a major headache.

In spite of his Celdecor connection, Raimondo agreed with Hisey that S A Pulp should link up with a technical partner or partners already experienced in soda pulping and prepared to advise on what should be done. Hisey recommended a Canadian company, Howard Smith Paper Mills of Montreal, which had a number of mills in Canada and the United States and is today part of Canada's Domtar group. S A Pulp contacted Howard Smith and was told that although the Canadians were interested, they had no one they could send to South Africa; but that if S A Pulp cared to send men to Montreal, they would be very welcome.

In August 1946, John Henderson and Harold Rogers of Tommy Stratten's department at Union Corporation set off for Montreal, expecting to be away for months as they were travelling by sea. In Henderson's absence Hisey took over as manager at Enstra. On arrival in Montreal Henderson and Rogers were met by George Tomlinson, Howard Smith's technical director, who arranged for them to visit a series of mills, some specialising in fine papers, some in kraft and some in newsprint. Henderson took special interest in the soda recovery processes used by Howard Smith, one of them a furnace only recently invented by Tomlinson himself.

The South Africans had been away for two months when they were joined by Tommy Stratten, who reached Montreal more rapidly by flying. Stratten wanted to tie up an agreement for technical co-operation, so invited the Howard Smith men to lunch and as a special treat showed films of South African wildlife, borrowed from the South African High Commission in Ottawa. The Howard Smith men were delighted, and made it clear that they would be pleased to help as many men as S A Pulp cared to send, and hoped to send their own representatives to South Africa as soon as circumstances allowed.

At Enstra, Hisey was becoming a popular figure even though some found it difficult to follow his 'Yankee accent.' He was a man in his fifties so was a good deal older than all but a few of Enstra's staff, but

One of the Holland beaters in which pulp was prepared ready for making paper.

had no difficulty in finding his feet. People talked about him as 'The Prof,' and as if to justify his nickname he offered a course of evening lectures on pulp and paper at the East Geduld club. The lectures were first-rate and well attended, and Enstra men took the point that their work was a subtle blend of art and science — a startling conclusion, considering the difficulties they met from day to day.

Not long after Henderson's return to Enstra, two more men left for Montreal. This time it was the turn of Arnold Clark of the pulp plant and 'Old' Harry Smith — there was a 'Young' Harry too — who was chief papermaker. Their brief was to learn anything and everything they could, and once again the Howard Smith men proved wonderful hosts. By now it was 1947 and Hisey had persuaded Union Corporation that Enstra's existing soda recovery system, a makeshift affair put together at the end of the war, was no longer adequate. He recommended the system built around the Tomlinson furnace from Canada; but Celdecor wanted to order a British design, the Wagner furnace.

The stage was set for a showdown between Hisey and Celdecor. Both lobbied Union Corporation, and Hisey was able to demonstrate that though the Wagner furnace was cheaper, its soapstone lining quickly corroded and had to be replaced every six months. In contrast, the Tomlinson system was water-cooled and there was no corrosion. Hisey won the day and Union Corporation ordered the Tomlinson furnace. Celdecor's appointment as S A Pulp's technical consultants was cancelled. Raimondo left Celdecor to start his own business, Celdecor itself broke up soon afterwards, and Hisey was left in undisputed control.

Chemistry

ENSTRA'S LAST STRAW was harvested in December 1947, and S A Pulp took steps to sell off the fleet of tractors and balers loaned to farmers. Steadily the mill's straw park emptied until the final pulping was completed in April 1948. The straw preparation plant was converted into a store, but the straw chlorination towers were adapted for pulping wood. Already the company had stepped up orders for pine railed from the Eastern Transvaal and wattle from Natal, and eucalyptus was trucked in from private plantations not far from Johannesburg. A new era was beginning, and nobody regretted the passing of the old.

To mark the transition S A Pulp published an illustrated brochure which made no reference to its beginnings but instead stated baldly: 'Paper from Wood: that is the background of South African Pulp and Paper Industries Ltd.' According to the brochure, the company now



*Wood for paper: a eucalyptus plantation
near Johannesburg.*

employed 350 whites and 700 blacks and coloureds, who together produced 1 350 tons of paper each month as well as 200 tons of cardboard and quantities of chemicals — hydrochloric acid (made by burning hydrogen in an atmosphere of chlorine), chloride of lime (a combination of lime and chlorine gas), liquid chlorine (made by compressing and cooling chlorine gas) and the caustic soda used in the pulping process.

Enstra's caustic soda was used in the pulp plant, though there would be a surplus for sale once the soda recovery plant started up. The other chemicals were marketed as by-products, and S A Pulp was regarded as one of South Africa's leading producers. During the war years the largest of these producers, African Explosives and Chemical Industries or AECI for short, had proposed to Union Corporation that Enstra's chemical section should be separated from the rest of the mill and run as an independent company which AECI would manage. Nothing had come of the idea, but AECI's interest had confirmed Enstra's importance.

One page of the brochure was devoted to Enstra's 'control and research laboratory,' actually two areas as there was now a quality



control laboratory inside the paper machine house. This freed the original laboratory to concentrate on research. The laboratory team included eight chemists all reporting to Leonard Job, who had been appointed Enstra's assistant manager. Some members of the team worked on plant problems such as effluent control and bleaching techniques. Others carried out routine tests on paper, checking for tensile strength, weight, resistance to tear, ability to fold and other attributes whose absence had been criticised in the past.

Plainly Enstra's chemists were coming into their own. They had always had influence in the pulp and chemical sections, but paper-makers viewed them with suspicion. In response, John Henderson arranged for several young chemists to join the papermaking crews, which taught the chemists new skills and showed the papermakers that scientists were not an alien species. On Oury Hisey's request chemists began investigating the pulping characteristics of the various types of wood used at Enstra, and miniature pilot plants were built to test techniques. As a result of these tests Hisey suggested that Enstra should modify the soda cooking process by adding a touch of sulphur.¹

By itself, the soda process was a matter of adding caustic soda to wood chips and then pressure-cooking the mixture with steam. This worked rather too well in that the soda was aggressive and the cellulose was weakened. By adding sulphur, the process was slowed down and produced much stronger pulp, though it also produced a sulphurous odour which brought complaints until it was contained. Gradually the new plant was erected and with it new digesters to increase the mill's pulping capacity, and in March 1949 two of Enstra's chemical men set off for Montreal to learn more about how the plant should be operated.

One of the two was Leonard Job and the other was Chris Myburgh, a chemical engineer who had joined Enstra in 1940 when fresh from university. Now he was superintendent of the chemical section. As usual the Howard Smith company gave the South Africans a warm reception and showed them everything they wanted to see, not only the recovery plant but also innovations like the Hooker electrolytic cell which worked much better than Pomilio's. In addition, Myburgh travelled to New Mexico to examine a carbate plant for making hydrochloric acid, much more compact and straightforward than the existing acid plant in use at Enstra.

Back in South Africa, Job and Myburgh took turn and turn about in twelve-hour shifts to teach Enstra crews how to operate the recovery plant. Myburgh advised S A Pulp's management to introduce Hooker cells and buy a carbate acid plant, and both ideas were ap-

proved. The acid plant was a priority as the old one was dangerous and liable to explode if the chlorine and hydrogen gases fed into it suddenly surged and came into contact with the flame used to ignite the hydrogen. The new plant was installed but the water seal pipe at the bottom was too short. Enstra chemists combed the district for Ford radiator hoses which had the same diameter and joined them up to make a loop, which worked perfectly.

Shortly before the new plant was commissioned, late one evening there was a sudden surge of the gases in the old plant. An explosion followed, and a gasometer used to store hydrogen took off like a rocket with a trail of flames behind it. The gasometer — an inverted cup with a diameter of ten metres — soared about 50 metres in the air, turned through 180 degrees and landed on a pile of empty drums. Not long afterwards the same thing happened with the second gasometer, this time in daylight. Neither episode caused any casualties, and the gasometers were not missed as the old plant was being scrapped.

The new plant started up during 1949, at a time when S A Pulp's management was thinking about major expansions likely to double and eventually quadruple the company's output. Some of the plans affected Enstra, but others concerned a quite different venture, a new mill to be built in Natal which was to specialise in kraft packaging papers. Union Corporation had been considering the Natal scheme ever since the war years, partly to discourage other investors from launching mills of their own. The wartime paper shortage had led at least two other mining houses to undertake feasibility studies.

Nothing much had been done about the plan until Oury Hisey joined S A Pulp and toured South Africa to look for possible sites. His trip took him from Saldanha Bay north of Cape Town to the Limpopo River which divides South Africa from Zimbabwe, but all the most promising sites were in Natal. In May 1947 he, John Henderson and Percy Anderson — P M's brother — of Union Corporation's survey department travelled to Durban to make a closer inspection. On arrival they tried to hire a car but found none was available, so telephoned Johannesburg for help and had to wait for three days until a car was sent to them by rail.

The three men visited all the sites picked out by Hisey, each time checking for plenty of water, adequate timber, enough labour, on-the-spot rail links and a means of disposing of effluent. At one point they drove all the way to Richards Bay in Zululand, a beautiful though desolate spot named after one of Whitmore Richards's ancestors; but there was no rail access, and it was ruled out. They also looked at Mtubatuba not far from Richards Bay, today an important forestry centre, and they visited several municipal sites close to Durban, among them the one now occupied by Mondi Paper's



Laboratory staff photographed in 1945, among them Piet Fourie (back row, third from left), Henry Myburgh (back row, far right), Toppie van Jaarsveld (front row, second from left) and Louis van der Walt (front row, second from right).

The Tomlinson soda recovery plant installed on Oury Hisey's advice (overleaf).

Merebank mill. For one reason or another all were rejected.

The travellers were more impressed by a site near Stanger on the Natal North Coast, though they were doubtful about its water supply; but even that was eclipsed by what they found on rolling farmland overlooking the Tugela River on Zululand's southern boundary, close to the bridges carrying the road and rail line which gave Zululand its only links with the south. The site met all five of Oury Hisey's criteria and Percy Anderson took options on two farms though without revealing whom he represented. Soon afterwards the options were taken up — not by S A Pulp but by Union Corporation, as there were suggestions that the second mill should be launched as a quite separate company.

That was not the view of Tommy Stratten, who was now a director of S A Pulp as were Whitmore Richards and Oury Hisey.² Stratten was also the mining house's chief consulting engineer, so took a double interest in the paper company's progress. He was convinced





that the second mill would work best if tied to S A Pulp, particularly if it made a different style of paper. Oury Hisey was sure that Natal wood could be made into high-quality kraft paper even though many supposed that South African fibre matured too rapidly to be strong enough — between twice and six times as fast as its counterparts in the northern hemisphere.

Nothing had been decided, but in June 1950 John Henderson learnt that a British company was trying to sell a brand new 170-inch (4,32m) paper machine for a bargain price. The machine was considerably larger than those at Enstra and had been custom-built for a paper company in India, but following that country's partition would have ended up on the Pakistan side of the border and was no longer

Pulp in storage at Enstra, retained until needed for making paper.



wanted. The makers, Walmsleys of Bury, were ready to sell the machine to S A Pulp and to send out its components in six fortnightly sailings. The opportunity was too good to miss, particularly as the machine had been designed to make both kraft and newsprint.

The order was placed and the machine was despatched. A storehouse was hastily constructed on the site earmarked for the Tugela mill, though as yet no mill had been designed. It was a ridiculous situation, but the machine's arrival acted as a catalyst. Union Corporation agreed that the mill should be built and ceded the two farms to S A Pulp, while Oury Hisey worked directly with the mining house's engineering department in drawing up plans. The new mill was to specialise in unbleached kraft and the Walmsleys machine was expected to produce 100 tons of paper per day — twice the output of the two machines at Enstra.

To start with, the new mill was to pulp wood bought from private growers in Zululand and elsewhere in Natal, but Hisey said that it was high time the company began growing trees of its own, ready for the future. For that the company needed land, and S A Pulp representatives inspected several properties in southern Natal. On their recommendation the company bought a single farm in the Ixopo district, bare of trees but close to a narrow-gauge rail line linked with the main line system. More farms followed, and S A Pulp men began looking forward to the time when their company could make paper from trees it had grown from seed.

Doubling Up

SOON AFTER THE war S A Pulp's sales department had returned to Johannesburg and now had offices in the Union Corporation building, where Whitmore Richards kept an eye on it. Paper control had been lifted in 1946 but price control was still in force and imported papers were far more expensive than their Enstra equivalents. This meant that S A Pulp still sold all the paper it produced, and the sales department still had to ration deliveries to ensure that customers received their fair share. Profits were encouraging and shareholders, not least Union Corporation, were reaping rich rewards — so much so that S A Pulp's management felt it was time to expand.

One possibility was to begin converting paper to make consumer products. Extra paper was already used to make envelopes, but supply houses would not be impressed if S A Pulp went into opposition. There was greater potential in the packaging sector, still in its infancy and consisting in the main of small companies specialising in making boxes, bags, corrugated containers and paper sacks. The corrugating industry in particular was still young, and John Henderson

believed there was scope for an extra factory which could eventually serve as a showcase for packaging papers made in Zululand.

During a visit to Britain in 1947 Henderson had met a representative of a leading British corrugating converter, Thompson & Norris. The representative told Henderson that his company was installing new equipment at one of its British factories and was scrapping the old plant to make sure competitors could not get hold of it. Henderson suggested that the old plant should be shipped to South Africa and set up at Enstra where there was plenty of room to build a factory alongside the mill, meaning that the two operations could pool their resources. Thompson & Norris liked the idea and in September 1947 sent two directors to South Africa to investigate.

Henderson's idea looked viable, and it was agreed that Thompson & Norris and S A Pulp should join forces in creating a new company, Union Corrugated Cases, with the British firm holding a controlling interest. S A Pulp agreed to build the new factory though in the event there were delays because of shortages of cement. The corrugating and boxmaking machinery arrived, together with a team to operate it, and in February 1949 Union Corrugated Cases — UCC for short — went into operation. Water, steam and electricity were provided by the mill, and UCC shared Enstra's stores, workshops and canteen.

UCC's raw materials were kraft linerboard (the stiff paper that forms the inside and outside of corrugated board) and fluting (the corrugated paper inside the sandwich). Both linerboard and fluting were imported in reels. As Henderson had hoped, UCC soon found customers, and the success encouraged S A Pulp's board to think of introducing extra pulp and paper capacity at the mill. The market was crying out for more paper, wood pulping could be stepped up, and Enstra's reservoir could provide twice as much water as the existing operations consumed. Already Oury Hisey was drawing up plans for a third paper machine and extra pulp and chemical capacity to support it.

By coincidence, it was learnt that the Wiggins Teape company of Britain wanted to erect a paper machine somewhere in South Africa to make speciality products like cheque paper. Wiggins Teape was one of the great paper companies of the world and already controlled a supply house in South Africa. Its representatives approached S A Pulp with the suggestion that the machine should be set up at Enstra and run by papermakers sent from Britain. In addition, Wiggins Teape wanted to invest in S A Pulp and offered to enter into a technical partnership aimed at improving Enstra's output.

The machine offered by Wiggins Teape was old and small — only 72 inches (1,83m) wide, compared with the 104 inches (2,64m) of the two from Edinburgh — but it was capable of making superior paper

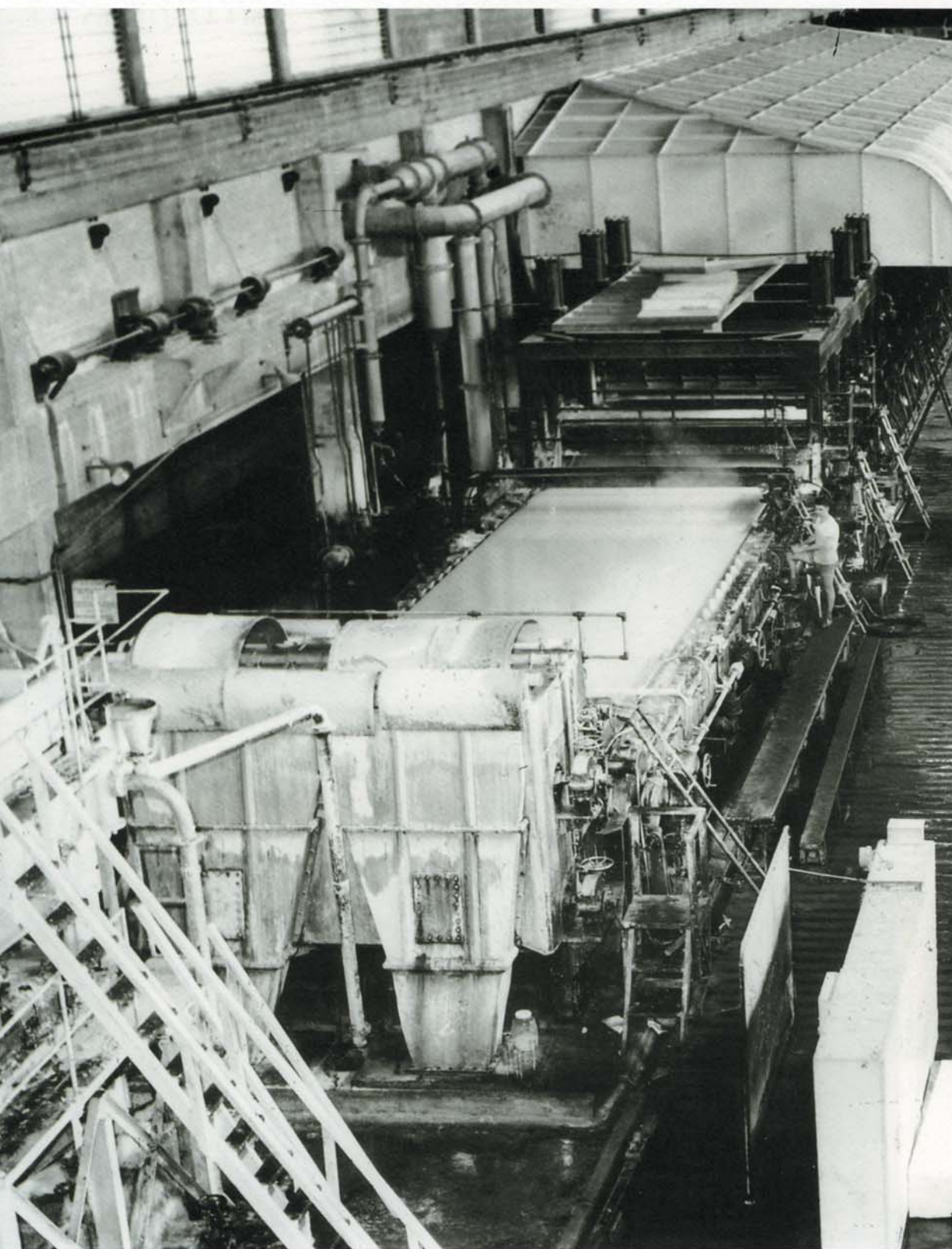
from rags, the best raw material. S A Pulp's management duly negotiated a technical agreement with the British company and arranged for the machine to be shipped out. At the same time the board approved Hisey's plan for a 120-inch (3,05m) 'No 3' Fourdrinier machine able to make 40 tons of paper per day, and this was ordered from Walmsleys of Bury.

The new machines were to be housed on a site occupied by Enstra's finishing house, which had to be moved. Other sections of the mill had to be extended or modified, and it was expected that construction would take more than two years. To pay for the expansion S A Pulp first resorted to shareholders. In September 1949 the company's capital had been raised to £1 million, with new shares

Making paper on Enstra's No 3 (left) and No 4 machines (overleaf).

Extending Enstra's machine house to make space for new paper machines.





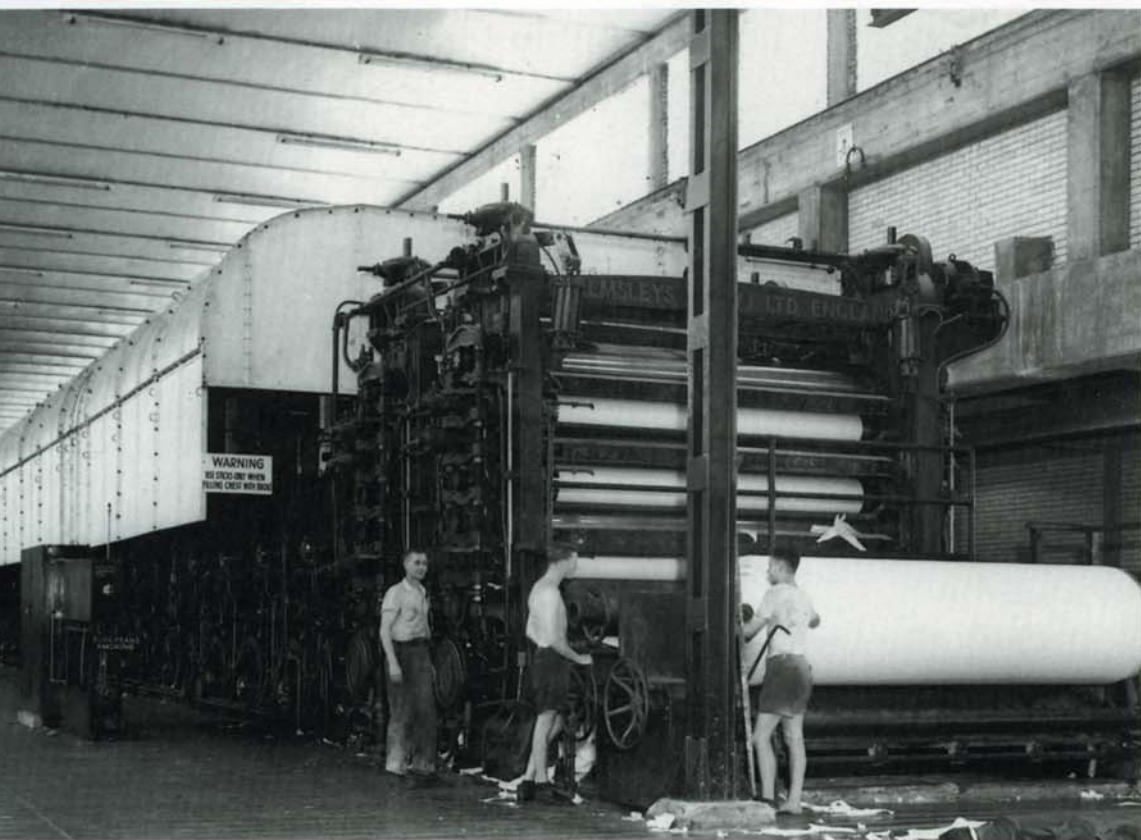


taken up by Wiggins Teape and the Howard Smith company. The board was enlarged to make room for two Wiggins Teape representatives and one director nominated by Howard Smith, raising the membership to nine.

By November 1950 the company was committed to the Tugela project so needed yet more funding. Shareholders were asked to increase S A Pulp's authorised capital to £1,75 million, and new shares were taken up by Union Corporation, Howard Smith and other minority holders including the Industrial Development Corporation, a parastatal investment agency pledged to encourage industrial growth. Because the shares were sold for 40s (R4) each, the issue netted £2 million, but even that was not enough. S A Pulp's board arranged to borrow a further £1 million from an insurance company and as collateral offered Enstra, the farms on the Tugela and indeed all the movable and immovable property that the company possessed.

With so much going on, in May 1951 John Henderson was appointed S A Pulp's general manager and moved to Union Corporation's

Johnny Peden (left) beside the dry end of Enstra's No 3 machine, commissioned in 1952.



offices in Marshall Street, Johannesburg, taking with him a marketing man and a typist as the nucleus of S A Pulp's first head office. The team had quarters on the eighth floor but lifts stopped at the seventh, so it was a modest start. Leonard Job became manager at Enstra, where construction was in full swing and the little Wiggins Teape machine had been assembled. Trial runs began in August 1951 and the papermakers sent to operate the machine looked for suitable rags but found there was a shortage. Most of those offered were made of synthetic materials, so were useless for making paper.

An interesting feature of the 'No 4' machine was its dandy roll, a wire mesh cylinder at the termination of the wet end which carried scores of dies or electros, the stamps used to impress watermarks. Each set of electros had a special design, and the translucent watermarks were fixed into the paper as it sped towards the dry end. Unfortunately orders for No 4's special paper were slow and small, and the papermakers found their rag paper was uneconomic. In time they were recalled to Britain and S A Pulp teams took over, using ordinary pulp and in the first instance making blotting paper. An Enstra foreman was so embarrassed to see the date 1882 on a section of the machine that he told his men to file it off.

Once the major expansion was under way, Oury Hisey decided that there was little more that he could contribute so retired, intending to charter a yacht and cruise the Mediterranean. 'The Prof' had become an Enstra institution and would be sorely missed, for to him belonged much of the credit for diverting S A Pulp from what could have been a suicidal course. Already sections of his No 3 machine were arriving at Enstra. The machine incorporated all the latest technology, not least rope feeding, a system that saved papermakers from having to feed paper by hand. In future, they would stand a better chance of retaining their fingertips.

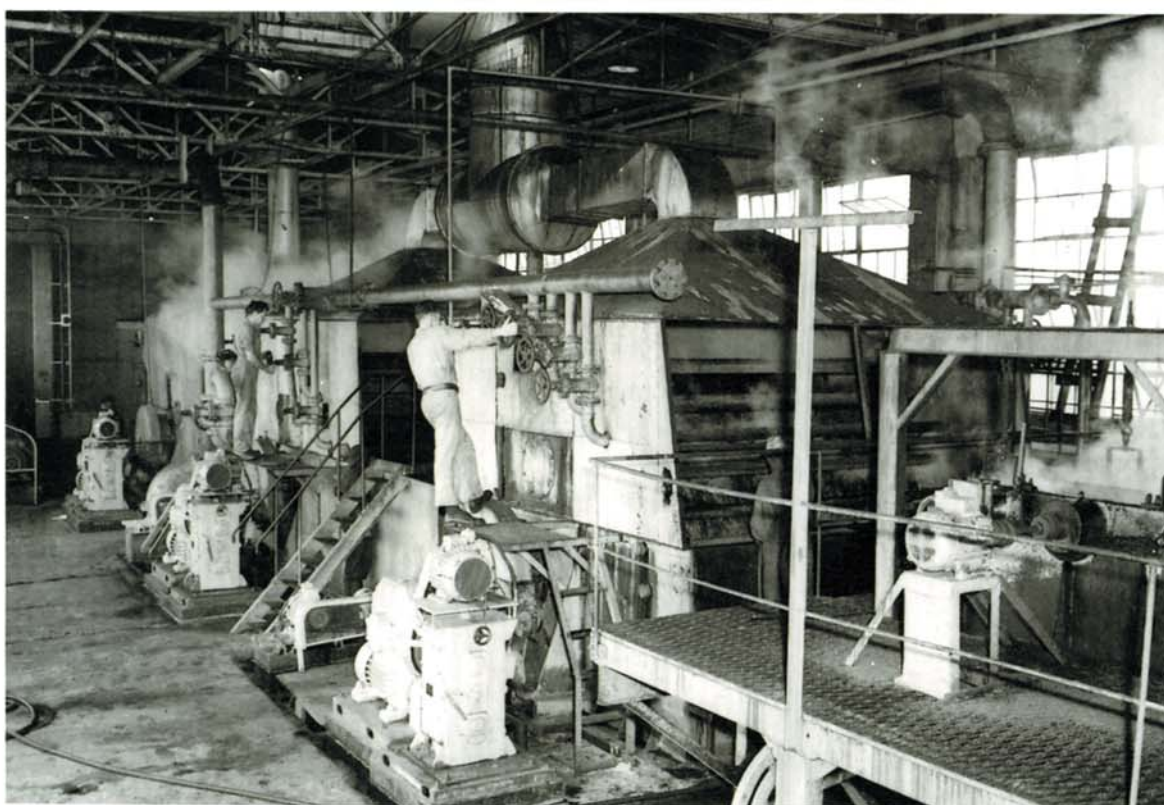
As had happened with the UCC factory, construction was hampered by shortages of cement. Often S A Pulp trucks were sent all the way to the Western Transvaal to collect emergency loads. A new finishing house was completed, a new electrolytic plant was built to house Chris Myburgh's Hooker cells, and other new plants included a pulp washing section, bleaching liquor equipment and an alum and size section. The No 3 machine made its first paper on October 9 1952, not bleached paper but unbleached kraft made from recycled waste and imported pulp — a foretaste of the paper that would be made at the new mill in Zululand.

Another taste of things to come was an experiment with newsprint, which consisted chiefly of mechanical pulp obtained by shredding logs on a grindstone rather than by cooking chips. Mechanical pulp retained wood's lignin so was liable to turn yellow in the course of time, but a much greater volume of the original wood was retained.

Union Corporation wanted to learn more about the process so had provided a pilot grinding unit. Experiments continued for a year, and in February 1952 the resulting pulp was made into newsprint and was tried out on a press at the Johannesburg *Star*. Sceptics who had predicted that quick-growing local trees were not up to the job were pleasantly surprised.

Changing reels without interrupting the running of the machine: Enstra's No 3 in 1953.

Inside the pulp plant: vacuum filters used for removing black liquor and washing the pulp.





3 1952-1960 ZULU COUNTRY

THE NAME TUGELA is Zulu for 'frightening' or 'startling one.' At most times the Tugela River is relatively placid, but with little warning floods can transform it into the fastest-flowing watercourse in South Africa, a fierce torrent strong enough to destroy buildings and wash livestock all the way to the sea. The river's history has a ferocity to match. In 1838 a settler commando led by Robert Biggar crossed the Tugela to avenge the murder of Biggar's brother and was destroyed by a Zulu impi. One of the few survivors was Dick King, whose later exploits earned him the title 'Saviour of Natal.'

In 1856 the armies of Cetshwayo and Mbulazi, ambitious sons of the Zulu king Mpande, met in battle on the Tugela's banks to decide who should be the king's heir. Mbulazi was defeated and he and thousands of his men were slaughtered. Ever since, a local stream has been known as Mathambo, the river of bones. Cetshwayo became king of the Zulu in 1873 and fought to defend his land against Boers to the north and British to the south. In December 1878 he was summoned to a drift on the Tugela to be informed of the findings of a British boundary commission, and was given a 30-day ultimatum to accept them.

Cetshwayo refused, and in January 1879 British forces invaded Zululand by way of the same drift, only to be annihilated at Isandhlwana. A second invasion followed, and in the next year the king was defeated at Ulundi, but there were troubles for another seven years before Zululand was annexed to Natal and the Tugela River was fixed as its southern boundary. After the South African War whites were allowed to take up farms in Zululand, only to fall foul of the Bambatha Rebellion of 1906. Again there was fierce fighting, and once more the Tugela's stream ran red with blood.

The Tugela River, historic boundary between Zululand and the rest of Natal.

Since the Bambatha uprising the Zulu have been at peace, but when S A Pulp moved into the area there was still a frontier feeling about the Tugela, even though the surrounding countryside was being farmed with sugar cane and cattle. Zululand's links with the south were a dirt road that crossed the river by a narrow bridge, and near it a rail bridge carrying the main (and only) line to Durban. The bridges were 15 kilometres from the Tugela's mouth but less than six from the drift where the Zulu War had begun, and they adjoined the farms bought for S A Pulp's new mill. The nearest towns were Eshowe to the north and Stanger to the south, neither of them far as crows flew but both difficult to reach because of atrocious roads.

Opposite the mill site on the Tugela's south bank was a small Indian settlement with several stores and a wayside hotel, the only accommodation for visitors in the whole district apart from the two farmhouses on S A Pulp's properties, Sisalana and Lot 25. Sisalana had been given its name soon after the Bambatha Rebellion, when a settler had been granted the land on special terms provided he used it to pioneer sisal cultivation. The farmhouse was occupied by the Tugela project's first employee, Ivan Pepper, and his wife Ione. Pepper had earlier managed a Zululand sawmill and was to double as caretaker and the company's link with local farmers.

The Peppers had moved in during May 1951 and were soon followed by the first construction men, who camped at the farmhouse on Lot 25. The first task was to level sites for single quarters overlooking the Tugela and for the mill itself, two kilometres away and on the inside of a river bend. When work began it seemed that the whole district was there to watch. Many were seeing bulldozers for the first time. The contractors' work was not made easier by the presence of hundreds of snakes which thrived in the hot, humid climate. The snakes included several poisonous species so the contractors took no chances and killed all they found — earning protests from local sugar farmers who relied on snakes to keep down cane rats.

The Walmsleys paper machine was already in storage near the mill site, still in its packing cases. Pulping digesters, filters, beaters, calenders and all the other machines needed for the project had been ordered and were being manufactured, many of them by South African companies. In 1952 a railway spur was constructed to link the mill site with the main line at Mandeni (*sic*) Halt, close to a Tugela tributary named Mandini in honour of the mundi trees which lined its banks. The weather was hot and wet, so contractors' men normally dressed in shorts and gumboots but nothing else except perhaps a wide-brimmed hat.

Another early project was a water pumping station built above the gorge crossed by the rail bridge. In that position it looked rather like a ship, complete with a deck rail edging an observation platform, so



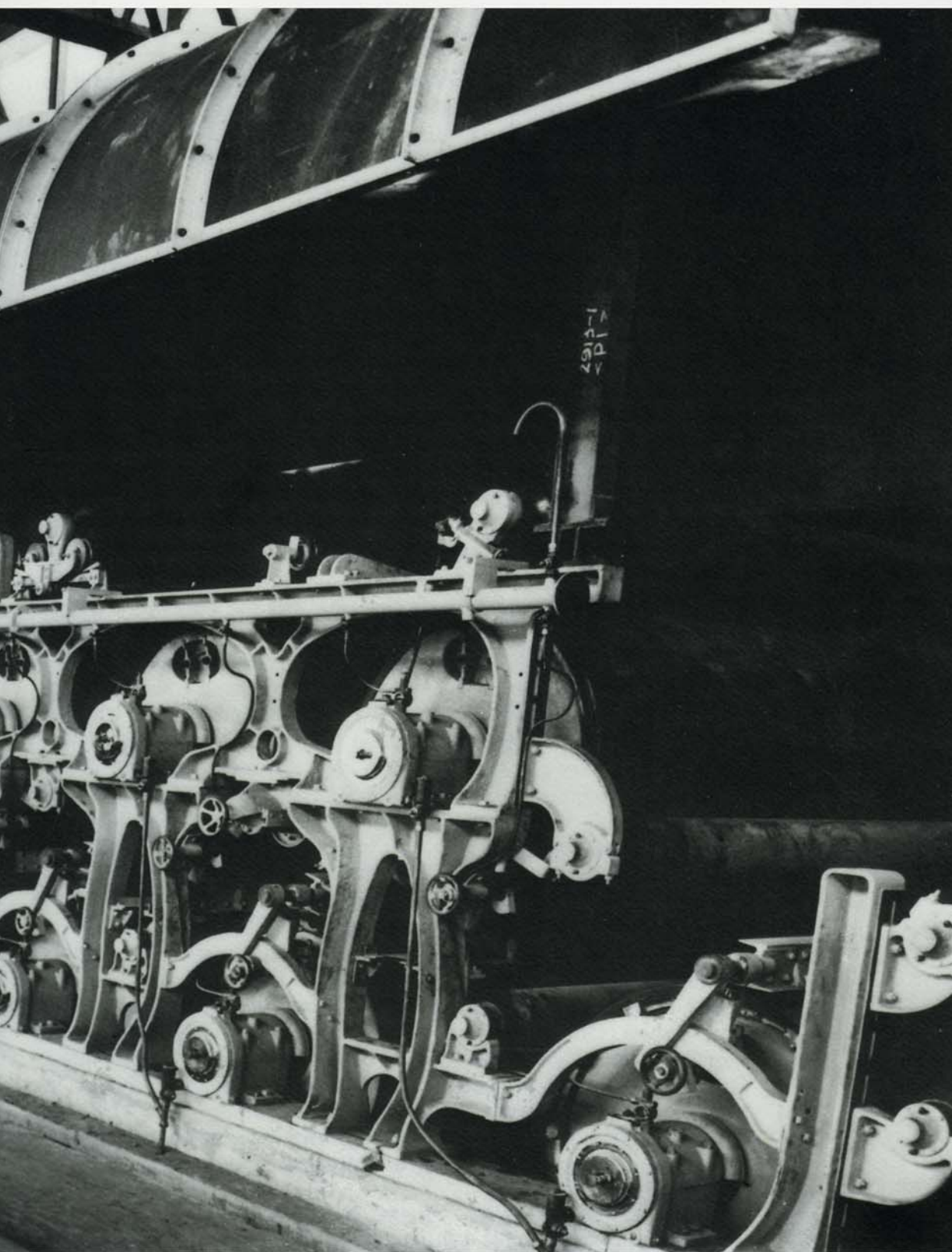
Tugela mill under construction, photographed in 1952.

The drying section of Tugela's No 1 machine (overleaf).

was soon nicknamed 'The Queen Mary.' Water was to be pumped from the river to a settling tank and then to a reservoir feeding the mill, well above the river's level. At the same time, contractors were building houses for S A Pulp employees, scattering them over three hillsides which were blandly labelled Hills 1, 2 and 3. Accommodation at the site was so scarce that as soon as a house was roofed, contractors' men moved in, even when there was no flooring and water had not been connected.

Most of the whites working for the contractors were young bachelors from the Durban area, but with them came many continental immigrants, some of whom spoke no English. All had been attracted by high wages. There were also large numbers of blacks, nearly half of them Shangaan from Mozambique who had worked at local sugar mills or on Witwatersrand gold mines, so were used to working with artisans. Zulu¹ were the next largest group, and there were also Pondo and Swazi. Most Indians² on the project had earlier worked at the sawmill once managed by Ivan Pepper. According to Tugela





tradition, an Indian recruit introduced to 'Mr Pepper' wondered if he would also have the pleasure of meeting 'Mr Pulp.'

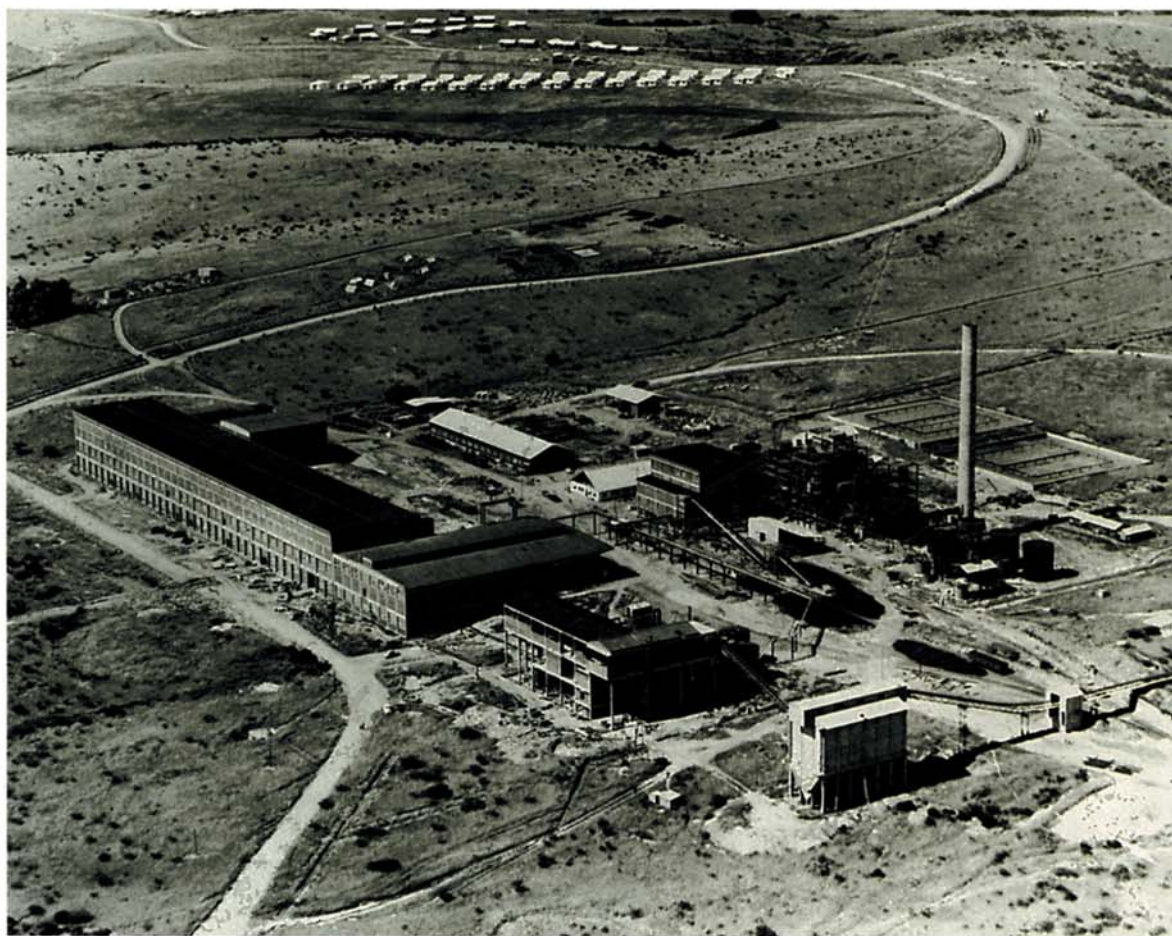
Work continued twelve hours a day, seven days a week, but men still made time to visit the little Indian hotel across the river, reached by a row-boat ferry for a charge of one penny or for a 'tickie' if the river was in flood. The ferry had been laid on by Indian shopkeepers to attract customers and raise funds for a mosque. It was run by a black boatman named Pono who wore a money satchel round his neck and stopped work at sunset. Anyone wanting to return from the hotel after dark faced an eight kilometre walk by way of the road bridge or otherwise had to wade or swim. Many chose the direct route, even though it was known that there were crocodiles, and one man was washed away and never seen again.

The hotel became an institution, and was especially popular on Thursdays when the contractors' men were paid. One Thursday evening an electrician named Gordon Sheriff arrived at the hotel wearing a borrowed Scout hat and a home-made brass star and announced he was Sheriff of Red Dog County. From then on everyone knew the hotel as the Red Dog, while a trip over the Tugela was described as 'going across the Jordan.' At times the Red Dog became a little too exciting and fights were frequent, but the only other watering hole was a shebeen in the single quarters.

The contractors toiled for a year, and step by step the mill took shape. There were interruptions — early one morning a black labourer was found hanged from scaffolding, and on another day a tower crane collapsed — but the construction teams kept to their schedules. As mill machinery arrived, S A Pulp men were sent from Enstra to supervise installation. Among the first were Johnny Holmes, previously Enstra's works secretary, who was appointed Tugela's mill manager, Chris Myburgh who was to be production manager, Don Kilgour as mill engineer, and Wally Lake as assistant engineer.³ All found that they had to work as hard as the contractors. One of Johnny Holmes's chief duties was to entertain visiting VIPs.

The visitors included various S A Pulp directors, especially Tommy Stratten, John Henderson and Whitmore Richards, who was no stranger to Zululand as he had farmed there before joining Union Corporation. On two occasions P M Anderson travelled to the mill though he was a dying man, a result of miner's phthisis. Then Johnny Holmes was told to prepare for Lord Bracken, formerly minister of information in Winston Churchill's war cabinet (as Brendan Bracken). Since 1945 Bracken had been chairman of Union Corporation, based in London, and liked to visit South Africa every year.

An elaborate lunch was laid on at the mess attached to the single quarters, though to Whitmore Richards's embarrassment the caterers decorated the table with a bunch of spring onions arranged in a



Tugela mill at the time of commissioning, 1954.

beermug. Also on the table was an unlabelled gin bottle which normally held iced water; so when Bracken asked Holmes to add water to his gin and tonic, Holmes reached for the bottle and topped up his glass. On this occasion the bottle contained neat gin. When Bracken took a sip he nearly choked and his hosts were horrified, but he soon recovered and for two hours related tales of the war.

More Enstra men were arriving, and with them their families. The little mill village was now known as Mandini after the stream that ran between its hills. Children were bussed to school and housewives shopped at a local general dealers' or made monthly expeditions to Eshowe or Stanger. The Red Dog apart, social life centred on a Saturday-night film show at the mess, almost the only occasion when Mandini's women could dress up. There were rare dances and a Christmas party for the children, and the women formed their own club and started a lending library.

At the mill, assembly teams were erecting the paper machine, pulp digesters and all the rest of the equipment. The digesters had been the bulkiest items delivered to the mill, each one transported by rail.

Already the railways were bringing in supplies of pine and eucalyptus, the pine from government plantations in Zululand and northern Natal and the eucalyptus from private growers. Elsewhere in the world kraft mills relied exclusively on softwoods except in Australia where they pulped eucalyptus. Tugela was to be the first mill where the two were used together — a concept suggested by Oury Hisey.

During 1953 John Henderson had visited Australia to learn something about eucalyptus kraft. The two leading companies, APM (Australian Paper Makers) and APPM (Australian Pulp and Paper Mills) offered all the help they could — on an informal basis — and several more Sappi men visited Australia during the next year. Among them was Bob Burns, one of the Scots papermakers who had arrived at Enstra in 1938 and was now to run the Tugela machine. S A Pulp's chemists experimented with various mixes of pine and eucalyptus and suggested that they should be used in a ratio of seven parts softwood to three parts hard.

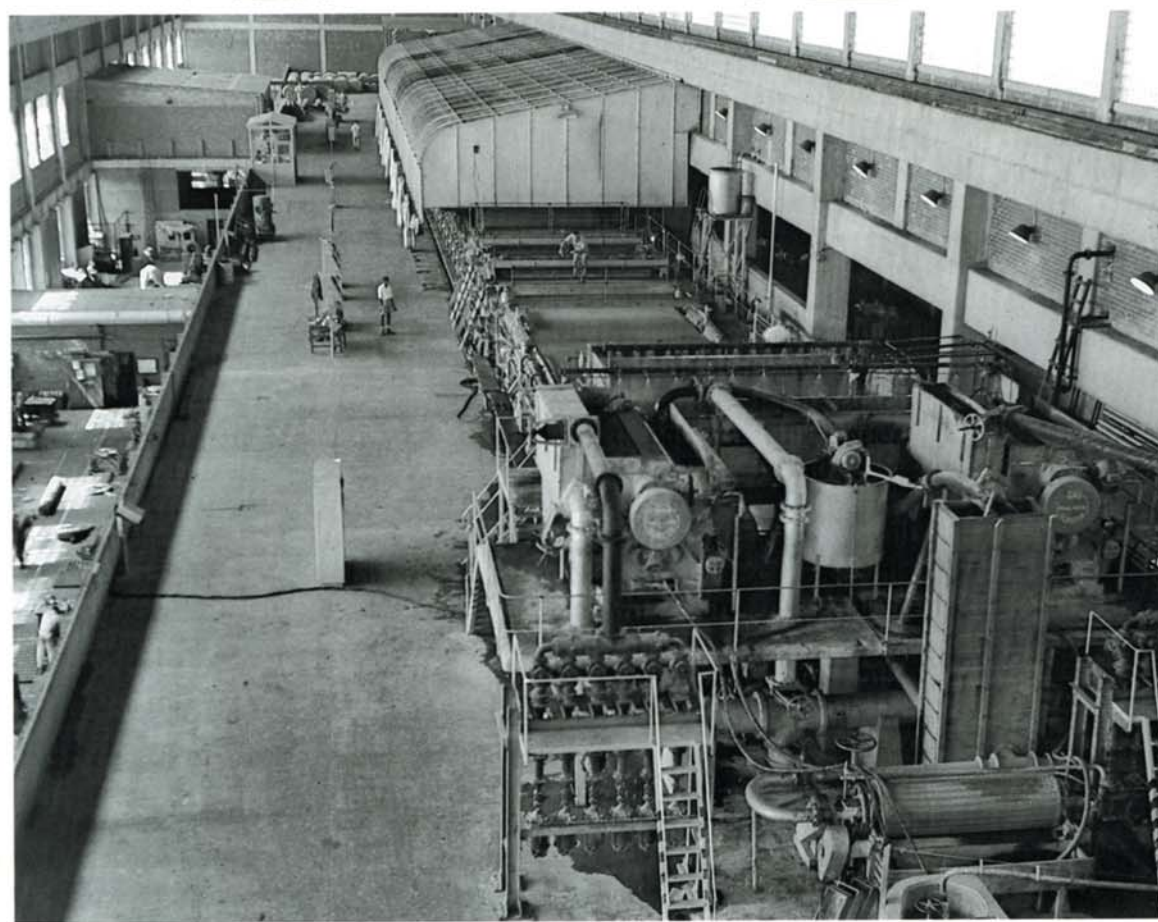
Tugela's first pulp was produced in May 1954, and on June 16 the paper machine was commissioned and made its first kraft fluting. Commercial production was to start in August and it was expected that the Tugela operation would eventually produce 100 tons of paper per day — the same as the combined output of the four machines at Enstra. The mill's staff celebrated with a raucous party in the machine house, built twice as big as needed to allow room for expansion; and to make sure they were not left out, the Mandini women organised a tea party. It was exactly three years since the contractors' bulldozers had begun clearing the site.

