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the story of sappi

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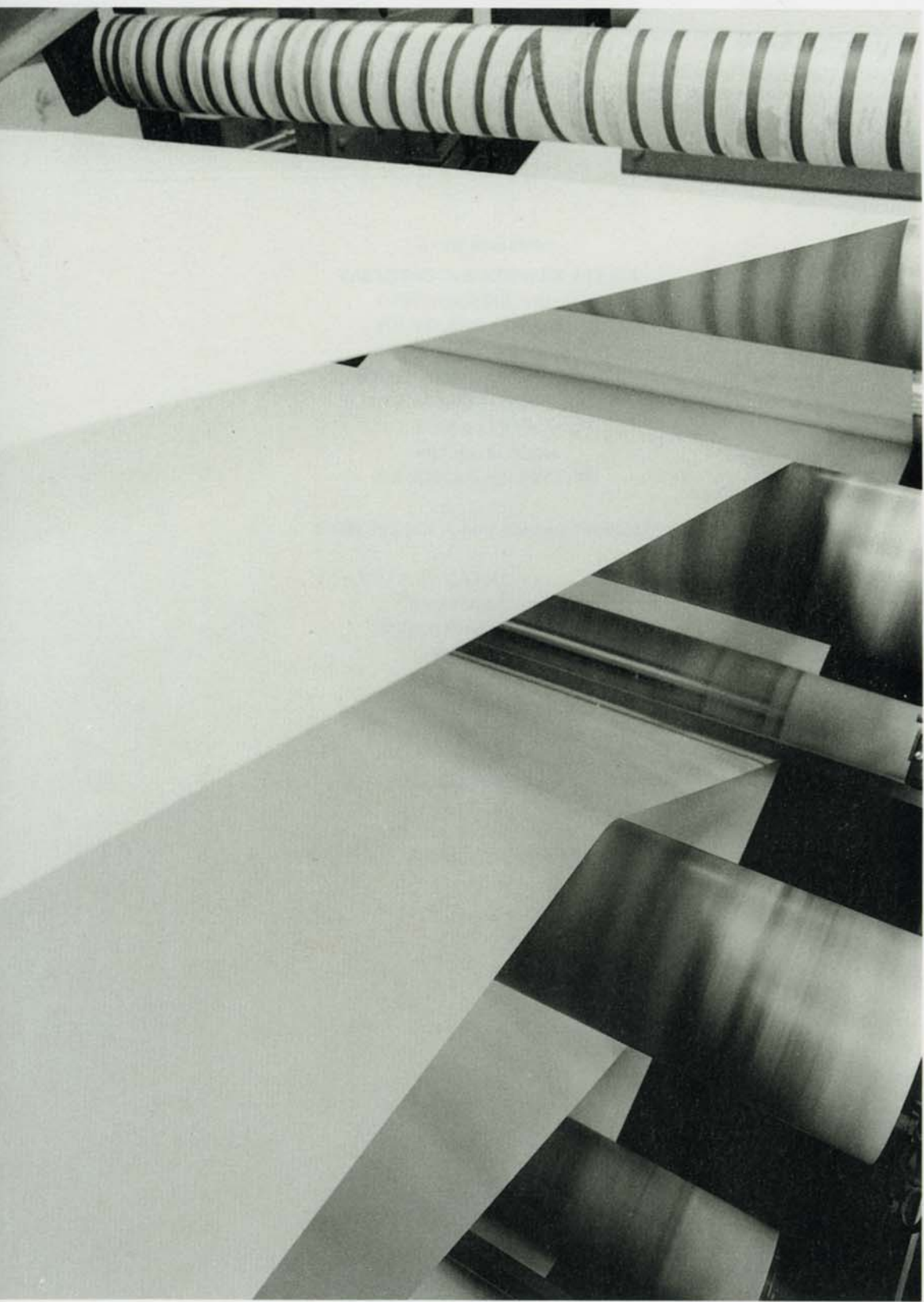
PAPER CHAIN

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PAPER CHAIN

The story of Sappi

ANTHONY HOCKING

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