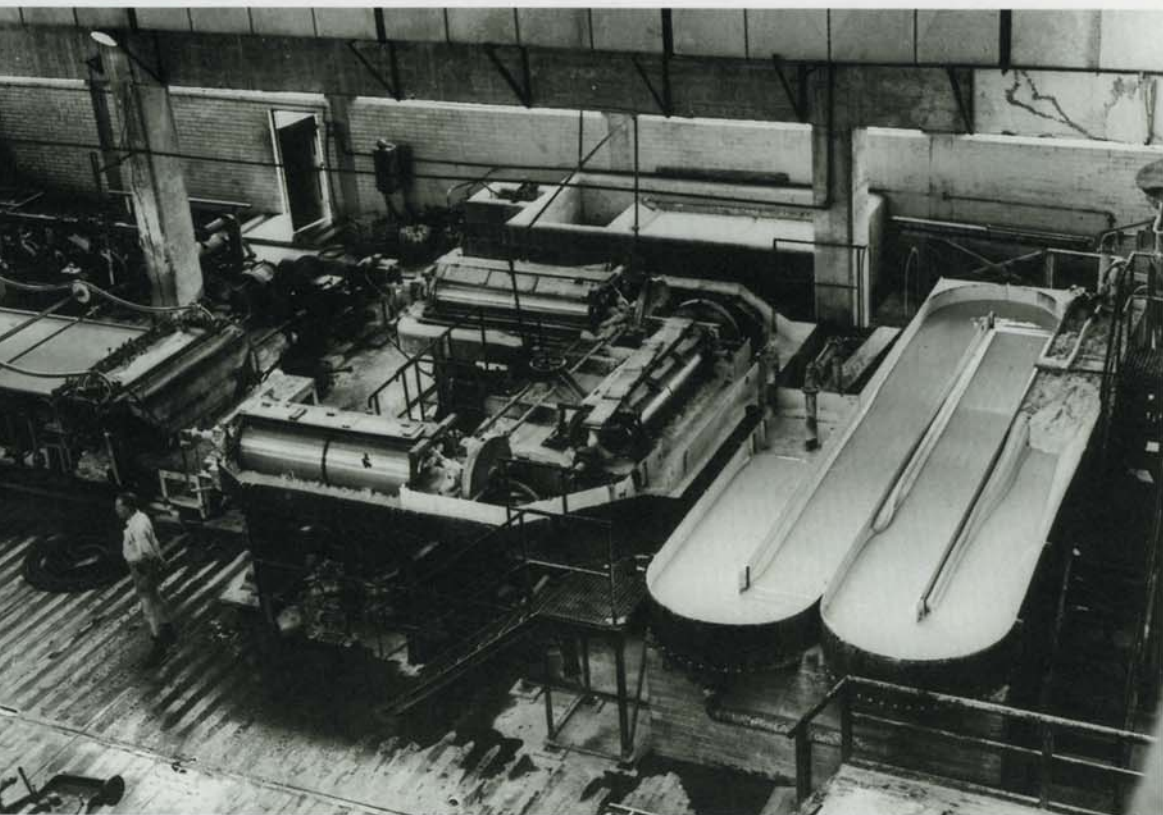
The Open Market

P M ANDERSON died during November 1954 and Tommy Stratten succeeded him, both as Union Corporation's managing director and as chairman of Sappi. At the same time Whitmore Richards was appointed Sappi's deputy chairman. The two men were still together, nearly twenty years after working hard to bring the company into being. Other members of Sappi's board included Major Colin Frye, who had been a director since 1936, J D White of Union Corporation who had joined in 1945, two representatives of Wiggins Teape and one of the Howard Smith company, and finally John Henderson who remained general manager and had been appointed a director earlier in the year.

Tommy Stratten (left) and P M Anderson.

Tugela's No 1 machine producing kraft packaging papers.





Anderson's death left a vacancy on the board and this was filled by Moore O'Hara, who had joined S A Pulp as commercial manager during 1953.⁴ Before that O'Hara had spent 26 years in Union Corporation's secretarial department and had been in touch with S A Pulp from its inception. Indeed, he had frequently attended board meetings as alternate to one or other of the directors. Tommy Stratton had asked him to join S A Pulp to shake up the sales department ready for the lifting of price controls, which would be welcome, and the easing of import restrictions, which would be less so.

O'Hara moved into S A Pulp's head office and quickly asserted his authority over the sales department, which was in another building. Sales records were written up in ledgers which made it difficult to keep track of developments. O'Hara insisted that the whole system should be transferred to a card index, and kept the sales staff working until midnight for two weeks. He also brought in new staff, notably Bob Garden who had spent several years with him at Union Corporation. On O'Hara's urging, Garden had studied for the international CIS (Chartered Institute of Secretaries) and CWA (Cost and Works Accountants) qualifications and had come first in the world in both.

The sales department had been dealing with the paper supply houses for years and also with many of the larger printers. Now they were in contact with packaging converters as well, trying to interest them in buying kraft from Tugela. In the past, most selling had been done over the telephone, but O'Hara said it was better to deal with customers face to face. Setting an example, both he and John Henderson made a number of calls. They wanted to hear what customers wanted and what complaints they had about S A Pulp's products and service. Once that information was collected, O'Hara passed it on to the mills and put pressure on those in charge to improve matters.

Not long before, the company had opened a sales office in Durban to help find new customers for paper produced at Enstra. Under O'Hara, similar offices were opened in Cape Town and Port Elizabeth. For years S A Pulp's customers had been allowed only a limited proportion of its output, but the increased capacity at Enstra meant that much more was available. To attract fresh interest Enstra experimented with new types of paper, but response from customers was disappointing. To use the mill's capacity the company accepted orders for low-grade papers that would normally have been omitted from its range. Even then there were complaints.

Much of the trouble lay in Enstra's finishing department, which

The wet end of Enstra's No 4 machine.

On the super-calender at Enstra.

was responsible for checking quality. The sorting house now employed 160 women who checked paper prior to despatch and labelled it ready for customers. In normal circumstances mistakes were rare, but for a considerable period quantities of paper were mislabelled in such a way that expensive products went out disguised as cheap ones. The mistakes looked deliberate but the culprit was never discovered. Of the paper, the cheaper grades were returned by aggrieved customers and caused havoc in the mill's bookkeeping system, but the expensive grades were never seen again so were probably resold.

In spite of these lapses, morale at Enstra had never been higher. The mill was well managed, and all knew what was expected of them. The pulp and chemical sections were settling down and their new equipment was effective. In the paper section, No 3 machine was busy making duplicating paper — suddenly an important product — and No 4 machine was again turning out cheque paper with watermarks and a chemical ingredient that showed up attempts to tamper with it. All other grades of paper were produced on Nos 1 and 2 machines. The mood at the mill was caught in a duplicated house magazine titled *Huisorrel*, edited by Grant Robertson of the accounts staff. *Huisorrel* means 'house organ' and Robertson ran a competition to find a more elegant name, but none was forthcoming.

All told, S A Pulp now employed more than 4 000 people, two-thirds of them at Enstra. In earlier days the mill's black workers had been recruited from local townships, but after the expansion the company had to recruit extra labour from Transkei and Swaziland. By arrangement with East Geduld mine these men were housed in a section of the mine's No 1 hostel. At Tugela, most black workers were accommodated in a hostel adjoining the mill, though some had families and lived in married quarters. Many had arrived at Tugela during the construction period to work with contractors and had liked the mill so much that they had agreed to stay on.

Before going ahead with the Tugela project S A Pulp had asked the government for an assurance that price control would soon be lifted. This had been done in 1954, and for the first time in ten years the company could charge what the market would bear. At the same time, import restrictions were relaxed, and supply houses and others took advantage by buying in quantities of bargain paper that hurt S A Pulp sales. Profits slumped, and there was a danger that cheap imports might run the company out of business. S A Pulp's directors had no desire to take chances so after careful deliberation and with much regret announced that they were unable to declare a final dividend for 1954.

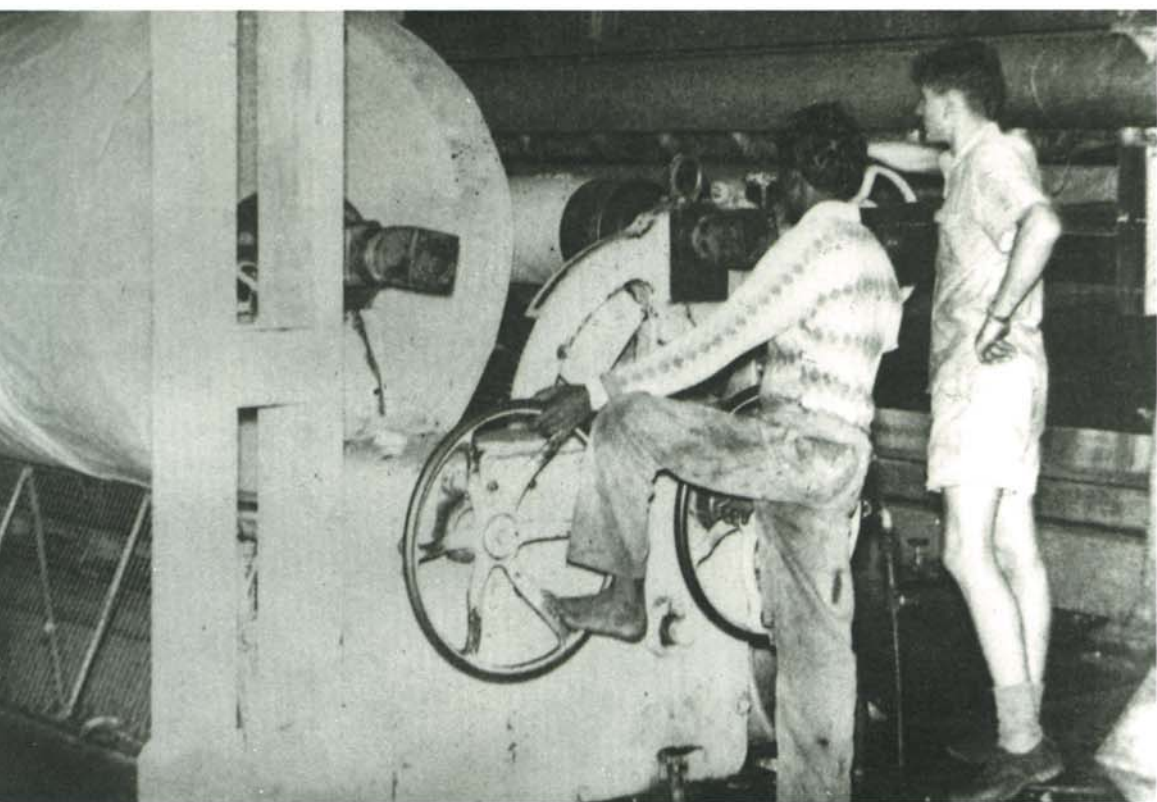
The decision was a shock, for it was the first time the company had passed a dividend. Tommy Stratten explained that the move was being made in the light of unsettled trading conditions and because so

much capital expenditure was being financed out of profits. He wanted the government's Board of Trade and Industries to protect the local paper industry by imposing tariffs on imports, which was common practice around the world. If that was done, he was confident that S A Pulp had a bright future. All its systems were working well, and South Africa's consumption of paper was rising in leaps and bounds.

The Board of Trade and Industries duly investigated the situation, and in February 1956 the government gazetted a protective tariff on certain grades of papers. Even then, Stratten was not satisfied. The duty imposed on white papers like Enstra's was less than he had hoped for, and most kraft papers of the sort made at Tugela were not covered at all. Both mills were faced with competition from overseas

Checking fine papers in Enstra's finishing house.





companies that had unfair advantages in that they served much larger markets and were able to export surplus production at a discount. If South Africa wanted to retain and expand its paper industry, then the government would have to take further action.

Coming of Age

STOCKBROKERS, financial journalists and old-school board members knew the company as S A Pulp, the nickname it had acquired in its early days. Everyone working for the company talked of it as 'Sappi' though in written form it was usually spelt in capitals. Customers followed the example, and the sales staff began using the abbreviation to describe the company's products — for instance SAPPI Cream Laid or SAPPI Tinted Board. That way, everyone knew where the paper came from, and nobody would confuse it with imports.

December 1957 marked Sappi's 21st anniversary, and the company threw staff parties at both mills. At Enstra the celebrations were held at East Geduld club and were staggered over two weekends so that all shift workers could attend. Many staff members went twice. To mark the birthday the company published an elaborate brochure-cum-catalogue entitled *Graphic Art* to show the diversity of its products. Twenty different types of paper and board were represented in the brochure, and four different methods of printing — photo litho offset, letterpress, rotogravure and silk screen.

The brochure was ring-bound and every page was a self-contained sample illustrating how a particular grade of paper could be used. A sheet of SAPPI Offset Cartridge was silk-screened as a travel leaflet in five colours; SAPPI Unicorn Bond was lithographed as if for letterheads; and a sheet of SAPPI Azure Bond illustrated a typist's frustration on tearing a non-Sappi sheet as she pulled it from her typewriter. Several super-calendered papers were included, and so was a sheet of brown wrapping paper from Tugela, silk-screened as the cover of a lipstick shade card.

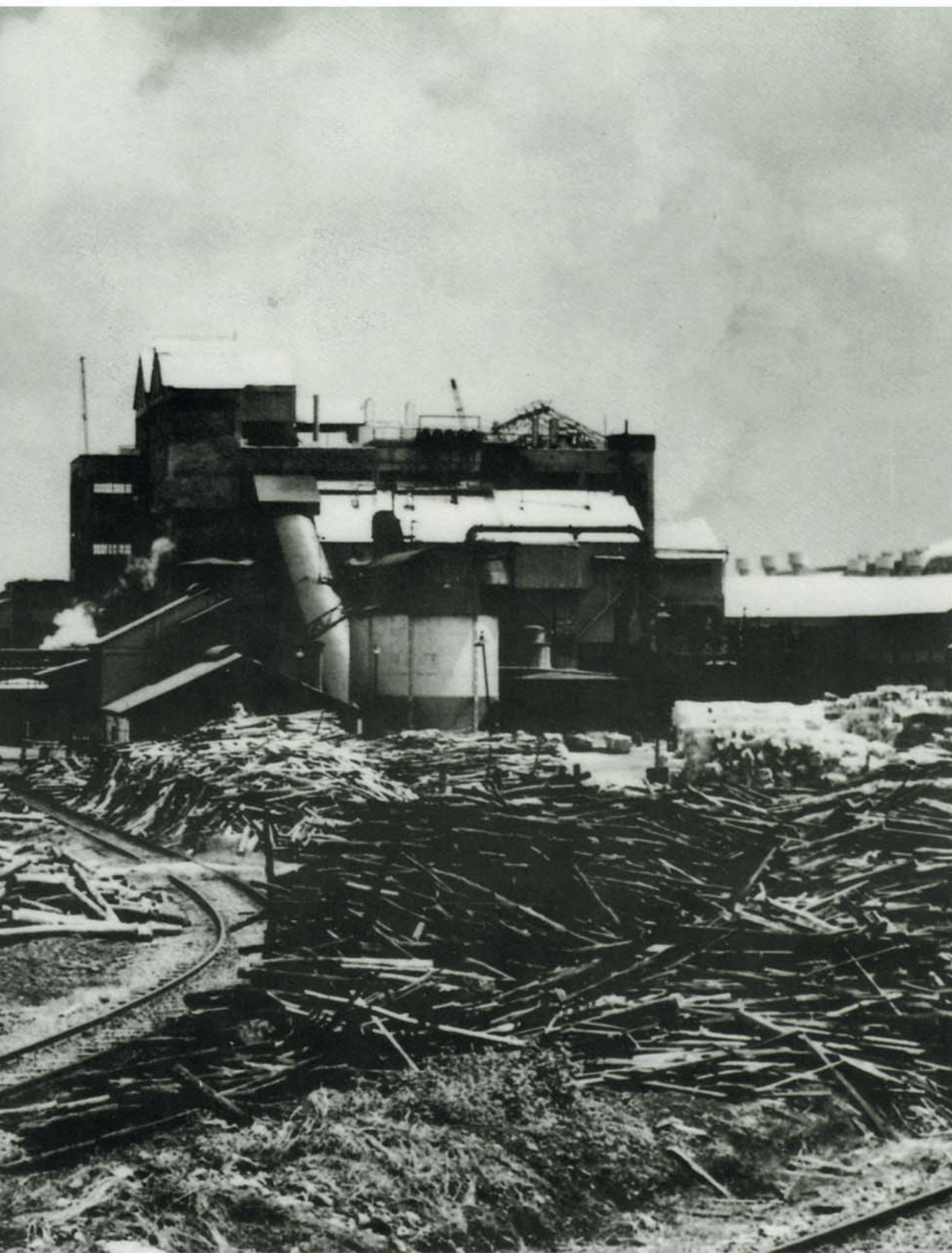
The reverse of each page was used to show how Sappi's paper was made, from log to finished reel. There were telling photographs of each stage of the manufacturing process, nearly all of them taken by

*Tugela papermakers: (from left) Albert Hannekom,
Arthur Burns and Ken Gray.*

*Raymond Naidoo (left) and Doug Makkink on
Tugela's No 1 machine.*

Cluttered conditions in Enstra's woodyard (overleaf).





PROCESSES IN

A further example of silk screen printing with a white ink background in the black ink box.



THE NEW METHOD FOR THE PAPER INDUSTRY
 All sheets coming from the rollers pass through the normal
 departments, which is necessary for the fabric.
 Every sheet is examined by hand for imperfections. The normal
 work is checked by electronic and highly sensitive film records of the
 sheets. Counting is now being done by the latest electronic method
 instead of by hand. Very accurate control can be achieved with a
 suitable series of tapes.
 Modern high speed precision printing machines require sheets cut
 to exact dimensions, with close cut edges. After printing and counting
 the results can be printed on a guarantee on each edge in the dimen-
 sions required in an optional extra service and charge.

The year 19 is given under shade of Paper Trade Order
 here printed by Lithography in the form of a book. A new
 valuable paper is essential for use as film, which is used
 in the printing process. Various types of paper are available for
 various uses and special finishes are required.

19 SAPPi XL Three Green Cover 154 pins

FOR ZEDEKIAH HOREB
 PROFESSOR OF RELIGIOUS HISTORY

THE
 DAWN
 OF
 TRUTH
 LECTURES ON THE TORAH



PUBLISHING COMPANY LIMITED
 JERUSALEM

SAPPi
 SOUTH AFRICAN PULP AND PAPER INDUSTRIES
 presents
 on
 SOUTH AFRICAN MADE PAPERS AND BOARDS
SAPPi

Gordon Douglas of Union Corporation, who though technically an amateur was earning himself a worldwide reputation. Each photograph was printed in black and white to show off another aspect of the paper's performance. The production was one of the most ambitious printing projects ever attempted in South Africa, and was a credit to the two Cape Town printing firms which had undertaken it.

Publication of the brochure marked a watershed in Sappi's career, or more particularly in Enstra's. Whatever customers said, Enstra's paper was improving, and it provided value for money when compared with imports. The change had come about through the hard work of Leonard Job, who as Enstra's manager had done all he could to upgrade the mill and encourage those who worked there. Job was a strong and persuasive man who liked people to do things his way but was always ready to listen to new ideas. Since Oury Hisey's departure, Job had set a personal stamp on Enstra which has never been erased.

If Leonard Job had a failing, it was a fondness for meetings. On his way to making a decision he liked to canvass as many opinions as possible, and detained his senior men for hours at a stretch. Some supposed that he needed the meetings to help him think. If so, it worked, because his conclusions could seldom be faulted. When out of meetings he spent much of his time inspecting the mill and insisted on neatness, explaining that only a clean mill could offer clean production. Brass was polished daily, and the unpainted ironwork of the two Bertrams machines was brightened with oil and paraffin.

That had been Job's life until October 1954, when he decided to step aside as mill manager to become technical manager for the whole company. He remained at Enstra and was the senior man at the mill, but day-to-day administration was taken over by Harry Hirsch. Job himself moved into a new office with a secretary — Lillian Harrison, whom he later married — and two filing cabinets, one for Enstra and one for Tugela. He had realised that the company needed to move rapidly if it was to keep up with developments in the printing and converting industries, which were investing in new machinery that was more efficient but at the same time more sensitive than what it replaced.

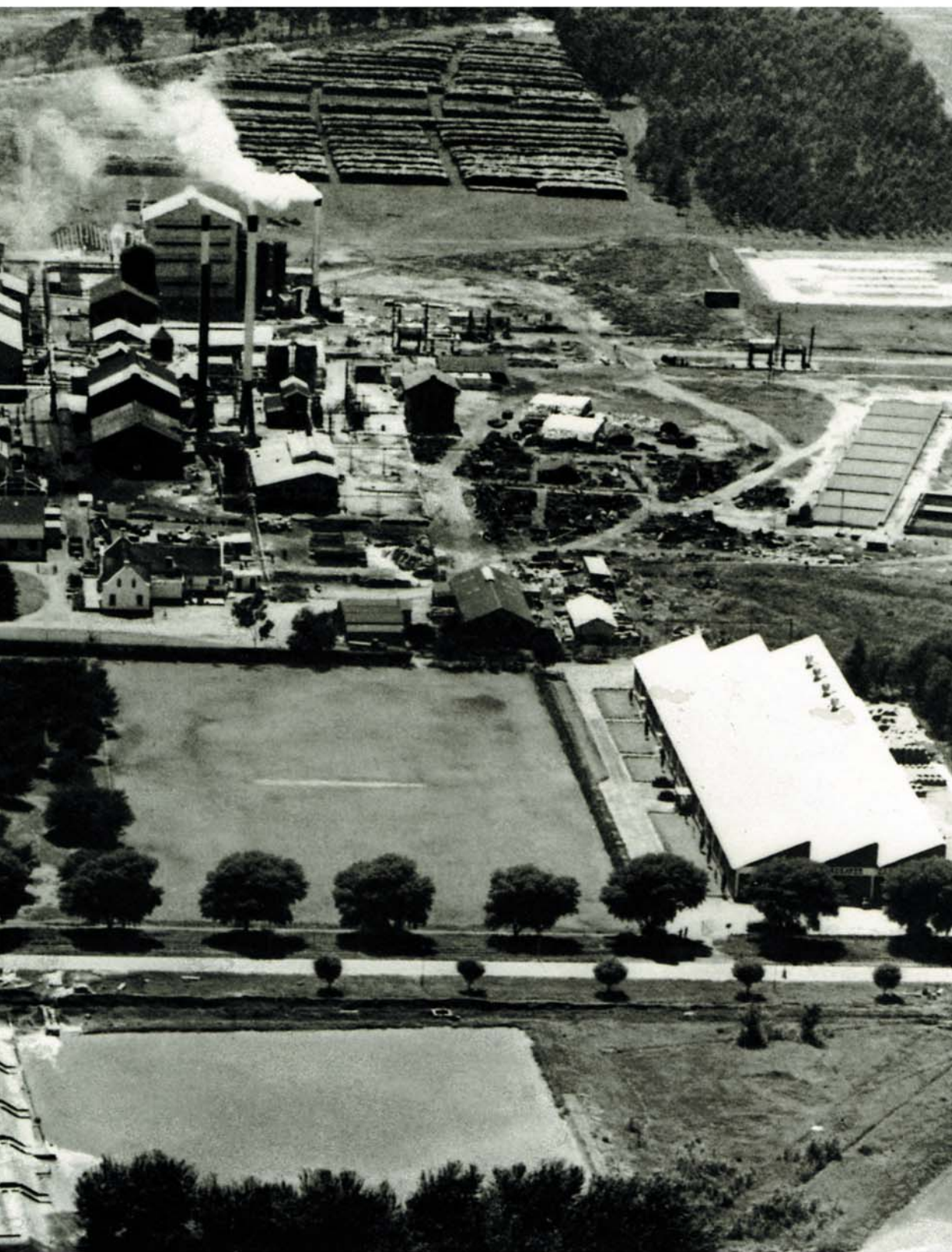
As technical manager Job had a roving brief to make contributions wherever necessary, and power to make important decisions on his own initiative. Job's degrees were in chemistry but for years he had

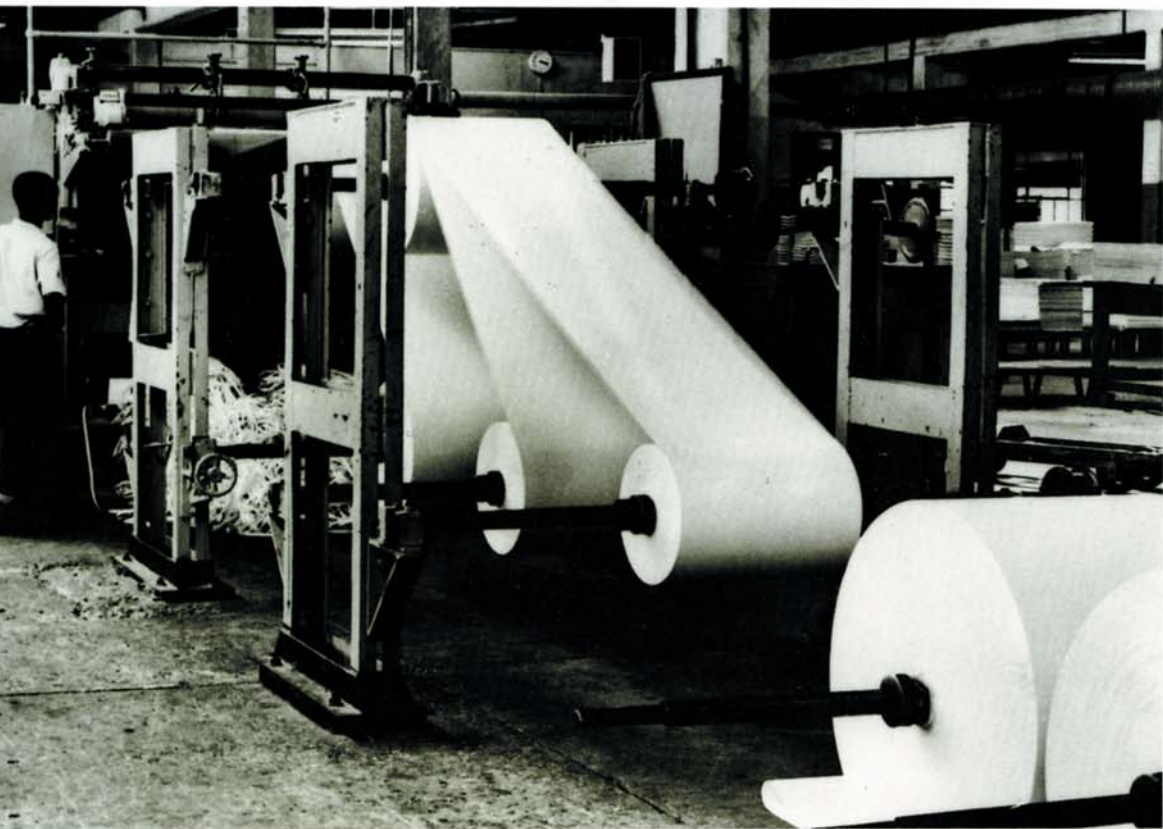
Commemorative brochure 'Graphic Art', published in 1957 to mark Sappi's 21st birthday.

Enstra in the mid-1950s, with the Union Corugated Cases factory in the right foreground (overleaf).



S.A. PULP & PAPER INDUSTRIES, LTD.





Feeding paper to the cutter in Enstra's finishing house.

seen himself as a chemical engineer, so was more interested in the engineering side of S A Pulp's operations than in what went on in the laboratories. As a result he allowed Enstra's chemists to organise their own programme under the direction of the chief chemist, Henry Myburgh, whose degree was in chemical engineering. Much of Job's time was spent at Union Corporation's engineering department which for years had drawn up plans for Sappi's new projects.

For two years Job appeared to be working alone, though in fact he was in close touch with technical men at both mills. Then in 1957 he was joined by Lou le Roux, a quality control specialist recruited by John Henderson from the South African Bureau of Standards (SABS) in Pretoria. Le Roux had spent four years drawing up SABS specifications for toilet tissue, corrugated containers and other paper products, and had learnt a great deal about what customers required. He was expected to keep an eye on the quality control laboratory at Enstra and hoped to convince the whole company that only the best was good enough.

Le Roux's work at the Bureau of Standards had taught him the importance of raw materials. No matter what manufacturing techniques were introduced, Sappi could not hope to make acceptable products if its wood was inferior or wrongly pulped or if mistakes were made

with chemicals or additives. All raw materials for the two mills were arranged through an estates and supplies department headed by Johnny Holmes, formerly mill manager at Tugela. It was reported that each year the mills consumed 275 000 tons of wood, 120 000 tons of coal and 27 000 tons of lime, and in addition Enstra's chemical section needed 12 000 tons of salt.

All these commodities reached the mills by rail. As in the war years, salt came from the Orange River Salt Works and lime from the Western Transvaal or Northern Cape. Enstra's coal was mined in the Witbank area and Tugela's in Natal. Enstra's wood was 55 per cent wattle, 20 per cent eucalyptus and 25 per cent pine, while Tugela's was 70 per cent pine and 30 per cent eucalyptus. The timber came from government plantations and private growers, and in many cases the harvesting was done by Sappi, especially in Zululand (under Ivan Pepper) and the Eastern Transvaal (under Fred Snyman).

Since buying the Ixopo farm in 1952 Sappi had steadily increased its land holdings and was planting trees. Several foresters had been added to the staff⁵ and in the first year the company had bought pine seedlings from the government for planting at Ixopo. Once in the ground, the seedlings were attacked by rats and died. In the second year the foresters tried again, and this time put down rat poison. They also encouraged small boys to make traps baited with mealies. Rats walked up a plank to reach the mealies and were tipped into a four-gallon can filled with water. The boys were rewarded for every drowned rat they turned in.

In the third year, snakes arrived to feed on the rats, and secretary birds followed the snakes. Seedlings grew rapidly and buck appeared. The pattern was repeated in several more plantations that the foresters started, two near Bulwer and one near Howick. Rats remained a problem so the chief forester, Archie McKellar, began breeding hawks to go after them. Tall poles were set up in the plantations to serve as perches. By the beginning of 1958 the company owned and leased roughly 10 000 hectares of land earmarked for timber cultivation, of which roughly 7 500 were already under trees.

Even by South African standards Sappi's timber holdings were minute when compared with those of the government or large private growers like SAFI (South African Forest Investments) of the Eastern Transvaal, which was controlled by the financier Charles Engelhard. SAFI had surplus timber, so much so that there had been talk of opening a new pulp mill in the Eastern Transvaal. John Henderson suggested that SAFI should instead rail the timber to Enstra to make newsprint, and SAFI agreed.

Sappi's management had wanted to make newsprint ever since running pilot plant experiments in 1952. Now that timber was guaranteed, the only obstacle was the attitude of the Newspaper Press

Union, an industry co-operative which bought newsprint on behalf of all its members. As things stood, South Africa imported 70 000 tons of newsprint each year, nearly all of it from North America and Scandinavia. The union agreed that it would be helpful to have a local source of newsprint, but doubted whether it could ever match imports — exactly the objection raised with every other type of paper that Sappi had introduced. Before committing itself, the union wanted to be sure that there was no chance of a fiasco.

Early in 1958 John Henderson asked Leonard Job to make a fresh investigation. At almost the same time J D White died and Job took his place on the board. Shortly afterwards Job set off on a world tour to learn more about newsprint production and in particular about groundwood pulping and the characteristics of wood. With him went Chris Myburgh from Tugela and Lon Wayburne, a mechanical engineer who had joined Sappi in 1950. He, Job and Myburgh were the nucleus of a technical department. The three were away for six months and made stops in Australia, New Zealand, Hawaii, Fiji, Canada, the United States, Finland, Sweden, West Germany and Britain.

Everywhere the Sappi men came upon new ideas, and returned home confident that they could produce quality newsprint. In November 1958 John Henderson and Moore O'Hara won an undertaking from the Newspaper Press Union that it would guarantee to buy 22 000 tons per year — only a small portion of its requirements, but a valuable beginning all the same. SAFI promised supplies of timber, and in addition bought 150 000 Sappi shares. It was agreed that Fritz Fuerst, SAFI's deputy chairman and managing director, should join Sappi's board. On Leonard Job's recommendation a 209-inch (5,31m) newsprint machine was ordered from the Beloit International company of Wisconsin in the United States.

A New Horizon

THE RAIL LINE linking Zululand with the rest of Natal crossed the Tugela River by way of a seven-span steel bridge erected in 1932 and mounted on a row of concrete towers close to Sappi's pumphouse. In September 1957 the river was in flood when a goods train loaded with sugar cane began crossing the bridge from the northern bank. The locomotive was still on the bridge when a truck was derailed and knocked the end of a span off its tower. The truck and three others fell into the river, three more were derailed, and the men in the guard's van only just missed plunging into the torrent.

At the front of the train the locomotive and five trucks were not affected, as a coupling had broken. The accident had happened on a



Sappi men on tour: Leonard Job (left), Lon Wayburne (Back seat, right) and Chris Myburgh (standing) in West Germany's Black Forest with their host and driver, Herbert Schmidt of Er-We-Pa.

Mandini township in 1960, with Tugela mill in the background (overleaf).

Sunday afternoon, and as word spread, Mandini families converged on the bridge. It was realised that the loss of the bridge was a disaster for the whole of Zululand, for the rail line carried all the region's coal and other essential supplies. The bridge had to be repaired without delay. It was raining heavily, but railway repair crews arrived from the south and laid on road transport to provide a shuttle service over the road bridge, and link the rail halts north and south of the river.

Tugela's management offered to help in whatever ways possible. A power line was rigged up at the pumphouse to provide floodlighting so that the railway crews could work through the night. The mill had a large reserve of coal on hand and much of this was commandeered to supply communities further north. Gradually the flood subsided and mill workers helped the railway crews to reinforce the damaged





support and jack up the fallen span. The job was done in three days and normal rail service was restored, but remains of the lost trucks can still be seen in the river.

The mill's help was much appreciated by the railways administration, for without it repairs would have taken much longer. In a similar way the mill had earned the gratitude of local farmers when mill workers turned out to fight fires in their cane fields. At first, farmers had been less than enthusiastic about Sappi because they had assumed the mill would pay higher wages than they could afford, so they would be stripped of their labour. It turned out that few local Zulu wanted to work at the mill, so there was no problem. Ivan Pepper had known many of the farmers since serving with them in the war, and did much to put their minds at rest.

Sappi had farms of its own — not only Sisalana and Lot 25, but also Rocky Ridge, acquired in 1957 for effluent disposal. Large portions of these farms were still producing sugar cane and sisal. The mill had a dairy herd as well, and in the earliest days Mandini housewives had collected milk from a milking shed on what later became a golf course. Then milk was delivered by donkey-cart. At least one local farmer brought fresh vegetables to Mandini and sold them from his truck. Then a vegetable garden was developed near the milking shed, and a tree nursery near the confluence of the Tugela and Mandini rivers. When the trees were large enough they were transplanted to beautify the township.

There were still scores of bachelors in Mandini and the Red Dog was doing a roaring trade, but at the same time the community was becoming more civilised. A primary school had been started in one of the mill houses in 1954. A doctor, Allan Curson, had arrived and had set up two surgeries, one at his house and one at the mill. It became a tradition that when a new family moved in, the manager's wife visited the lady of the house with a cooked meal and made sure she met her neighbours. The company built a small recreation hall which was used for dances, and those attending took their own food and drink in a hamper.

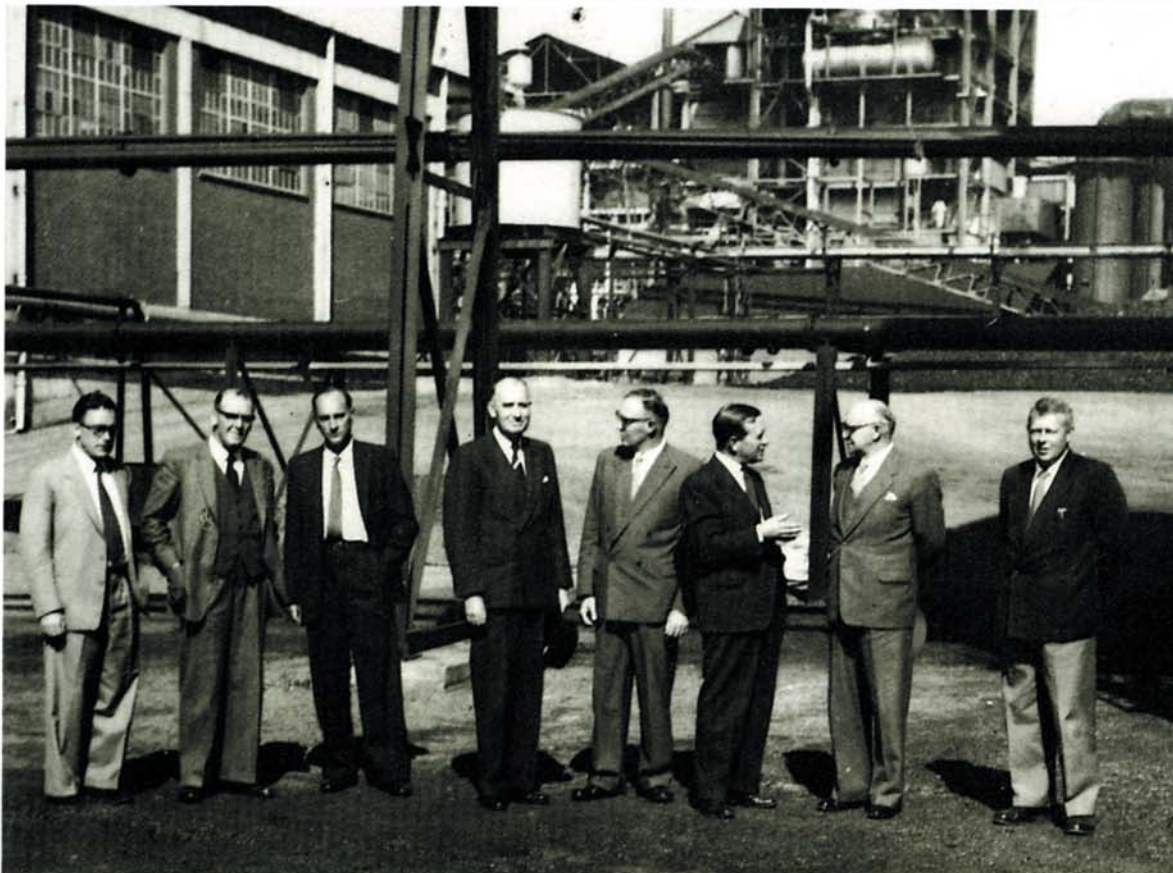
Children were free to roam wherever they wanted with no chance of coming to harm, providing they kept well clear of the river. Several new sports clubs had been founded — bowls and rugby in 1956 and tennis in 1957, with a concrete court laid down near the single quarters. A three-hole golf course was begun in 1956 and later extended to six holes and then nine. A deep gully running across three fairways had to be filled with rubble and ash, and hazards included a channel for black liquor effluent, monkeys that stole balls, and the district's ever-present snakes.

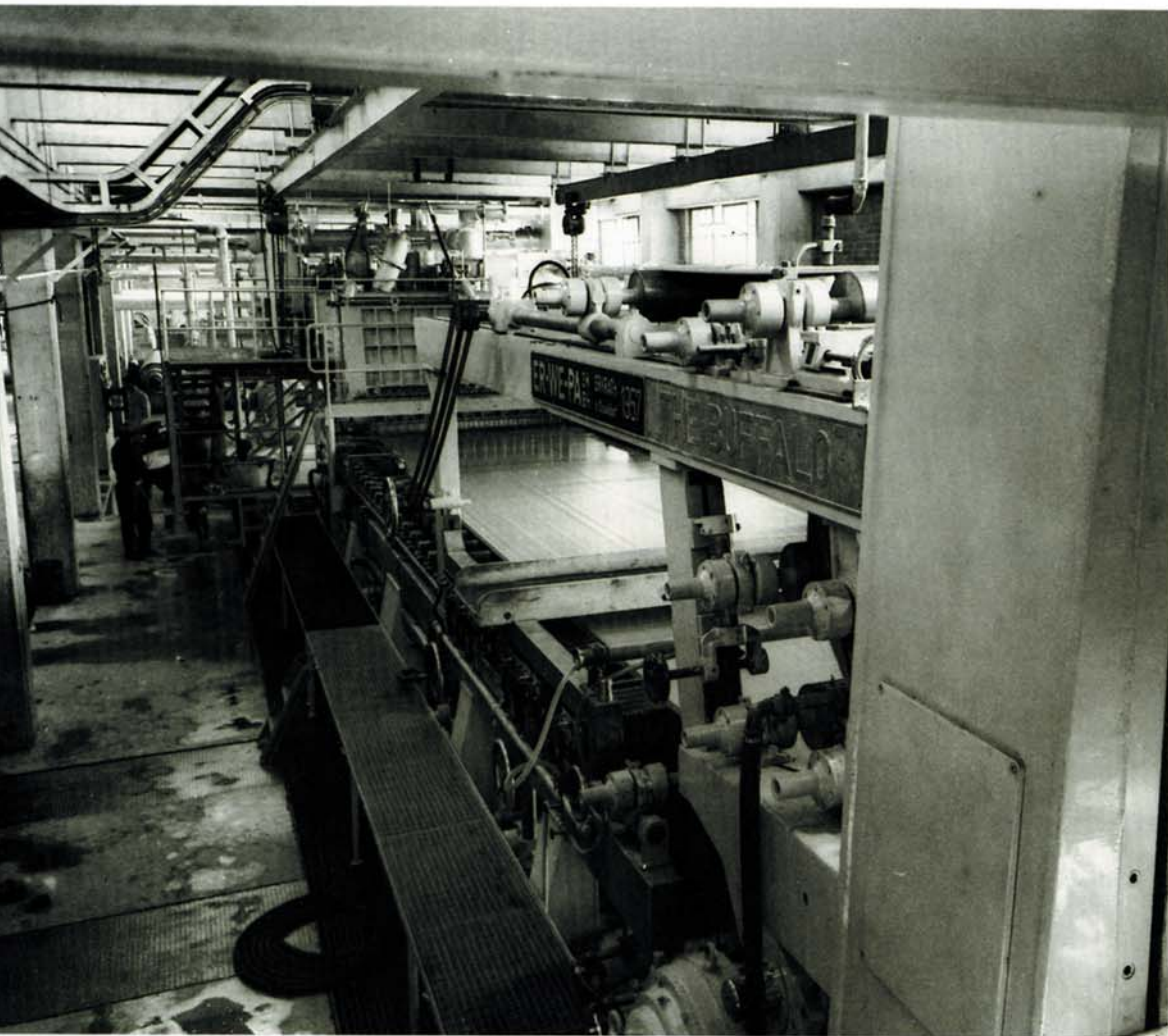
Tugela's black workers had their own soccer club, Sappi Home Stars, which had been founded by two Transkeian enthusiasts, Abner

Gcaleka and Colonel Nozigqwaha, in 1952. Training had begun in earnest in 1955 and a year later the club's first team was too strong for Zululand and was admitted to the Durban league. In 1958 the club won the league championship. Black soccer was booming, and few whites at Mandini realised that the Home Stars were becoming famous throughout Natal. When a challenge match was arranged between the Durban league and its Johannesburg equivalent, four Sappi men were included in the Durban team and played in front of 15 000 spectators.⁶

The Sappi players' home ground was at the hostel beside the mill, where both pulp and paper production were going well. Roughly 80 per cent of the paper was linerboard, but the mill also had to make fluting, bag paper, sack kraft for multiwall paper sacks and conventional wrapping papers, and operators found it awkward to chop and

Nico Diederichs, minister of economic affairs, visits Tugela in 1959: (from left) L Visser, H R P A Kotzenberg, Wally Lake, Tommy Stratten, Lappies Labuschagne, John Henderson, Nico Diederichs and F Marais.





The Tugela No 3 machine, designed to produce glazed packaging paper.

change. There had been thoughts of bringing in a second Fourdrinier machine but it was doubtful whether the pulp plant could support it. As a stopgap, Leonard Job suggested installing a smaller, multipurpose MG (for 'machine glazed') machine able to make MG wrapping paper — the sort with a shine on one side — and other products.

An MG machine differs from a Fourdrinier in that its dry end consists of a single large steam-heated Yankee cylinder in place of a series of dryers. In 1956 an order was placed with the Er-We-Pa company of Düsseldorf in West Germany, and Piet Fourie of Tugela's papermaking section set off for Canada to learn how it should be operated. Fourie was away for three months and spent much of the time at a Howard Smith mill in Ontario. Crates containing the machine reached Tugela during 1957 and a German assembly team arrived to put it together. To leave space for a No 2

Fourdrinier the MG machine — No 3 — went into the machine house basement with its paper roll-up on the first floor.

The new machine was to be used on relatively short runs of bag kraft and other products, leaving No 1 to concentrate on linerboard. In 1959 the Board of Trade and Industries agreed to impose protective tariffs on imported kraft and Tugela's future looked rosy. Sappi's management wanted to expand the mill immediately and as a first step ordered a 209-inch (5,31m) kraft Fourdrinier from Beloit International, far larger and faster than the original Tugela machine, and in many respects the twin of the large newsprint machine that Beloit was building for Enstra. With the machines twinned, parts would be interchangeable and it would be enough to hold only one set of spares.

For Enstra the board ordered a No 5 machine, this one a semi-automatic board plant designed and produced by Er-We-Pa and intended to replace the aged cardboard equipment that had been at Enstra since the days of straw. Because the machine was relatively small, no assembly crew was sent out, and Enstra's engineers had to erect it themselves. Unfortunately nobody could make head or tail of the symbols on the crates, so the engineers had to improvise. Their guesses were correct, the machine was commissioned, and it still works well today.

During 1956 Sappi had acquired further shares in Union Corrugated Cases, which still had its factory at Enstra and now bought linerboard from Tugela. This gave Sappi a majority holding. A year later, John Henderson heard that there was a chance to buy into Cellulose Products of Johannesburg, South Africa's only manufacturer of tissue wadding which was the paper used to make toilet rolls and related products. Henderson had long wanted to invest in tissue but Sappi's money had been needed elsewhere. Now the board bought one-fifth of Cellulose Products from a minority shareholder and decided to bid for complete control.

The tissue company had been founded in 1948 and had a small mill in Johannesburg's Mayfair. Its first papermakers had been Hans Loebecke and 'Young' Harry Smith, formerly of Enstra, and it had two rather antiquated wadding machines and an associated converting company named General Products Manufacturing, which shared the same premises. In 1954 its managing director had been killed in an air crash and majority control had been sold to a Swedish company, Aktiebolaget Billingsförs-Langed. Sappi's Moore O'Hara travelled to Stockholm to see the Swedes and a price was agreed, but then they received a better offer.

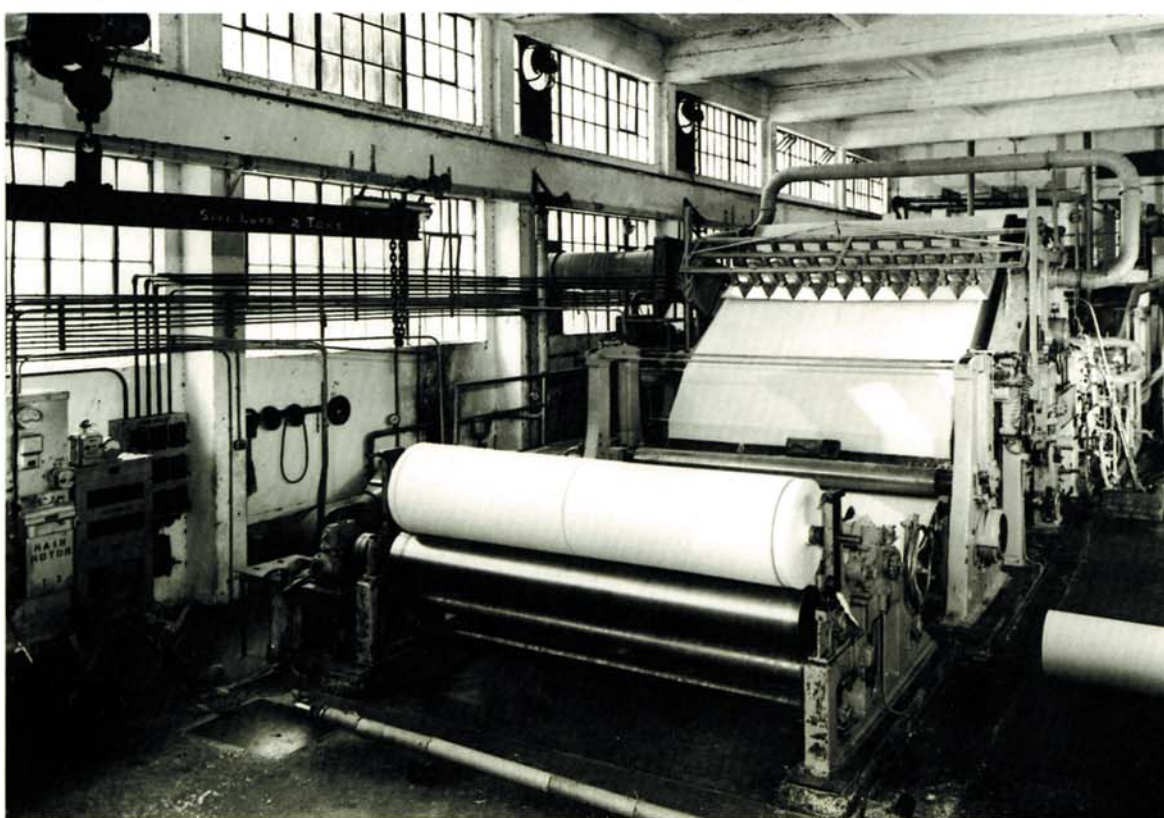
Among Cellulose Products' customers was the South African agency of the Kimberly-Clark Corporation of the United States, the world's leading tissue manufacturers. Like Beloit International, Kim-

berly-Clark was based in Wisconsin and was best known for making soft facial tissues and paper towels made from wet-strength wadding designed not to fall apart — quite different from the wadding used to make toilet paper, which was expected to disintegrate in water. The South African agency imported wet-strength wadding from the United States but bought toilet wadding from Cellulose Products. When the agency reported that Cellulose Products might be for sale, Kimberly-Clark wanted to buy.

The upshot of the negotiations was that Sappi and Kimberly-Clark agreed to make a joint offer for Cellulose Products and also General Products Manufacturing. In January 1960 the Swedes accepted, and it was arranged that of the tissue company's 100 000 shares, 49 000 should go to Sappi, 30 000 to Kimberly-Clark and 21 000 to Union Corporation. At the same time Sappi and Union Corporation bought into Kimberly-Clark of South Africa. The 100 000 shares were divided between Kimberly-Clark Corporation (51 000), Sappi (16 800) and Union Corporation (7 200), with the last 25 000 going to Arthur Murray, the converter who had been running the agency. Cellulose Products was to give KCSA first call on its output, and as far as possible Kimberly-Clark was to buy its wadding from Cellulose Products.

Inspecting Enstra's No 5 machine, commissioned in 1960.

The No 1 machine at Cellulose Products, Mayfair.





4 1960-1967 IN THE NEWS

IN OCTOBER 1960 white South Africans were asked to vote in a referendum on the country's future. Was it to remain a constitutional monarchy with the Queen as head of state, or should it become a republic with a president? Those wanting a republic won the day — though Natalians voted against them — and the change was timed for the end of May 1961. To satisfy business leaders, the government agreed that it would be a good idea to remain in the Commonwealth, following precedents set by countries like India and Nigeria. In March 1961 the Prime Minister, Dr Hendrik Verwoerd, attended a Commonwealth Conference in London and applied for continuing membership.

Australia and Britain supported the idea, but the Canadian Prime Minister, John Diefenbaker, was violently against it. So were leaders from the Third World. There was such an uproar that Verwoerd withdrew the application and returned home. South Africa had to stand alone, and there was a strong chance that other countries might apply trade sanctions. That put paper supplies at risk, because South Africa produced little more than half of what it consumed. The total embraced 350 000 tons per year — 190 000 tons of unbleached papers of various kinds, 80 000 tons of newsprint, 48 000 tons of printings and writings and 12 000 tons of tissue.

At the beginning of 1961 South Africa's papermaking capacity had stood at 200 000 tons per year, the bulk of it at Sappi's two mills though several other companies made contributions. Premier Paper and South African Board Mills were still in business; Cellulose Products was rivalled by a new tissue mill in Cape Town; and there was a

One-ton cylinders of liquid chlorine, one of several chemical by-products made at Enstra.

Construction of Enstra's newsprint mill, 1960 (overleaf).





fluting mill at Felixton in Zululand, set up by Giuseppe Raimondo in association with the Huletts sugar group, which made its paper from sugar cane bagasse — a South African first, though the technology was not new. In addition, a British company was building a pulp mill in Swaziland, and Sappi was wondering whether to erect a mill in the Eastern Transvaal.

In April 1960 Sappi had bought the farm Mweti near Komatipoort on the border with Mozambique, close to the tree-growing areas of the Transvaal and Swaziland. There was plenty of water in the Komati and Crocodile rivers, and there was easy access to the rail link between Johannesburg and Lourenço Marques — today's Maputo — meaning that a mill would have the option of sending paper westwards for the domestic market or east for export. A subsidiary, Komati Pulp Ltd, was registered; and a caretaker moved onto the farm and used it to grow squashes — only to have the whole crop gobbled up by hippos just when it was ready for harvesting.

The Komatipoort scheme had been John Henderson's idea. In January 1960 Henderson had been appointed Sappi's managing director, still based in the Union Corporation building. Moore O'Hara remained commercial manager while Leonard Job the technical manager held court at Enstra. The three men had worked wonders in transforming the company into a major industry. One of the latest projects was a new bleaching process, an extra stage added to the four used previously, which exposed pulp to chlorine dioxide to make it still whiter and brighter. The new installations included an extension to the bleaching plant and a plant for making the chlorine dioxide, commissioned in 1960.

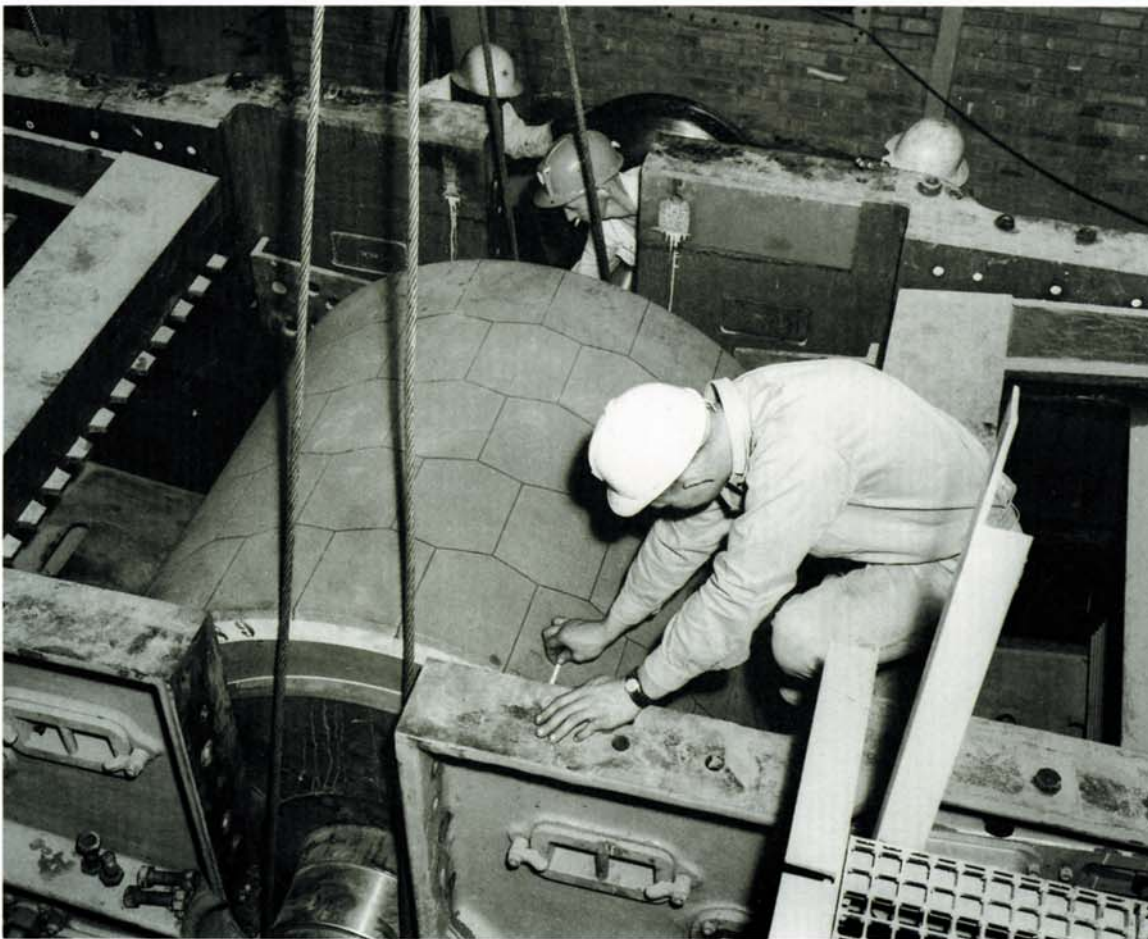
Much of the preliminary work for these projects was done by Leonard Job's technical department, which had expanded from the original two filing cabinets into occupying a building of its own, completed in 1959. The department included a central development team — Job himself, Chris Myburgh, Lon Wayburne, Les McWilliam and others — which explored and monitored new processes and liaised between Sappi and the engineering department at Union Corporation, which was responsible for all working drawings. There was also a research team led by Henry Myburgh and E J Smith, which included a well-established pulp section, a paper-testing section with Ella Steyn in charge, and an analytical laboratory.

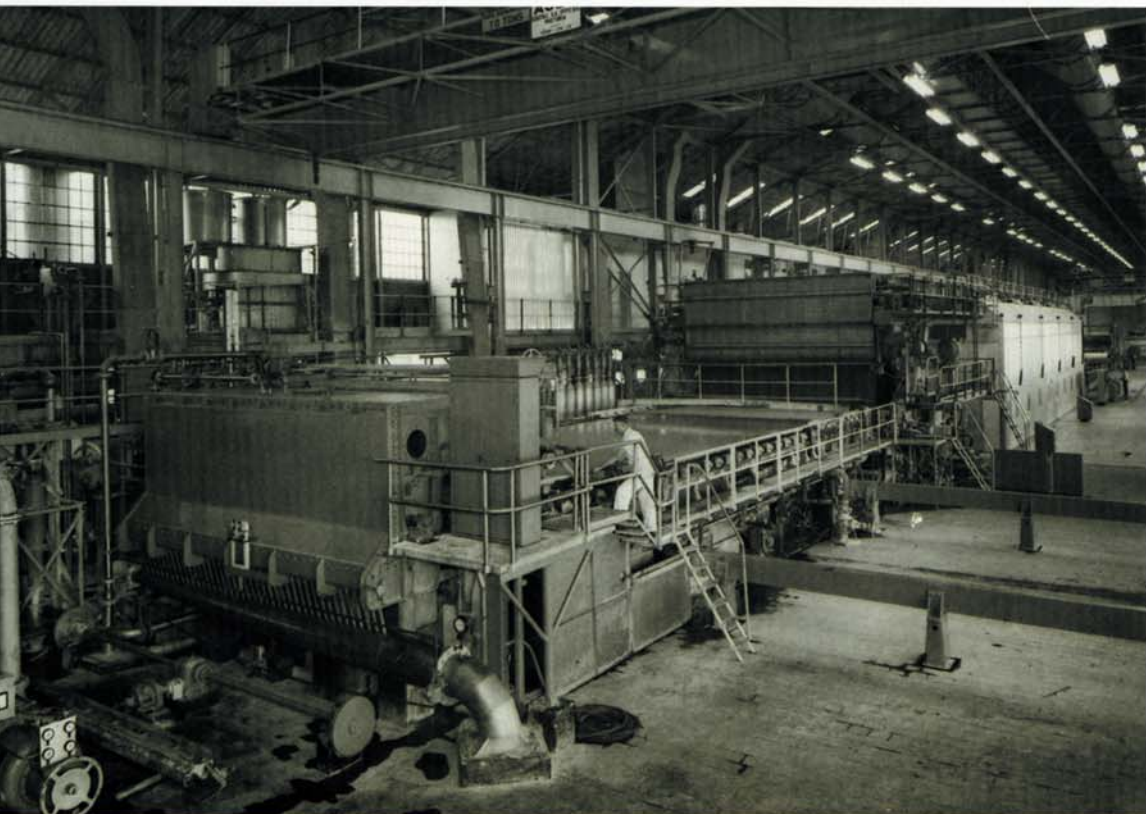
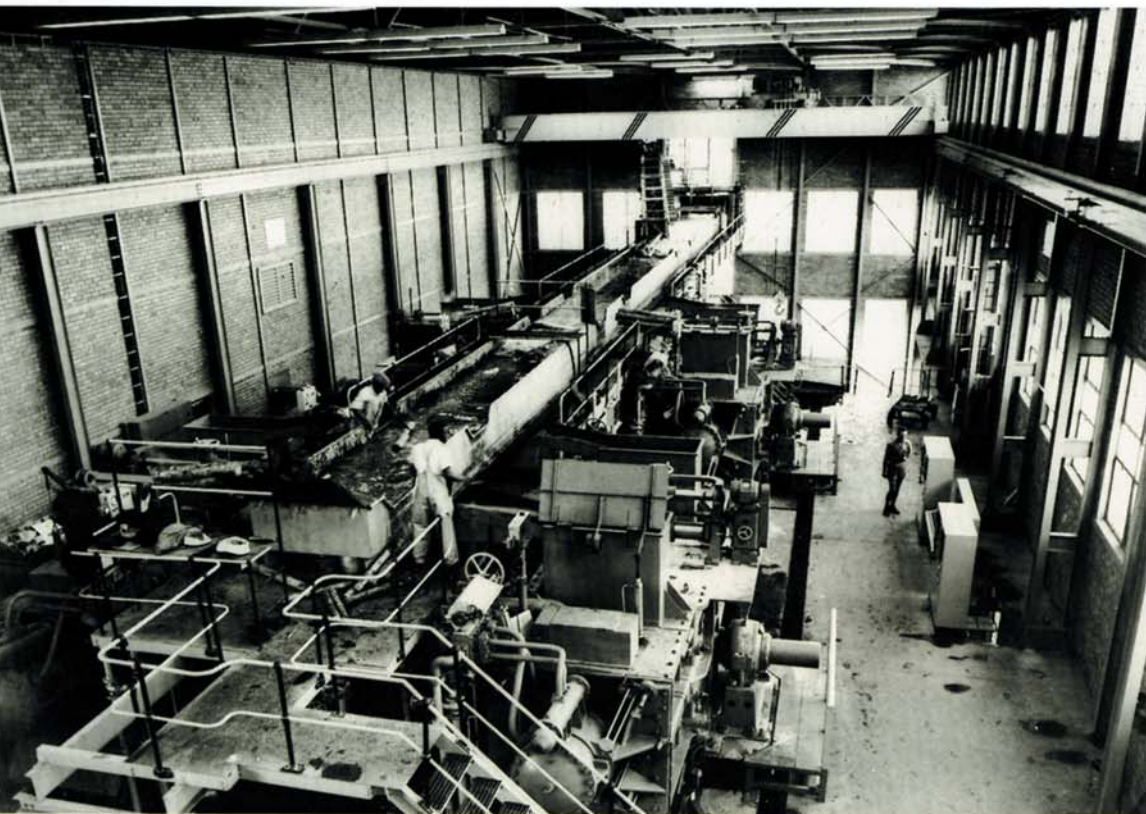
On another part of the Enstra site, the equivalent of a complete new mill was being installed — the Sappi newsprint project, which had got under way in 1959 when contractors began digging foundations. Soon a newsprint machine house was up and equipment was arriving, much of it from Beloit, but some items from Europe or local suppliers. By June 1960 the project's four grinding units were being installed, and an assembly crew was erecting the Beloit paper

machine — actually a scaled-down version of the full design. To cut costs a number of drying cylinders, valve pumps and a host of other features had been omitted. Leonard Job described it as ‘a sawn-off shotgun.’

The decision to scale down the machine had been taken because nobody could be sure how Enstra’s newsprint would turn out. If it worked, and the Newspaper Press Union wanted more, the machine could be extended. When complete the machine would be able to make 70 000 tons of newsprint per year, but Sappi needed only half that and could afford to run it at lower speeds. In planning the project Sappi had asked Beloit to provide two sets of specifications, one for the full machine and one for the economy model, and together the Americans and South Africans had decided what to include.

Assembling a grinding unit for the production of groundwood pulp.





By the early months of 1961 Enstra commissioning teams led by Des Turner were running in the paper machine and the grinding units. Debarked logs, each 1,3 metres long, were fed into the units and shredded by large grindstones that were lubricated with hot water. Mechanical pulp retained twice as much of the original wood as chemical pulp, but to make efficient newsprint the two had to be mixed in a three-to-one ratio. SAFI pulpwood was being railed in from the Eastern Transvaal and was tried out, and at last everything was ready. South Africa's first commercial newsprint was produced in April 1961.

The whole of Enstra had been waiting for the moment, and to celebrate it the company gave a 'Night to Remember,' an ox braai and dance attended by 5 000 people. Sappi's guests ate their way through two oxen, several sheep, 200 chickens and a ton of boerewors, and also tackled a knee-high cheese presented by Beloit as a symbol of Wisconsin, America's Dairy State. Customers and suppliers mingled with staff from Enstra and Tugela and Sappi's head office, and everyone present could feel part of a Sappi family. At least 20 of the revelers had been at Enstra in 1938 when the No 1 machine had started up.

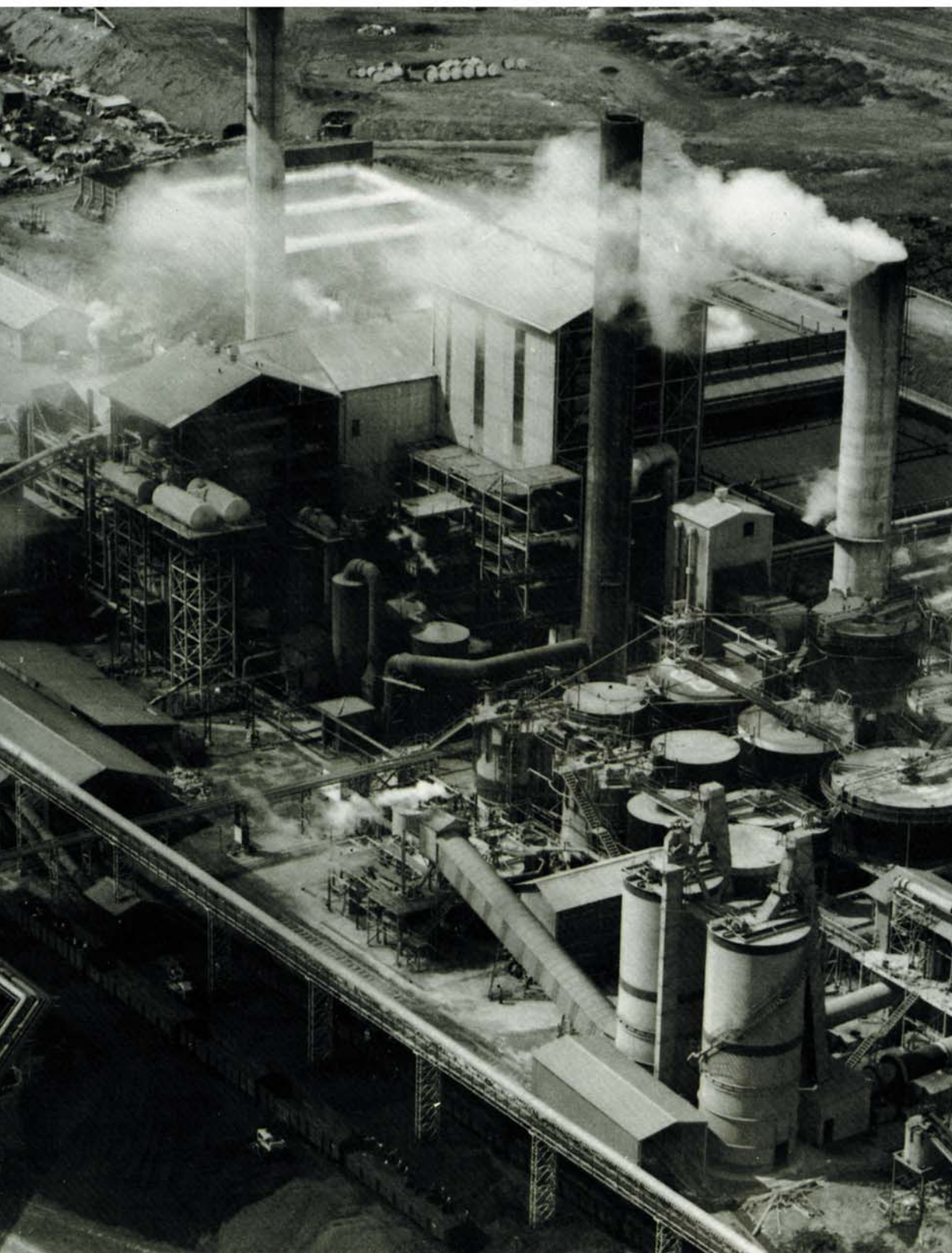
Before long, half the newspapers published on the Witwatersrand were printed on Enstra newsprint, but readers could not see anything different. Much of the news in their papers was about continuing threats of sanctions and about the government's efforts to counter them. Early in 1962 government representatives approached Sappi to ask whether the company could make more. Sappi explained that even as it stood the new machine could make 35 000 tons per year, and the Newspaper Press Union was instructed to take up the full amount. That covered all but a fraction of the needs of inland newspapers, but 35 000 tons more were needed for those at the coast, and newsprint for them was imported.

Newspapers were taking the sanctions threats seriously, and the Newspaper Press Union wanted a new source of local newsprint to supply the coastal market. Because the newspaper owners were wary of putting all their eggs in one basket they deliberately avoided Sappi

Inside Enstra's groundwood plant, with a conveyor belt feeding logs to the grinding units.

Making newsprint on Enstra's No 6 machine, commissioned in 1961.

Tugela's boiler house and pulp plant (left), soda recovery plant and causticising and lime burning plants, with the gas producer in the right foreground (overleaf).





and invited an international company to build a new mill. John Henderson was not impressed. In his view it would make much better sense to establish a newsprint operation at Tugela, where so much was already in place. After consulting the board he offered the newspapers a package deal by which Sappi would provide more than 90 per cent of their requirements for at least 15 years at prices tied to the cost of Canadian newsprint.

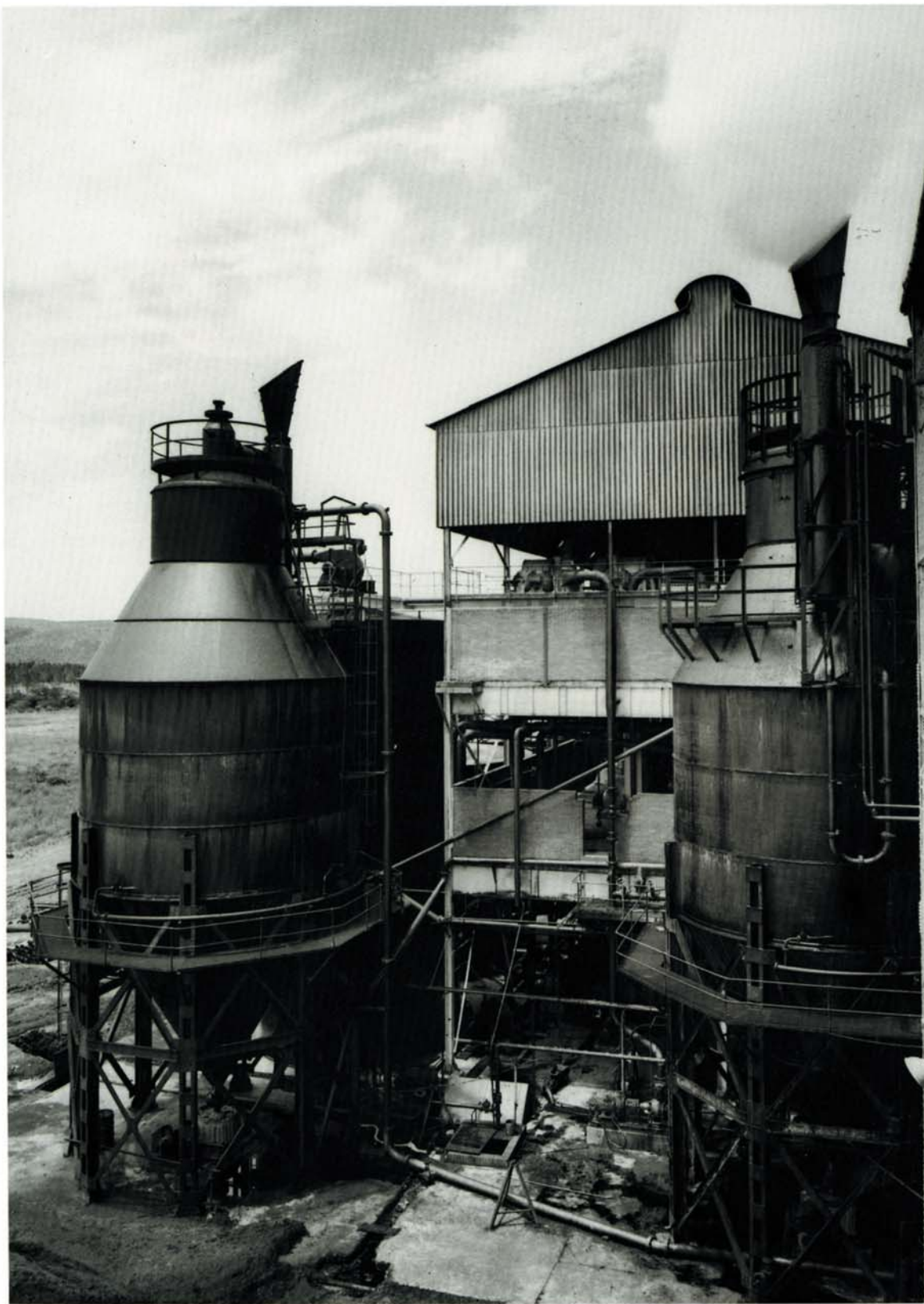
As extra inducements, Sappi offered to share profits, and invited the Newspaper Press Union to nominate a director to Sappi's board. These were offers that could not be refused. An agreement was drawn up and signed in August 1963, and Leonard Job and his men were faced with implementing another major expansion. A newsprint mill had to be built at Tugela, and the Enstra newsprint machine — No 6 — was to be extended without delay. Because Sappi was running out of pulping capacity, the management also wanted to build an entirely new mill in the Eastern Transvaal.

Built-In Stretch

DURING 1959 the Natal Administration had built a new road bridge across the Tugela at Mandini. The bridge was named after John Ross, who as a shipwrecked 14-year-old in 1826 had walked from southern Natal to Delagoa Bay in Mozambique to ask for medical supplies for his companions. Already the road south was being tarred, and a journey to Stanger was much less of an adventure. The only reminder of Mandini's colourful beginnings was the row-boat ferry across the river, but even that was little used. Interest in the Red Dog had slumped when Mandini recreation club had been given a liquor licence.

With the opening of the bridge, Mandini seemed much less isolated. That made things easier for the construction workers who arrived to assemble the No 2 kraft Fourdrinier built by Beloit, the twin of Enstra's newsprint machine. The new machine was to be installed parallel to No 1 in the machine house, and to make room for it Enstra's artisans had to move their workshops to another building. New digesters were set up, the woodyard was extended, extra filters were put in, and in February 1963 the No 2 machine was commissioned. Overnight, Tugela's papermaking capacity was raised from 70 000 to 125 000 tons per year.

Originally Sappi's management had meant to use the new machine to make sack kraft, but there was a change of policy. Sack converters were becoming interested in a relatively new product known as ex-





First trial run on Tugela's No 2 machine, 1963.

tensible sack kraft, paper with a built-in stretch that made sacks stronger. The paper was made by the so-called Clupak process, a technique dreamed up by Sanford L Cluett of the United States who was already famous for inventing 'sanforised' fabric which resisted shrinking. The Clupak process was sanforising in reverse, a matter of straining the paper sheet when still warm and wet, then allowing it to revert to its normal consistency. Moore O'Hara travelled to the United States and obtained permission for Sappi to use the Clupak process under licence.

The process depended on a special unit mounted halfway along the paper machine's dry end. Rather than disturb the No 2 machine, Sappi's management reserved the Clupak unit for No 1 — which in any case needed modifications. Linerboard production was transferred to the new machine, and within four months No 1's refit was complete and the mill was producing more kraft than the local market could absorb. Anticipating the situation, the company had already registered a wholly-owned subsidiary, Sappi Sales Ltd, with offices in Britain. In addition, Sappi had an interest in a British corrugating company, Unicases Ltd, which had been set up by Union Corporation in 1960 to promote Tugela kraft and had a factory near London.

Exports from Tugela were new, but it was not the first time Sappi was selling into outside markets. A Rhodesian subsidiary had been formed in 1958 to handle sales in Central Africa and as far away as the Congo. There had also been orders from East Africa, Mauritius and Ceylon, and in view of the coming expansion programme it was hoped they would increase. The first phase of the programme was the extension of Enstra's No 6 machine, adding the dryers and other features that had earlier been omitted, and equipping it to run at much higher speeds. Many parts of the machine had to be taken to pieces and altered, or in some cases moved to new positions.

The rebuild was complex and would normally have required a three-month shut-down before production could resume. In Sappi's case that was unthinkable because the company had to fulfil its newsprint contract. Enstra's engineers made detailed plans of what they had to do and where possible arranged to make alterations during scheduled maintenance shut-downs. Over a weekend, the calender stack and paper rewinder at the termination of the dry end were moved 30 metres to their new positions. That left a long gap where new dryers were to be put in, and underneath it in the basement the engineers rigged up a temporary conveyor system to carry paper to the calender.

As paper came off the dry end, it was fed to the basement and transferred to the conveyor, then returned to the production floor when it reached the other end. The process was monitored with closed-circuit television, still a novelty in South Africa. The engineers set up new dryers, then shut down the machine for nine days while they made final alterations. By the end of the rebuild the company had lost no more than 14 days of production, an achievement which attracted wide interest among papermakers in other countries. In November 1964 the machine was restarted and appeared to work well. Operators gradually increased its speed until it was approaching full capacity.

The company was spending a fortune — in rands and cents, following South Africa's switch to decimal currency from the beginning of 1961 — and the money was coming from profits and rights issues. To help pay for the Tugela expansion, in April 1961 Sappi's authorised capital had been increased from R3 500 000 to R9 million, with 3 186 879 shares distributed free to registered shareholders and 2 549 503 made available at R1,70 each. To pay for the newsprint expansion and also for the new pulp mill planned for the Eastern Transvaal, in September 1963 the capital was boosted to R12 million, with 2 230 815 shares offered at R4,50 each.

A month later, the company received extra funds through selling Union Corrugated Cases to Union Corporation. During 1962 the mining house's head office had been transferred from London to

Johannesburg, and Tommy Stratten had been appointed chairman, the first South African to hold the post. Stratten remained chairman of Sappi and early in 1963 his board had been enlarged to take in five extra directors — Ted Matthews and P M Anderson's son Colin of Union Corporation, the chairman of the Newspaper Press Union, Dr H J van Eck of the Industrial Development Corporation and P R Rörich of Twello Bosboukorporasie, an Eastern Transvaal timber company which was to supply wood to the new pulp mill.

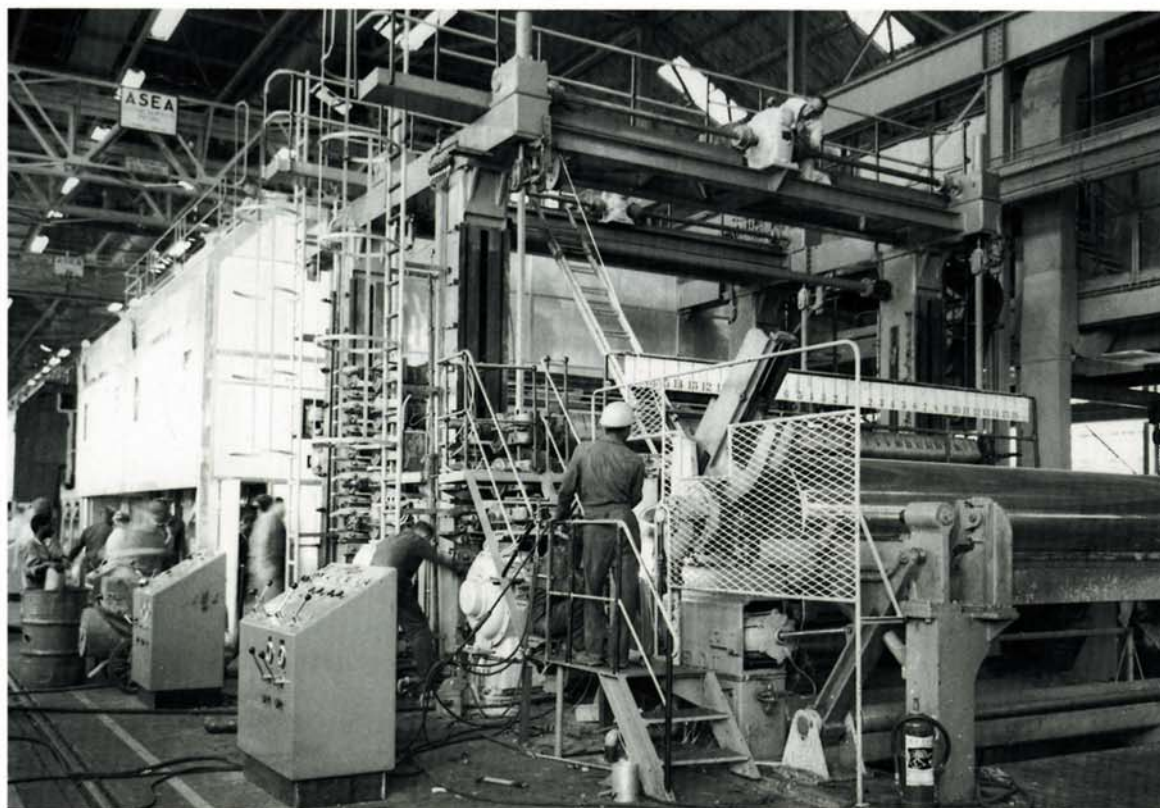
The board met only quarterly and found it difficult to keep pace with all that was happening in Sappi. In August 1963, then, it was decided to delegate some of its functions to a directors' executive committee which was to meet at least once a month. The committee consisted of Tommy Stratten, Whitmore Richards, John Henderson, Moore O'Hara, Leonard Job and Ted Matthews, who as a member of Union Corporation's financial staff had been involved with Sappi's affairs as long as anyone. The first meeting of the executive committee was dominated by discussion of where the new pulp mill was to be.

The Komatipoort site was still a possibility, but there was a feeling that the mill should be located close to large areas of vacant land where the company could develop plantations. On that basis Komatipoort had to be ruled out. To find an alternative John Henderson brought in Fred Snyman, who looked after plantations that Sappi leased near White River and knew the Lowveld like the back of his hand. Henderson wanted him to explore the Elands River valley and on to Komatipoort, looking for properties with access to water and road and rail links, with space for effluent disposal, and above all with room to grow trees.

Snyman had explored the valley before during the war years, when he had led the Sappi team that harvested tamboekie grass as a possible alternative to straw. Several days into his search he telephoned Henderson and said he had found a promising spot about 40 kilometres east of Waterval Onder. Henderson went down by car and joined him on the farm Roodewal. The scenery was charming, with citrus groves on adjoining properties and in one area a stand of pine, which seemed a good omen. To north and south were rolling, grass-covered hills used for farming sheep. The rail line to Komatipoort ran across Roodewal, and the farm was bordered by a tributary of the Elands River named the Ngodwana.

Extending the dryer section of Enstra's newsprint machine in 1964.

During the rebuild: newsprint is fed to the basement to bypass the last drying section.



Henderson was an immediate convert and Snyman arranged an option to buy, though without mentioning that he was acting for Sappi. Then Henderson called in Leo Ferreira, formerly manager of the Orange River Salt Works, who was a persuasive negotiator and had already obtained options in the Komatipoort area. Ferreira was to track down the owners of the farms adjoining Roodewal to ask if they wanted to sell. Some properties belonged to several individuals, and that was the case on Grootegeluk which neighboured Roodewal to the east. Ferreira patiently sounded out the owners — in Grootegeluk's case, even attending church with them — until he had the answers he wanted.

Still keeping the project secret, Sappi obtained rights to use water from the two rivers, and in November 1963 took up options on Roodewal and portions of Grootegeluk and announced they would be the site of Ngodwana pulp mill. Somebody suggested that 'Ngodwana' was probably Swazi for 'stream of little logs,' which sounded appropriate, but in fact the river had been named after a local trader named Godwin who had lived in the area in the 1890s. Old maps carried the name Godwin River, and General Ben Viljoen of South African War fame had mentioned it in his memoirs; and when Swazi came to pronounce it they had added on a 'n.

All this time Sappi had continued buying land in the area, leaving all negotiations to Leo Ferreira. He was often accompanied by Bob Scott and Alec Mackenzie, Sappi foresters who served as his advisers. The three men visited plot-owners in the valley and farmers in the hills, many of them living precariously close to the breadline, yet suspicious when Ferreira offered cash. Widows on their own were especially reluctant to sell. Often Ferreira told people that he only wanted their land and they could continue living in their houses, but most who agreed to sell quickly packed up and moved away.

In some cases Ferreira had to pressure land-owners for months before he wore down their resistance. Some wondered if he was really after gold, and stuck out for a hard bargain. Sappi and its intentions were never mentioned, and all transactions were carried out in the name of General Products Manufacturing, once the associate of Cellulose Products but now dormant. The company was still listed in the Johannesburg telephone directory with the same number as Cellulose Products, and more than a few Eastern Transvaal property owners who heard about Ferreira's campaign rang the mill manager and said they had land to sell.

Even before the mill site was chosen, Union Corporation's engineering department had been drawing up plans, and Leonard Job's technical men had recommended a new kind of pulping system. Much of the equipment was already on order so work could begin without delay. The site was surveyed and laid out according to the

plans, and construction crews prepared to start excavating. Then Tommy Stratten intervened, insisting that Union Corporation's geologists should make a careful inspection and check for dolomitic sinkholes. Not long before, a sinkhole on the Far West Rand had claimed a complete gold reduction works, and it was known there was dolomite at Ngodwana.

The geologists probed the area selected for the mill, and discovered cavities. To the east they found solid rock and said it would make a firm foundation. Unfortunately the spot they pointed out straddled the main road. Undeterred, Sappi lobbied the provincial administration and was told the road could be moved, providing the company paid. Once again the site was surveyed and work began in February 1964. By then a trickle of Sappi men was being sent to help, among them Don Fourie who had been appointed mill secretary. Fourie's first job was to soothe angry farmers who wondered what lay ahead.

Fledgling plantations in the green hills of Natal (overleaf).

Pulp wash filters in Enstra's bleaching plant.







If the company could arrange to have a straight road made crooked, then it surely had the power to turn the whole valley upside down.

In time Sappi would build a township at Ngodwana, but Fourie and other Sappi men lived in vacant farmhouses while construction workers camped. The nearest watering hole was the hotel at Kaapsehoop, an old gold mining camp in the hills to the south-east, which was reached by a long and winding track. The road to Nelspruit, 50 kilometres to the east, was not much better. The mill site was excavated and levelled and temporary offices and stores and a post office were erected. Then the construction crews began laying foundations for the mill and made a start on houses for the township. Like Tugela in its early days, Ngodwana was in pioneer country; but where Sappi was concerned, that was only to be expected.

Lingua Franca

SAPPI'S MANAGEMENT was in no hurry to make paper in the Cape Province, in spite of buying a potential mill site in Cape Town's Epping. During 1960 the company had been invited to take over a small wadding mill at Bellville near Cape Town, but had turned it down because of the price. In 1961 there had been talk of establishing a pulp and paper mill near George in the southern Cape, in collaboration with the Industrial Development Corporation. This time the project had been aborted when a timber company exercised a prior option.

Then, in 1964, Sappi was approached by representatives of an Italian industrialist, Gianfranco Fedrigoni, who had earlier been in business with Giuseppe Raimondo and now controlled a modest paper and fibreboard mill in Port Elizabeth. Fedrigoni had similar mills in Italy and Argentina and had established the South African concern in 1949. It was registered as S A Adamas Fibreboard and Paper Company (Pty) Ltd, thus honouring the Italian manufacturer Central Adamas which had built its fibreboard machines. The fibreboard was used to make suitcases, inside panelling for cars and strengthening for shoe heels.

Fedrigoni's mill was built around a row of wartime storage sheds which had been converted into offices and warehouses. The industrialist had imported operating staff from his home town of Verona in northern Italy, and had housed most of them in an apartment block which he bought for the purpose. Following Italian custom he built flats for the most senior staff actually on the mill premises, so that in an emergency his officials could be summoned without delay. The first fibreboard was produced in 1952 and found customers among Port Elizabeth's motor manufacturers.



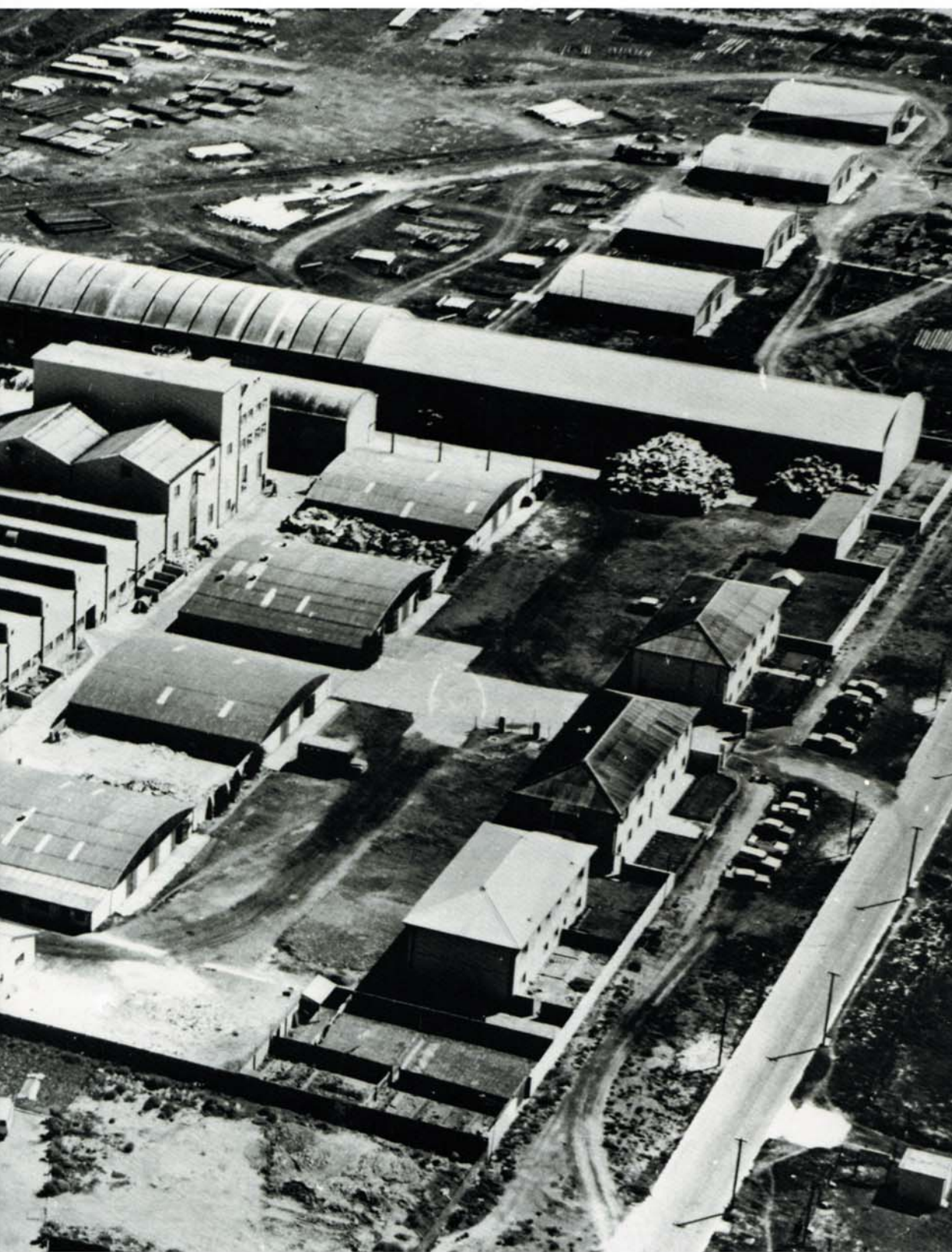
Delivering newsprint in Johannesburg.

Adamas from the air, with wartime hangars used for paper storage and flats for senior staff on the right (overleaf).

In 1955 Fedrigoni introduced a paper machine with a Yankee cylinder, able to make machine-glazed papers from waste and imported pulp. To run it he brought papermakers from Verona, and settled them in a block of old houses which he renovated as flats and which were later declared a national monument. Several of the newcomers were descended from generations of papermakers and knew how to make paper in the old way, by look and touch and taste. Like the earlier arrivals they were soon absorbed by Port Elizabeth's Italian community and made themselves at home.

That was the situation in 1964 when Sappi was brought in. John Henderson asked Alex Rodger, production manager at Enstra and by profession a mechanical engineer, to visit Adamas and assess its potential. The mill manager was a former Italian submarine commander who ran the mill as efficiently as Hans Loebecke had run Enstra, and Rodger liked what he saw. Soon John Henderson and





Ron Day, a member of Moore O'Hara's staff, left for Europe to negotiate with Fedrigoni — not in Italy but in a hotel in France, where it was agreed that Sappi should take over the entire share capital of S A Adamas and two property subsidiaries.

Most of the Italians at Adamas were calm about the change of ownership and agreed to stay on,¹ though the former submarine commander decided to return to Italy. In his place Sappi's management appointed Alex Rodger, suggesting that he should quickly bring the Italians round to Sappi's way of doing things and encourage them to work harder. Rodger soon realised that in some areas the Italians had much to teach Sappi and that they worked harder than most South Africans. He deliberately left Adamas as he had found it, and campaigned within Sappi to retain its special identity.

All told, the mill employed roughly 250 people, among them black employees who had picked up a smattering of Italian which remained the *lingua franca*. Adamas was much the same size as Cellulose Products in Johannesburg, which was being upgraded with advice from Kimberly-Clark of Wisconsin. Several Sappi men had joined the staff and one of the wadding machines had been rebuilt to produce high-grade facial and toilet tissue from virgin pulp. Meanwhile the General Products converting operation was broken up because the government thought it a bad idea for a single enterprise to dominate tissue manufacture from raw material to consumer product.

Much of the tissue mill's output was sold to its associate company KCSA. Other customers included a converter named S A Paper Processing which had been taken over by Geoff Kalmanson and his father Willie, members of the family which had set up one of South Africa's leading packaging groups, Amalgamated Packaging Industries. Father and son had spent World War II in the United States and had become fascinated by tissue's potential, realising that it was designed to be thrown away and had to be replaced again and again. The two had introduced many tissue concepts to South Africa, especially facial tissues and soft toilet rolls, and sold their products under the brand name Carlton.

By 1964 the Kalmansons were ready for a fresh challenge so entered into a partnership with a large American paper corporation, Crown Zellerbach. The result was a new company, the Crown Carlton Corporation, which was to set up an integrated tissue mill in Wadeville south of Johannesburg, with the Americans providing a

Cellulose Products in Mayfair, Johannesburg: the pioneer of South Africa's tissue industry.

Rebuilding Cellulose Products' No 2 machine around a steam-heated Yankee drying cylinder.





modern wadding machine and the Kalmansons converting its tissue. The government approved and had evidently changed its mind about vertical integration in the industry, presumably because there would now be competition. Sappi and Kimberly-Clark were caught off guard by the move, but decided that to hold their market share they would have to take decisive action.

Late in 1964 Kimberly-Clark of Wisconsin sent two senior men to Johannesburg to take charge of KCSA and to advise on Cellulose Products. The two men, Bernie Conroy and Dean Hoffenbacher, investigated the South African market and recommended that Cellulose Products and KCSA should integrate their activities and operate as a single enterprise, as Crown Carlton planned to do. Only recently Union Corrugated Cases had moved to a larger factory in Brakpan and its old premises at Enstra were empty and would make an ideal tissue mill. The first step was to merge the two operations as a single company, and this became effective at the beginning of July 1965.

The new enterprise was registered as Kimberly-Clark of South Africa and the name Cellulose Products fell away. Kimberly-Clark of Wisconsin held half the shares and the balance was divided between Sappi and Union Corporation in the ratio seven to three. In the near future KCSA's converting equipment would be transferred from Booyens to Enstra but the old Cellulose Products machines were to be left where they were. To compete with Crown Carlton the company would need a new wadding machine, and this was ordered from the United States. Sappi was to provide pulp for the enterprise, and Kimberly-Clark was to give KCSA full rights to its patents and trade marks, many of them already world famous.

Bernie Conroy and Dean Hoffenbach were to stay in South Africa to organise the new company, Conroy as managing director and Hoffenbach as general manager. It was plain that KCSA faced a major battle as the Crown Carlton wadding machine would be on stream many months ahead of Enstra's. The two Americans set out to upgrade the image of KCSA's products and began teaching their staff the elements of marketing — a new concept for the Sappi men, as they had never had to deal with competition. Clive Malkin, mill manager at Mayfair, travelled to Wisconsin to learn more about Kimberly-Clark's way of doing things; and to step up production at the mill, the No 2 machine was extensively rebuilt to make it faster and double its capacity.

The Mayfair operation was far removed from Sappi's mainstream,

Hooker electrolytic cells in Enstra's chemical plant, introduced to replace the Pomilio cells.

Cutting paper into sheets in Enstra's finishing house.

but no mill was closer to head office, and John Henderson frequently dropped in to see how it was doing. Counting Mayfair, Sappi now had four mills in production and a fifth being built, and to administer them all was becoming a major headache. That was why Sappi's management was installing a computer at Enstra, assuming that it would soon take over routine tasks that tied up the labours of armies of clerks. In time, it would be used on more ambitious assignments like the planning of new projects and techniques.

Computers were still a novelty in South Africa, and Sappi's management announced that any member of staff could apply for training. Well over 100 responded, and all were put through a series of aptitude tests organised by the company that was supplying the computer. Only six were found to have the right attributes — three of them typists, one an accounts clerk from head office, one an Enstra storeman, and the last a Tugela despatcher. These six embarked on the training programme, but after a few months only two were left and outsiders were brought in. Even then the computer department fell short of expectations, and in the end it was disbanded. The computer was handed over to Union Corporation and transferred to East Geduld.

Country Life

IN AUGUST 1964 shareholders were asked to approve another increase in Sappi's authorised capital, this time from R12 million to R24 million, to bring it closer in line with the value of the company's assets. Tommy Stratten had said there would be a rights issue too, but this was postponed. Shareholders were given an extra share free for every unit they held, effectively halving the shares' value and halving dividends as well. By March 1965 it was clear that the costs of expansion were higher than anticipated, the more so when S A Adamas was taken into account; so the authorised capital was raised to R28 million, with 4 541 630 new shares made available at R2,50 each.

The rights issue raised R11 million towards the R30 million-odd needed. Most of the balance came from profits, and much of it had already been spent. Enstra's newsprint extension was complete; most of the equipment needed for the Ngodwana project had arrived on the site; and the Tugela newsprint mill was under construction. New buildings had been erected for the No 4 newsprint machine and for grinding units, and a small party of Enstra men arrived to help install the equipment. The newsprint machine had arrived and was similar to Enstra's in that it was a Beloit design, but it had been built by Walmsleys of Bury, which was now closely associated with Beloit.

The machine was in place by December 1965 and was run in with kraft pulp as the groundwood pulping units were not yet ready. That suited the papermakers as the kraft fibre was stronger than newsprint and they were able to tune the machine with less risk of paper breaks, which had been a problem at Enstra. Once the grinding units were working the papermakers switched to newsprint and commercial production began in June 1966. Under the terms of the NPU contract Tugela newsprint was going to coastal newspapers, those in Durban, East London, Port Elizabeth and Cape Town. Reels of newsprint were railed to Durban, and the ones destined for other centres were loaded aboard ships of the African Coasters Line.

A year earlier, African Coasters had carried trial shipments of newsprint to Cape Town but they had been damaged en route by projections and awkward angles in the holds. As a result two ships had been specially modified, with new floors and vertical bulkheads fitted in the holds and remaining projections burnt away or cushioned

Newsprint production on Tugela's No 4 machine, commissioned in 1964.



with mattresses. It was expected that the coastal newspapers would use about 35 000 tons of newsprint per year, but the Tugela machine's capacity was 64 000 tons. Sappi's management was in no hurry to make full use of it because there was a problem over pulp-wood. Now that Tugela had four machines, the estates and supplies department was finding it difficult to keep pace.

Already the company was extracting all available timber from Zululand and the Natal Midlands. Extra supplies were being railed in from the Piet Retief area of the south-eastern Transvaal. Besides that, semi-bleached chemical pulp for newsprint was transported from Enstra as Tugela had no bleaching plant of its own. Another key element in the project was power from Escom, South Africa's Electricity Supply Commission, needed to supplement the mill's generating capacity. The existing sub-station could never have met the demands of the newsprint mill. The power had been connected early in 1965, soon after a catastrophic fire at the sub-station which had left the mill community without electricity for ten days.

The fire had been caused by an electrical fault in one of the switch-gears. A turbine feeder exploded in such a way that the turbine kept running and continued feeding current into the switchgear. A fierce fire developed, and afterwards it looked as if the sub-station had been hit by a bomb. The men on duty tried to switch everything off but several were overcome by smoke. Only much later was the fire brought under control, and by that time terrible damage had been done. With the whole mill down it was a matter of urgency to rebuild the sub-station as quickly as possible, but the fire had occurred between Christmas and New Year and most of Tugela's electricians were away. In the circumstances, Enstra volunteers who offered to help out were welcomed as heroes.

Several months later there was another serious fire at Tugela, this time in the basement of the machine house among the cables of the No 1 machine. It was supposed the fire had been caused by someone dropping a cigarette butt. At least 200 cables had to be replaced — not plastic-insulated cables like today's but 'wet' cables with a conductor inside, then resin-impregnated paper wound around it, then another layer of paper, then a lead sheath, then a layer of bitumen-impregnated paper, then a steel band and finally hessian sacking on the outside. It took eight hours to make a single joint. Relays of electricians worked around the clock to bring the machine back into commission, but even then it was out of action for ten days.

Tugela's steady expansion had been matched by growth in Mandini township. More than 50 new houses had been erected, and Mandini now had a population of 1 500 which made it the third largest community of whites in Zululand. A benevolent mill manager — Harry Hirsch, transferred from Enstra — made sure that recreational facili-



Reels of Tugela kraft await despatch.

ties kept pace. Golf, tennis and bowls remained popular and until 1964 Mandini's rugby club had been the strongest in Zululand. North of the mill complex the government was building a major township for blacks, to be named Sundumbili or 'the place of two palm trees.' As houses were finished, families moved in — many of them from Tugela married quarters which were later demolished.

Black recreation at Tugela still centred on the Sappi Home Stars soccer club. By 1962, all the major clubs in Natal except Sappi's had turned semi-professional, and the Home Stars followed the trend. Mill transport carried the players to away games and the company provided them with smart black blazers and grey flannels. On the field the team played in green and white and their smart turnout and efficient teamwork won them a wide following in Durban and Pietermaritzburg. Thousands of voices chanted 'S-A-P-P-I' whenever they went on the attack. It seemed that the Home Stars were destined for even greater things, but then Harry Hirsch went back to Enstra, company support dwindled, and the soccer club faded away.

A fitting memorial of the Hirsch era at Mandini was Ingwenya Park, 'the home of the crocodile,' a small game reserve that the mill management created on Sappi land, to the west of the national road. The site overlooked the Tugela River, and Harry Hirsch brought in



Ian Player of the Natal Parks Board to carry out an ecological survey. Then in July 1965 the Parks Boards released 30 impala brought from the Hluhluwe Game Reserve, soon followed by wildebeest and nyala. At about the same time, a handsome guest house for company visitors was built on high ground overlooking the Tugela, not far from the single quarters. John Henderson's wife Mary chose its decor and furniture.

Roughly 450 kilometres due north of Mandini, the Ngodwana project was well under way and everything was going as planned. The mill manager, Lappies Labuschagne, was on the spot, and so were Quintin Stubbings as production manager and Ted Newport as mill engineer,² all living in the Ngodwana township which would eventually consist of 120 houses. Brick was used to build homes for senior personnel, but most of the others were made of precast concrete including gravel from a quarry on Roodewal. There were monkeys in the area, and these soon learnt the meaning of a whistle blown when a blast was imminent. When it sounded, the monkeys scurried well out of the way, and when the blast was over, they all scurried back again.

The monkeys also learnt that Ngodwana kitchens were a never-failing source of food, to the despair of pioneer housewives, and duikers ate the flowers that housewives planted in their gardens. Bushbuck were frequent visitors as well. At weekends, many of the Ngodwana men went fishing in the Elands River, hoping to catch yellowfish which were a noted delicacy. To keep everyone happy the company was already building a recreation club and local farmers and other residents not connected with the company were invited to join. Valley people were learning that Sappi was not such a bad neighbour after all.

At the mill, the centrepiece was the continuous digester which would produce Ngodwana's pulp, very different from the batch digesters used at Enstra and Tugela. In the batch system, wood chips were cooked one load at a time. In the continuous system, chips were fed in at the top of digester and were cooked as they slowly filtered downwards until their lignin content dissolved and usable pulp emerged at the bottom. A small continuous digester was already in use at the Swaziland pulp mill, but Ngodwana's was the first in South Africa. Quintin Stubbings, Ted Newport and Charl Grobbelaar went

Erecting South Africa's first continuous digester at Ngodwana, with four evaporators for concentrating black liquor.

Ngodwana in 1966, dwarfed by a 100-metre smokestack designed to disperse gases in the higher atmosphere (overleaf).







Ngodwana's 'three wise men': (from left) Quintin Stubbings, Ted Newport and Lappies Labuschagne.

to Sweden, Finland, Britain, the United States and Canada to find out how it should be operated.

The continuous digester was essentially a tall, slender cylinder and had been built by a South African company to the design of Kamyr of Sweden, the world leader in pulping technology. The digester's capacity was to be 250 tons of pulp per day, though that could later be doubled, and as pulp emerged it was pressed out as a flat sheet and wound into reels on a roll-up machine. The digester produced its first pulp on August 30 1966 — an achievement recorded in the first issue of *Sappi News*, published four months later — but output was severely hampered by continuous jamming on the roll-up machine which failed to slice off completed reels. The problem baffled those at the mill, but Leonard Job solved it by going to Nelspruit and buying a carpenter's power jigsaw.

Most of Ngodwana's wood came from government plantations and private contractors, notably Twello Bosboukorporasie. Even then much of the harvesting was done by Sappi. Trees were felled with chainsaws, stripped of branches and hitched to mules which dragged them to access roads. Then they were loaded onto trucks and taken direct to the mill or to the nearest rail halt. About ten per cent of the wood came from plantations that Sappi had bought or leased, and in

time the proportion would increase as trees raised from seed approached maturity. Those planted at Ixopo in the mid-1950s were already half grown.

Already company foresters were planting seedlings over large areas of Grootgeluk and Elandshoogte, the hills on the north side of the valley. More than 400 men were at work on the open hillsides and all activities were carefully planned in advance. First an area was divided into blocks by marking out access roads with pegs. A bulldozer or grader was brought in to make the roads, and unwanted vegetation was cleared from the planting area. If necessary, the block was ploughed, and then a long chain was used to measure out a grid of planting 'pits' at intervals of 2,4 metres.

Once holes were made, teams of planters inserted seedlings with a special trowel and packed them with soil. The first 100 000 seedlings planted on Elandshoogte were obtained from a government nursery, but those that followed were from a nursery on Grootgeluk. In its first year, the Sappi nursery held four million seedlings; in the second, six million. Seedlings remained in the nursery for eight months until ready for transplanting and grew in individual plastic sleeves which helped soil retain moisture. Once in their final positions they were left alone for six months, then inspected. If mortality was higher than ten per cent, planters returned to 'blank' gaps with fresh seedlings.

Enstra and Tugela mills had been brought into being without any fanfare, but for Ngodwana the company laid on an official opening ceremony which took place in August 1967. Jan Haak, the minister of economic affairs, was invited as guest of honour. In welcoming the minister, Tommy Stratten pointed out that Ngodwana was already the largest industrial undertaking in the Transvaal Lowveld, but there was much more to come. At that stage the mill was producing only unbleached pulp, but in time the company would add paper machines. What the minister saw, said Stratten, was only a very small nucleus of what he was convinced would one day be the largest pulp and paper complex in Africa.



5 1967-1973 OXYGEN BLEACH

BY THE BEGINNING of 1967 South African Pulp and Paper Industries, Limited, had been in business for 30 years and employed nearly 10 000 people. A small proportion worked at Sappi's head office in Johannesburg or the sales offices in Durban, Port Elizabeth and Cape Town. There were large contingents at Enstra and Tugela, and smaller numbers at Ngodwana and Adamas in Port Elizabeth. More than 3 000 were involved in Sappi's forestry operations, whether in the nursery at Ngodwana or working in the new plantations, or harvesting pulpwood in Zululand, the Natal Midlands or the Eastern Transvaal.

Of the mills, Enstra now had the capacity to produce 110 000 tons per year of 'printings and writings,' boards and newsprint. Tugela could make 240 000 tons per year of kraft packaging papers and newsprint. Adamas produced 15 000 tons per year of wrapping and other papers and also suitcase and industrial boards. In October 1966 Sappi had made its two millionth ton of paper, only four years after making the one millionth which had come twenty-four years after the start of production at Enstra. Ngodwana made no paper but was gradually approaching its target of producing 250 tons of unbleached pulp per day — roughly 85 000 tons per year.

Apart from its own mills, Sappi also had an interest in Kimberly-Clark of South Africa and its mill at Enstra, where a building had been added to house the new 140-inch (3,62m) crepe wadding machine being supplied by two Italian companies, Pinerola and a subsidiary of Beloit International. Even though the machine had been introduced as rapidly as possible, KCSA was losing a lot of ground to Crown Carlton, which was making the most of its new mill at Wadeville. Adding insult to injury, the rival company had poached half of KCSA's papermaking staff by offering expenses-paid trips to

the United States. In little more than a year, KCSA had lost 60 per cent of its market.

The Enstra mill gave KCSA the means to fight back. The Mayfair operation closed in February 1967 and most of its staff was transferred to Enstra, and the Kimberly-Clark No 1 wadding machine was commissioned during the next month. An official opening was laid on with H R P A Kotzenberg, the government's secretary for commerce and industries, as guest of honour. In his address Kotzenberg noted that South Africa's consumption of paper and board had now reached 660 000 tons per year of which 550 000 tons were made locally — roughly 80 per cent of the total. Counting KCSA's output, Sappi's contribution approached 400 000 tons.

Like Union Corrugated Cases before, Kimberly-Clark's operations were closely tied to Sappi's in that the fine papers mill provided power, steam and water (and also pulp), while the tissue mill shared Enstra's canteen, stores and workshops. KCSA's wadding machine had been bought through Sappi's technical department, and Sappi engineers had erected it. In return, the tissue company had much to teach Sappi, especially about marketing. For several years Bob Garden of Moore O'Hara's staff had fought a lone battle to convince Sappi that marketing was essential, but his calls had fallen on deaf ears. Then in 1966 he was appointed commercial manager in place of Moore O'Hara, and that gave him much more clout.

Garden's first initiative in his new job was to assemble a marketing team, with Lou le Roux as marketing manager, Chris Myburgh's brother Phil as publicity manager and Piet Fourie as service manager, responsible for dealing with customers' difficulties. John Harrison was sales manager and Andre Vlok, who like Le Roux had joined Sappi from the South African Bureau of Standards, was in charge of quality control. One of the marketing department's first tasks was to help supply houses, printers and converters to switch to standard sizes of stationery, a move recommended by the Bureau of Standards to bring South Africa into line with other parts of the world. The country had been using 80 sizes of paper and 40 of envelopes, but the new AO system reduced the numbers to about ten of each.

A few members of the marketing team were based at Enstra but most were at head office, and the team's existence symbolised a distinct change in the balance of power. For years, the strongest influence in Sappi affairs had been the technical department headed by Leonard Job. The technical men were naturally more interested in how things were made than in how they were used once they left the mills, and this had sometimes led to friction. To bring Sappi's technical and commercial wings closer together, John Henderson had asked Leonard Job and Moore O'Hara to become assistant managing directors. Job had joined the rest of the management team at head office

while Chris Myburgh took over day-to-day running of the technical department at Enstra.

Among the technical team's projects was a plan to erect a bleaching plant at Tugela, urgently needed to produce semi-bleached pulp for newsprint. The most obvious course would have been to build a plant like Enstra's, based on chlorine; but there was concern that it would create an effluent problem, so the technical men had been looking for an alternative. Whitmore Richards had drawn their attention to a French magazine article on bleaching cellulose with oxygen, an idea explored in Russia in 1912. Only recently the idea had been revived by the French company l'Air Liquide of Paris, which was primarily an oxygen producer and was looking for new markets.

The Russian pioneers had abandoned their idea on finding that although oxygen reduced the lignin contained in pulp, at the same time it attacked and degraded the cellulose. The French had tried adding a magnesium catalyst that lessened the degradation by protecting the fibre, at least in sulphite pulp. It was not so effective with sulphate pulping, the kraft process, as the pulp came out much

Marketing men and executives: (from left) John Harrison, Lou le Roux, Bob Garden, Barry Wilson, Ronny Bell, Ron Watson, John Henderson, Andre Vlok, Moore O'Hara, Pietro Savini, Piet Fourie, Stan Rees and Phil Mijburgh.





Enstra's sorting department, with cut paper readied for despatch to customers.

weaker than was acceptable, and paper made from it was prone to burst or tear. The Enstra chemists had experimented, and they had reached the same conclusions as the French, even though they tried out a variety of pulps extracted from different types of wood. Then one day a member of the team, Daan Pauw, tried bleaching pulp from a bale produced at the Usutu mill in Swaziland and the results were far more encouraging. Not only was the bleached pulp stronger, but it was also brighter.

Usutu pulp was made from wood much like what Sappi obtained from the Eastern Transvaal, so Pauw and the other researchers wondered what had made the difference and analysed each stage of Usutu's pulping programme. In most respects the cycle was like Sappi's, but with one extra phase. After leaving the digester, the Usutu pulp was washed in water containing sulphur dioxide to improve its repulping qualities. Leon Smith of Enstra ran experiments and deduced that during pulping, cellulose fibres picked up microscopic traces of heavy metals like iron, nickel and cobalt. If oxygen was introduced these heavy metals acted as a catalyst, causing the oxygen to attack the fibres.

Smith was able to demonstrate that Usutu's washing process eliminated the heavy metals, which explained why its pulp fared so much better when bleached. He tried substituting sulphuric acid for sulphur dioxide, and the result was just as good. The discovery was a second breakthrough, a realisation that acid pre-treatment was the key to successful oxygen bleaching. After exhaustive testing, in May 1968 Sappi decided to patent the preliminary process in all pulp-producing countries. Attorneys drawing up the patent applications needed the signatures of the inventors so had to visit Leon Smith in hospital, where he was recovering from an operation, and found Daan Pauw at Ngodwana.

Sappi also contacted l'Air Liquide and the two companies agreed to file joint patents covering the process as a whole, and to try and develop it commercially. The process was to be registered as Sapoxal, an abbreviation of 'Sappi-oxygen-l'Air Liquide.' A third partner, Kamy AB of Sweden, was brought in to help build a bleaching reactor designed by Apie Verreyne, the construction engineer in Enstra's engineering department. From the outside the reactor looked like a continuous digester, but inside it was divided into a series of compartments, one on top of another. Pre-treated pulp was fed in from the top and slowly filtered from compartment to compartment by way of slits in revolving plates. Oxygen was piped in and lignin was removed in solution.

Verreyne's design was patented, Kamy built a pilot reactor by adapting a small digester, and the three partners announced that trials were to be conducted at a small kraft mill near Jössefors in the north of Sweden. The Jössefors mill was in the process of closing and was an ideal venue, even though the Scandinavian winter was coming on. In October 1968 four Enstra men flew to Sweden to take part in the trials — Chris Myburgh and Lon Wayburne as engineers, and Henry Myburgh and Leon Smith on the chemical side. Tests were carried out over a period of two months, and often the men worked for 16 hours a day, seven days a week. Different speeds and settings were tried out until results were better than those obtained at Enstra.

The Sapoxal success was some consolation for a Sappi initiative that was turning a little sour. For years, Sappi's management had hoped that the company could one day produce high quality coated printing papers, the grades preferred for illustrated books, magazines and advertising promotion materials. Local demand for such grades was rising, but all had to be imported. When visiting Britain early in 1967 John Henderson heard that the Bowater paper company was closing its mill at Sittingbourne in Kent and wanted to sell a paper

*Enstra in 1969, photographed by Gordon Douglas
for a Sappi calendar (overleaf).*



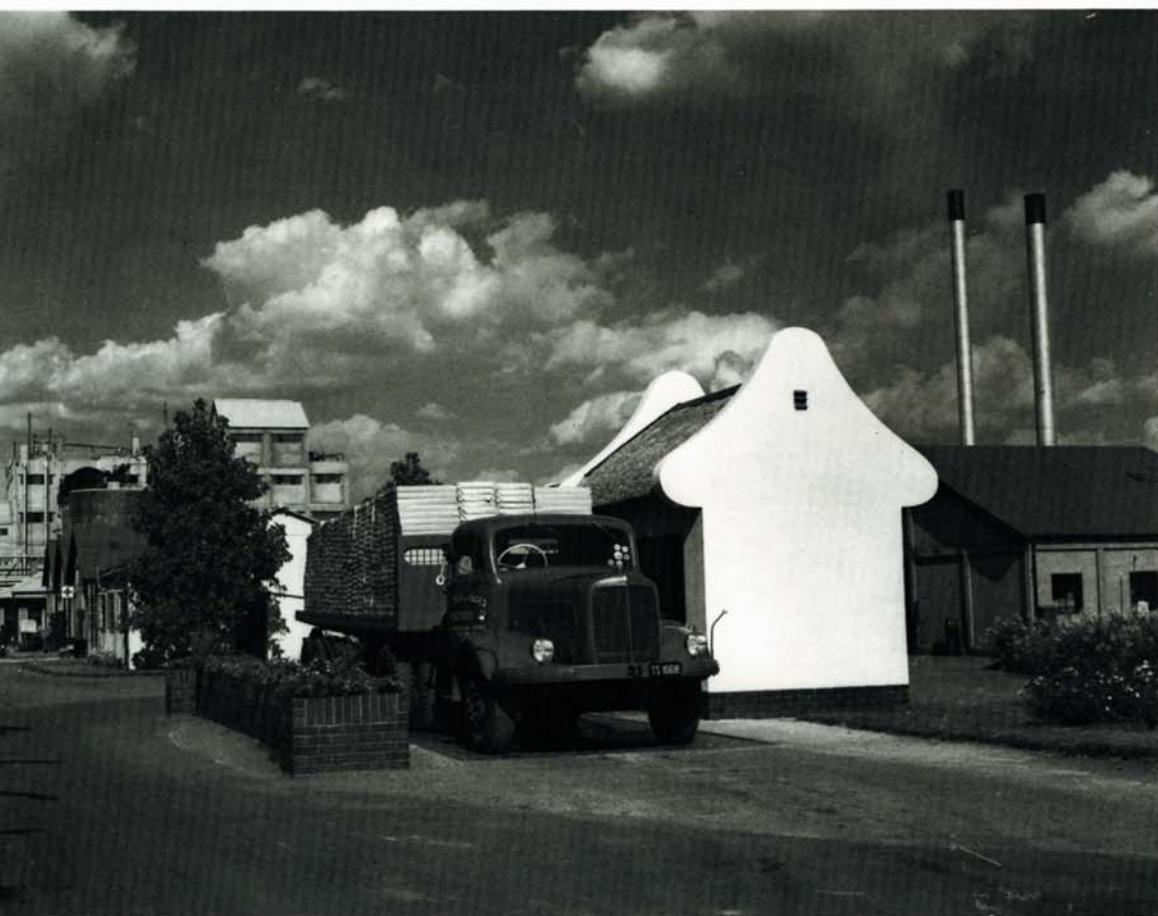


machine used to produce coated paper for magazines. The price was low, and Henderson asked Bowaters to give Sappi a month's option.

On returning to South Africa, Henderson arranged for Leonard Job, Lou le Roux and Lon Wayburne to go to Britain without delay to make a detailed inspection. The men decided that the machine had possibilities, providing that certain sections were replaced. Sappi took up the option and the machine was dismantled, packed in crates and shipped to Port Elizabeth. Not only was it a good way to encourage Adamas, but certain coating additives had to be imported, so it was better to have the machine at the coast.

Union Corporation's engineers drew up plans for the rebuild and new equipment was ordered from Er-We-Pa in West Germany. Mike Sharky of Tugela was appointed project manager and set off for Europe and North America to study coating technology. At Adamas, mill engineers unpacked the crates containing the machine and began

Weighing a load of fine papers prior to despatch from Enstra.



fitting them together. Like Enstra's No 4, the Sittingbourne machine was a hybrid, with a dryer section dating from 1902, the calender stack and other units from 1919, and the Fourdrinier from 1938. The machine had to be fitted into the mill with a shoehorn, and the coating 'shop' — a stack of rollers which coated paper top and bottom — was installed in a basement-style pit between two dryer sections.

The machine made paper before the year's end, and by February 1969 the operating team was ready to try out the coating unit. Results were disappointing. Elsewhere in the world, paper companies tended to specialise, and wherever possible a machine was assigned to make a single grade of paper and was never taken off it. At Adamas, the Sittingbourne machine was expected to make all the fine papers that coastal customers ordered, whether coated or uncoated and of every weight and quality. Still worse, the coating unit was outdated, so it was impossible to match overseas standards unless costly additives were included, and that made the paper too expensive.

In the end the coating unit was removed from the machine and sold to a local scrapyards. The Adamas No 4 instead concentrated on making uncoated papers and paradoxically began to earn its keep, producing 15 000 tons per year. Leonard Job still hoped to salvage the coating project so looked for a small, off-machine unit and found one in storage in the United States. He bought the unit and had it shipped to Port Elizabeth to make clay-coated and chemical-coated papers for carbonless business forms. Unfortunately the second unit was not much better than the first and was eventually sold to a company in West Germany.

Sappi Families

DURING 1967 Sappi had begun making fine papers at Tugela using spare capacity on the newsprint machine. Bleached pulp was railed from Enstra. In the same year the company had built an administration block at the mill, part of it reserved for a branch of Barclays Bank previously housed in a rondavel. Before long the branch moved to a shopping centre between the mill and the village, constructed by the Old Mutual insurance organisation in 1968. The administration block also included a medical wing with a dispensary, first aid station, doctor's consulting rooms and a small operating theatre—a great improvement on the cramped surgery which had been used before.

The company doctor, Allan Curson, was a jogging enthusiast and for several years had bullied colleagues into joining him in early-morning runs. At the recreation club one evening Mandini runners had discussed taking part in the coming Comrades' Marathon, the gruelling road race between Durban and Pietermaritzburg (or vice



versa, every second year) that had become the most notable event on the marathon calendar. As a result several of Mandini's young men began training in earnest, running 32 kilometres every day — though they later discovered that other runners ran twice or three times as far. To enter the Comrades they had to belong to a recognised association, so they founded the Southern Zululand Athletic Club.

The Mandini men duly completed the Comrades and enjoyed it so much that they organised a road race of their own between Stanger and Mandini, a distance of 33 kilometres which had to be completed within four hours. The race took place in March 1968 and a number of separate teams competed for a Rose Bowl presented by John Henderson. One was from Mandini, kitted out in the Zululand colours of crimson and black. Scores of Mandini residents turned out to help, among them members of the racing pigeon club whose birds carried news of runners' progress. The finish was at Mandini recreation club with its swimming pool and bar, and the mill management laid on soup and cool drinks.

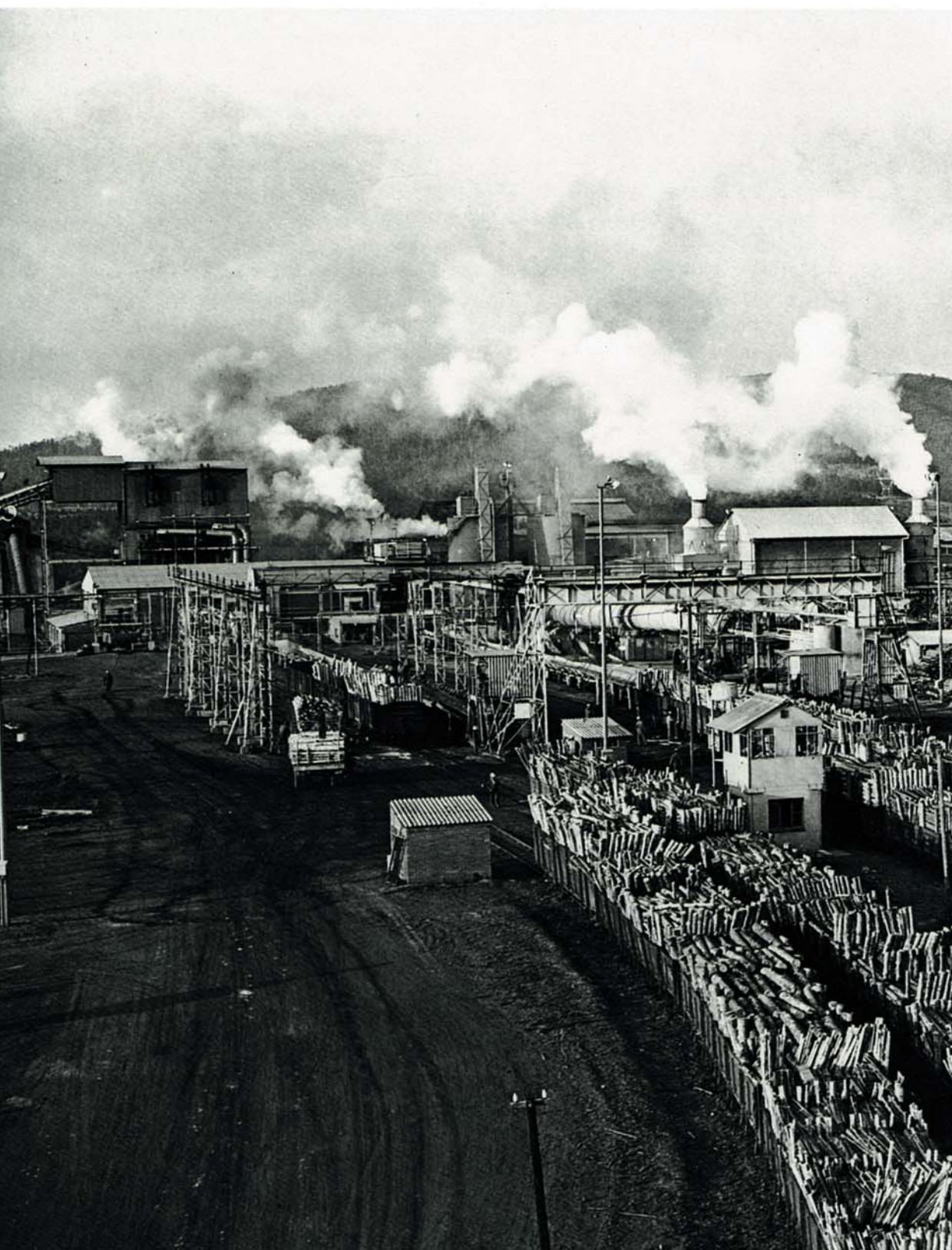
The Mandini runners decided to make the race an annual event and named it Ubejani, Zulu for 'rhino.' Within a few years it was regarded as one of the leading road races in Natal. Another Mandini inspiration attracted still more attention, this one an annual raft race down the Tugela River from Mandini to Oliver's Rocks near the mouth, a distance of 18 kilometres. In August 1967 six Mandini men had made an informal raft voyage to the mouth. Two months later they repeated the exercise with a second raft in attendance, and in February 1968 they organised a race and attracted 15 entries. At the finish, five rafts broke loose from their moorings, drifted out to sea and were eventually washed up on beaches to the north, sparking rumours that there had been a shipwreck.¹

Racing rules were drawn up, and those taking part were asked to pay modest entry fees with the proceeds going to charity. The organiser was Bill Hemmings, a Tugela engineer who was well-known as the community's leading practical joker. Some of Hemmings's jokes were straightforward — a matter of presenting birthday cakes which turned out to consist of filtered pulp, or rigging up hoses in wash-rooms to spray those occupying the cubicles. Others were elaborate, as when Hemmings arranged bogus correspondence which appeared

Tugela in 1970: all through the year, a succession of trains keeps the mill supplied with logs (overleaf).

At the start: runners line up for the 33-km road race from Stanger to Mandini.

Men overboard during an early Mandini raft race.





so realistic that even when the victim was told he had been hoaxed, he refused to believe it.

One of the most ambitious practical jokes was played on a mill electrician who had an old broken-down car standing in the wood-yard under a railways tarpaulin. The railways were pressuring the mill to return surplus tarpaulins, so Hemmings obtained blank railways letterheads from the Mandini station master and wrote to Sappi complaining that the tarpaulin covering the car — he quoted the number — was long overdue, and demanding a total of R685 in back rental. Hemmings took his letter to the mill secretary and persuaded him to attach a hand-written note referring the matter to the chief engineer.

Next he went to the chief engineer, who wrote a second bogus letter asking where the tarpaulin was; then added a third letter from himself as section engineer, explaining about the car; then obtained a further letter from the chief engineer, addressed to the electrician and asking him to pay what was owing. Finally Hemmings presented the whole sheaf of letters to the electrician, who was devastated. He could never afford to pay so much money, he said, and would have to resign his job. Yet when Hemmings crumpled up the letters and threw them into a wastepaper basket and told him he could forget all about them, the man became still more upset.

Stories like these were told and retold in the bar at the recreation club, the favourite rendezvous for men coming off duty, and so were other tales that the mill community had generated. For instance, the parliamentary messenger who in 1965 had stabbed Hendrik Verwoerd to death on the floor of the House of Assembly in Cape Town had earlier worked at Mandini as a security guard and had been involved in a knife fight at the single quarters. Another story concerned a canoeist, Angus Pint, who had bumped into a crocodile in the Tugela River. Pint reported that he had never paddled so fast in his life.

Another topic of conservation was the 'North Coast Smell,' a distinctive odour noticed in the northern suburbs of Durban. There had been long-running correspondence about the smell in Durban newspapers, and many writers pointed fingers at Tugela, even though it was 100 kilometres to the north. That seemed unfair, as even Mandini residents hardly noticed the mill's odour. Sappi had reacted to the complaints by calling in the CSIR, the Council for Scientific and Industrial Research, and had acquired a gas chromatograph to study odour levels in the mill's gases. After studying the results, Sappi's management ordered a number of changes to lift gases higher in the atmosphere and improve combustion in the mill furnaces.

Even after the changes, Durban people continued to complain, so Sappi called in researchers from the University of Natal. In addition,



Papermakers and friends attached to Tugela's No 4 machine on receipt of a safety award: group includes Harry Gill (front row, left), Jerry Farrell (second from left), Johnny van Niekerk (fourth from left) and (back row, from right) Jack Mostert, Lynn Baker, Janet Roux, Alan Povall, Bill Hemmings, Bob Jones and Bill Bailey.

Ngodwana mill, the most important industrial site in the Transvaal Lowveld (overleaf).

the management asked the CSIR to carry out tests and find out whether the 'North Coast Smell' came from Tugela. The CSIR chartered aircraft and brought in a more sensitive chromatograph, able to identify particular smells which to the human nose seemed all the same. It was found that the odour came from at least seven separate sources and was caused by such activities as sewage disposal, sugar processing, oil refining and cutting up whales on Durban Bluff. Tugela was not blameless, but it was not the chief cause of the problem.

Word of the 'North Coast Smell' had reached the Eastern Transvaal at the time when Sappi was building Ngodwana, and to make sure it was not duplicated the company had built a 100-metre-tall smokestack which was the highest structure in the Lowveld. The stack was designed to channel the mill's gases into the upper atmos-





phere, avoiding the effects of an inversion layer which formed at certain times of the year and would have prevented the gases from dispersing. Solids in the effluent were recovered before they went up the stack, but the gases retained a slight smell of sulphur which sometimes wafted down the valley and brought sharp protests from as far away as Nelspruit.

Within Ngodwana village, the only time the smell was noticed was just before rain or when the west wind was blowing. That happened only rarely, and in any case residents soon became used to it. Already the Ngodwana community was developing a character of its own, with everyone knowing everyone, and the 120 families working hard to beautify their environment. Dances were held at the recreation club every second month, when bands were brought in from outside, and local farmers and their wives were welcome guests. The club was also used for farewell parties when men were transferred to other mills, and it became a tradition to snip off the ends of departing men's ties.

Beginning in 1968 the Transvaal provincial administration had

*Ngodwana's Old Man River, the 1890s locomotive
refurbished in honour of Waterval Boven's anniversary.*



begun tarring the road between Ngodwana and Nelspruit, and shopping trips were less of an adventure. Subsequently the road to Waterval Boven was tarred as well and trips to Johannesburg could be made much more quickly. Before, many people had made a wide detour by way of Schoemanskloof and Montrose Falls. Most Ngodwana children attended a nearby primary school attached to Elandshoek sawmill, several kilometres to the east, and were taken to and fro by bus. The nearest hospital was in Nelspruit but the mill had its own clinic, visited weekly by doctors from Waterval Boven.

During 1970 Waterval Boven — the community on top of the Escarpment, as opposed to Waterval Onder at the bottom — celebrated its 75th anniversary, and attention was focussed on the rail line between Johannesburg and the Mozambican coast which had been the reason for the town's foundation. By happy coincidence, Ngodwana possessed a steam locomotive named Old Man River, originally operated in the Eastern Transvaal in the 1890s and later sold to Geduld mine until acquired by Sappi in 1967. To honour the neighbouring community, Ngodwana engineers overhauled the locomotive and repainted it in its original livery, and it was used to haul a three-coach passenger train.

Geduld mine had closed down many years earlier, and in 1969 it had been announced that East Geduld was closing too. That posed problems for Sappi, as some 800 of Enstra's black workers were housed at an East Geduld hostel and in addition a number of Sappi apprentices were enrolled at the mine's training school. Sappi's management decided it was time the company had its own school, so established one at Enstra. Work was in progress in May 1969 when for the first time the annual general meeting was held at the mill. The meeting took place in a marquee, and subsequently the directors, mill management and about 100 shareholders lunched in a second marquee and toured the plant.

One of the highlights of the tour was an explanation of Sapoxal bleaching. The Swedish trials had been concluded only a few months earlier, yet already Kamy AB was building a commercial reactor for Enstra, the first of its kind in the world. The reactor reached Enstra later in 1969 and trial runs began in May 1970. The men in charge were Henry Myburgh and Ben Coetzee, who had joined Sappi as a very young man in 1938. There was disappointment when the first pulp came out pale yellow; but Myburgh and Coetzee took turns to work 12-hour shifts until they found the right parameters.

The reactor entered commercial production, and it was decided to reserve the system for softwood pulp, while hardwoods were bleached by the standard method. Within a short time, Enstra's effluent was reduced by 70 per cent and bleaching costs by ten per cent. That was impressive, but for many Sappi employees it could not

match an achievement celebrated nearly a year before. In June 1969 Sappi had produced its three millionth ton of paper. It was calculated that to have made so much, the company had pulped the equivalent of 15 430 000 trees.

Competition

TOMMY STRATTEN remained Sappi's chairman but in 1969 Whitmore Richards had retired as deputy chairman and had been replaced by John Henderson, who at the same time took on responsibility for all of Union Corporation's industrial activities. Moore O'Hara became managing director. Then at the end of 1970 Henderson was appointed chairman when Stratten stepped down so that he could devote more time to Union Corporation.² At this point Leonard Job let it be known that for the rest of his career — he was due to retire in 1972 — he wanted to concentrate on modernisation and development and wished to be known as technical director, as in earlier years.

Stratten, Richards, Henderson, O'Hara and Job all remained on Sappi's board and the directors' executive committee, but several non-executive directors had gone. Major Colin Frye had died in 1968; Dr H J van Eck of the Industrial Development Corporation had died in 1969; and hardly had Van Eck's successor, Dr G S J Kuschke, been appointed to the board in his place than he died too. Fritz Fuerst and P R Rörich of the Eastern Transvaal forest products companies had resigned; and among directors appointed to fill the gaps were two Sappi executives: Ron Day, a Cambridge graduate who had worked closely with Moore O'Hara for ten years and was tipped as his successor, and Bob Garden the commercial manager.

The company's results for 1970 had been disappointing and the board had reduced the dividend paid to shareholders from 12 cents per share to 11 cents. The international pulp and paper industry had entered one of its periodic slumps and producers in other countries were exporting surplus production at rock-bottom prices. In normal circumstances the South African government might have acted to protect the local paper industry from competition, but there was a severe inflation problem, and to avoid worsening it the government did nothing. The South African supply houses and packaging converters took advantage by importing a large proportion of their requirements at low prices.

Trusting that the position would soon improve, the board paid the normal interim dividend for 1971, even though revenue was static and production costs were rising. Making matters worse, there were awkward technical problems at Enstra and Tugela. Wherever possible the management trimmed overheads and expenses, but even so



Leonard Job (left) and Whitmore Richards.

results were disastrous. The profits for 1971 were only R676 000 compared with R3 876 000 in 1970 — a drop of 86,6 per cent, and not enough to cover the interim dividend. The final dividend was passed, leaving shareholders with a year's total of four cents per share compared with 11 cents the year before.

In the circumstances, the debut of a competitor might have been seen as the last straw. In the past Sappi's management had headed off potential rivals before they could gain a foothold. This time the rival was backed by the largest of the mining houses, the Anglo American Corporation of South Africa, in partnership with Bowaters of Britain. For years Anglo American had been thinking of becoming involved in the paper industry and at one point had come close to investing in the Tugela project. Then in 1966 the mining house unveiled plans to build a pulp mill in the Mondi valley near Creighton in the Natal Midlands, and with it a paper mill at Merebank on the Umlazi River, close to Durban's Louis Botha Airport.

A new company, Mondi Paper, was registered; but the government had objected to the Creighton pulp project on the grounds that it threatened the catchment areas of important water schemes. Anglo American fought the ruling but lost, so decided to proceed with the paper mill alone, intending to import bleached pulp for fine papers production and to make groundwood pulp on the spot for the production of newsprint. It was known that Sappi's newsprint capacity was already at full stretch and that the company was importing newsprint from Scandinavia to fulfil its obligations to the Newspaper Press Union.

Initially Sappi had made a small profit from the imports but then exchange rates had altered and the company was now losing. One



solution was to install extra newsprint capacity, but Union Corporation was not enthusiastic. At this point Mondi approached Sappi's management and offered to take over part of the burden. The offer was accepted, and Mondi was to serve as Sappi's subcontractor. When Tommy Stratten heard about the arrangement he was upset, pointing out that once Anglo American had a foot in the door Sappi could never sleep easy again; but by that time the arrangement was a *fait accompli*.

As a result of the deal with Mondi, Sappi's output of newsprint was reduced from 105 000 tons per year to 95 000 tons, while imports dropped away altogether. To utilise surplus capacity on the Tugela No 4 machine the company added a Clupak unit to produce more extensible sack kraft. On the face of it, Sappi had benefited from its association with Anglo American; but as if to confirm Tommy Stratten's warning, word reached Union Corporation that the rival mining house wanted to take over the Kalmansons' Crown Carlton tissue company, which competed with Kimberly-Clark of South Africa.

The Kalmansons wanted to dispose of their company because to keep pace with the expanding tissue market they needed to bring in a second tissue machine, and they were not sure it was worthwhile. John Henderson had a long-standing agreement with Geoffrey Kalmanson that if ever he and his father wanted to sell, they should give the Union Corporation camp first option. Kalmanson and Henderson worked on a deal until late in the night and it was agreed that Kimberly-Clark of South Africa and Carlton should be combined as a single operation trading as the Carlton Paper Corporation. The arrangement became effective in November 1972, and Sappi's interest amounted to 23,5 per cent of the equity capital.

The Carlton success was a gratifying windfall, but Sappi's executives could not forget the *débat* over 1971 dividends, the more so as to cover them they had been forced to dip into borrowings. Wendell C Walker, an American consultancy, was invited to investigate the company and suggest improvements. The consultants pointed out that Sappi still tended to 'sell what it could make' rather than the other way around, so recommended a sweeping reorganisation into three line divisions — marketing, production and timber, and three staff divisions — administrative services (including planning, personnel and accounting), manufacturing services (essentially the engineering side of the old technical department) and research and product assurance (the chemists).

John Henderson (left) and Tommy Stratten in Enstra's finishing house.

Sappi fine papers awaiting despatch.

The reorganisation took effect early in 1972 and gave Sappi's head office much tighter control over the rest of the company. The power of the technical department fell away, and Sappi was no longer a 'three-kaiser empire' ruled by John Henderson, Moore O'Hara and Leonard Job. In any case, Job was retiring, and his place as technical director was taken by Lon Wayburne. Moore O'Hara wanted to step down as well but agreed to stay on for another year, provided he was allowed to live in Natal where his wife was staying for health reasons. He planned to commute to Johannesburg for a few days each week. Already many of O'Hara's responsibilities had evolved on Ron Day, who was appointed assistant managing director.

Between 1969 and 1972 Sappi's board had been enlarged from 11 to 14 members, and of those five were Union Corporation nominees. The latest was Ted Pavitt, a mining engineer who had joined the corporation in 1946 and had just been appointed managing director. As the major shareholder, the mining house had been hard hit by the dividend problem of 1971, so Pavitt and the other Union Corporation men were happy to hear that Sappi's first-half profits for 1972 were 228 per cent up on the previous year's. The company was charging higher prices on its products and at the same time was containing its costs, and shareholders could look forward to a much brighter future.

In the Woods

STARTING IN 1959 Sappi had produced a series of calendars depicting wild flowers. Then in the mid-1960s the company had commissioned the artist Ernst de Jong to prepare a series of graphics depicting the history of paper, and the three calendars in which they were reproduced became collectors' items. As a tailpiece Sappi's management commissioned extra paintings from a second artist, A H Barrett. Then in 1968 Gordon Douglas was asked to take photographs. For the 1969 calendar Douglas concentrated on timber operations in the Eastern Transvaal and Natal Midlands.

The growth of Sappi's forest operations had been spectacular. Only 20 years had passed since the company began its first plantation, yet now it had 50 000 hectares under trees and new areas were planted every year. The trees' rapid growth meant that several plantations were ready for harvesting, and 20 per cent of the wood pulped at Sappi's mills came from within the company. At Ngodwana, the trees on Grootgeluk and Elandshoogte were growing well and wildlife was moving in. To discourage poaching Sappi's plantations were declared a nature conservation area.

The Sappi reorganisation of 1972 made little impact on the timber division as its infrastructure was already in place, with regional offices



Former sheep country being prepared for a new plantation.

in Sabie (for the Eastern Transvaal) and Pietermaritzburg (for the Natal Midlands and Zululand) and a head office in Benoni (having moved from Enstra in 1971). Its general manager was Tommy Stratzen's son Peter, who had first studied forestry at Oxford and had then worked in Rhodesia before joining Sappi in 1963. Peter Stratzen believed that it was no longer enough for Sappi's foresters merely to grow trees. Wood had to command the best possible price, so it made sense to reserve the best logs for outside sawmills or mining timber companies.

Roughly 3 500 men were employed by the timber division, most of them involved in harvesting or planting but a substantial number concerned with protecting the plantations against fire. Around the clock, lookouts manned a network of watch towers each 27 metres high and positioned at the best vantage points. The lookouts were in radio contact with one another and gave the alarm at the first sign of trouble. Firefighting crews and six four-wheel-drive fire engines could be called out at short notice. In addition, the division had 180 other vehicles, 60 of them fitted with radio, and many of them trucks used to transport the 750 000 tons of wood that the division harvested each year.

Sappi's plantations were transforming the landscape and were changing the company's image at the same time. Wood was a renewable resource, and Sappi crews were replanting areas in which trees had been harvested. Both at Tugela and at Ngodwana, liquid effluent was being used to irrigate kikuyu grass which in turn supported cattle, and from 1972 Enstra used both 'white' and 'black' effluent to irrigate lucerne. At Tugela, black liquor was providing extra revenue



in that a new plant converted 'soap skimmings' contained in the liquor into crude 'tall oil,' despatched to a Durban company for processing into additives for paint, adhesives, polishes and other products, including paper sizing which was sold back to Sappi.

The tall oil plant had been commissioned in 1971 and was the first in the country and the second in the southern hemisphere, preceded by a similar plant in New Zealand. Tugela's versatility was extended still further when Sappi's management decided to erect a new pulping plant, this time an NSSC (for neutral sulphite semi-chemical) technology based on an Australian patent and centred on a Kamyr continuous digester able to produce 270 tons of pulp per day — not unlike the one at Ngodwana. The point of semi-chemical as opposed to chemical pulping was that it dissolved less lignin and the resulting pulp retained more of the volume of the original wood chips so offered a higher yield.

The NSSC system had already been studied by Lon Wayburne, Manie van Niekerk, Tom Craig and others with the encouragement of APM of Australia, which was combining semi-chemical and chemical pulp to make fluting and other packaging papers. The Australians believed that NSSC pulping worked best with hardwoods and the South Africans decided to follow suit, leaving Tugela's existing kraft pulping system to concentrate on softwoods. The extra capacity would make Tugela independent of Ngodwana, meaning that the whole of Ngodwana's output could be channelled to Enstra.

As part of the NSSC project Lon Wayburne went to the United States to look at chemical recovery processes and came across a new idea, the Copeland fluid bed reactor invented by George Copeland of New York, who had set up a consultancy to market his idea. The Copeland reactor could have been said to work like a coffee percolator in reverse, in that it converted spent cooking liquor into dry pellets of sodium sulphate. Sappi invested in a standard Copeland reactor which was delivered to Tugela and assembled beside other elements of the system. The NSSC digester was commissioned in November 1972 and the complete circuit was in operation by February 1973.

Only two months after the NSSC start-up there was a crisis at Tugela when the entire black workforce went on strike for more pay. The strike lasted four days and whites and Indians did their best to keep the mill running, working long shifts and turning their hands to

Forest workers' accommodation in the Natal Midlands (overleaf).

Feeding time for mules used to haul logs to access roads.

Cross-cutting eucalyptus logs in the Eastern Transvaal.





whatever needed doing. In the village essential services were undertaken by women. At first the mill management resisted the strikers' demands, but following representations from the government of KwaZulu, as the Zulu homeland had been renamed, the company raised the level of minimum wages and the men returned to work.

As a result of the strike Tugela's management took steps to form a liaison committee on which blacks elected from all sections of the mill regularly met management to discuss problems and grievances. Similar committees were introduced at Adamas and Ngodwana. At Enstra, however, black workers preferred to set up a works committee on which management was not represented, so two-way communication was more difficult. White workers at the various mills were represented by trade unions which agreed that it should be a priority to train blacks and advance them to higher levels of skill and responsibility. Already a number of blacks were being trained as artisan aides.

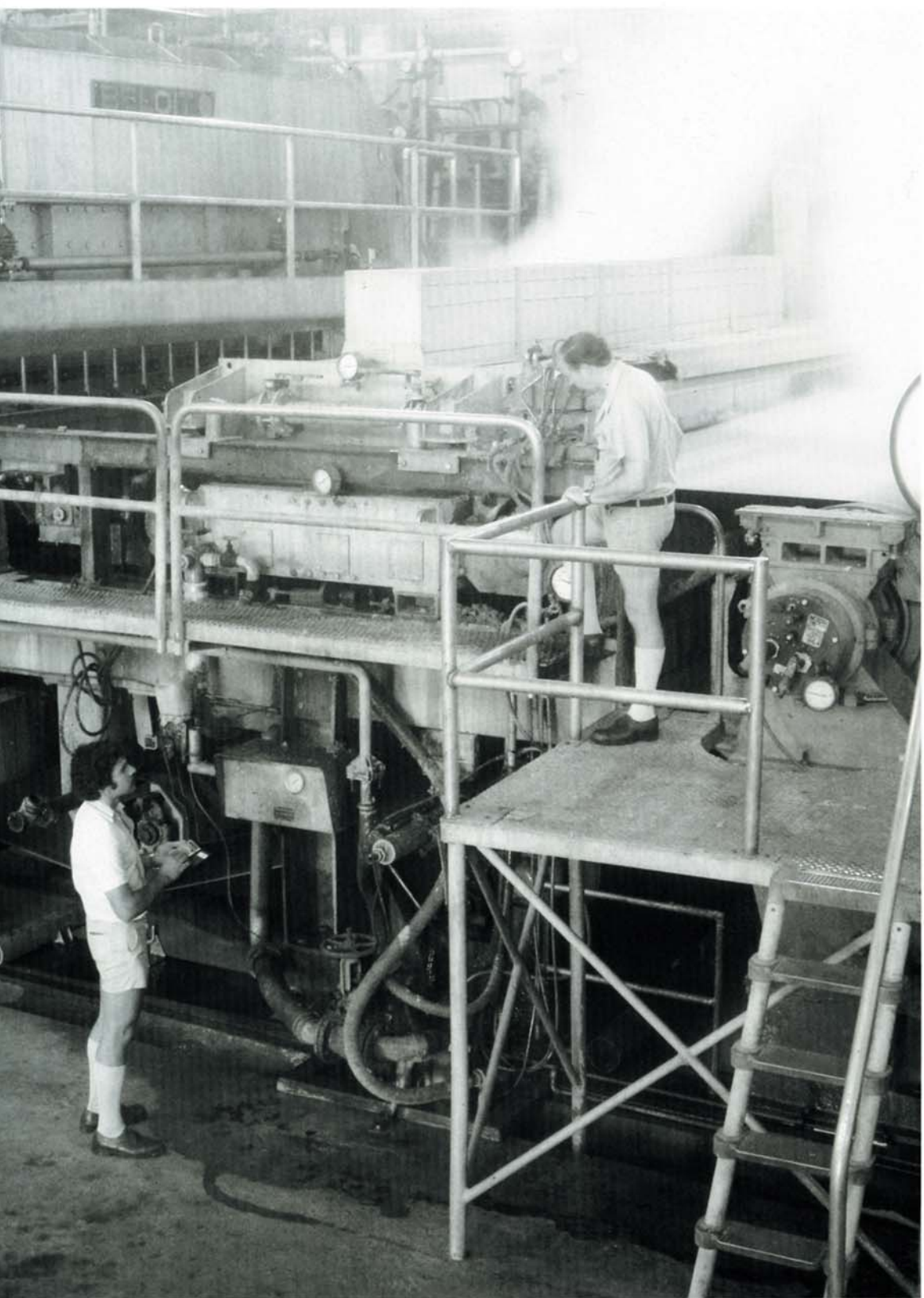
The Tugela strike had been the first challenge facing a new managing director, Ron Day, who had succeeded Moore O'Hara in March 1973. The appointment was hailed as the start of a new era for Sappi, as of the 'old brigade' only John Henderson was left, and even he was no longer part of the management team. To mark the new start the directors decided on a change of name. Ever since its foundation the company had been registered as South African Pulp and Paper Industries, Limited, but in April 1973 it was officially transformed into 'Sappi Limited,' which had a much brighter ring.

The annual report issued in April 1973 showed that the company was profiting from a worldwide shortage of commodities caused by rapid rises in the price of oil and spiralling inflation that accompanied them. Sappi was well placed to take advantage, though Mandini residents at least were soon treated to a cautionary tale. In September 1973 demolition experts arrived to blow up the old Tugela railway bridge following the erection of a new one. A large crowd gathered on the riverbank and on the 'deck' of the pump station, but the bridge refused to die. The explosion merely raised the spans a little and most fell back to their original positions. In the end the steelwork had to be cut and removed by hand.

Ron Day (centre) chairs a company-wide liaison committee drawn from Enstra, Tugela, Ngodwana and Adamas.

The Tugela railway bridge in the course of demolition.





6 1973-1978 HIGHS AND LOWS

SPIRALLING INFLATION triggered by the international oil crisis showed no sign of slowing down. Throughout 1973 and well into 1974 there were continual increases in the prices of commodities of all kinds, among them pulp and paper, under the pressure of rising costs and apparent scarcity. In South Africa, Sappi had to raise its prices almost every quarter, yet orders rained in because there were no other sources of supply. Sappi had not enjoyed such security since the war years, and it was no surprise that the company's turnover was setting new records.

In spite of this success, there was plenty of scope for improvement, especially on the fine papers side of the business. For years Sappi's production men had complained that the company made too many kinds of paper, a legacy from the days when every supply house had insisted on ordering exclusive brands even when these were practically the same as their competitors. Officially, Sappi produced 65 different kinds of fine papers in a wide range of weights and sheet sizes. In practice, many of these were seldom ordered, but to avoid upsetting the supply houses, all had been kept on the books. The commodities crisis provided an excellent excuse for rationalising the range and making better use of the various production units.

The rationalisation campaign was named Operation Streamline and was to take effect in October 1974. Less profitable grades were to be eliminated entirely, and those with close similarities were to be merged. After careful deliberation — and not without protest from some supply houses — the marketing men announced the new line-up. The number of grades made was being reduced from 65 to 29, the number of weights from 30 to 17, and the number of sheet sizes from 29 to nine. To make better use of production units, all tinted grades

*The wet end of Tugela's No. 2 machine,
with kraft linerboard in production.*

were to be made at Adamas, apart from certain boards and manillas made on Enstra's No 4 machine, and all white papers were to be made at Enstra.

With fewer grades on offer, it could be assumed that the paper-makers would have less need to chop and change, so production runs would be longer and more profitable. In a connected development, the marketing men were introducing new brand names to give each family of papers a special identity. Before, all names had been prefixed by 'Sappi' or in some cases 'Adamas,' but this confused customers and also the sorting house staff, who often attached the wrong labels. Lou le Roux suggested dropping the prefixes and providing clear brand names which would be easy to remember. Among the first chosen were Kopychief for duplicating paper and Auditor for the paper used on computer printers.

Several more Le Roux inspirations were adopted in 1974. Supply houses were doing a roaring trade with embossed, 'laid' papers of the sort used for letterheads, all imported. Le Roux arranged to have similar paper made on the No 4 machine at Adamas, produced in several tints and marketed as Lord Ariston. Another new product was multipurpose stationery cut to size on a precision rotary machine rather than a guillotine, packaged in reams marketed as Typek Bond. When Typek found a ready market as the ideal medium for plain paper photocopying, supply houses placed large orders.

As a spin-off of Operation Streamline, the marketing rationalisation was extended to the kraft and packaging grades made at Adamas and Tugela. Both mills had multipurpose MG machines expected to produce a wide range of packaging papers, and in both cases unprofitable lines were dropped and only four or five were retained. In addition, the marketing men introduced fresh brand names. Before, the chief products had been Tugela linerboard and fluting, and these were relaunched as Kraftguard and Magic Flute respectively.

Sappi's products still dominated the South African packaging market but faced competition from three small mills each founded by Giuseppe Raimondo. One was the bagasse-based fluting mill at Felixton, in business since 1953; the second was an NSSC linerboard mill at Piet Retief, like the first controlled by the Huletts sugar group; and the third was Paper and Packaging Industries of Rosslyn near Pretoria, an integrated, waste-based paper mill and boardmaking plant which Raimondo had planned as a family business. Tragically, he had been killed just before his mill was commissioned, and the enterprise had been taken over by his widow and sons.

On the fine papers side Sappi faced competition from Mondi, and in the newsprint market, Mondi had an agreement with Sappi to produce 40 per cent of South Africa's requirements. Then Mondi rebelled, refusing to produce another ton of newsprint unless the News-



Control room serving Enstra's bleaching plant.

paper Press Union agreed to renegotiate the price. The NPU refused, pointing out that the contract was with Sappi and that Sappi was obliged to supply all the newsprint needed. At the time the commodities crisis was at its height and there was no possibility of obtaining newsprint from outside the country, so Sappi's only recourse was to threaten Mondi with legal action.

Even then, Mondi refused to produce paper. Sappi was helpless, and the NPU knew it; so in the end the NPU backed down and agreed to negotiate with Mondi. As a result the old contract was cancelled and a new one offered better terms. As an extra sweetener, Mondi was contracted to produce 60 per cent of the NPU's requirements, and half of that was to be taken up at a still higher price. Some Sappi men regretted that the company was abdicating from what had once been a monopoly. Others were more philosophic. The

This certificate is awarded

to
Everhardus Johannes Smitch

in recognition of the part he played as a member of the SAPPI Research and Development team, which, in collaboration with L' Air Liquide of France and Kamyr of Sweden, invented and developed the "SAPOXAL" oxygen pulp bleaching process. In May 1970, at Sappi's Enstra Mill near Springs, this team successfully commissioned the first plant in the world to use that process.

On 27th November 1974, the Associated Scientific & Technical Societies of South Africa presented its 1974 National Gold Medal Award to the SAPPI team for its contribution to "SAPOXAL". The citation bears the names of the following persons.

<i>L. A. Job (deceased)</i>	<i>H. C. Myburgh</i>
<i>P. J. Myburgh</i>	<i>D. R. Linn</i>
<i>H. H. Boothe</i>	<i>M. M. Linnar</i>
<i>D. W. Calvert</i>	<i>E. J. Smith</i>
<i>B. Portzer</i>	<i>L. Smith</i>
<i>W. W. Houweld (deceased)</i>	<i>H. J. Terreyne</i>
<i>T. B. Kilgour</i>	<i>H. J. R. Wiese (deceased)</i>

The Chairman and Board of Directors of SAPPI Limited record the Company's great appreciation of their achievement, which has earned international honour and prestige for Sappi.

Springs

Date: 3rd October 1975

[Signature] Chairman

[Signature] Managing Director



old contract's terms had been so generous that Sappi had never made a profit. Now Sappi stood to make some money.

If the newsprint problem had been frustrating, there was consolation in Sapoxal which was going from strength to strength. Pulp and paper companies in France, Sweden, the United States and Japan had evaluated the process and had contracted to use it on a royalty basis. Sappi's Ben Coetzee was travelling the world, helping to start up new reactors, and had a hand in designing one for a mill near Lake Baikal in the Soviet Union. Sapoxal was a triumph, and to honour the achievement the Associated Scientific and Technical Societies of South Africa awarded those responsible with its gold medal for 1974. Each member of the team was given a special commemorative certificate recording 'the Company's great appreciation.'

Sappi's results for 1974 were even better than the previous year's — turnover of R114 million, and after-tax profits of nearly R14 million, an improvement of 136 per cent. The directors announced a final dividend of 20 cents, up from 14 cents in 1973, and said they

*Commemorative certificate honouring the Sappi men
concerned with developing the Sapoxal process
1967-1970.*

*Sapoxal men and supporters: (front row, from left)
E J Smith, Ron Day, John Henderson, Chris Myburgh
and Lon Wayburne; (back row, from left) Don Kilgour,
Daan Pauw, Henry Myburgh, Apie Verreyne and Andre Botha.*



would have paid still more if it was not necessary to retain earnings as a hedge against inflation. Sappi's only real problem was a shortage of bleached chemical pulp, and the board and management were looking into the possibility of expanding Ngodwana by putting in extra pulping capacity. It was realised that inflation would make such a project extremely expensive, but a feasibility study was under way.

All Aboard

THE CALENDARS WHICH Sappi published every year were becoming an institution. Starting in 1971, they featured photographs of lesser-known historic sites in South Africa's many regions. Each year Gordon Douglas and his wife spent ten days to two weeks touring a particular region in a motor home. In the first year they covered the Eastern Cape and in the second the Western Cape, in each case visiting many more sites than could be represented in the calendar and sometimes horrified by the dilapidation of what they found.

In the third year the theme was South West Africa, following an invitation from the territory's administration. This time the photographs were taken by Phillie Uys of Sappi's publicity department. Then Gordon Douglas returned, visiting Natal which was especially dear to Sappi. Douglas now had the co-operation of the National Monuments Council which helped him to pinpoint the most interesting sites, among them the battlefields of the Zulu War and the Ultimatum Tree down the Tugela River from Mandini, where Cetshwayo had met the British boundary commissioners and where the Zulu War had begun.

In some cases sites were too large to make good photographs, and in others Douglas had to persuade local authorities to clean them up. His high standards ensured a memorable series. Sappi's management took pains to make the company's annual reports equally attractive, each one generously illustrated to show shareholders what the company was doing. In 1973 the illustrations had concentrated on Tugela; in 1974 on forestry; and in 1975 the theme was 'products in use,' from Clupak sack kraft as used in cement sacks to Kartwell packaging paper as used in shopping bags, and from Prefect Wove exercise books to a Lord Ariston calendar.

Another product featured was Vulcanfibre from Adamas, a board used to make school cases. The Adamas fibreboard operation had never been regarded as more than a sideshow, and as much as 40 per cent of its output was exported. Adamas morale remained high, and many of the original Italians were still at the mill, some with sons there as well. A new manager, Andre Vlok, asked his men to suggest names for various parts of the mill so that at meetings everyone



Fire in the paper storage yard at Adamas in 1975, which continued smouldering for ten days.

would know which section was being talked about. Names accepted included Lovers Lane, Power Drive (past the transformers) and Excitement Alley (where Pietro Savini, the Italian who ran the board plant, frequently became agitated).

During September 1968 Adamas had been hit by floods caused by a cloudburst which had turned whole streets into raging torrents. The Sappi mill had escaped more lightly than other plants, but even so the floors of several buildings were under 60 centimetres of water and extensive pumping was needed before normal production could resume. Then in April 1975 fire broke out in the materials storage yard and destroyed 5 000 tons of imported pulp and 1 500 tons of waste paper. Twelve firefighters had to be treated for injuries from the initial blaze and the fire continued smouldering for ten days before it was finally extinguished. Damage was estimated at R2 million.

In 1976 there was a serious fire in Tugela's paper storage yard, when 600 tons were destroyed. The mill had its own fire station and a

team of amateur firefighters who responded to every emergency. In 1973 they had been called out to cope with an accident at Mandini station. A goods train had been standing at a signal when a passenger train came from behind and ploughed into the back. The driver of the second train was flung through a window and landed on a truck filled with pulp. He was badly injured but alive. At the back of the passenger train, one of the coaches jackknifed and was bent double, and passengers were thrown on top of one another. Seventeen people were killed, and another 40 were seriously hurt.

Tugela workers helped passengers to escape from the broken coaches, but scores more were trapped in the wreckage and a heavy duty crane was brought in to lift the jackknifed coach. Once again the Mandini community had proved itself a good neighbour, so it was unfortunate when in May 1974 a crack developed in the black liquor storage dam and quantities of effluent escaped into the Tugela River. Alex Rodger, recently transferred to Tugela from Ngodwana, immediately reported what had happened to the local police and magis-

Tugela firefighters in rescue operations following a Mandini train crash in 1973.



trate and took steps to have the damage repaired; but Natal newspapers took up to the story, and the mill's image was not enhanced.

In earlier years the mill and Mandini had been one and the same, but that was changing. In 1971 the KwaZulu government had proclaimed an industrial township at Isithebe, close to the town of Sundumbili which now had 5 000 residents. Several factories were built, and white managerial staff lived in Mandini which had been declared a Natal enclave even though it was surrounded by KwaZulu. To serve the growing community Mandini's shopping centre was being enlarged, and to provide the ultimate seal of civilisation, the little town now had several churches.

In spite of the mill and the Isithebe factories, Mandini retained its country charm and those living there loved its surroundings. The golf course was a treat and there was greenery all around, much appreciated by joggers and strollers who could be spotted all over Sappi's property. In 1975 conservation enthusiasts founded a Mandini branch of the Wildlife Society of Southern Africa and took responsibility for the game reserve at Rocky Ridge, demolishing the old farmhouse and introducing braai places and other facilities to make it an attractive camping and picnic spot.

In spite of growing larger, Mandini retained many of the traditions of its earlier years. Clubs and societies of all kinds still thrived. Scouts and Cubs, Guides and Brownies, the Mandini Round Table, clubs for tennis, bowls, cricket, chess, karate, angling, swimming, badminton, squash, wrestling, pigeon racing and more besides, the Moths, the Women's Institute, the Tugela Commando — Mandini was far livelier than most communities of its size, even those attached to mines, and had a social programme to match. One of the highlights of the year was a Moths ball at which a Paper Queen was chosen and crowned. Another was the road race.

Activities like these attracted wide interest, but none came close to matching the appeal of the annual Tugela raft race, which had become one of the great spectacles of Natal. In spite of its rather murky origins, the race had quickly gained in popularity and each year more crews took part. In 1970, there had been 50 rafts; in 1972, more than 100; and in 1975 there were more than 200, with 800 people on board. To give the event still greater appeal the committee introduced a Miss Mandini beauty competition — open to all, but usually won by Mandini girls — and encouraged competitors to decorate their rafts in terms of an annual theme. For instance, one year the theme was 'nursery rhymes,' and in the next 'film titles.'

Each year the race produced its share of thrills and spills — many rafts sank, and more than a few paddlers fell overboard — but the event was mercifully free of serious mishaps. The organising committee timed it to coincide with an incoming tide so that rafts were not



swept out to sea; but one year something went wrong, and the race took place just when a spring tide was turning. Officials patrolled the river mouth in skiboats to make sure nobody got into trouble; but several crews deliberately paddled out to sea, causing much anxiety until they were rescued. After that incident, security was much tighter.

The raft race took place during March or April, when the river was normally full. In October the water was low. One year a Tugela construction team consisting of Jannie van der Merwe and four Zulu was erecting a steel pipe on rock in the middle of the river bed. Without warning a flash flood was upon them. One of the Zulu saw it coming and reached the bank; but the other four had to cling to the pole to avoid being swept away. The water rose 1,8 metres in 12 minutes. A crowd gathered, but a rescue team was unable to reach the men because the river was flowing too fast. Eventually a helicopter was summoned from Durban, and at last the men were lifted to safety more than two hours after their ordeal had begun.

Reorganisation

TOWARDS THE END of 1974 there was a notable change in the economic climate. Around the world, orders for commodities slowed to a trickle, and producers realised that they were entering a recession. The trend continued through 1975, and in South Africa Sappi's sales of fine papers suddenly slumped as merchants and converters found themselves over-committed. Costs of raw materials, transport, labour and services of all kinds continued to rise, and to adjust to the situation, Sappi's management deliberately shut down three paper machines — Nos 3 and 4 at Enstra, and No 3 at Adamas — for extensive periods. It was the first time in the company's history that such a thing had happened.

One of the few Sappi units left unaffected by the slowdown was Ngodwana. Rather than cut production there, Sappi's management preferred to build up a pulp stockpile ready for an economic revival. Even so, plans to expand Ngodwana had been shelved on the grounds that it would be far too expensive, in spite of enthusiastic recommendations made by a three-man study team, Moore O'Hara

Young pine trees in a Sappi plantation located in the Natal Midlands (overleaf).

Paddling room only at the start of a Tugela raft race.

Real professionals can get by without a raft.





(who had been on the point of retiring), Ron Gill (a chemical engineer who had made rapid progress through the company) and Andre Vlok. The committee had disbanded, but Gill had been asked to draw up plans for expanding pulp and bleaching capacity at Enstra and Tugela, ideally with minimum outlay.

At Enstra, not only was more pulp needed, but the mill had an odour problem. Ever since Oury Hisey's time Enstra had used a modified kraft pulping process which produced a smell of sulphur; and ever since Ngodwana had started up, the Department of Health had suggested that the Enstra pulp section should be closed down as soon as possible. Sappi thought differently, and it was decided to convert the existing pulp digesters to the soda process which Sappi had used in its earliest days and had abandoned because its pulp was so poor. Since then, soda technology had improved, at least when used on hardwoods; and it was decided to team soda pulping with the Sapoxal bleaching reactor to reduce effluent to a minimum.

New equipment was ordered, and with it a Copeland recovery furnace similar to the one installed at Tugela, only much bigger. Spent liquor from both the pulping and the bleaching reactor were to be processed in the furnace to recover chemicals. In addition, Sappi ordered a second Sapoxal reactor from Kamyr AB, this one to bleach softwood pulp railed to Enstra from Ngodwana. Once the new equipment was in place, Enstra would have the capacity to produce enough bleached and semi-bleached pine pulp and enough bleached hardwood pulp to supply all the group's needs, including those of Carlton Paper and its tissue machines.

Work on the expansion began in 1975, with a large portion of the funding loaned by the Industrial Development Corporation and the Old Mutual. Ron Gill was appointed project manager. Meanwhile, the management wanted to increase pulping capacity at Tugela by replacing the existing batch digesters with a continuous digester like the one at Ngodwana, but able to produce 750 tons of pulp per day. Existing recovery systems and paper machines were to be modified so that pulp and paper output could be increased from 600 tons per day to 1 000 tons, which would make Tugela a mill of world significance. An announcement that the Tugela expansion was to go ahead was made in November 1976.

The Tugela project was expected to cost upwards of R80 million, though that was later scaled down, and Enstra's was assessed at R25 million — hefty commitments, considering that the recession was not yet over and was being worsened by political unrest. Slack kraft sales mirrored the state of the economy, as demand for packaging was down. Fine papers sales were down as well, partly because of competition from Mondi, and the newsprint market was not much better. Costs were still rising, even though salaries and wages were frozen in



Batch digesters at Tugela, to be replaced by a continuous digester.

response to a government manifesto, and in spite of price increases there was a danger that profits would be much reduced.

Sappi's troubles were not unique. Most industrial companies were suffering, among them others in the Union Corporation group and indeed the mining house itself, which was vulnerable to a takeover. Ted Pavitt, John Henderson and others at Union Corporation decided that the group should be restructured in such a way that Sappi and other industrial holdings would become Union Corporation subsidiaries — in other words, that the mining house should hold more than 50 per cent of their shares. That would entitle the corporation to consolidate their earnings with its own, making its financial position that much stronger.

In Sappi's case, Union Corporation planned to transfer portions of its minority holdings in the two tissue companies, Kimberly-Clark of South Africa and the Carlton Paper Corporation. In return, Sappi would issue 1 370 600 new shares to the mining house and would transfer its minority holdings in two other companies in the group. That left Sappi holding 50 per cent of KCSA and 39,5 per cent of Carlton; but by 'borrowing' a single share from Kimberly-Clark of Wisconsin (which could be reclaimed at any time) Sappi took control



of KCSA, which in turn controlled Carlton. In this way, Carlton became a Sappi subsidiary.

The reorganisation took effect in October 1976, only two months before Sappi's 40th birthday. To mark the event the company was introducing a long service award scheme, with a series of parties at the various mills and forestry divisions. The festivities began with a party at Adamas and continued for a week. For Enstra there was a dinner-dance for 800 at the Springs Town Hall, believed to be the largest such function ever held there. For Tugela and Ngodwana there were dances in the respective recreation clubs. On the actual birthday, December 17, there was an elaborate head office function at Johannesburg's President Hotel.

A highlight of the head office party was the unveiling of a John Meyer portrait of John Henderson, commissioned by Sappi to hang in its boardroom. Henderson was to retire at the end of January 1977 and was being replaced as chairman by Ted Pavitt, who was already chairman of Union Corporation. However, Henderson's responsibility for the mining house's industrial interests was being taken over not by Pavitt but by Basil Landau, a younger man who had joined the mining house only recently to sort out problems in one of Sappi's sister companies. Now Landau was on Sappi's board, and was taking close interest in a far-reaching reorganisation planned by Ron Day's management team.

The reorganisation was to be much more fundamental than the 'line and staff' arrangement recommended by Wendell C Walker. This time, three operating subsidiaries were being set up, each with

Tugela's senior induna, J Sibiya, receives a long service award from Ron Day as part of Tugela's celebrations in honour of Sappi's 40th birthday.

Long service parade at Enstra: (back row, from left) J Tshonisa, M Mkwanazi, M Ngomane, Andre Vlok, S Myambo, Ron Day, G Kumalo and F Mashele; (front row, from left) B Mtshali, M Mkwanazi, S Bungele and C Kundu.

At the head office banquet: (front row, from left) Colin Glazebrook, Alex Rodger, John Henderson, Ella Steyn, Bob Garden and Ron Day; (second row) Leslie McWilliam, Wally Lake, Chris Myburgh, Ben Coetzee, Eric Brink and Lon Wayburne; (third row) Piet Fourie, Dennis Masson, Don Fourie, George Dyason and Solly Strydom; (fourth row) George Monk, Henry Myburgh, Robert Cockburn and Louis van der Walt; and (back row) Phil Mijburgh, Joe van der Walt, E J Smith and Andre Jonker (overleaf).





its own executive and responsible for its own finances. The subsidiaries — one for brown paper, one for white products and one for forestry — would report to a much smaller head office team led by Ron Day, Lon Wayburne as group technical director and Colin Glazebrook as group financial manager. Considerable work would be needed before the new system could take effect, but it was hoped that all would be in place by January 1977.

So it was that three new subsidiaries were registered, and Sappi Limited became a group. One subsidiary was Sappi Fine Papers, responsible for Enstra and Ngodwana and headed by Bob Garden. A second was Sappi Forests, headed by Peter Stratten and divided into three regions covering the Eastern Transvaal, Natal Midlands and Zululand. The third was Sappi Kraft, responsible for Tugela and Adamas and headed by a newcomer, Eugene van As, a marketing specialist who had recently resigned as chief executive of a consumer-oriented company which made detergents, among other products.

The many changes were giving Sappi a facelift. There was a new chairman, a new executive and a new operating strategy. Overnight, Sappi had bloomed as much more than a single company, and to promote its new image the management asked an advertising agency to design a new logo. Ever since the war years Sappi's logo had been a shield bearing two Ps and an I, surmounted by the Union Corporation unicorn. That was now scrapped, and in its place the management introduced a stylised pine tree with three branches on each side. For Sappi Limited, the logo was red; for Sappi Fine Papers, blue; for Sappi Kraft, brown; and for Sappi Forests, green. All but the most conservative thought it a great improvement.

On the Ladder

EACH YEAR THE American magazine *Pulp and Paper International* published a list of the world's Top 100 paper companies and in 1976 had included Sappi, the first time an African entry had been considered. As a pulp producer Sappi was listed 39th in the world; as a paper and board producer 59th; and on the basis of profits 43rd. On turnover, which was treated as the most important category, Sappi was ranked no higher than 96th—chiefly because many overseas paper companies had integrated converting operations or forest products divisions with sawmills or chipboard mills, whereas Sappi was only concerned with pulp and paper.

On the 1977 list Sappi was promoted to 88th place on the turnover ladder, in part a reflection of the increasing value of the rand against the dollar. On the pulp and paper ladders Sappi slipped several positions because the production slowdown was still in effect; but once



Quintin Stubbings (with loudhailer) and friends unveil the group's new logo at Tugela.

the economy recovered and the group took advantage of greater capacity at Enstra and Tugela, the position would improve dramatically. Elsewhere in the world, pulp and paper companies were relatively static, unable or unwilling to increase in size; but in South Africa it seemed that the sky was the limit.

At Tugela, the expansion project was still in its infancy, but had a flying start when a project team of Tugela engineers was assembled under the name Zululand Construction (Pty) Ltd, a wholly-owned subsidiary which was registered in July 1977. The team was led by Tom Liversage as senior engineer and included specialists in construction, machine assembly, instrumentation and electrical work. At Enstra, progress was less inspiring. There had been unfortunate hiccups in the expansion programme, partly because the mill management had seen it as a head office initiative so had shown little inclination to co-operate.

To remedy the situation, Andre Vlok had been transferred to Enstra as mill manager, and when Ron Gill resigned to take up a position in the United States, Vlok became involved in the expansion project as well. Work continued throughout 1977; and even though there were further frustrations as key men went elsewhere, by the end of the year several sections were ready for commissioning and it was hoped that the Copeland recovery furnace would be started up early in 1978. The project was behind schedule and there was an



element of haste, but if all went to plan the engineers would soon make up lost ground.

While the engineers struggled, Enstra's papermakers were busy developing new products. For instance, the marketing team said that Sappi should resume making security paper for cheques, the sort impregnated with chemicals so that tampering could be detected easily. Years earlier, such paper had been made on No 4 machine, though not effectively; now it was made on No 2, its surface coated with wax so that it would run well on printing machines. Another kind of security paper was made for Defence Force Bonus Bonds, this time watermarked with the help of 2 000-odd electros mounted on a dandy roll.

Enstra was the responsibility of Sappi Fine Papers, which now had its own head office in Isando near Jan Smuts Airport. Sappi Kraft had taken a suite of offices in Rennie House on Braamfontein Ridge, with commanding views over Johannesburg's northern suburbs. Kraft sales remained soft, so Eugene van As first aimed to break even; and when that target was achieved, he looked for profits. One of his tasks was to sort out Adamas, which had been making substantial losses. He shut down much of the mill for a month and sent many employees on leave until a new strategy could be worked out.

Sappi's foresters still had headquarters in Benoni and a regional office in Pietermaritzburg, but the Eastern Transvaal offices had been shifted from Sabie to Nelspruit. The new Zululand division was run from Mtubatuba near Richards Bay. For some years there had been little effort to buy more land, apart from one large acquisition near Waterval Boven in 1974, and planting had slowed down as well in view of uncertainty about the future. Inflation and the recession had hit the forestry industry badly — both mining and construction had cut back their consumption, and Sappi's was down as well — and there was an over-supply of pulpwood.

Now that Sappi's pulping capacity was being stepped up, Sappi Forests made plans to revitalise its planting programme. Even during the recession the foresters had managed to plant roughly 1 300 hectares per year, and at the start of 1977 there were 59 700 hectares under trees out of the 83 300 hectares owned. Because of recruiting difficulties the forest operations employed fewer men than in the past, and was making greater use of machines. At the Ngodwana nursery, almost the only operation carried out by hand was lifting plants from the seedbeds; and in the Natal Midlands and Zululand, Sappi's foresters were trying out new methods of harvesting.

For instance, in Natal the foresters had introduced 'forwarders,' heavy duty tractors able to operate over rough terrain with a trailer

in tow, picking up logs by means of a crane. Using a forwarder made it unnecessary to skid logs to the nearest roadside, whether with a winch or with mules. The idea had been suggested by the Natal forestry manager, Denis Ogram, who had come across it in Scandinavia. Ogram also introduced 'Nordfor harvesting,' a Scandinavian approach to felling, debranching, cross-cutting and stacking timber which enabled one man with a light chainsaw to do the work of four.

Even though trees grew far more quickly in South Africa than in most parts of the world, it still took ten years for hardwoods to reach maturity and twenty-five years for softwoods. Sugar cane could be grown much more quickly, and once depithed its bagasse residue could be combined with wood pulp to make paper. In other countries bagasse was used to make tissue and lower-grade packaging or printing papers, and in one case a company was trying to make bagasse newsprint. Even so, Sappi had been caught by surprise when the British group Reed International announced plans to build a pulp and paper mill in South Africa and to use bagasse to make coated papers.

Years earlier, Reed had toyed with the idea of building a wood-based fine papers mill in South Africa. It had been one reason why Sappi had snapped up the Sittingbourne machine now known as Adamas No 4. The new venture was a partnership between Reed and the C G Smith sugar group, which was putting up half the capital and providing the raw material. Indeed, the pulp and paper mill was being constructed on a site next to the Smith group's Gledhow sugar mill outside Stanger and was the twin of one that Reed had built in Iran. Construction had started in 1974 and the first paper was produced in May 1976.

Stanger's bagasse was literally blown through pipes from the sugar operation next door. On arrival it was fed to hammer mills to remove the last of its sugar, then stored on a mountainous stockpile calculated to see the paper mill through its neighbour's off-season. As required, bagasse was fed to the pulp section where it was cooked with soda in a continuous digester, then bleached with chlorine, caustic soda and hydrochlorite. To make fine papers the bagasse pulp was mixed with wood pulp in a ratio of seven to three. The mill had a single Fourdrinier machine with a separate coating line, so paper could be coated or left uncoated as desired.

The pulp mill relied on its neighbour to provide steam, so it was unfortunate when water contaminated with molasses was accidentally fed into the main boiler. Repairs took months, and even though the mill hired railways locomotives to provide extra steam, production was hit badly. Equally it was unfortunate that the mill had come on stream at a time when coated paper was readily available from overseas and prices were low. In comparison, prices fetched by uncoated

paper made by Sappi and Mondi seemed relatively high, a result of tariff protection. Because the price differential was so small, there was a chance that regular customers would want to buy coated papers from Stanger rather than uncoated from Enstra.

The Reed group had other interests in South Africa, notably the Reed Nampak packaging group which had resulted from the merger of two major companies. Reed Nampak was the largest paper packaging enterprise in the country, much bigger than Kohler Brothers, its chief competition, which was controlled by Union Corporation. Both were major customers of Sappi. It appeared that the Reed group wanted to expand its South African empire still further, in spite of losses being made at Stanger, but then there was bad news from Canada. Three Reed mills in that country were under attack from conservationists who complained of pollution, and to sort out the trouble Reed International had to raise large sums of money by selling off subsidiaries in other parts of the world.

Early firewatch tower in the Eastern Transvaal.



The South African group was the first to be tapped for funds, in spite of its chief executive's pleas. He resigned, and it was left to his successor to look for buyers for the various elements of the group. In the case of Reed Nampak, Reed had to consider the interests of minority shareholders; in the case of Stanger, half of the equity belonged to C G Smith, which was itself anxious to sell as the mill's capital was exhausted and the project was posting huge losses. Asked what paper they made best, Stanger papermakers replied: 'Broke' — the waste that had to be returned to the beaters for repulping.

In September 1977 representatives of C G Smith and the Reed group invited Sappi to take over the loss-making mill for R2,5 million. As a sweetener, the two groups offered to take up R5 million in Sappi shares. Ron Day liked the idea, but others felt that the proposition was too risky in view of Stanger's heavy debts and uncertain prospects. Smith and Reed instead approached Mondi, with a similar result; but Ron Day believed it was important to keep in touch with the two groups, and in December 1977 was rewarded with a better offer. Not only were the Stanger partners prepared to sell the mill for a song, but Reed was also offering its 62 per cent holding in Reed Nampak.

The later round of negotiations was made more complicated by the situation at Union Corporation, which was no longer its own master. In spite of efforts to stave off an unwanted takeover, 50 per cent of its shares had been acquired by another mining house, the General Mining and Finance Corporation, which was itself controlled by a holding company, Federale Mynbou, and formed part of a group headed by the Sanlam insurance giant. Union Corporation's board could not authorise an acquisition without the approval of Wim de Villiers, chairman of General Mining, and beyond him acceptance by the board of Sanlam.

Another complicating factor was a suggestion that Union Corporation should consider merging Sappi, Kohlers, Stanger and Nampak in a new conglomerate headed by Sappi. With this in mind, negotiations were kept as discreet as possible and very few Sappi executives were fully in the picture. As a result, serious errors crept into the calculations; and by the time they had been sorted out, planning was back where it had started. Even so, by January 1978 it seemed as if a deal was in sight, so Sappi and Nampak shares were suspended on the Johannesburg Stock Exchange.

Sappi's directors met in March 1978 and agreed to the management recommendation that the Reed and Smith offers should be accepted. Ted Pavitt and Union Corporation were in favour as well, and so were General Mining, Federale Mynbou and Sanlam. Indeed, Sanlam's board agreed to put up R50 million in cash to help launch the new conglomerate — providing that if for any reason the deal fell



*Chairmen and chief executives, present and future:
(from left) Basil Landau, Ron Day, Ted Pavitt and
Eugene van As.*

*Stanger Pulp and Paper, located five kilometres from the
sea and surrounded by fields of sugarcane (overleaf).*

through, the money would be switched into Union Corporation shares. That would have given Sanlam an effective 60 per cent in the mining house. Union Corporation's directors felt that it might be a mistake, and the whole scheme was abruptly dropped.

Reed Nampak was subsequently sold to the Barlows group, though without Stanger. That deal concluded, Reed and Smith again approached Sappi, this time proposing that the paper company should take over their Stanger shareholdings for nothing and that each should contribute R16,2 million to help pay off the mill's debts. The deal was all but agreed when Sappi's executive had a further change of heart and asked for a review of the terms. Less than impressed, Reed backed out of the talks and instead took over the C G Smith interest on its own account, together with the R16,2 million sweetener.

Ron Day had been overseas at the time of the last round of negotiations, and was greatly disappointed to hear they had broken down. After a brief spell on leave he returned to work at Sappi's head office





and met Ted Pavitt to decide what should happen next. In the course of the meeting he tendered his resignation and departed soon afterwards. No successor was named, but it was decided to administer the company through a management committee nominally headed by Basil Landau, who was appointed Sappi's deputy chairman, though in fact meetings were convened by Eugene van As.





7 1978–1982 THE BOTTOM LINE

THE SAPPI INTERREGNUM continued until September 1978, by which time Eugene van As had been appointed chief executive. Indeed, he had been invited to take the job at the time Ron Day had resigned, but had been told to keep it quiet as Ted Pavitt felt that the dust should be allowed to settle. That gave Van As a chance to work out strategy for the future. A number of senior men were approaching retirement age, so it was a good time to bring in fresh blood. The first appointment was made in October 1978 when Bob Garden retired. His successor as managing director of Sappi Fine Papers was Ken Lechmere-Oertel, whom Van As had known since university days and who had a degree in chemical engineering.

To run Sappi Kraft, Eugene van As appointed Mike Struwig, who came to Sappi with a degree in chemistry. Peter Stratten remained managing director of Sappi Forests. When Lon Wayburne retired in May 1979, the technical department was taken over by Alex Rodger. As senior financial man Van As brought in John McManus, formerly the Reed group's finance director and a central figure in the talks covering Reed Nampak and the mill at Stanger. McManus had been born and educated in Britain and had emigrated to Rhodesia before moving to South Africa.

Eugene van As, John McManus, Ken Lechmere-Oertel, Mike Struwig, Peter Stratten and Alex Rodger — that was Sappi's new management team, working in liaison with Basil Landau who represented the major shareholder. Sappi's head office was still in Unicorn House, part of the Union Corporation complex in central Johannesburg, but it had been agreed that the group would have greater financial and managerial independence than in the past. Van As had been given a detailed letter of authority to that effect, and it was the reason why he had brought in John McManus. Taking things

still further, each operating subsidiary was made responsible for its own results.

At the time the team came together, Sappi's prospects looked less than bright. South Africa's economy was still in recession and orders for kraft — always an accurate barometer of how other industries were faring — were well down, amounting to less than 60 per cent of Tugela's capacity. Rather than cut back production, Sappi Kraft had begun exporting. It was encouraging to find that Tugela kraft was more than holding its own in international markets, even though the prices obtained were low and the exports contributed little to group profits.

At Tugela, both the pulp and the papermaking sections were performing efficiently and the Zululand Construction team busy implementing the expansion project was meeting all its deadlines. At Enstra, the situation was less promising. It seemed as if there had been an unending series of setbacks ever since the middle of 1978, when the old pulping process had been shut down to make way for the new. Sappi's management had hoped that once the new system was operating, the mill would produce 200 tons of pulp per day — twice as much as before. Instead, Enstra was lucky to produce 40. It was not possible to restart the old pulping system, so Sappi's options were soda pulping or nothing.

At first the setbacks had been merely irritating. Careless welding had damaged the insulation of instrument lines, which shorted out every time current was turned on. Then again, even before the plant was completely ready there had been pressure to have it operating before the end of 1977, to qualify for tax benefits. Shortly afterwards the plant had been shut down again, but in some cases instruments had become corroded so had to be replaced. Several items bought second-hand to save money needed repairs that more than doubled their cost, and there were three gas-related explosions in the chlorine dioxide plant.

In theory, all units chosen for the expansion should have worked well as they had been tried and tested in other situations. In practice, they had never been used in combination, and at times seemed allergic to one another. The most problematic unit was also one of the most important: the American-supplied fluid bed reactor used to recover chemicals from the black liquor produced in the cooking process and in oxygen bleaching. The reactor was basically a heated, vertical, cylindrical tank with air blown in from underneath through thousands of pipes in the floor. Black liquor was sprayed in from the top and its organic content was burnt off, leaving the inorganic

Work on Enstra's fluid bed reactor (behind storage chest, to right), the key to the mill's expansion.



content to form into tiny balls or pellets of sodium carbonate which made up a fluid bed kept in suspension by the jets of air.

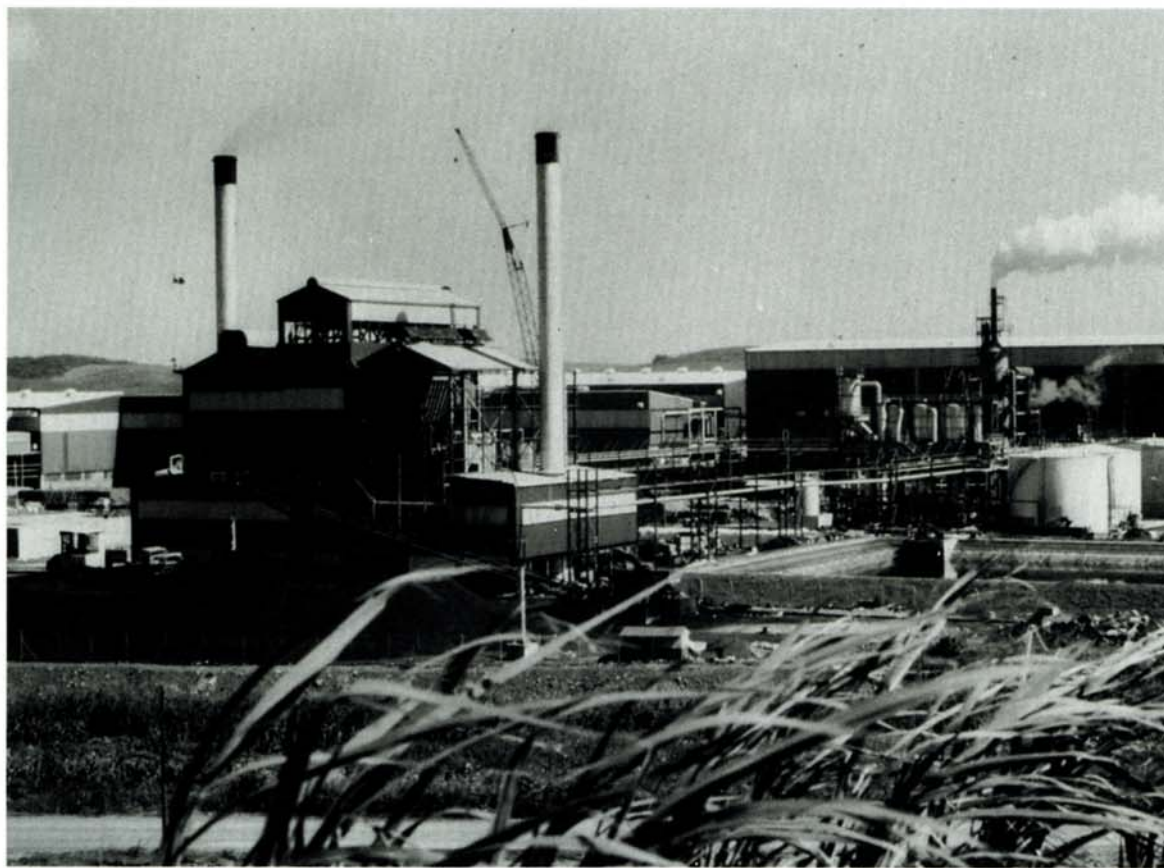
The fluid bed reactor ordered for Enstra was considerably larger than the one already operating at Tugela, and even during installation Sappi's engineers had been concerned about it. The inventor had been called in for consultations and a brick lining had been inserted in the bottom part of the reactor to reduce its diameter from ten metres to eight. The reactor was commissioned and at first worked well; but periodically things went wrong, and on such occasions the fluid bed solidified as a rock-hard, metre-deep white cake. When that happened, the reactor had to be shut down and allowed to cool to the point where men could enter it through a small manhole in the wall and break up the white cake with jackhammers.

The problem recurred with depressing frequency, and each time the reactor took six days to cool. To save time, jackhammer crews donned asbestos suits which allowed them to begin work after 48 hours. Various modifications were attempted, but nothing worked, so it was decided to send two Sappi men to North America to visit mills where similar reactors were in use. One of the two was Manie van Niekerk, Enstra's manager of pulp production. In Canada, the men visited a mill which had earlier formed part of the Howard Smith group and which had a reactor similar to Enstra's, acquired second-hand and modified with a brick lining to reduce its diameter. Unlike Enstra's, the Canadian reactor was proving very efficient.

Looking for differences between the two, Van Niekerk realised that the lining in the Canadian mill's reactor was built higher than Enstra's, which prevented the fluid bed from spilling over the lip. It occurred to him that at Enstra any spill immediately solidified, and that lumps forming on the fluid bed's periphery would tend to break free and disrupt the whole system. On returning to South Africa he suggested that the reactor should be rebuilt all over again; and when this was done, it worked much better. There were occasional 'freezes' resulting from operator error, but as expertise improved, the reactor became as efficient as Tugela's.

Problems with the reactor and other units had seriously affected Enstra's flow of pulp and had implications for the whole group, to the point where the head office team was becoming anxious. To keep Enstra's machines running, bleached pulp was being imported, and still more pulp was being brought in to supply Adamas and Carlton which relied on Enstra for major portions of their requirements. Sappi Fine Papers' earnings for 1978 were down by 78 per cent. At this point Eugene van As entered the picture. His first step was to send the whole project team on leave. Then he and Andre Vlok took a deep breath and prepared to start again.

The key men in the Enstra team were Vlok himself, Manie van

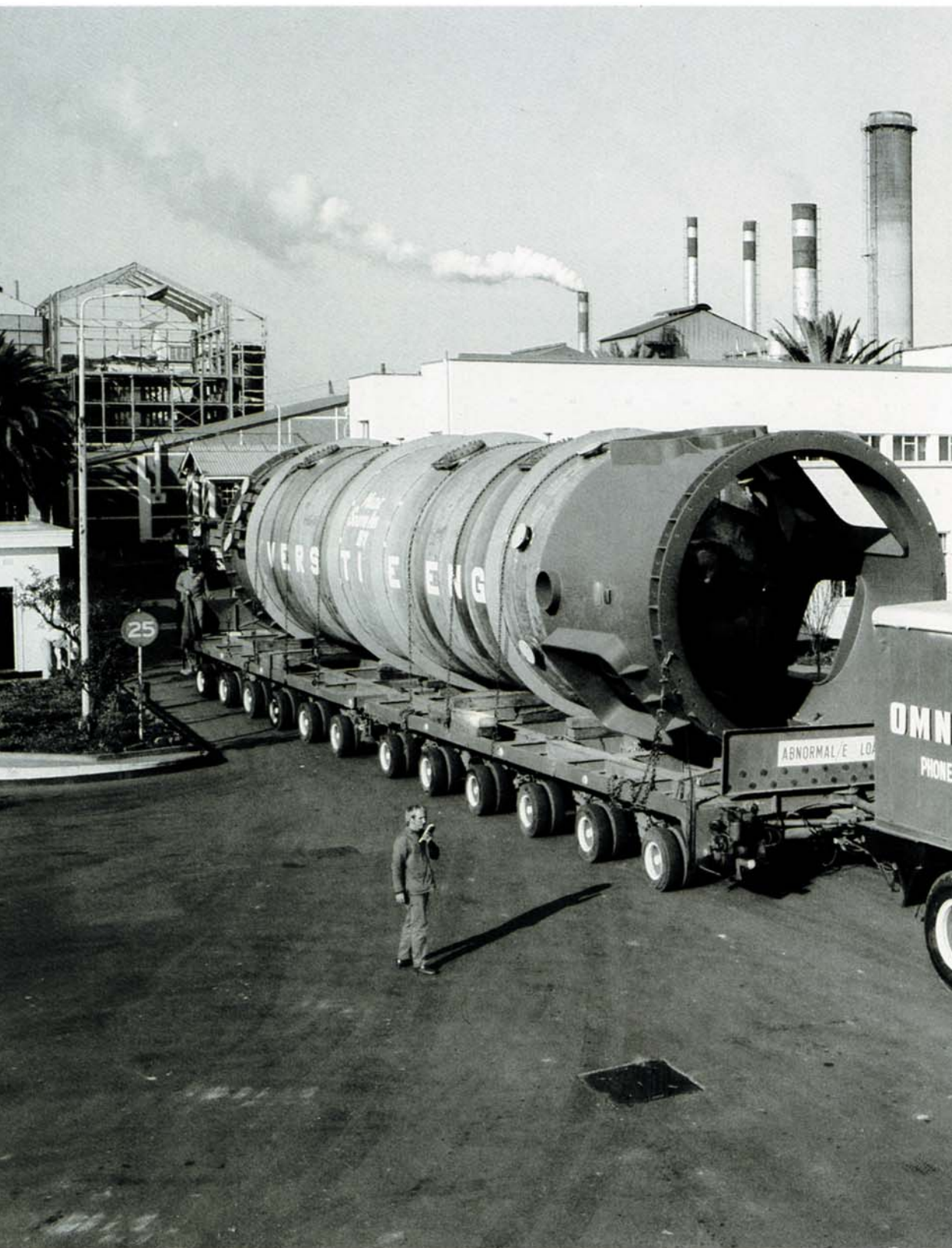


Stanger pulp and paper mill.

Enstra's second Sapoxal reactor arrives at the mill as part of the major expansion (overleaf).

Niekerk, Leon Smith of Enstra's technical division, Colin Kerr who had been seconded from Tugela as project engineer and Barry Melrose who had recently been transferred to Enstra to strengthen the engineering team. During the leave period Vlok had drawn up a list of the items of equipment which worked properly and those which did not, and he and Van As revised their strategy accordingly. To encourage them, the modified fluid bed reactor continued to work much better.

That was not the only good news for Sappi Fine Papers, for it looked as if there might be another chance to acquire the mill at Stanger, now 100 per cent owned by Reed. There were rumours that Reed planned to sell Stanger to the Hulett's group which already had mills at Felixton and Piet Retief; but before anything was arranged, Sappi jumped in ahead. The Reed group offered Sappi a three-week option, and this time Ted Pavitt and Union Corporation agreed that the deal should go through, in part because there would be valuable tax benefits.





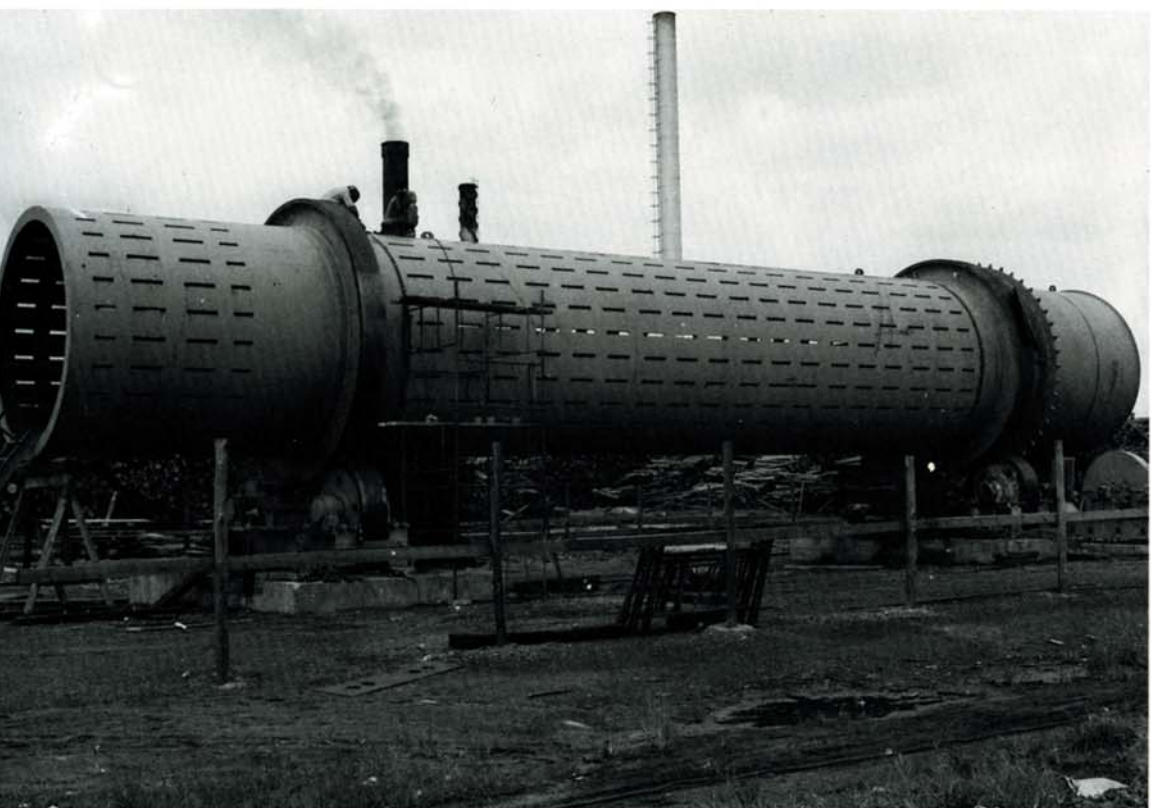
25 YRS.
PAPER

FIRST

PRODUCED 15 JUNE '54



sappi kraft
PAPER MILL



On the Sappi side the chief negotiator was Eugene van As. John McManus, who had inside knowledge and who could have been an enormous help, had undertaken not to become involved. Van As dealt directly with Reed's new chief executive, Bas Kardol, and this time everything went smoothly. A new price was negotiated and the deal was concluded with a handshake. The change of ownership took effect in June 1979 and was made as smooth as possible. Those working at Stanger included several former Sappi employees who were no doubt anxious about their future; others were Reed men recruited from Britain who had learnt to regard Sappi as the opposition.

As things turned out, very few of the Stanger employees wanted to leave; and their absorption by Sappi Fine Papers seemed painless. To introduce them to the rest of the group, an issue of *Sappi News* included a Stanger supplement with pen-portraits of the mill management. The following issue devoted its front page to the newly-introduced Printer of the Season national competition masterminded by Bruce MacIntosh, earlier Stanger's sales director and now sales manager of its coated papers and tissue operations. The competition was to be held quarterly, with printers invited to enter books printed on Stanger paper. The first round of the competition attracted 86 entries, an indication of the papers' growing popularity.

Stanger was only 40 kilometres south of Tugela, but there was little contact between the two mills. Not only was Tugela far larger than Stanger — it remained the largest pulp and paper complex in Africa — but it was administered as part of Sappi Kraft. The mill was becoming still bigger as equipment was added or modified. Both the No 2 and No 4 paper machines had undergone partial rebuilds to increase their capacity. Further innovations included a drum debarker, the first of its kind in South Africa, a rotating horizontal cylinder in which bark was scraped off as logs tumbled over one another. The bark escaped through slits in the drum and was collected as fuel for the mill's boilers.

The key to Tugela's expansion was the new continuous digester, which was commissioned during June 1979 and reached its targeted capacity in record time. The new unit replaced the batch digesters, which were closed down and mothballed. At first the continuous digester was to produce only 450 tons of pulp per day — even that was 100 tons more than had come from the batch digesters — and as papermaking capacity increased, the digester's output would be in-

*Tugela pioneers celebrate the 25th anniversary of the day
the mill first made paper.*

The Sappi group's first drum debarker being erected at Tugela.

creased towards its 750-ton maximum. In view of what had happened at Enstra, Eugene van As cautioned those concerned that if there were problems, they could not be baled out. All pulp produced at Ngodwana was earmarked for Enstra.

Tugela's mood was bright, in part because the expansion was going well and orders were flowing in. Besides, Quintin Stubbings who had been Tugela's general manager since 1975 insisted on putting people first, much as Harry Hirsch had done. All sections of the community were benefiting, and imagined barriers between white, black and Indian were breaking down. One symptom of the trend was the apprentice school, originally set up for whites but since widened in scope until it was now fully multiracial — the first such school in Natal and one of the first in the country. Almost every day there were visitors from other companies wanting to see the school and find out how it worked.

In the training school whites, blacks, Indians and coloureds worked on an equal footing. Some of the white apprentices had formed a recreation club and wanted to buy a television set, so decided to enter the Tugela raft race which offered a first prize of R400. A special streamlined raft was designed and built, a crew of six paddlers was selected, and the 'Sappi appies' went into strict training. During the six weeks before the race the apprentices covered the course on five occasions, and on race day itself their raft was joined by more than 200 others. Their training paid off as they quickly showed the rest of the fleet a clean pair of heels, eventually reaching Oliver's Rocks in the record time of one hour and 28 minutes.

Back on Track

ITALIANS WHO HAD worked at the Port Elizabeth mill since the early days were sometimes known as Wawas because they liked to recall what had happened 'when Adamas was Adamas.' Wawas were much in evidence when two huge, round stones were found on a Port Elizabeth dump and local people wondered where they had come from. There were letters to the papers, and one learned authority suggested that early settlers had used the stones to mill grain. Then a Wawa explained that the stones were from Adamas's old kollergangs, the units used to mash waste paper to pulp, which had been thrown out some years before. Indeed, a kollergang stone had been set up at the mill entrance as a Wawa memorial.

There was consternation among Wawas in December 1979 when Adamas's black workers went on strike for more pay. Such a thing had never happened before. The grievance had arisen in the varnishing shop over what had been seen as unfair job ratings and had soon



Long-serving Adamas personnel at the mill's koller gang stone: (from left) Charlie Zucollo, Aldo Giuliani, Stephen Manendzo, Anacleto Sabbadin, Giulia Butlion, Bruno Toffali and Giacomo Fabrello.

Tugela's pulp plant at dusk (overleaf).

been fanned by agitators. On a Friday morning the incoming shift had refused to work until the issue was cleared up, and persuaded workers from the night shift to join them. The mill manager, Clive Malkin, said that he could not negotiate with them unless they returned to work, and when they refused, that was that. For the rest of the morning the strikers idled at the mill entrance; and when the afternoon shift arrived, they rushed out to stop the men coming in and then dispersed to their homes.

At the time Adamas employed 700-odd workers of whom 300 were among the strikers. Those involved were warned that they would be dismissed if they failed to report for their next shift. None turned up, so the mill management began recruiting replacements. A worrying feature of the strike was that the organisers had deliberately circumvented the liaison committee, dismissing its members as 'stooges.' Still worse, employees who had shown themselves out of sympathy with the strikers had had boxes of matches rattled in their faces, as if to imply that their homes would be burnt down if they rebelled.

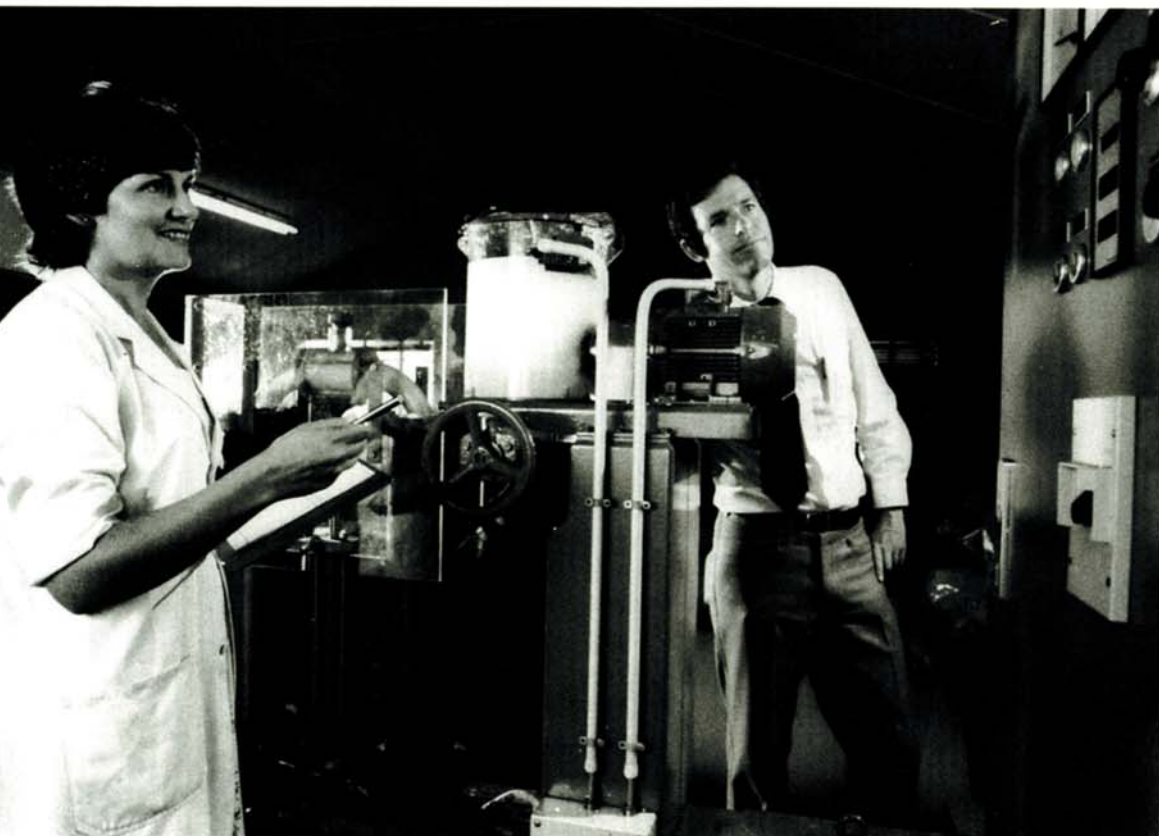




Only a few months before the strike, Adamas had installed an extra board machine, this one acquired second-hand from a Boksburg company named Trans Africa Paper Products, or TAPP. Sappi had bought TAPP lock, stock and barrel and had sold off most of its equipment, but the board machine had been quite new so had seemed just right for Adamas. The mill now produced 30 000 tons of paper and board per year — 15 000 tons of fine papers made from bleached pulp, and 15 000 tons of board made from waste paper. In comparison, Stanger produced roughly 30 000 tons of fine papers and 16 000 tons of tissue wadding; but even that seemed puny when compared with the 250 000 tons of kraft produced at Tugela and the 120 000 tons of fine paper and newsprint available from Enstra, provided that the new installations were all working.

Over the course of a few months, Enstra had been transformed. The Copeland reactor worked adequately well, in spite of occasional operator errors which caused its pellets to freeze. When that happened, Enstra men almost cheerfully took out their asbestos suits to

*Research in progress at Enstra,
a key factor in the group's development.*



begin drilling into the white cake, for everyone felt that the mill's problems were over. True, the soda pulping system fell short of producing 200 tons of bleached pulp per day — but that was because its designers had made inadequate allowance for down time.

In looking over Enstra in its darkest days, Eugene van As and Andre Vlok had noticed the debris of years. It appeared that every time a new plant had been commissioned, engineers had simply shut down the old one and left it to rust. Vlok took photographs of the mill's squalid nooks and crannies and Van As showed them to his fellow directors, suggesting that a facelift was in order. At the same time Vlok and Ken Lechmere-Oertel set out to revive a sense of pride in Enstra. Soon smiles reappeared on men's faces; and when Sappi's management team threw a party for the 130 men who had been involved in the expansion project, their wives were invited as well to thank them for making sacrifices while their husbands saved the mill.

The Enstra project had been one of the costliest in Sappi's history. Quite apart from overrunning its budget — counting lost production, the eventual bill had come close to R60 million rather than the R25 million expected — it had taken a heavy toll of group profits. Even so, the eventual result was a triumph after all: the group was once more self-sufficient in pulp and could afford to upgrade its papermaking capacity. Already Enstra's No 3 machine was being modified to increase its output. Besides, without the switch to soda Enstra's pulping section might have been forced to close down, and that would have caused still greater problems and even costlier solutions.

A large part of the responsibility for the expansion had been borne by Sappi's technical division, and by the research and development team at Enstra which formed part of it. During the early 1970s research and development had been something of a backwater, but in 1976 a new manager, Sigi Eggers, had set out to give the team fresh motivation. Eggers was an organic chemist who had come to Sappi by way of the CSIR, and he realised that the team needed streamlining and involvement in new disciplines. Three new sections were set up to look into corrosion, energy engineering and chemical engineering, and the team's services became better known not only at Enstra but throughout the group.

Research and development had not been affected by Sappi's reorganisation but the technical division as a whole had undergone a change. Only a small cadre had remained at head office, and the rest of the technical staff had been split between Sappi Fine Papers and Sappi Kraft, each of which now had its own technical department. Sappi Kraft's men had been looking into a new project planned for the Western Cape, a waste-based kraft mill originally conceived as a co-operative venture between Sappi and the major corrugators. Now the project was to be Sappi's alone, but both Nampak and Kohler



The Sappi Board is entertained at Tugela mill, 1979: (front row) from left) Paul Hoogendyk, Mike Struwig, Eugene van As, Jan Kitshoff, John Henderson, Ted Pavitt, Basil Landau and Alex Rodger; (back row, from left) Tjaard van der Walt, Alan Tubb, Ray Berrard, Bruno Bruniquel, Ken Lechmere-Oertel, John McManus, Tom Liversage, John Pile, Bernard Chamberlain, Stephanus van Niekerk and Phil Mijburgh.

Brothers were to install 96-inch (2,44m) corrugating machines which would complement the paper machine that Sappi intended to order.

The decision to build at the Cape had been long in coming. Sappi had bought a mill site in Epping as long ago as 1956, though it had subsequently been sold; and when interest had revived in the early 1970s, the company had bought an industrial site in Milnerton — only to shelve all plans soon afterwards, chiefly because of the economic downturn. From 1977 onwards a number of schemes had been con-



sidered, until in 1979 Sappi's management opted for a relatively modest waste-based paper machine, initially capable of producing 28 000 tons of kraft per year though it could later be upgraded to make 7 000 tons more.

Once Sappi's board had given its approval, a paper machine was ordered and the lion's share of the work was entrusted to Zululand Construction, which had proved so useful during the expansion project at Mandini. The first members of the team to reach Cape

Town were Tom Liversage, the construction manager, and Alan Povall, the electrical superintendent, and they visited the Milnerton site in January 1980. The area was flat but sandy, without so much as a water tap in sight, let alone sanitation or electricity. A neighbouring company allowed the Sappi men to borrow an office and a telephone for an hour a day, and its receptionist took messages.

The construction team soon erected a prefab store and set about building an access road and prefab offices and erecting a security fence. Before the fence was up, thieves burgled the offices and broke into a locked fridge but missed a safe containing R27 000. Electricity, water and a telephone service were connected, but the office staff were treated to some odd reactions. One Cape Town caller who heard he was talking to Zululand Construction said, 'Oh, God,' and hung up. Another was asked to make a delivery to the site and said, 'Zululand's a bit far for us.'

A further task for the construction crew was to lay a large area of concrete to be used as a storage yard for waste paper. Through Adamas Sappi had had many years' experience of buying waste and

The real Zululand: a trophy-winning dance team consisting of Zulu working at Tugela.



already had a collection company, Saveall Paper of Port Elizabeth, taken over in 1970. In the Cape Sappi could expect a 'waste war' as there were other consumers — notably two paper mills, one a tissue operation controlled by Premier Paper, and the other the Cape mill operated by South African Board Mills, a company now closely aligned with Mondi.

To enter the marketplace Sappi bought a small Cape-based waste collection company, Herby Taylor, which had been founded by a former Springbok cricketer in 1940. Soon afterwards the group took over a second company, Western Province Paper Salvage. By then a price war with S A Board Mills was under way as the rival company set out to woo suppliers by offering higher prices. The acquisitions were made at a time when the group was celebrating encouraging results from the previous year, notably a 59 per cent increase in profits. The board approved a dividend of 36 cents for the year, 14 cents more than in 1978.

The results were a triumph for the whole group but especially for Eugene van As, who had taken over as chief executive at a time when Sappi had seemed headed for catastrophe. Now Sappi was capable of standing on its own feet, and Ted Pavitt was sympathetic when Van As outlined plans to cut the apron strings that bound the group to Union Corporation. It was announced that Sappi's head office was moving away from Unicorn House and into Rennie House in Braamfontein, already the home of Sappi Kraft. Both Sappi Fine Papers and Sappi Forests were moving there too, and for the first time all Sappi's divisions would be together under one roof.

Forest Products

THE SAPPI CALENDAR was to have a new look. The series on lesser-known historic sites had ended and the focus shifted to pockets of indigenous woodland in Sappi's forests. Such pockets were deliberately left undisturbed, some of them protecting watercourses and some on ground which was too uneven for planting but which provided a beautiful setting. The wildlife photographer Peter Johnson was commissioned to gather material for a series of calendars, each one devoted to a theme such as Sappi's birds, flora, animals or water. Far from being an enemy of the environment, Sappi was doing a great deal to protect and improve it.

The indigenous forests on Sappi's land had been the subject of an article in *Sappi News*, contributed by Keith Cooper of the Wildlife Society of Southern Africa. Near Ngodwana, for interest, Sappi had three such pockets — Houtboshoek, Elandshoogte D and Mashonimi, and in the Natal Midlands the group had the Liff Forest near

Rietvlei and the Clairmont Forest at Bulwer. Each pocket was more than 50 hectares in size so was viable from a conservation standpoint, containing a wealth of bird life, insects and animals and also plants that ranged from lowly mosses and ferns on the forest floor to trees in the canopy which were up to 25 metres high.

For Cooper, the most interesting of Sappi's indigenous pockets was the Liff Forest, which held fine specimens of all three species of yellowwood, together with good examples of red pear, sneezewood, white stinkwood, myrtle, quince and many other species. The forest was also rich in bird and mammal fauna, and held a greater variety of endangered species than the other areas on Sappi's land. All the Sappi pockets had been exploited in the past — in the Liff Forest harvesting had continued from 1870 to 1940 — yet the indigenous vegetation had more than held its own and was recolonising even the largest open patches where trees had been felled and exotic flora had flooded in.

Of course, Sappi's indigenous forests occupied only a tiny proportion of the group's land holdings; even nationally, indigenous forest was to be found on only 0,25 per cent of the surface area. At the beginning of 1980 Sappi had owned 87 000 hectares of land, of which 59 000 hectares were under trees, 28 per cent to eucalyptus and wattle. Every year, more land was bought — wherever possible through agents, so that landowners would not inflate their prices — and fresh areas were planted. In the Eastern Transvaal all seedlings were supplied from the nursery at Grootgeluk, and in Natal, seedlings came from a new nursery established at Mtubatuba in the Zululand division.

Sappi Forests' chief purpose in establishing the Zululand division had been to make sure that Tugela would have enough pulpwood in decades still to come. Already there were signs of increasing competition for the available resources, and unless the foresters made their plans early, the Zululand mill might be left high and dry. That was why the Zululand division was to concentrate on silviculture — the planting and protection of trees — while all harvesting for Tugela was being organised through the Natal office in Pietermaritzburg. The first manager of the Zululand division was Peter Stoker, a former tobacco farmer from Rhodesia who had joined Sappi with little knowledge of trees, but was confident he could apply techniques he had used on his tobacco estates.

The Zululand division was responsible for all Sappi silviculture north of the Tugela, so when the group bought land in the Melmoth and Piet Retief areas, Zululand teams arrived to plant seedlings. Sappi Forests had acquired several tractor-drawn, semi-automatic planting machines which used a claw to deposit seedlings in a prepared furrow, then compacted soil around their roots through the

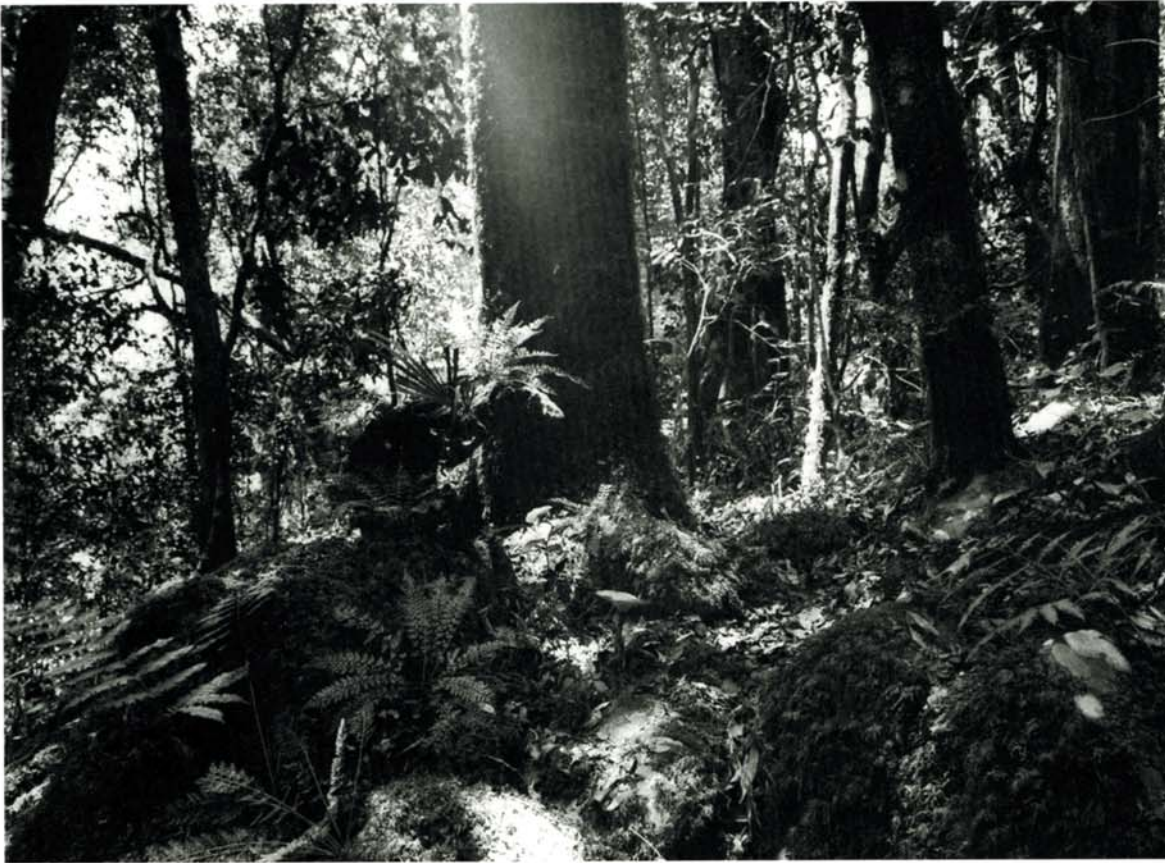
action of two rubber wheels; but such aids were still experimental, and most of the work was done by men lined up 30 or 40 abreast, carrying satchels full of seedlings wrapped in wet sacks to keep their roots moist.

Machines were proving their worth in harvesting operations as well. Some were imported at great expense — for instance, a transportable ‘high lead’ aerial cableway designed to winch logs over uneven terrain. Others were home-made, notably a timber loader devised by Peter Stoker and his colleagues at Mtubatuba. The Zululand men had attached a grab to the front of an old sugarcane loader made by the I A Bell company of Empangeni in Zululand, and had found it ideal for picking up bundles of logs and transporting them to the nearest roadside. The Bell company took the hint and began making loaders designed for the forestry industry.

In Zululand, the Bell loader/stackers were initially used in conjunc-

The Sappi nursery at Grootgeluk (overleaf).

A pocket of indigenous forest on Sappi land in Natal.









tion with teams of individual cutters trained in Nordfor harvesting. The system worked so well that it was soon introduced to the Eastern Transvaal, where the team which pioneered it was presented with one of the six national productivity awards for 1979. On Sappi's own plantations, most harvesting took the form of thinning — in the case of *Pinus patula*, a first thinning at ten years and a second at 18, with the trees reaching maturity at 25. Very few of Sappi's trees had been in the ground long enough to reach full growth, but the time was not far off when the harvesting of mature trees would begin in earnest.

For years, Peter Stratten of Sappi Forests had been urging the group's senior management to use more imagination in disposing of the group's wood. Much of it was of excellent quality and would be ideal sawlog material for the construction and furniture industries. Besides, if used in that way it would earn far more money. Instead, only a small proportion of Sappi's forest output went to sawmills or to mines for use as mining timber. The rest was pulped, even though the long-running recession had left the market flooded with low-grade pulpwood which could be obtained very cheaply.

Stratten's views were well known to the rest of Sappi's management, but before 1979 they had been given low priority. Then Sappi Forests received a number of inquiries from companies in Europe and elsewhere, asking whether the group was prepared to export sawlogs, wood chips and other forest products. At the time there was a wood surplus, and in 1980 a trial shipment of Natal pulpwood was shipped to Finland. A German customer proposed co-operating with Sappi in setting up sawmills in South Africa to cut wood for boxes and pallets. At that point Stratten and Eugene van As visited Europe to investigate the opportunities for themselves.

Peter Stratten subsequently visited forest products companies in North America, and he and Van As became convinced that it was time for Sappi to become much more than a pulp and paper producer. Elsewhere in the world, similar companies set out to utilise 'the whole log,' extracting sawn timber from its middle, pulpwood from its sides, particleboard wood chips from its branches and boiler fuel from its bark. It remained to convince the rest of Sappi's management, but just then came news that the Department of Forestry wanted to dispose of various sawmills attached to its plantations, among them Elandshoek which was only a few kilometres east of Ngodwana.

The chance to obtain Elandshoek could not have come at a better time, and Sappi's management immediately approached the Depart-

Semi-automatic planting in the Eastern Transvaal.

A Bell stacker/loader in action in Zululand.

ment of Forestry for permission to take it over. Talks began at the end of 1979, but the department was in no hurry, and it seemed that it might be months before firm proposals could be drawn up. The board now backed the plan to begin sawmilling, the more so as Sappi was over-committed to outside pulpwood contractors and was obliged to accept their wood. A small bush sawmill was set up on the Epsom plantation near Bulwer and long-term contracts were arranged covering timber supplies to a single customer.

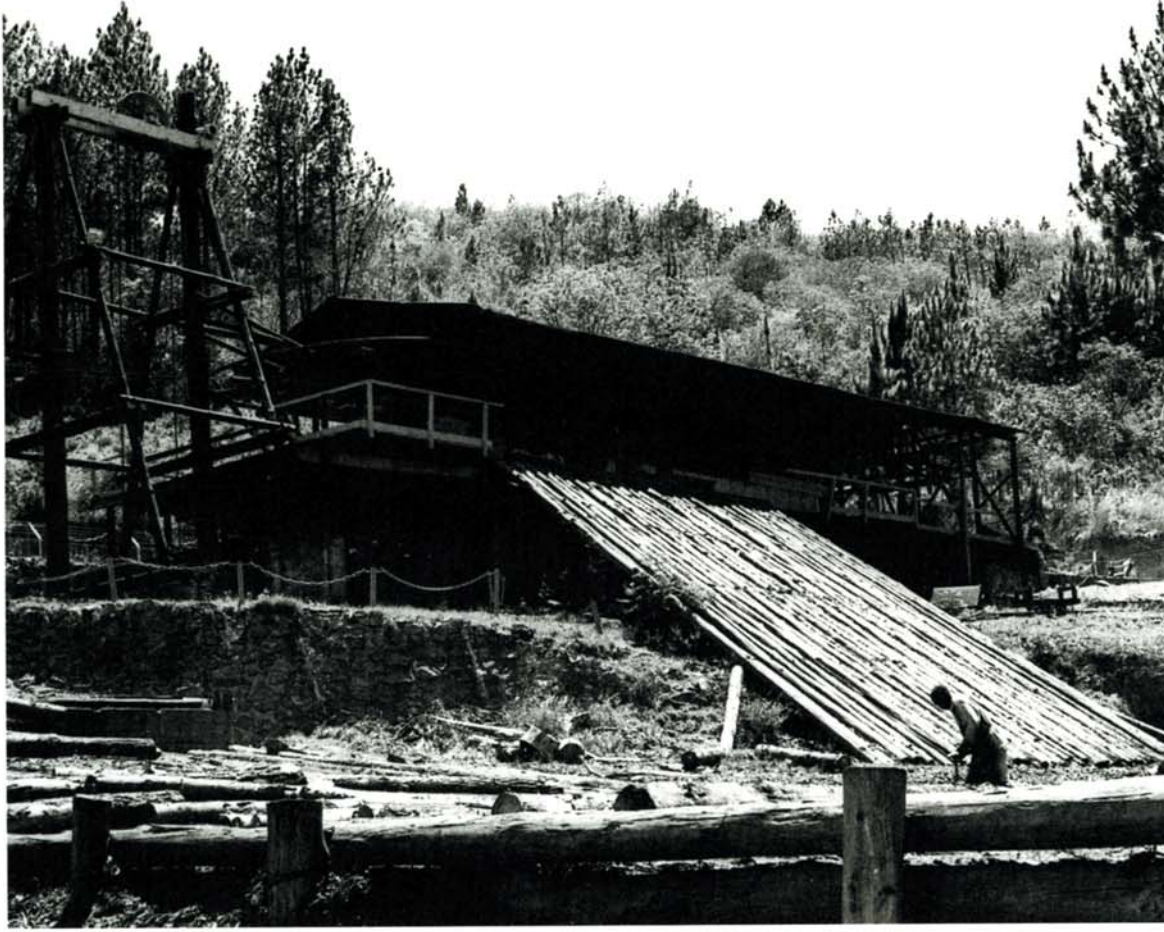
In October 1980 the Department of Forestry agreed to dispose of Elandshoek to Sappi. The group was to take over the sawmill in January 1981 and a new division, Sappi Timber Products, was formed in readiness. Elandshoek had started operations in 1936 so was as old as Sappi, and its equipment included an old log cableway in the hills behind the sawmills. Streams named Poverty Creek and Starvation Creek were reminders of the Eastern Transvaal gold rush of a century before. The sawmill had given rise to a small community served by its own station, shop, post office and primary school with Ngodwana's children among the pupils.

Cape Kraft

EVEN BEFORE General Mining had acquired half of Union Corporation, the two had been near neighbours in Johannesburg and their head offices were no more than a stone's throw apart. Still, the two had separate traditions so for some time remained independent of one another, with their own management and their own ways of doing things. Then it was pointed out that both would benefit from sharing common services, so it was decided to bring them together. In August 1980 the two mining houses merged as General Mining Union Corporation, Gencor for short, and Ted Pavitt was appointed vice-chairman.

It was clear to Pavitt that his new job would keep him busy on Gencor affairs and that there would be less time to devote to other interests, among them Sappi. In September 1980 he announced that he was stepping down as chairman and that Basil Landau was succeeding him. Landau had now served on Sappi's board for four years and had taken a keen interest in all developments. Besides heading Sappi he was chairman of several other industrial subsidiaries of Gencor; and on top of that he was a member of the President's Council.

One of Basil Landau's first tasks as chairman was to report on Sappi's results for 1980. Like many other concerns, the group had profited from a more favourable economic climate; yet even allowing for that, the figures were encouraging. Production of paper, board

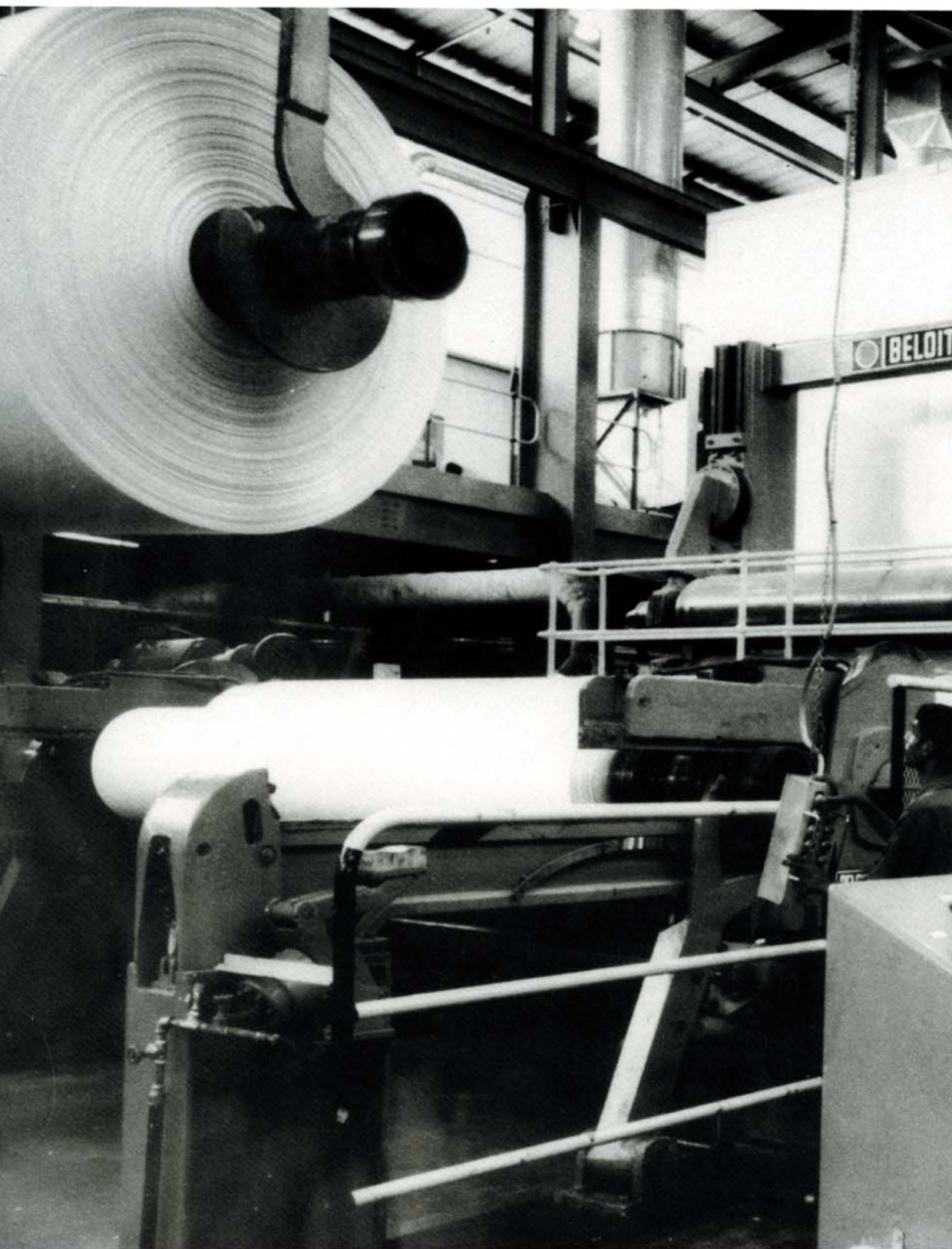


The terminus of the old log cableway at Elandshoek.

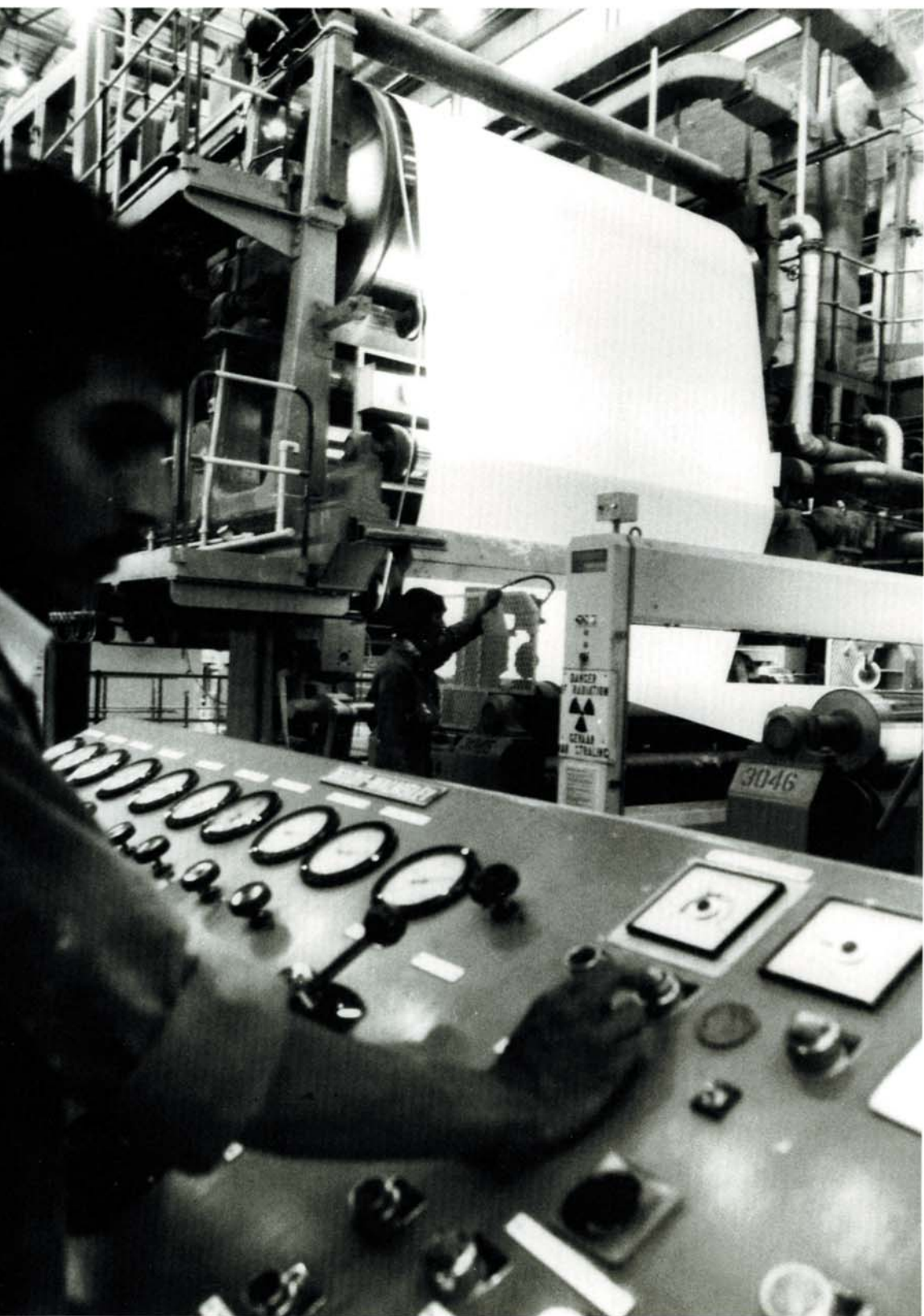
Making paper on the Beloit-Walmsley machine at Stanger (overleaf).

and tissue had risen by 70 000 tons, to a total of 550 000 — which suggested that the expansions were paying off. Turnover was up by 33 per cent, to R347 million. Taxed profits had gone up to R50,8 million, 78 per cent higher than in 1979 and nearly three times higher than in 1978; and the board was paying dividends of 57 cents per share, up from 36 cents the year before.

The only source of worry was a serious drought which was slowing the growth of trees in the Transvaal and Natal and affecting the sugar crop which provided much of Stanger's raw material. Both quality and quantity had been affected, and during the 1980 season the Gledhow sugar mill had processed only half as much cane as usual. There was also a water shortage, meaning that Stanger's management had to act rapidly to assure a supply should the Umvoti River dry up. To keep the paper machines running, bleached pulp was imported from Canada.







Even in spite of the drought, Stanger had produced an operating profit, and the group as a whole was in a mood for expansion. One new project was already under way — construction of the new ‘Cape Kraft’ mill at Milnerton. The various buildings were in place and Zululand Construction was installing equipment, notably a plant which converted waste paper into pulp noodles ready for repulping as required, and the 96-inch (2,44m) paper machine built by the Voith-Dorries company of West Germany, the first that had been made especially for Sappi since the newsprint machines of the 1960s.

The Cape Kraft paper machine was 85 metres long and though it had similarities to a Fourdrinier, it worked quite differently. Pulp was pumped to five vats positioned under a travelling felt. As the felt moved over the top of the vats it picked up a layer of pulp from each and the separate layers combined as a sheet of paper. Pulp in the vats could be varied, so it was possible to use low-grade pulp for the inside of the paper ‘sandwich’ and bleached pulp on the outsides to give it a white finish. As water drained away the thin layers bonded together.

Trial runs of the paper machine began at the beginning of August 1981, and in November the mill was formally opened by the minister of finance, Dr Owen Horwood. By then, the waste paper recovery operation needed to supply the mill with its raw material was in full swing. Nor was paper the only commodity being recovered. To reduce effluent Cape Kraft had been planned as a ‘closed mill’ in that its water was endlessly recycled, meaning that it used only one-tenth as much as Sappi’s other mills.

Cape Kraft was expected to use 30 000 tons of waste paper per year, and elsewhere in the group roughly 16 000 tons were used at Adamas and 15 000 at Tugela as a low-cost supplement to wood pulp. It could be expected that in time waste would be used in the Transvaal as well. Accordingly Sappi’s management set out to build a national waste collection network. In Durban, the group bought Natal Waste; in Johannesburg, Reef Waste; and these companies and Herby Taylor of Cape Town were renamed ‘Saveall Paper’ like the Port Elizabeth waste collection company that Sappi had acquired in 1970.

Cape Kraft was to produce linerboard and fluting for the various corrugating converters in the Cape, and for geographic reasons alone would have an advantage over competitors. Elsewhere in the country

Coating fine papers at Stanger.

Sappi’s Cape Kraft in Milnerton, opened in 1981 (overleaf).





the situation was less clear-cut, and Sappi's sales staff had to keep on their toes to retain customers' good will. For Sappi Kraft, there was competition from the Hulett mills, which had been taken over by Mondi, and from the Raimondo mill near Pretoria, now closely aligned with Nampak. Sappi Fine Papers' competition came from Mondi, at least in regard to uncoated papers, and from imports in the case of coated papers.

South African kraft and most kinds of uncoated fine papers were partly protected by import controls; but Stanger's coated papers were not, and needed special promotion. The 'Printer of the Season' competition originated at Stanger had been a great success, so in 1981 Sappi Fine Papers broadened its scope by adding extra categories, bringing in outside judges and honouring the overall winner as 'Printer of the Year.' The categories included 'books,' 'promotional materials' such as annual reports and brochures, 'magazines' and 'calendars and advertising materials.' All entries had to be printed on Sappi paper.

Stanger, Cape Kraft and the expansions at Enstra and Tugela had all increased Sappi's capacity, and there had been talk of building a new linerboard machine at Tugela; yet it was clear that demand for paper of all kinds was increasing so fast that Sappi could not keep pace. South Africa's paper consumption had risen to 40 kilograms per head — far higher than the average for Africa, yet seven to eight times less than in the United States. It could be expected that increasing education and rising living standards would gradually narrow the gap.

That being the case, something had to be done. One option was to continue tinkering with Enstra and Tugela, but that was only a short-term solution. Analysis of the group's strengths and weaknesses showed that Sappi needed a great leap forward, a bold initiative that would make it strong for decades to come. Years earlier a Sappi team had drawn up plans for an expansion at Ngodwana, and that idea was now revived and embellished. No other site offered so much — virtually unlimited timber potential, plenty of water, coalfields within easy range and an excellent transport infrastructure.

To survive, the group had to be able to turn out more of virtually everything it produced, but there were priorities. A team led by Andre Vlok assessed possible approaches. It seemed best to tackle the expansion in several distinct stages — first, to install a 140 000 tons-per-year newsprint machine at Ngodwana and to rebuild Enstra's No 6 machine to equip it for production of fine papers; second, to erect a major new pulping and bleaching plant at Ngodwana, with a capacity of 260 000 tons per year; and third, to add a 150 000 tons-per-year kraft linerboard machine at Ngodwana to lessen pressure on Tugela.



Sappi's 'Printer of the Year' competition: Dennis Nick (front row, second from left) of Creda Press, Cape Town, receiving an award from Sappi's Eugene van As (left) and Bruce MacIntosh (third from left).

Such an expansion would increase Sappi's pulp and paper capacity by 50 per cent, and would equip the group to keep pace with South African demand for years to come. Indeed, there would be a large surplus for export. Obviously the scheme would cost a fortune, much more than Sappi had spent on capital development in its entire history. One early estimate was a construction cost of R925 million, not counting finance charges, though that was later reduced to R880 million. John McManus was confident that money could be raised, partly through equity, partly from long-term debt and partly from short-term debt. In January 1981 the management team's proposals were placed before the board.

Ted Pavitt, Basil Landau and other Union Corporation men among Sappi's directors were aware of the group's needs and were keen to proceed with Phases One and Two, on condition that Federale Mynbou agreed. The Federale Mynbou directors were doubtful. What Sappi proposed would amount to the largest private sector initiative ever seen in South Africa, the equivalent of floating three major gold mines. Then overseas consultants confirmed that the project was viable, particularly if long-term export prospects were



confirmed. That done, Phases One and Two were approved, and John McManus was authorised to start raising funds.

While negotiations continued, Sappi's management confirmed several key appointments. One was that of Charles T Main, a firm of consulting engineers based in Boston, Massachusetts, which had recently completed work on a major pulp and paper plant in the United States. The second appointment was of an Australian, Peter Dixon, as project director. The third was of a British firm, Davy McKee of Stockton-on-Tees, which had been involved in South Africa before and was put in charge of project management. By August 1981, initial land clearance at Ngodwana was already under way.

The decision to go ahead with the expansion had implications for the whole group, not forgetting the foresters who would have to provide the new pulping plant with wood. Already there were plans to develop a huge new nursery at Grootgeluk to serve all Sappi's land holdings; and in addition the foresters aimed to step up their silvicultural activities and plant 12 million seedlings per year. Sappi Forests was firmly on its feet, and Peter Stratten felt he could safely leave the company to go into private consultancy. His place as managing director of Sappi Forests was taken by Andre Vlok.

The mood of expansion was reaching even the smallest of the group's divisions, Sappi Timber Products. Early in 1981 Sappi had taken over a Gencor subsidiary, Venus Timbers, which had been set up by Union Corporation in the 1950s to develop eucalyptus plantations and produce prop-poles and other roof supports used in mines. The company had plantations in the Eastern Transvaal and Zululand with a combined area of 6 000 hectares, one of them equipped with a matpack sawmill. The plantations were to be managed by Sappi Forests, but the sawmill became part of Sappi Timber Products.

Waste wood from sawmills was normally sent for pulping or was otherwise turned into chipboard (the European term) or particleboard (as Americans knew it) for the furniture and construction industries. The South African chipboard market was dominated by two companies, one of them Novobord which was based in Port Elizabeth and was owned by a French concern and three Port Elizabeth families. Sappi's management intended to produce chipboard as a means of making the group still more versatile; so when Eugene van As was told that Novobord was for sale, he moved quickly.

Novobord had an interesting history. It was descended from a company named Boxes & Shooks, founded in Port Elizabeth in 1927 to make wooden boxes by recycling packing cases used to ship car components to local motor assembly plants. By 1952 Boxes & Shooks was making wooden pallets as well but had surplus raw materials, so

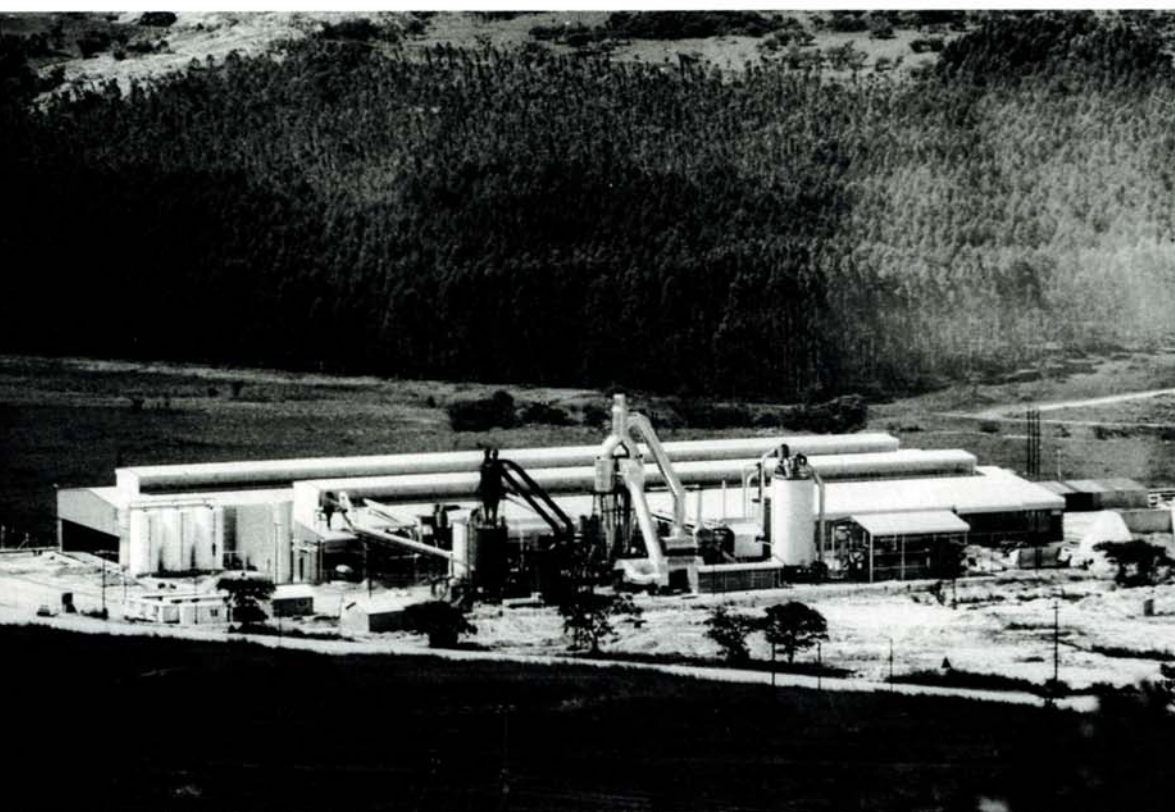
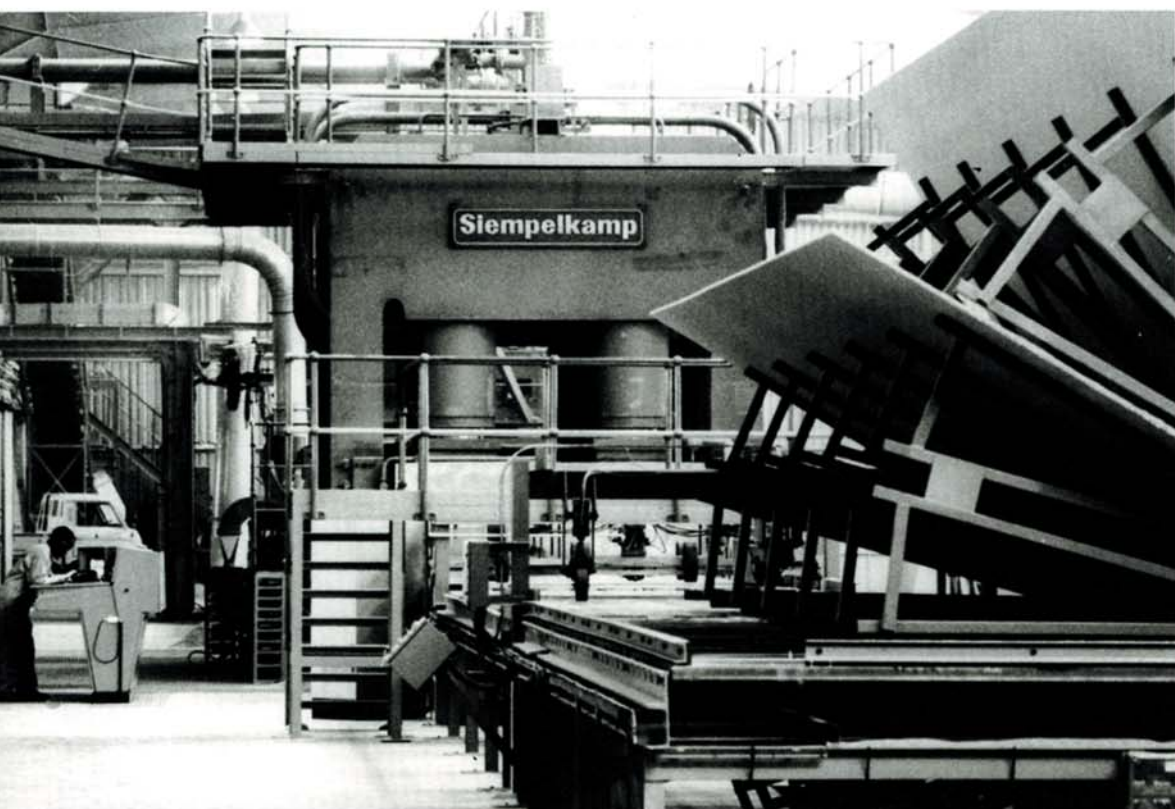
looked for ways to use them. One of the company's directors obtained rights to a Swiss process for making particleboard, not only for South Africa but for most of the British Commonwealth, and the Novobord plant was set up in Port Elizabeth.

When supplies of packing cases dried up, Boxes & Shooks moved to the Transvaal to be close to sources of timber, and Novobord itself processed raw logs. In 1977 Novobord's owners sold a half share in the business to Ets G Leroy of France, which had chipboard plants in Europe. The French connection brought many new ideas to South Africa, and an early consequence was a new plant at Wadeville near Johannesburg where particleboard was laminated with hard-wearing melamine for use in kitchen furniture. Another was a decision to build a high-technology mill at White River in the Transvaal.

The Novobord group became part of Sappi on New Year's Day 1982 and for a time continued operating as before. The White River plant went into operation during March 1983 and was to concentrate on plain particleboard without a special finish, whereas the Port Elizabeth plant added a range of wood veneers and laminates designed for use in furniture. Later in the year, Boxes & Shooks and a Novobord sawmill in the Transvaal were made part of Sappi's Timber Products division, and the three particleboard plants were reorganised as Sappi Novobord which became a division on its own.

Chipboard being made at Novobord.

The Novobord plant at White River, Eastern Transvaal.





8 1982 – 1986 METAMORPHOSIS

DURING 1967, Tommy Stratten had predicted that one day Ngodwana would develop into the largest pulp and paper complex in Africa. Now the time was at hand, but the existing mill community was not looking forward to it. Ngodwana's oldest residents had lived in the valley for 15 years and took its tranquillity for granted, so were horrified by the idea of a hectic construction programme and the invasion of strangers that it would bring. Ever since the early days Ngodwana had seemed like an extended family, but the expansion would end all that. The old Ngodwana was doomed, and few who lived there held much hope for the future.

Nobody understood these anxieties better than Ngodwana's mill manager, Colin Kerr, who did all he could to cushion the community against shocks. On the bright side, he pointed out that the expansion would bring major benefits. New career possibilities were opening up; a large storage dam was to be built on the Ngodwana River; and a shopping centre was being provided. Even though the village was to be made three times as big, he ordered that when streets and house plots were laid out, no tree was to be chopped down except with his personal authorisation.

In a further measure, Kerr announced that as far as possible, all construction workers were to be accommodated where Sappi could control them, though well away from the village. Sappi would provide them with recreational facilities, but use of the Ngodwana club would be reserved for members and their guests. In ways like these Kerr tried to reassure the community that all was not lost. Besides, he was determined to head off any possibility of conflict between the residents and the outsiders. The existing mill would be expected to continue making pulp all through the construction period, and that might be difficult if the two sides were at loggerheads.

From an early stage, Kerr had to delegate actual management of Ngodwana as much of his time was spent in Johannesburg. There, Davy McKee and Zululand Construction had set up offices in a block located close to Sappi's head office. The Zululand Construction men were for the most part specialist engineers seconded from Alex Rodger's division to liaise with counterparts in Davy McKee and Charles T Main. Their primary job was to vet plans prepared by the Americans in accordance with Sappi's requirements. Once these were approved, the necessary equipment could be ordered.

By the early months of 1982, elements of the project were already taking shape. Sappi's management wanted the new plants up and running as soon as possible, to take full advantage of tax benefits and to lessen the effects of inflation. Everything was being done on a 'fast track' basis, meaning that the lead time between engineering and construction was cut to a minimum. Site clearance had begun when no more than 2,5 per cent of the 50 000-odd plans needed for the project were complete; and as the project progressed, it sometimes happened that plans reached Johannesburg from Boston only days before construction men were scheduled to put them into effect.

Some of the most basic construction was carried out by Sappi's own men; but once Davy McKee was on site, assignments were farmed out to 20-odd major contractors and 30 sub-contractors. Davy McKee supervised each stage while the project director, Peter Dixon of Zululand Construction, kept an eye on overall progress and made sure that every deadline was met. As the project advanced, several thousand men converged on the site. Most were accommodated in a large hostel located near the original Grootgeluk nursery or in a camp consisting of rows of mobile homes.

More than 20 separate nationalities were represented among the construction men, not least groups of Americans, Canadians and British associated with Charles T Main or Davy McKee. Many had their families with them, and in the earliest days some of the more senior were billeted in cottages at Elandshoek or Waterval Boven. As new housing was completed in the village, senior construction men and their families moved in. As expected, they proved a lively influence; but far from resenting the intrusion, most residents accepted it as a breath of fresh air. Many of the newcomers were elected to the recreation club, and Ngodwana social life had never been richer.

The first important landmark in the construction programme had come in March 1982 when the construction men began erecting steelwork for the huge machine house designed to accommodate not only the newsprint machine but also the kraft linerboard machine that was coming later. The building was to cover an area equivalent to the size of two rugby fields. Already, elements of the newsprint machine were arriving at Ngodwana by rail, and with them equipment for the asso-

ciated groundwood plant and open-air sections including the wood-yard, materials handling plants and lime-burning kilns which were scheduled for completion by the year's end.

So far all appeared to be going smoothly. A container packed with Ngodwana components had reportedly been washed overboard from a cargo ship in transit from Europe, and part of a drum debarker had been damaged when a truck driver took a wrong road and overturned his trailer in trying to turn around; but such mishaps were speedily remedied. So was a more serious setback. The newsprint machine was being built by an old friend, Walmsleys of Bury — or rather, Beloit-Walmsley, as it had been renamed. When the 44 drying cylinders reached Ngodwana, it was discovered that five had become corroded during the sea passage, and to make things still worse, two of them were dented.

All five cylinders needed regrinding — but if that was to be done,

Erecting the machine house designed to hold Ngodwana's newsprint and kraft linerboard machines (overleaf).

Construction of the Ngodwana dam wall.







the remaining 39 would have to be reground to the same diameter. Unless they matched, paper would break in the machine. Only one company in South Africa had the equipment needed for such an operation, and 42 of the cylinders were shuttled to its premises in Johannesburg and back aboard a fleet of special trucks. The dented cylinders were sent back to Britain, where Beloit-Walmsley produced two new ones. By the time they were delivered, the paper machine house was complete and the newsprint machine was being assembled.

Work in the woodyard and associated areas was on schedule and the drum debarkers, handling systems and other features were in place and approaching the commissioning stage. No matter how small, every element had to be checked by Charles T Main, Davy McKee and Zululand Construction and a series of coloured tags was attached as they passed successive inspections. In the groundwood plant, three of the five grinding units had been brought up from Tugela, while the other two were from Finland. Motors, drives, pumps, valves and other items were in place, and electricians were installing electronic controls.

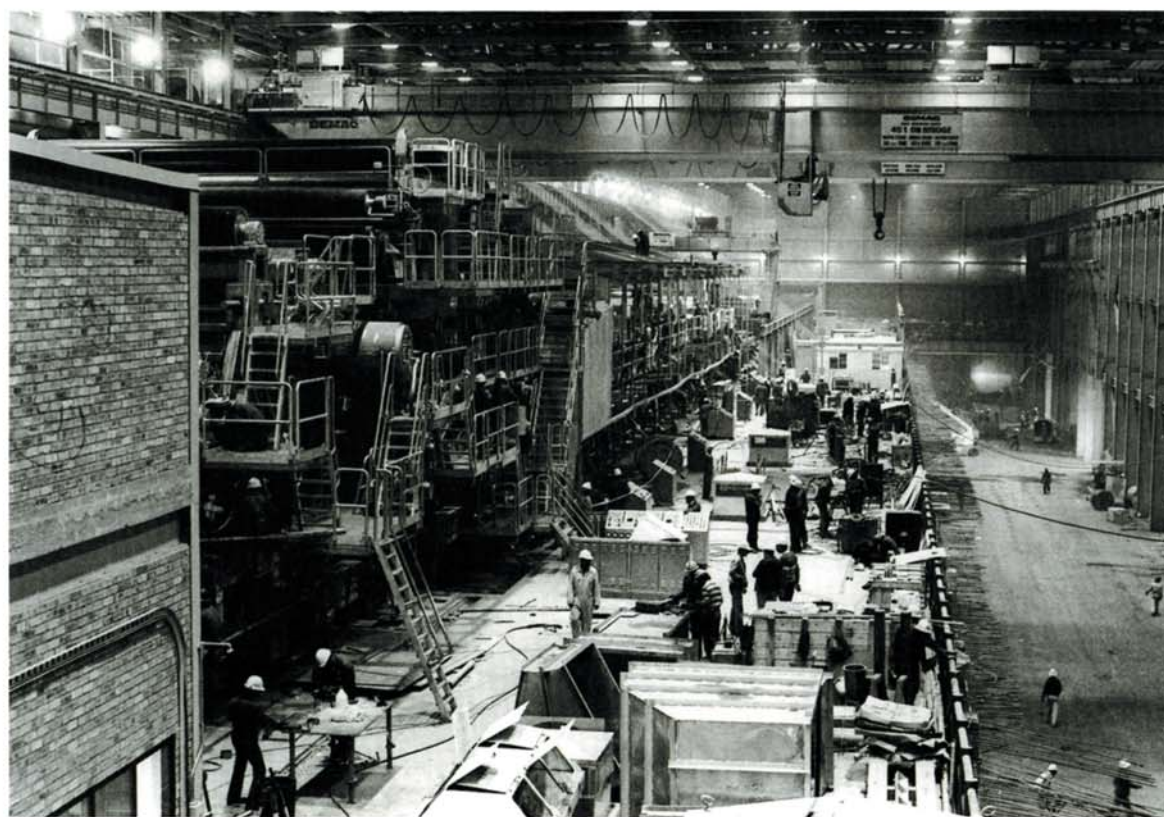
Two distinct electronic systems were involved, quite different from anything else in Sappi and signalling a major advance in the group's technology. One system was known as 'PLC,' short for 'Programmable Logic Control,' and was concerned with turning things on and off at the command of computer software. The second, at many points interfaced with PLC, was 'TDC' or 'Total Distribution Control,' a digital system run from computer consoles. Keyboards and monitors replaced whole banks of dials and buttons used in more conventional systems, and gave operators much tighter control over variables like volumes, speeds and temperatures.

In all of South Africa only Sasol — the chemicals corporation founded to produce oil from coal — had a TDC system comparable to the one chosen for Ngodwana (though that was of an earlier generation), and a number of Sasol-trained technicians and operators were recruited to help pave Ngodwana's way. The PLC system had no counterpart anywhere in the country, and American training experts were brought in to introduce it to South Africans. From an installation point of view, electricians were expected to stick to the plans provided by Charles T Main; but when they encountered snags, they quickly gathered PLC expertise of their own.

By the early months of 1983 the end of the newsprint project was

Allie Albertyn (standing) and Oppie Opperman at the TDC console in Ngodwana's groundwood plant.

Assembling the Ngodwana newsprint machine, built by Beloit-Walmsley of Britain.





in sight, even though the lengthy process of commissioning 400 distinct control loops was still under way. Then it was realised that steel erection for the mill's new coal/bark boiler house was seriously behind schedule. The boiler — a massive, 20-storey unit supplied by a company in Tennessee — was already on the site, but could not be erected until the steelwork was in place. Without the boiler there could be no steam; and without steam there could be no newsprint. If the newsprint project was to be completed ahead of its tax deadline, it was a matter of urgency to complete the steelwork without delay.

No local contractors could promise rapid results, so Peter Dixon instead turned to the United States. An eight-man team of specialist 'steel fixers' was brought in from Colorado and undertook to finish the job in a fraction of the time expected. Their methods were a revelation. To speed up productivity, they used cranes to hoist heavy steel girders four at a time, strung one below another and quickly fixed into place. Intent on their work, the Americans fearlessly clambered about the rising steel framework as if oblivious to gravity; and when everything was in place after only 76 days instead of the nine months originally budgeted, they gathered on the top and unfurled a home-made Stars and Stripes.

The crash erection programme had proved a leading spectator attraction at Ngodwana, and it was noticeable that other construction men learnt much from the Americans' approach. Families living in the township were even more delighted by progress on the dam, where the 40-metre high wall was nearly complete and water was already flowing in. An attraction of a quite different kind was the arrival of the largest items of equipment ordered for the expansion, sections of a Kamyrr-designed continuous digester which had been built in Britain. The cylindrical sections were shipped to Durban, then loaded onto 28-axle, 64-wheel trailers for the journey to the mill.

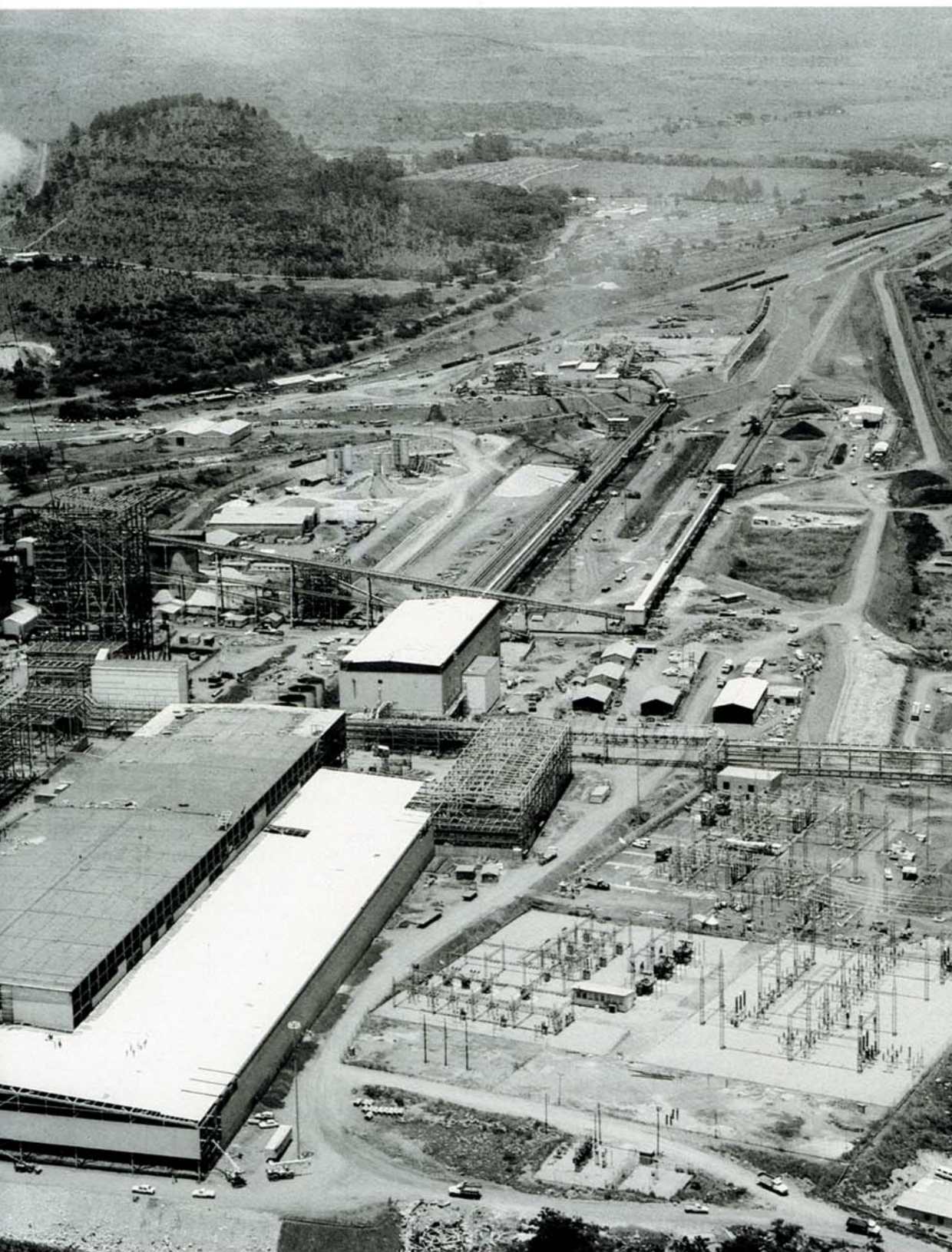
The route of the journey had been explored with great care, and a series of special lay-bys had been arranged for rest stops. The most daunting obstacle between Durban and Ngodwana was a 400-metre tunnel between Waterval Boven and Waterval Onder. The tunnel had a clearance of 7,9 metres, and for the larger of the two sections that allowed a margin of only 20 centimetres. A large contingent of Ngodwana residents was on hand as the heavy loads inched through

The Ngodwana site with construction well under way (overleaf).

American 'steel fixers' celebrate completion of their work on Ngodwana's boiler house.

Sections of Ngodwana's continuous digester, en route to the construction site.





the tunnel at a snail's pace, checked at every metre to make sure they would not become stuck. All went to plan, and the loads reached their destination without further difficulty.

Phase Two

ONE OF South Africa's treasured national productivity awards for 1983 was made to the Zululand division of Sappi Forests. Only four years earlier the Transvaal division had received a similar honour, and Sappi was the first company to win a second time. The award was made in respect of the productivity achieved over a three-year period, recognising effective use of labour, equipment, resources and energy. At a banquet in Johannesburg Dugald Black, the Zululand harvesting superintendent, received a commemorative plaque from the prime minister, P W Botha.

Everyone in Sappi agreed that the productivity award was well deserved. The Zululand division had been a dynamic force within Sappi Forests ever since its creation in 1977, largely through the efforts of Peter Stoker and other Rhodesians who had joined Sappi with greater experience of tobacco than of trees and had introduced novel approaches to everything they had to do. In particular they had realised the advantages of mechanising and had worked closely with the I A Bell company of Empangeni in developing relatively light-weight, highly manoeuvrable machines for felling, stacking and loading.

With the machines' help, Sappi Forests' labour productivity had improved by 160 per cent since 1978. Besides making loaders, the Empangeni company now offered tree harvesters which felled and stacked timber in one operation and tractor-trailer units for hauling timber to depots, replacements for the imported 'forwarders' that had been found cumbersome and expensive to operate. The new machines appealed to the Natal and Transvaal divisions as well, and were soon in general use wherever Sappi's harvesting teams were in action.

Sappi Forests was also looking at new concepts in silviculture, and again the Zululand Rhodesians had been prominent. Indeed, Peter Stoker was appointed managing director of Sappi Forests. In Stoker's view, it was best to plant trees as farmers planted tobacco, mechanically if at all possible and in that case watering and fertilising the seedlings as parts of the same process. The watering process sealed seedlings' roots and meant that planting could continue for ten months of the year. Besides, there was a 98 per cent survival rate, and there was less need to 'blank' growing plantations by replacing plants which had died.

Another change affected the standard planting grid, which was enlarged from 2,4 metres by 2,4 to three metres by three. Where the old measures had been used, stands had to be thinned twice on their way to full growth. Under the new arrangement foresters would have much more flexibility in deciding when stands should be harvested. Each year, more land was bought and by 1983 the group owned 130 000 hectares of which 80 000 were under trees. Where possible the holdings were consolidated by acquiring farms adjacent to the major plantations and disposing of smaller, more isolated areas.

Each year, Sappi Forests aimed to plant 7 000 hectares with 12 million new saplings, most of them drawn from the nurseries at Ngodwana and Mtubatuba. Eight million saplings were planted in new forestry areas and the balance was used to reforest sections

Dugald Black (right) of Sappi Forests' Zululand division receives a national productivity award from the prime minister, P W Botha (centre), while Jan Visser of the National Productivity Institute looks on.





where harvesting had taken place. Besides raising seedlings under nursery conditions, Sappi's foresters were experimenting with cuttings from selected trees and also with 'tissue culture,' manipulating tissues from cuttings to enhance straightness, resistance to disease and other qualities.

As Sappi's plantations grew, so did the risk of fire. In 1981 there had been a major outbreak in Natal, and Sappi's management had agreed to experiment with aerial water bombing which had already proved its worth in the northern hemisphere. In Canada, floatplanes scooped water direct from lakes. In South Africa, the aircraft used was a Turbo-Thrush able to carry 2 000 litres per trip. Water was piped to a forest airstrip, then loaded into the aircraft by way of overhead tanks. The aircraft needed only 6,5 minutes to take off, dump its water and return for another load.

The experiments were a success, and in 1983 water bombing was introduced to the Transvaal. As in Natal, a number of airstrips were built at strategic points in the plantations, and both water bombers and spotter planes were chartered from the beginning of April to the end of October, the period regarded as the fire season. The network of fire towers was still in place, manned 24 hours a day in the fire season; and to provide access to ground crews, a grid of firebreaks was cleared of all vegetation.

A decade earlier, less than one-tenth of Sappi's timber had been supplied from its own plantations. Now the proportion was close to 30 per cent, with most of the balance drawn from government forests. Of the wood supplied from Sappi's estates, roughly 90 per cent was used to make paper and another eight per cent was sold as mining timber. Only a tiny portion went for sawmilling — but then, the Elandshoek operation was supplied from the government forest that surrounded it. Waste wood from Elandshoek was sent to Novobord.

In November 1983 Sappi's management acquired another particle-board plant, Timberboard of Wadeville near Johannesburg, which became part of Novobord. The concept of extracting maximum value from the group's timber resources was catching on, and in March 1984 Novobord and the Timber Products division were united in a new subsidiary, Sappi Timber Industries, with Ian Forbes as managing director. As yet the new subsidiary was tiny when compared with Sappi Fine Papers, Kraft and Forests; but it was sure to grow, and

A demonstration of water bombing carried out on a Sappi plantation near Pietermaritzburg.

A self-steering trailer in service with Sappi Forests, useful when negotiating tight bends.

was organised in four divisions — Novobord, sawmills, mining timber and ‘timber packaging,’ formerly Boxes & Shooks.

The new division was formed at a depressing time. South Africa was in the grip of one of the worst droughts in memory. Food had to be imported, there was spiralling inflation, the rand’s exchange value was slipping and the gold price was down. Sales of Sappi’s products had been sluggish for a year, and a few months earlier machines at Enstra, Cape Kraft, Adamas and Stanger had been put on short time or shut down altogether. That was an unpromising scenario, considering that Ngodwana was about to go on stream; but just in time, orders were picking up and Sappi’s turnover was the highest ever.

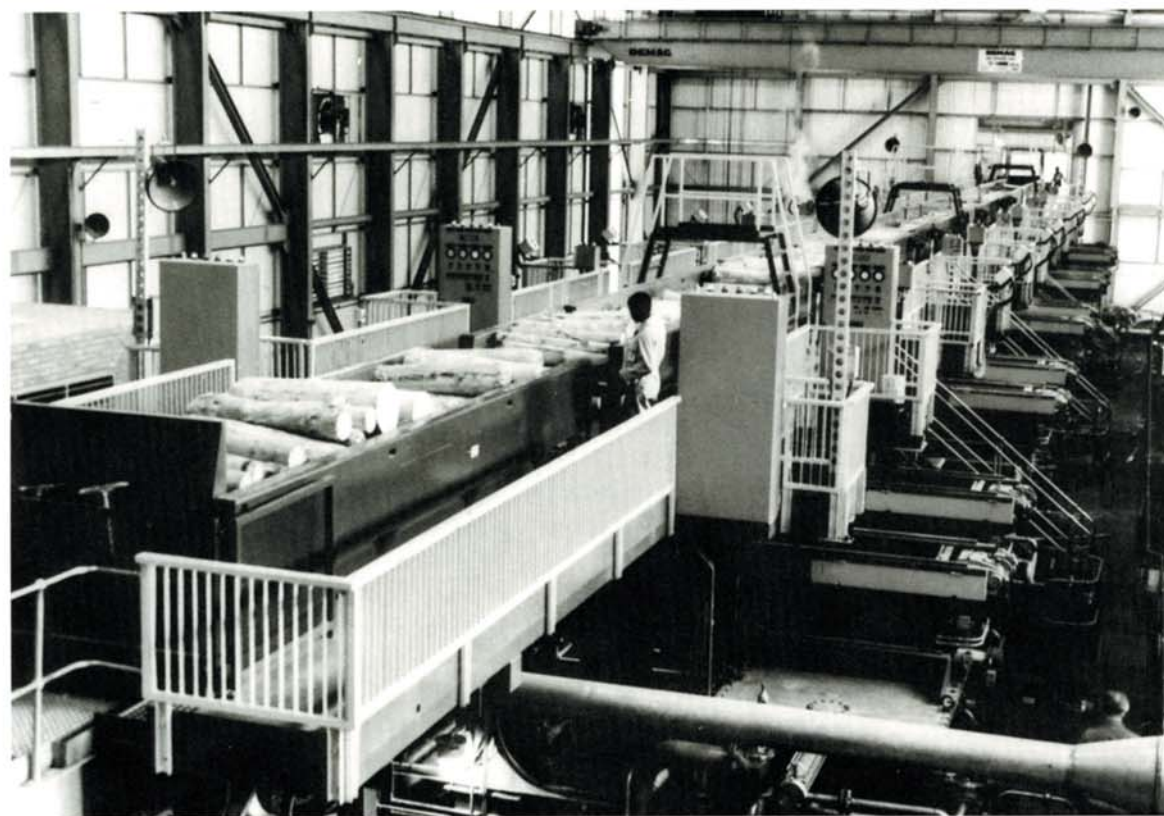
Only recently, Ngodwana’s construction teams had celebrated the completion of the newsprint project, in spite of last-minute problems with under-powered motors. The machine was the largest of its kind in the southern hemisphere and made paper in a novel way, in that pulp was sprayed upwards and sandwiched between two screens which compacted the fibres and discouraged linting. The first reel of Ngodwana newsprint was produced on September 1983 under the supervision of Colin Kerr and Attie Fourie, the manager of paper production; and while Ngodwana men broke out champagne, congratulations rained in from all around the group.

Well before the start-up, operating crews had been trained in TDC with the help of specially-written training manuals and an on-site simulator. Old job titles like ‘machineman’ and ‘dryerman’ were to be retained, but duties and procedures were light years away from those used at the older mills. Operators soon became accustomed to working with keyboards and monitors, but found it difficult to adjust to the sheer speed of the new machine. As normally happened there were teething problems, but operators slowly sorted them all out. When things went wrong — as they often did — they blamed the PLC system and accused the electricians of tinkering with it.

There was a further setback for the newsprint project when two units in the groundwood plant burnt out and a third was found to be faulty. That left only two in working order and newsprint production had to be cut because of a shortage of pulp. In time, pulp production was restored; but because of the problems, the rebuilding of Enstra’s No 6 machine was delayed until February 1984. The rebuild took two months and by the end of it the machine was equipped for long runs of fine papers. At the same time Enstra’s No 4 machine was shut down for a well-deserved rest, and Nos 1 and 2 were reprogrammed to concentrate on speciality grades.

Mechanised timber handling in Ngodwana’s woodyard.

The groundwood plant at Ngodwana.



The Enstra rebuild marked the conclusion of Phase One of Sappi's major expansion, and Phase Two was progressing well. Even before the newsprint commissioning, Sappi's directors had decided to proceed with Phase Three, and equipment was already on order. Peaking interest rates, inflation, the declining rand and sharp rises in general sales tax were making the project more expensive than anticipated; but all were confident that John McManus's financial arrangements were sound. So-called 'suspensive sale' arrangements by which equipment for Ngodwana became the property of banks, retail chains and other organisations which leased it to Sappi, had been specifically approved by the Commissioner of Revenue.

Suspensive sales enabled Sappi to take advantage of the outside organisations' under-utilised tax allowances and was perfectly legal. Several other large projects were being funded through similar schemes. Then the government realised it was losing too much money. It was announced that emergency legislation was being pushed through to bar the use of third-party tax bases. A number of Sappi's leasing schemes were already in force and would not be affected, but others lay in the future. If they had to be abandoned, then Sappi would have to raise money by other means, paying interest at commercial rates, then the highest in South Africa's history.

When the measures were announced, John McManus was on holiday in Plettenberg Bay. Eugene van As telephoned him and said he was sending an aircraft and wanted McManus to go straight to Pretoria. Once there, he was politely received by officials of the Department of Inland Revenue, who listened attentively as he put Sappi's case. The department had originally accepted that Sappi's arrangements were in order, said McManus. The group had gone ahead with the Ngodwana scheme on that understanding, and it was too late to stop. The officials promised to pass on the comments, but in the event the legislation went through.

Just when the crisis broke, Ngodwana construction crews were approaching the culmination of Phase Two of the project, the commissioning of the Kamy continuous digester at the heart of the pulp section. Several elements of the section — the washing and screening plants, the Sapoxal bleaching reactor and the bleached pulp uptake plant — had already started up, treating pulp supplied from the old plant. The section was nothing if not cosmopolitan. For instance, the pulp uptake machine had a wet end from Italy, a dry end from the United States and a cross-cutter from Finland. The chlorine dioxide line attached to the bleaching plant was from West Germany.

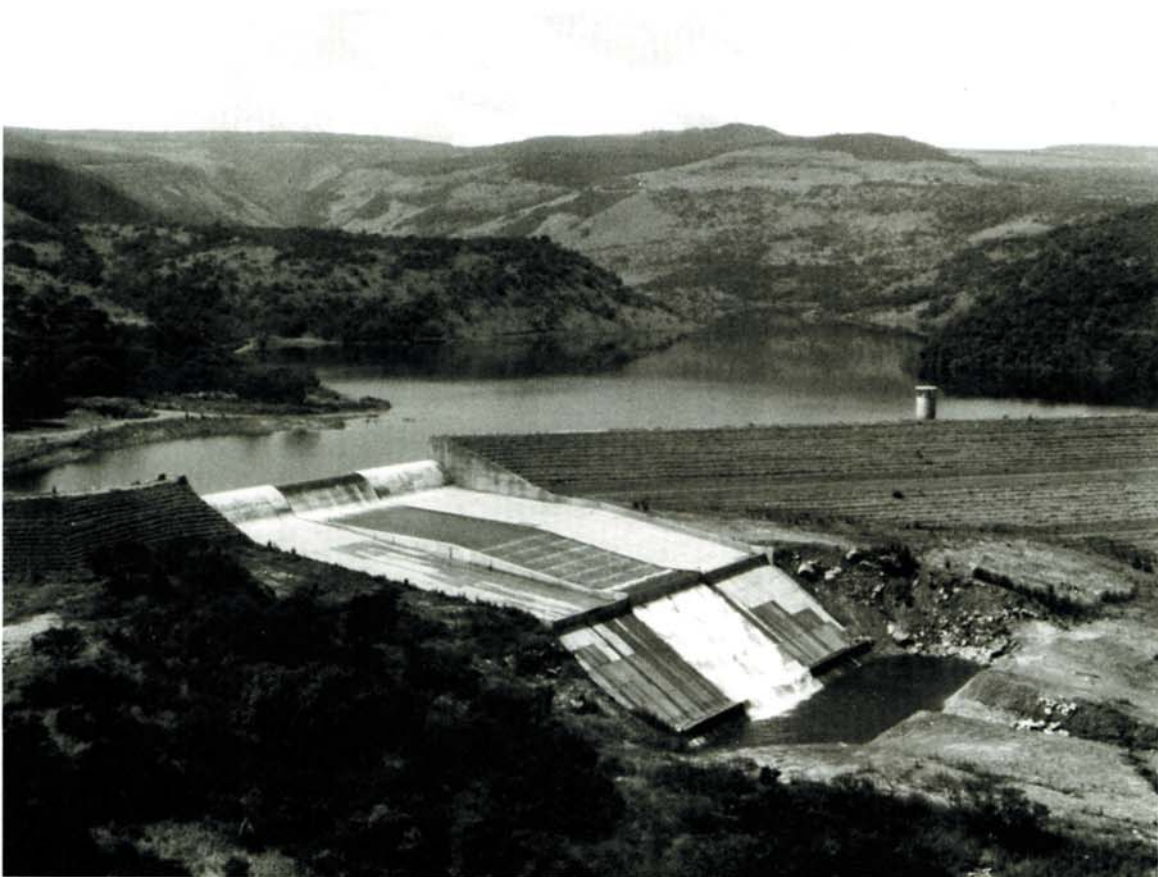
The new pulp section had been built alongside the existing mill but was divided from it by a high wire fence. Earlier in the project, Sappi's men had complained about slovenly housekeeping on the part of uncaring contractors, and Colin Kerr had decided to keep the op-

erations quite separate. In the village, the construction men more than compensated for any irritations on the site. Besides enlivening the tennis and bowls they played rugby and soccer and introduced baseball. In two successive years Americans invited all comers to celebrate the Fourth of July; and construction men keen on theatricals laid on two full-scale pantomimes and an old time music hall.

At the height of the expansion programme, construction workers had swelled Ngodwana's population by about 7 000; but now that most of the structural work was in place, there was a steady exodus. Meanwhile, the village's permanent population was increasing as Sappi employees and their families arrived to help operate the new plants. The new shopping centre was open; the Elandshoek primary

A section of Ngodwana village with the recreation club on the hill behind (overleaf).

The Ngodwana dam, a valuable recreational asset for the mill's community.







school had moved to new quarters near the recreation club; and the club itself had been enlarged and upgraded. To beautify the new streets, hundreds of new trees were being planted. Even the most sceptical inhabitants had to admit that things could have been a lot worse.

Woody and Friends

DURING 1984 Sappi's management had introduced two group-wide campaigns aimed at boosting morale and encouraging quality of effort. One was a poster campaign featuring a cheerful cartoon character named 'Woody' who was wearing a Sappi hard hat and giving a thumb's up sign. Woody had a message: 'Let's do it right; let's do it now; in fact, let's do it right now.' Woody and his message were included on posters urging everyone to 'be part of a team — pull together' or to 'do today's work today — you'll feel better.' Above all, Woody asked everyone to 'Smile.'

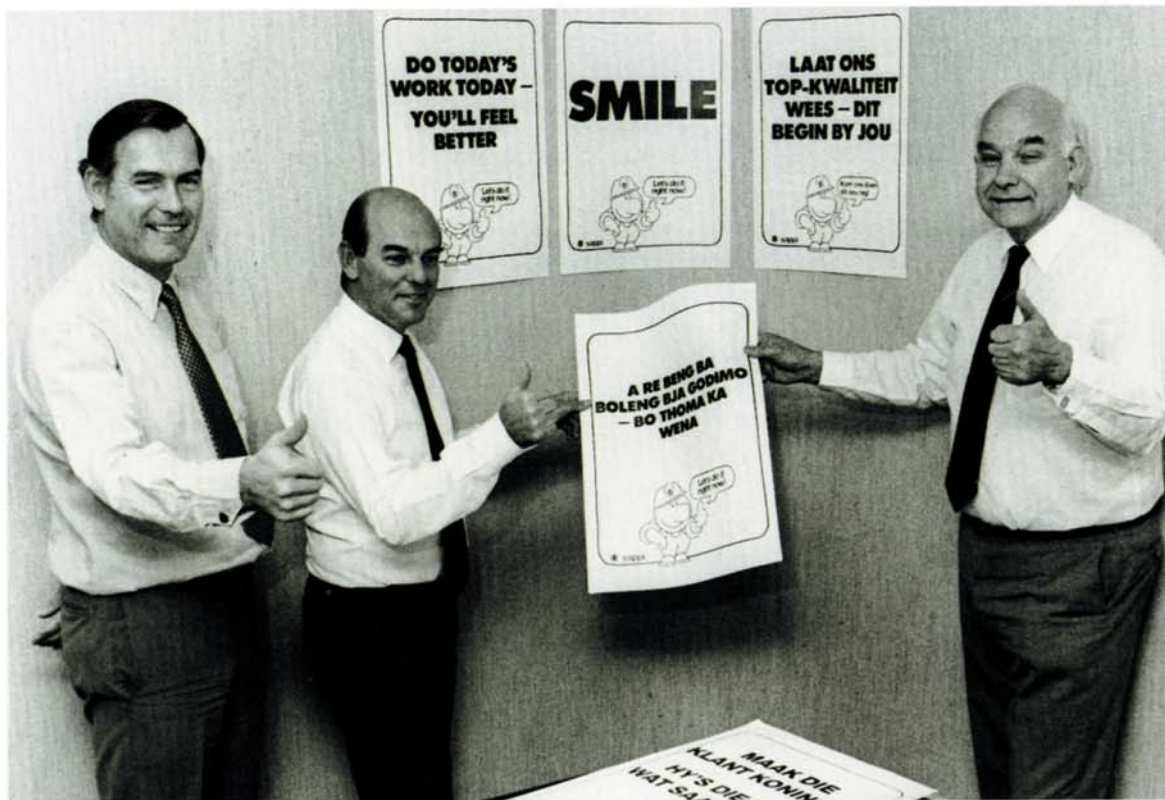
The second innovation was the Sappi Excellence in Achievement Award, to be made in three categories. Bronze awards were to be made monthly to people nominated by their supervisors for excellence in their own area of activity. Silver awards were to be given quarterly on a divisional level, with winners selected from those who had earned bronze awards. At the end of the year Sappi Limited was to make a gold award to an overall winner adjudged to have made the greatest contribution to excellence in his or her field. It was stressed that the award could go to anyone — an unskilled worker, a researcher, a production man or an executive director.

Quality of effort was becoming all the more important as the group prepared to market the increased output from Ngodwana. In the near future, Sappi would be exporting to the world, and international customers would compare its standards with those of the great pulp and paper companies of other countries. The group's head office needed more space and Eugene van As tried to persuade another major tenant in Rennie House to move, offering to pay any difference in rent. The offer was refused, so Sappi bought a site across the street and set out to build an eight-storey, six-sided, glass-walled head office block.

The new building was ready for occupation by February 1985 and

Launching the Woody campaign in 1983: (from left) Ken Lechmere—Oertel, Eugene van As and Quintin Stubbings.

Excellence in Achievement: Eleanor Myburgh of Sappi's head office receives an award from Eugene van As.





the move from the old offices took place over a weekend. 'Sappi Limited' was given the sixth and seventh floors, and the three major operating subsidiaries were allotted floors of their own with plenty of room to spread themselves out. Sappi Fine Papers was still headed by Ken Lechmere-Oertel, Sappi Forests by Peter Stoker and Sappi Timber Industries by Ian Forbes, while Andre Vlok had taken over at Sappi Kraft. Alex Rodger remained head of Sappi Limited's technical division; a Human Resources department was run by Quintin Stubbings; and Eugene van As and John McManus and their staff were near neighbours.

Of the management team, Van As, McManus, Lechmere-Oertel, Vlok and Rodger were executive directors. Basil Landau remained chairman and the other Gencor nominees on the board were Ted Pavitt, Tom de Beer, Trevor Rees and Hugh Smith. Peter Stratten was still a director, and the board also included two distinguished outsiders: Dr J G H Loubser, who had spent a number of years as chief executive of South African Transport Services, which included the railways; and Derek Keys, by profession a chartered accountant, who had joined Sappi's board in 1981 and was non-executive chairman of several other companies.

At the start of 1985, neither Sappi's board nor the management team could take much comfort from the group's situation. South Africa was still in the grip of drought and the ongoing recession, and on top of that there was persistent political unrest. There had been a sharp fall-off in orders following the removal of import controls which opened the way to paper 'dumped' by outside producers. Even so, the board was confident that the new operating units at Ngodwana would soon begin to earn their keep and had no qualms about maintaining the dividend at 86 cents per share.

By February 1985 Ngodwana was producing saleable bleached pulp. At the same time, work on the kraft linerboard machine—Phase Three of the scheme—was nearly finished. The machine had an odd background in that its wet and dry ends came from quite separate sources. Originally Sappi had intended to order both from one company, but then it became clear that to obtain the ideal result, it was better to split the contract down the middle. The wet end was ordered from Tampella of Finland and the dry end from Mitsubishi of Japan, working to a Beloit design.

Sappi's management wanted quick results, so Ngodwana's linerboard project had been undertaken six months ahead of the original schedule, and the machine was ready for commissioning by March 1985. Quite apart from being a hybrid, the machine was unlike those at Tugela in that it produced a three-ply board, each layer formed on

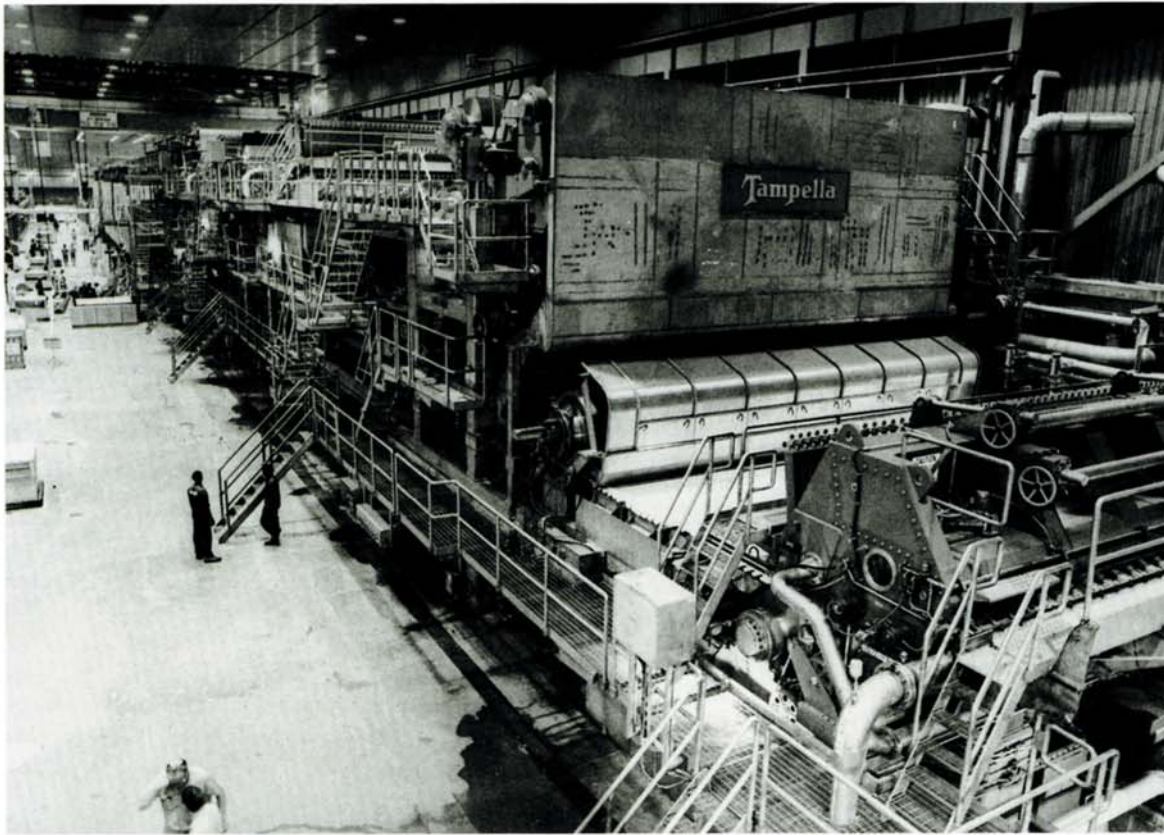
a separate wire screen. When bonded together the three plies formed paper that was stronger than conventional linerboard. Only a day after producing its first paper the linerboard machine had to be shut down because of breakdowns in the mill's boiler, but production resumed at the end of April.

It had been expected that Sappi's output of kraft would be increased overnight as soon as the Ngodwana linerboard machine was in operation. It was ironic, then, when in April 1985 there was a serious explosion in one of Tugela's recovery boilers after a tube ruptured over a length of two metres. A stream of water flowed into the white-hot chemicals in the boiler, and the contents exploded. There were no casualties, but the boiler casing ballooned and the whole thing had to be rebuilt. Repairs took six months and the breakdown cost the group R30 million. In the meantime Tugela's pulping capacity was reduced by two-thirds and replacement pulp had to be brought in from Ngodwana, Swaziland and other sources.

There was further bad news from the newsprint side of Sappi's business. Newspapers had been noticeably thinner ever since the introduction of commercial television, as much of the available advertising revenue was diverted to the new medium. Then advertising was made subject to general sales tax, and several newspapers either closed or were merged with others. That might have made things difficult for Ngodwana, though from the outset much of its output had been reserved for export. Besides, operators were still finding it difficult to cope with the machine's high speed, and it was performing at only two-thirds of its capacity.

Throughout the Ngodwana expansion, other mills in the group had been generating income to help pay for it and Sappi Forests had stepped up its tree-planting programmes. At the same time, Sappi Timber Industries was expanding its sawmill capacity. A plan to close down Elandshoek and to build a modern, high-speed mill near Ngodwana had been dropped; but the division was in the process of closing Epsom, selling a second mill and merging Elandshoek with a large family-owned operation, Barberton Sawmills, which specialised in structural timber and would increase the group's sawmilling capacity by 70 per cent.

At head office, the chief worry was the group's growing burden of debt. Actual construction costs at Ngodwana and Enstra had been R947 million, only eight per cent higher than the target set in 1980; but peaking interest rates coupled with adverse foreign exchange movements, increased sales tax and higher commissioning expenses had pushed finance charges to R328 million, more than twice the amount foreseen. Another R218 million had been swallowed in costs incurred to improve the group's long-term financial leverage. The most obvious remedy was to turn to shareholders.



The wet end of Ngodwana's kraft linerboard machine, built by Tampella of Finland.

Two years earlier Sappi had raised R150 million in two rights issues consisting of convertible and redeemable preference shares respectively. Now Gencor's board agreed to underwrite a fresh rights issue of R200 million — a considerable encouragement, considering that real economic recovery might still be years away. The new shares were offered in the ratio of one preferred ordinary share for every two existing ordinary shares, and one preferred ordinary for every five existing participating preference shares. In the event the issue was 98,3 per cent subscribed.

Up to Date

EXCLUDING Carlton Paper, the Sappi group had a workforce of very nearly 12 000 — not many more than in the 1970s, though individuals' productivity was much higher. The range of employees reflected the remarkable diversity of South Africa's heritage. Xhosa, Indians, Italians, English, Zulu, Coloureds, Afrikaners, Tswana, Sotho and others — all had parts to play, and many were taking full advantage of changing attitudes within Sappi and in South Africa as a whole



which were giving rise to new opportunities, not least through taking courses at the group training centres located at Tugela, Enstra (the most versatile, opened in 1983) and Ngodwana.

Training courses were a preparation for the future. For the present, Sappi faced a storm over the group's results for the half-year to the end of June 1985. At the annual general meeting in May, Basil Landau had warned shareholders that the group's position was unpromising and that they should not expect an interim dividend in respect of ordinary shares. The chief problem was that Sappi had to pay heavy finance charges which cancelled the benefits of a 50 per cent leap in operating profits. When preference dividend payments were taken into account, the group had to report a bottom line loss of more than R20 million.

The results were worse than even the gloomiest forecasts. The only consolation was that as a result of the rights issue, the group stood to make profits in the second half of the year. In the circumstances, many financial analysts thought it was significant when Gencor offered to take over Sappi's 39 per cent holding in Carlton Paper in return for R41 million in cash. In fact, Sappi was little affected. The group had never exercised managerial control over the tissue company — Carlton's closest ties were with Kimberly-Clark — but was to continue supplying pulp as before.

In South Africa as a whole there was an anxious feeling of uncertainty about the future, and lack of confidence in the rand was undermining the whole economy. From Sappi's point of view, domestic kraft and newsprint sales were down and fine papers sales were not much better, even though the group's output was steadily increasing. Fortunately the international paper market was stronger and Sappi was earning money from exports. By a strange quirk of fate South Africa's weak rand gave Sappi a considerable advantage over competitors, even Canadian, American and Scandinavian companies which had long been regarded as the international front-runners.

Both Sappi Kraft and Sappi Fine Papers mounted ambitious export marketing efforts to take full advantage of the rand. At first it was supposed that the currency's weakness was only temporary, but months went by without a change, and in the meantime international commodity prices steadily increased. During 1985 as a whole exports

Ngodwana by night: the largest pulp and paper complex in Africa (overleaf).

Training facilities at Ngodwana, complete with a much-used video recording studio.

Precision paper-cutting in Enstra's finishing house.







accounted for one-fifth of Sappi's output, compared with less than one-tenth in earlier years. By the end of 1985 the proportion was higher than one-third, and would have been still greater had more paper been available.

Tissue from Stanger, computer paper from Enstra, fibreboard from Adamas, particleboard from Sappi Timber Industries — all were finding customers in the international marketplace. Even Ngodwana pulp was arousing interest. In the past Sappi had been a 'spot market' exporter, prepared to sell surplus paper as and when it was available. Now that the output was so much greater it was important to project a more serious image, a conviction that Sappi was in the export business for keeps. Accordingly the management established a new operating subsidiary, Sappi International, with Ian Forbes as managing director.

Besides launching Sappi International, the group's management decided on an extensive rationalisation of Sappi Kraft and Sappi Fine Papers. The two were involved in quite different markets — Sappi Kraft dealing with bulk commodities like pulp, linerboard, fluting and sack kraft which were normally produced in long runs, and Sappi Fine Papers in a much greater variety of products, made in smaller quantities but with greater added value. As a result, responsibility for Ngodwana was transferred to Sappi Kraft, for newsprint had always been regarded as a bulk commodity. In exchange, Sappi Fine Papers took over Adamas and Cape Kraft.

Even before the rationalisation, Ngodwana had begun experimenting with a new bulk product not previously made in South Africa: board for liquid packaging, the sort converted into cartons for milk, fruit juice or sorghum beer. The board was notoriously difficult to make and even though there had been an obvious market among local converters Sappi had not had suitable equipment. In planning the Ngodwana linerboard machine, Sappi's technical men had made provision for liquid packaging board — indeed, the modifications had made the machine more expensive. It could be expected that the local market would absorb all the board produced.

Before commercial production could begin, Ngodwana had to overcome two obstacles. One was the steam boiler, which was turning out to be too big for what it had to do so was difficult to control. The second was the Escom power supply, or rather the way in which lightning strikes on power lines tripped the mill's sensitive control systems. In some cases, Ngodwana was vulnerable to strikes which occurred hundreds of kilometres away. Even a modest power dip was enough to shut down the steam boiler and thus the whole

Sappi newsprint for export: loading a shipment in Durban docks.

mill, and when that happened it took hours to restart the various units. Worse still, shutdowns halted the 14-hour pulp cooking cycle in the continuous digester, and the pulp's quality was uneven.

During the lightning season there were sometimes three or four trips per day, and production was seriously hampered. In February 1986 it happened 59 times. Part of the problem was that towers supporting the Escom power lines were not properly earthed, and that was put right. Even then, the ultimate solution was for Ngodwana to generate its own power — in fact, for Sappi to implement an unofficial Phase Four of the expansion, which had been included in the original plan but had been postponed indefinitely in a bid to cut costs. A pass-out generator able to supply about 65 per cent of Ngodwana's power was ordered from the Toshiba Corporation of Japan.

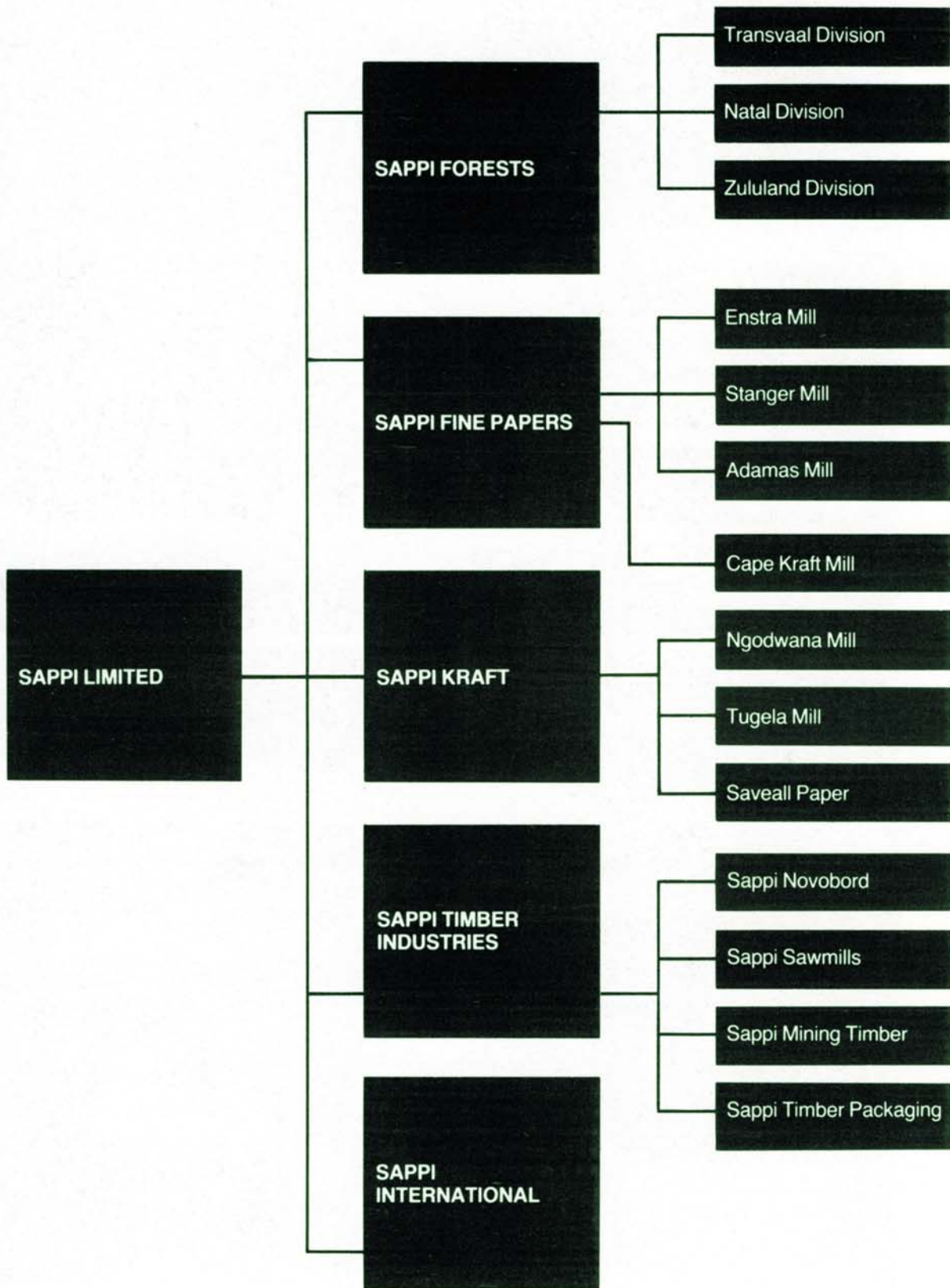
The generator was eventually commissioned in September 1986, and those in charge of Ngodwana's operations looked forward to a change in its fortunes. Already there was talk of installing a second generator which would utilise surplus steam from the boiler and allow it to function at full capacity. Once it was in place, Ngodwana would be more than self-sufficient in power and would be in a position to feed the surplus into Escom's grid. Everyone at Ngodwana could sense that success was close, and even those who had been most sceptical had to admit that the expansion was proving much less disastrous than they had predicted.

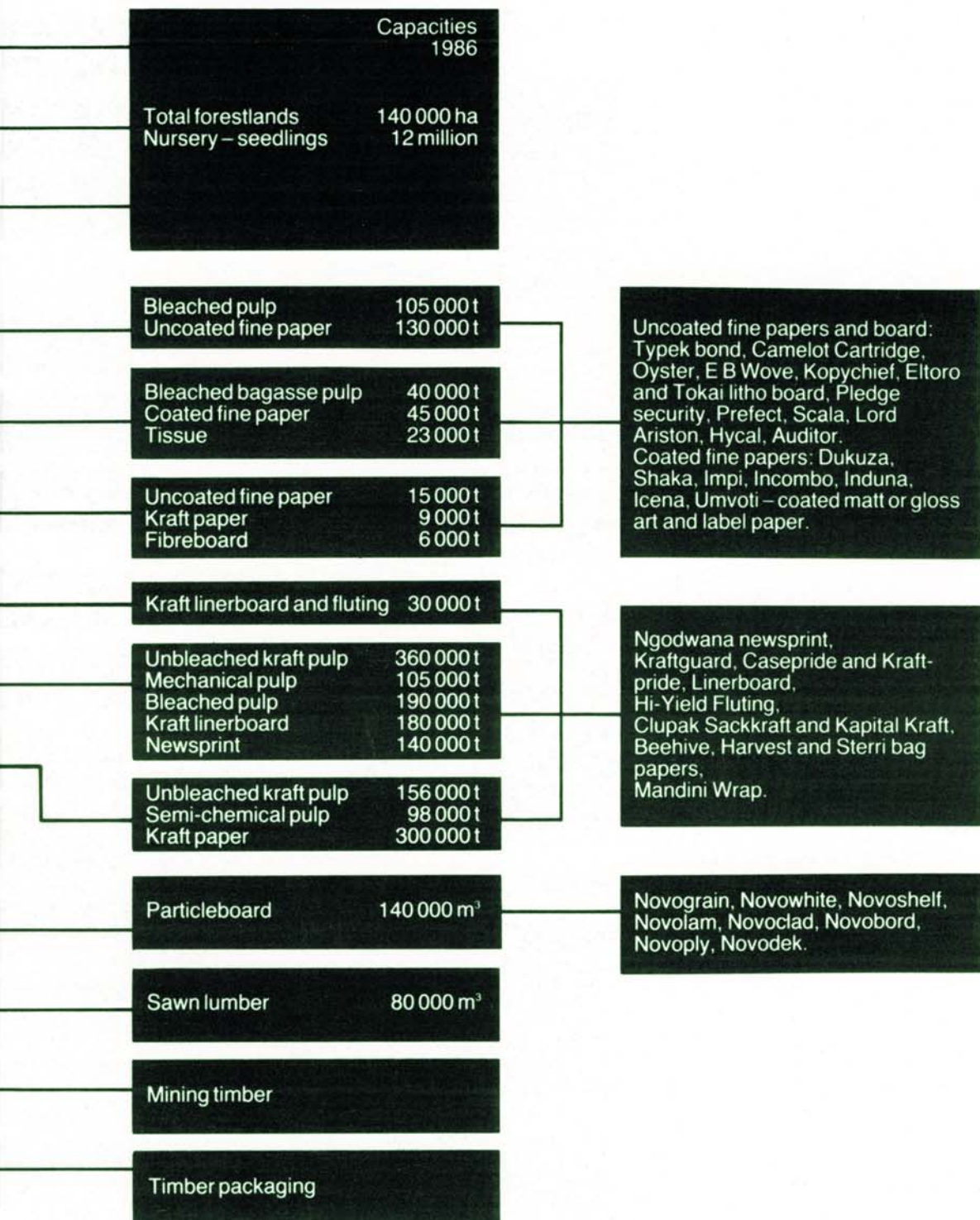
The mood of optimism was shared at Sappi's head office. Domestic sales were increasing and exports continued to grow, to the point where Sappi was barely able to keep pace with orders. The group's prospects were healthier than in many years. As if to mark the beginning of a new era, there were major changes in the directorate. Ted Pavitt was stepping down as Gencor's chairman to be replaced by Derek Keys; and Basil Landau was giving up his Gencor directorships and was being succeeded as Sappi's chairman by Tom de Beer. With the group's 50th anniversary in sight, it could be expected that its second 50 years would be just as eventful.

Ngodwana veterans celebrate the twentieth anniversary of the day the mill first produced pulp: (front row, from left) Doep du Plessis, Fanie Coetzee, Sandy Paul, Nick Bruyns and Albie Verster; (back row, from left) Koos Naude, Attie Dormehl, Daan Pauw, Arthur Westerman, Manie van Niekerk, Ertjies Steyn and Jack Hooper.

The paper machine house at Ngodwana, with the Tampella-Mitsubishi kraft linerboard machine on the left and the Beloit-Walmsley newsprint machine on the right.







NOTES

Chapter One

- 1 The full board consisted of P M Anderson (chairman), Major C C Frye, Dr Umberto Pomilio, Whitmore Richards, V J Ronketti and Paul Strakosch. Anderson, Richards, Ronketti and Strakosch were all on Union Corporation's management staff.
- 2 The Italian operators included Vincenzo di Paolo, Vittorio Raimondo, Donato de Domenicis, Vincenzo Mariani and Armando Scipione.
- 3 The 16 papermakers were (from Inverkeithing) Bob Burns, Harry Gibson, Matthew Kelly, Geordie King, Jock MacDonald, George Peden, Johnny Peden, Jock Porteous and Charlie Robinson; (from Gravesend) Ted Croucher, Andy Evans, 'Old' Harry Smith and Fred Whitehead; (from Cardiff) 'Young' Harry Smith; (from Belfast) Eddie Simpson; and (from Clondalkin in Northern Ireland) Steve Foster.
- 4 The first papermaking machine was invented by a French engineer, Nicolas-Louis Robert, in 1798. Robert sold his interest in the invention and the plans reached two London stationers, the Fourdrinier twins, who commissioned an engineer to build a 'Fourdrinier' machine based on Robert's concept.
- 5 Employees who joined S A Pulp in 1938 and 1939 included many who remained with the company for decades to come. Among them were George Main, Ben Coetzee, Mike Pienaar, Denis Masson, Dick Gray, Leonard Job, Fred Snyman, George Balfour, Billy Mtshali, Arnold Clark, Ben Schlaphof, Alec Greig and Frank Noble.

Chapter Two

- 1 Sulphate or kraft pulping involves cooking with a solution of caustic soda and sodium sulphide (obtained from sodium sulphate, hence the name) and is milder and less damaging than pulping with caustic soda alone (the soda process) because the sulphur element checks and stabilises the reaction. The pulping method was pioneered in the 1880s, but 50 years went by before researchers developed an adequate way of bleaching the pulp.
- 2 At the end of 1949 the board consisted of P M Anderson (chairman), Major C C Frye, Oury Hisey, Whitmore Richards, Tommy Stratten, A T Milne and J D White, of whom only Frye and White were from outside Union Corporation.

Chapter Three

- 1 A high proportion of Tugela's pioneer Zulu were still there 30 years later. They included Adam Mhlapo, Bethuel Buthelezi, Emmanuel Mkhwanazi, Norman Zuma, Wilfred Xulu, Henry Chili, Mbongeni Chili, Andreas Bugela and Gabriel Nhlebela.
- 2 Tugela's pioneer Indians included Aroo Naicker, Moonsamy Pillay, George Lalsingh, Solomon Joseph, Paul Ramsamy, Coopermy Naidoo, Puckray Pillay, Andy Manikum, Perunal Naicker, David Naidoo, Shota Cassim and Steven Samuels.
- 3 Tugela pioneers also included Charl Grobelaar, Wally Lake, Blackie Schwartz, Les Cheyne, Bob Burns, Andy Evans, Ken Gray, Ben Schlaphof, George Hay, Ben Coetzee, Johan Olivier, Ted Woodburn, Piet Conradie, Toppie van Jaarsfeld, Johan Visser, Kim Smith, George Hay, Gillie Wolfaardt, Syd Simpson, Fred Snyman, Sleepy Lucas, Mike Pienaar, Doug Makkink, Dave Hunter, Des Gordon-Turner, Gerry Renaud, Alan Povall, Ginger Murphy and Bill Hemmings.
- 4 In 1955 S A Pulp's board consisted of Tommy Stratten (chairman), Whitmore Richards (deputy chairman), Major C C Frye, J D Whyte, John Henderson, Leonard Job, Moore O'Hara, H Crabtree (representing Howard Smith Paper Mills) and L W Farrow and G B C Johnston (both British, representing Wiggins Teape).
- 5 Pioneer Sappi foresters included Bob Scott, Alec Mackenzie, Bokkie Botha, Archie McKellar, Sven Karth, Frikkie Rousseau, Okkie Buys and Ben Buys.
- 6 Early players included Gabriel Nhlebela, Michael Zulu, Bheki Mhlongo, Julian Mthethwa, Gideon Shandu, Michael Msami, Nhamdemi Nzuza, Barnabus Mthembu, Joseph Shakone, Freddie Makhoba, Amon Msane, Richard Ntanzi and Lloyd Zulu.

Chapter Four

- 1 Adamas's Italians included Freddie and Charlie Zuccollo, Mario Ponzo, Bruno Toffali, Carlo Casvolone, Giacomo Fabrello, Aldo Giuliani, Giulia Butlion, Gino Canale, Guido Recchia, Anacleto and Daniale Sabbadin, Pietro Savini, Richard Kirsten, Ugo and Alda Fabbri and Giuseppe and Maria Bernelli.
- 2 Ngodwana's pioneers also included Manie van Niekerk, Charlie Charlton, Roelf Joubert, Johan van As, Peter Low, Kobus Naude, Attie Dormehl, Daan Pauw, Arthur Westerman, Ertjies Steyn, Jack Hooper, Doep du Plessis, Faan Coetzee, Sandy Paul, Nic Bruyns, Albie Verster, Jan de Clercq, Hugh Riley, Johan van Zyl, Russel Moller, Mike Estill, Les Wilson, George Main and Janie Lotter.

Chapter Five

- 1 Raft race pioneers included P de Swardt, T de Beer, F van Staden, R Meek, C Woods, D Berrington-Smith, Ernest Hemmings and Frikkie Scheepers. The first women to complete the course were Dawn de Swardt and Lorraine Meyer.
- 2 In 1970, Sappi's board of directors consisted of John Henderson (chairman), Moore O'Hara (managing director), Leonard Job (technical director), Colin Anderson, Bill Andrag, Tony Croad, Fritz Fuerst, Liff Hewitt, Jan Kuschke, Whitmore Richards, Tommy Stratten and Jan van der Horst.

Chapter Seven

- 1 Stanger's pioneers included Peter Parks, Maureen Leslie, Roger Philps, Don Stead, Bruce MacIntosh, Raj Naidu, Ursula Hannenberry, Errol Smith, Kleintjie Coetsee, Willie Appelkryn, Nunhall Deonarain, Dave Swanepoel, Derek Welsh, Andy Stevens, Barney Ramdaloo, Dave Moodley, Sam Ditton, Errol Kleingeld and Hennie Maartens.

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THE DIRECTORATE

SAPPI'S ORIGINAL board of directors was chaired by P M Anderson and had seven members. In the years since, many others have served on the directorate, some of them Sappi executives and others representing outside interests:

Chairmen

1936-1954	P M Anderson	1977-1980	Ted Pavitt
1954-1970	Tommy Stratten	1980-1986	Basil Landau
1970-1977	John Henderson	1986-	Tom de Beer

Deputy Chairman

1954-1969	Whitmore Richards	1978-1980	Basil Landau
1969-1970	John Henderson		

Managing Directors

1941-1943	Whitmore Richards	1973-1978	Ron Day
1960-1969	John Henderson	1978-	Eugene van As
1969-1973	Moore O'Hara		

Directors

1978-1981	P H Agar	1969-1971	Liff Hewitt
1963-1972	Colin Anderson	1943-1944	H R Hill
1936-1954	P M Anderson	1948-1951	Oury Hisey*
1968-1973	W H Andrag	1974-1982	Paul Hoogendyk
1949-1956	H Crabtree	1958-1972	Leonard Job*
1965-1967	D M Craib	1949-1967	George Johnston
1970-1978	Tony Croad	1981-	Derek Keys
1971-1978	Ron Day*	1972-1981	Jan Kitshoff
1981-	Tom de Beer	1970-1971	Siegfried Kuschke
1968-1969	D P de Villiers	1976-1986	Basil Landau
1967-1969	H L du Toit	1981-	Ken Lechmere-Oertel
1949-1966	Lesley Farrow	1983-	Jan Loubser
1986-	Ian Forbes*	1963-1965	Alan Macintosh
1936-1968	Colin Frye	1963-1970	Ted Matthews
1959-1972	Fritz Fuerst	1979-	John McManus*
1972-1978	Bob Garden*	1940-1948	Tracy Milne
1972-1974	David Gevisser	1974-1977	Cyril Newnham
1954-1980	John Henderson*	1954-1977	Moore O'Hara*

THE DIRECTORATE

1972–1986	Ted Pavitt	1983–1986	Hugh Smith
1956–1961	A J Philip	1936–1941	Paul Strakosch
1936–1941	Umberto Pomilio	1974–	Peter Stratten*
1981–1986	Trevor Rees	1944–1974	Tommy Stratten
1936–1974	Whitmore Richards*	1977–	Eugene van As*
1981–	Alex Rodger*	1968–1976	J G van der Horst
1936–1943	V J Ronketti	1963–1970	Harry van Eck
1963–1968	Paul Rörich	1983–	Andre Vlok*
1971–1972	O G Schwellnus	1972–1979	Lon Wayburne*
1940–1940	P Selby	1945–1958	J D White
1972–1973	Layton Slater	1981–1981	Ian Willis*
1986–	Bernard Smith		

**denotes Sappi executive, present or past*

CHRONOLOGY

THE FIRST PAPER made by South African Pulp and Paper Industries, Ltd, was produced in December 1938, by which time the company was exactly two years old:

- 1936 Dec South African Pulp and Paper Industries, Limited, registered as a company with an authorised capital of £750 000 (R1,5 million)
- 1937 Jan Union Corporation applies for S A Pulp share listing on the Johannesburg Stock Exchange
- Jul paper machines, chemical and pulping equipment ordered from suppliers in Britain, Germany and South Africa
- Aug construction of pulp and paper mill begins on Union Corporation land near Springs
- 1938 Aug arrival of Italian operators to work in chemical and pulp sections
- Sep S A Pulp recruits 16 papermakers from Britain
- Oct mill named 'Enstra,' short for 'Enterprise Straw,' after its chief raw material
- Dec commissioning of No 1 paper machine, and first production of paper
- 1939 Feb commissioning of No 2 paper machine, though pulp section not yet operating
- Jun reported that company employing 618 people, but operators finding it difficult to make pulp from straw
- Sep South Africa declares war on Germany, leading to increased orders for Enstra paper
- 1940 Mar S A Pulp makes its first profit: £4 000 (R8 000) for the month
- Jun South Africa declares war on Italy, and Italians remaining at Enstra are interned
- 1941 Jun fire in Enstra straw park destroys 1 450 tons of straw
- 1942 Mar continuing difficulties in producing pulp from straw, and mill workers operating under severe handicaps
- 1943 Mar board declares S A Pulp's maiden dividend of 6d (5c) per share
- Jun introduction of paper rationing, and S A Pulp selling all it can make
- Dec continuing difficulties in pulping straw force the company to look for outside help
- 1944 Jul Prof Oury Hisey of the United States advises the company to pulp locally-grown wood rather than straw
- 1946 Aug suspension of paper rationing
- Oct S A Pulp signs technical aid agreement with Howard Smith Paper Mills of Canada

- 1947 Jun Union Corporation buys two farms north of the Tugela River in Zululand with aim of establishing second paper mill; later transfers them to S A Pulp
- 1948 Jan S A Pulp co-operates in establishing Union Corrugated Cases, a converting operation adjoining Enstra mill
 Mar last production of straw pulp, and the company switches to wood
- 1949 Aug announcement of plans to expand Enstra with two more paper machines
 Oct authorised capital increased to £1 million (R2 million)
- 1950 Sep S A Pulp acquires farm in Ixopo district of Natal with aim of establishing a pioneer plantation
 Nov S A Pulp and Union Corporation decide to proceed with development of second mill on the Tugela
 Dec authorised capital increased to £1 750 000 (R3,5 million)
- 1951 May establishment of an S A Pulp head office in the Union Corporation complex, Johannesburg
 Jun start made on clearing site for the Tugela mill
 Aug commissioning of Enstra's No 4 machine, to be operated with help from Wiggins Teape of Britain
- 1952 Feb groundwood pulp produced on experimental basis, used to make newsprint
 Oct start-up of Enstra's No 3 machine, increasing the mill's output to 100 tons of paper per day
- 1953 Apr commissioning of new electrolytic technology in Enstra's chemical section
- 1954 Feb reported that 1 800 ha of company land in Natal planted with pine seedlings
 May completion of Tugela construction programme and installation of equipment
 Jun Tugela mill produces its first reel of paper, prepares to supply packaging customers while Enstra concentrates on fine papers
- 1955 Mar Tugela mill increases output of pulp and paper, using wood railed from the Natal Midlands and Zululand
- 1956 Feb protective tariff gazetted for certain types of paper, to shelter S A Pulp from imports
- 1957 Mar reported that area of company land now planted with seedlings amounts to 3 860 ha
 Dec S A Pulp celebrates 21st birthday with parties at Enstra and Tugela
- 1958 Mar commissioning of No 3 paper machine at Tugela, to make MG (machine glazed) papers
 Nov S A Pulp proposes to begin making newsprint, and Newspaper Press Union undertakes to buy 22 000 tons per year
- 1959 Mar reported that the company's land holdings amount to 10 000 ha of which 8 000 ha are planted
 Jul S A Pulp takes majority holding in Union Corrugated Cases
 Sep completion of building for technical department at Enstra
- 1960 Jan S A Pulp acquires majority share in Cellulose Products, manufacturer of tissue wadding
 Oct commissioning of chlorine dioxide bleaching plant at Enstra
- 1961 Apr first newsprint produced on No 6 machine at Enstra
 May authorised capital raised to R9 million
- 1962 Mar reported that company's land holdings amount to 11 000 ha of which 9 400 ha planted with trees
 Apr Newspaper Press Union instructed to increase its newsprint order to 35 000 tons per year

- Oct S A Pulp produces its one millionth ton of paper
 Dec production figures for the year: 40 000 tons of fine papers, 35 000 tons of newsprint and 70 000 tons of kraft
- 1963 Feb commissioning of No 2 machine at Tugela, to specialise in kraft liner-board
 Jun start-up of Clupak sack kraft production on No 1 machine at Tugela
 Aug S A Pulp committed to produce more than 90 per cent of South Africa's requirements of newsprint
 Sep authorised capital increased to R12 million
 Nov S A Pulp disposes of its holding in Union Corrugated Cases
 Nov acquisition of two farms in Elands River Valley for proposed new mill (Ngodwana); also farmland (Elandshoogte) to establish plantations
- 1964 Feb site clearance begins at Ngodwana
 Mar S A Pulp acquires S A Adamas Fibreboard and Paper Co in Port Elizabeth
 Aug authorised capital increased to R24 million
 Nov extension of Enstra's No 6 machine
- 1965 Feb Escom power connected at Tugela
 Mar authorised capital increased to R28 million
 Jul Cellulose Products merged with Kimberly-Clark of South Africa
- 1966 Jan start of commercial newsprint production on No 4 machine at Tugela
 Aug Ngodwana construction completed, and the new mill produces its first pulp
 Oct S A Pulp produces second millionth ton of paper
- 1967 Feb Cellulose Products mill closed; staff transferred to Kimberly-Clark of South Africa, now based at Enstra
 Mar commissioning of new tissue machine at KCSA
 Aug official opening of Ngodwana mill
 Dec net profit for the year: R3 470 000
- 1968 May S A Pulp applies for patents covering Sapoxal bleaching process
 Jun establishment of S A Pulp timber division with administrative office in Benoni
 Sep Adamas mill flooded out following Port Elizabeth cloudburst
 Oct S A Pulp men attend Sapoxal trials at Jössefors in Sweden
 Nov start-up of the No 4 machine at Adamas, expected to produce coated papers
- 1969 Jun S A Pulp produces its third millionth ton of paper
- 1970 May trials begin on world's first commercial Sapoxal bleaching reactor at Enstra
 Aug Tugela's No 4 machine equipped with Clupak unit
 Aug portion of S A Pulp's newsprint production subcontracted by Mondi Paper
 Nov Kimberly-Clark of South Africa merges with Carlton Paper Corporation
 Dec production for the year: 408 000 tons, but sales 397 000 tons
- 1971 Jul commissioning of tall oil plant at Tugela
 Dec profit for year nosesdives to R676 000 from R3 876 000 in 1970
- 1972 Mar reported that company's land holdings amount to 65 000 ha of which 50 000 ha under trees
 Mar S A Pulp reorganised into three 'line' and three 'staff' departments, former being marketing, production and timber divisions
 Apr board announces no final dividend to be paid for 1971
 Nov start-up of NSSC pulping at Tugela
- 1973 Apr company re-registered as 'Sappi Limited'
 Dec record turnover for the year of R83 977 000 and taxed earnings of R5 867 000

- 1974 Oct launch of marketing 'Operation Streamline' to rationalise paper production
 Nov Sapoxal team awarded the gold medal of the Associated Scientific and Technical Societies of South Africa
- 1975 Mar company's land holdings amount to 83 500 ha of which 53 800 ha under trees
 May fire at Adamas destroys R2 million worth of imported pulp and waste paper
 Aug start of pulping and bleaching expansion at Enstra
 Oct scarcity of orders forces Sappi to put three paper machines on short time
- 1976 Oct Sappi becomes Union Corporation subsidiary, through an exchange of shares, and Carlton Paper becomes a Sappi subsidiary
 Dec Sappi's 40th birthday celebrations, with special emphasis on long service awards
- 1977 May formation of three operating subsidiaries — Sappi Fine Papers, Sappi Kraft and Sappi Forests, each with its own board of directors
- 1978 Aug commissioning of Copeland fluid bed reactor, key to Enstra's pulp expansion programme
 Nov commissioning of drum debarker at Tugela, the first in South Africa
- 1979 Mar after causing many problems, Copeland reactor at Enstra performing satisfactorily
 Jun Sappi acquires Stanger Pulp and Paper from the Reed group
 Jul start-up of 750 ton-per-day continuous digester at Tugela
- 1980 Feb Sappi head office moves to Rennie House in Braamfontein, together with its operating subsidiaries
 Aug Union Corporation and General Mining merge as General Mining Union Corporation or Gencor
 Sep formation of a new division, Sappi Timber Products, specialising in saw-milling
- 1981 Jan Sappi Timber Products takes over Elandshoek sawmill near Ngodwana
 Mar company reports land holdings of 110 000 ha of which 70 000 ha are under trees
 Mar acquisition of Venus Timbers with plantations in the Eastern Transvaal and Zululand
 Jul Cape Kraft, a new waste-based mill in Cape Town, produces its first paper
 Jul Sappi's board gives go-ahead to a major expansion at Ngodwana and Enstra
 Aug beginning of site clearance for Ngodwana expansion
 Nov official opening of Cape Kraft
- 1982 Jan Sappi acquires Novobord
 Mar erection of first steel structure at Ngodwana
 May Tugela's No 4 machine enhanced with Flakt dryer
- 1983 Sep commissioning of newsprint machine at Ngodwana
 Dec acquisition of Timberboard, soon linked with Novobord
- 1984 Mar amendments in Income Tax Act have adverse effect on financing of Ngodwana commissioning
 May launch of 'Let's Do It Right Now' campaign
 Jul launch of 'Excellence in Achievement Awards'
 Aug testing of Kamyr continuous digester at Ngodwana
 Sep move to new head office building in Ameshoff Street, Braamfontein
 Nov move to new head office building; first unbleached pulp produced at Ngodwana's new pulping plant
- 1985 Feb first saleable tonnages of bleached pulp produced at Ngodwana
 Mar commissioning of kraft linerboard machine at Ngodwana

- Apr explosion in recovery boiler at Tugela, necessitating extensive rebuild
- Jul Sappi sawmills merge with Barberton Sawmills
- Oct Sappi sells interest in Carlton Paper to Union Corporation
- 1986 Jan creation of Sappi International to handle export marketing of all Sappi products
- Jun commercial production of liquid packaging board at Ngodwana
- Jul commissioning of pass-out turbine generator at Ngodwana
- Aug announcement of greatly improved results; announcement of fresh rights issue
- Dec Sappi's 50th anniversary

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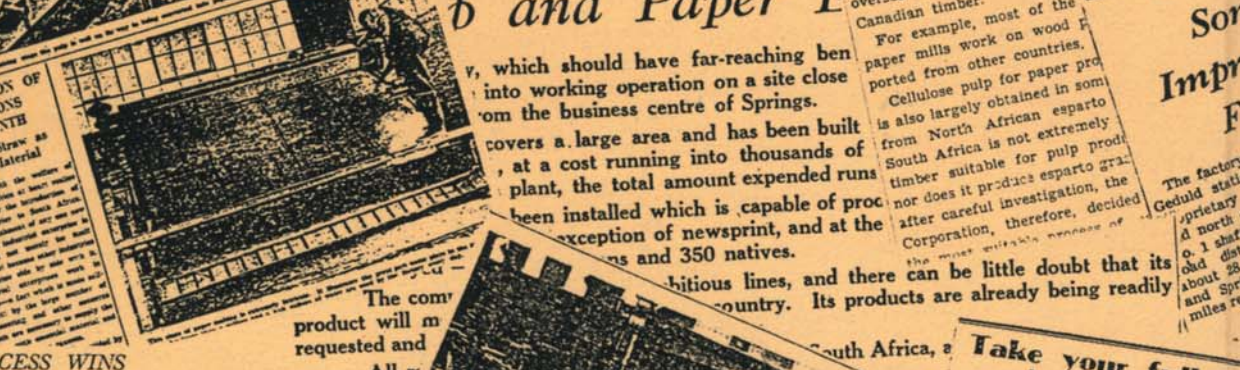
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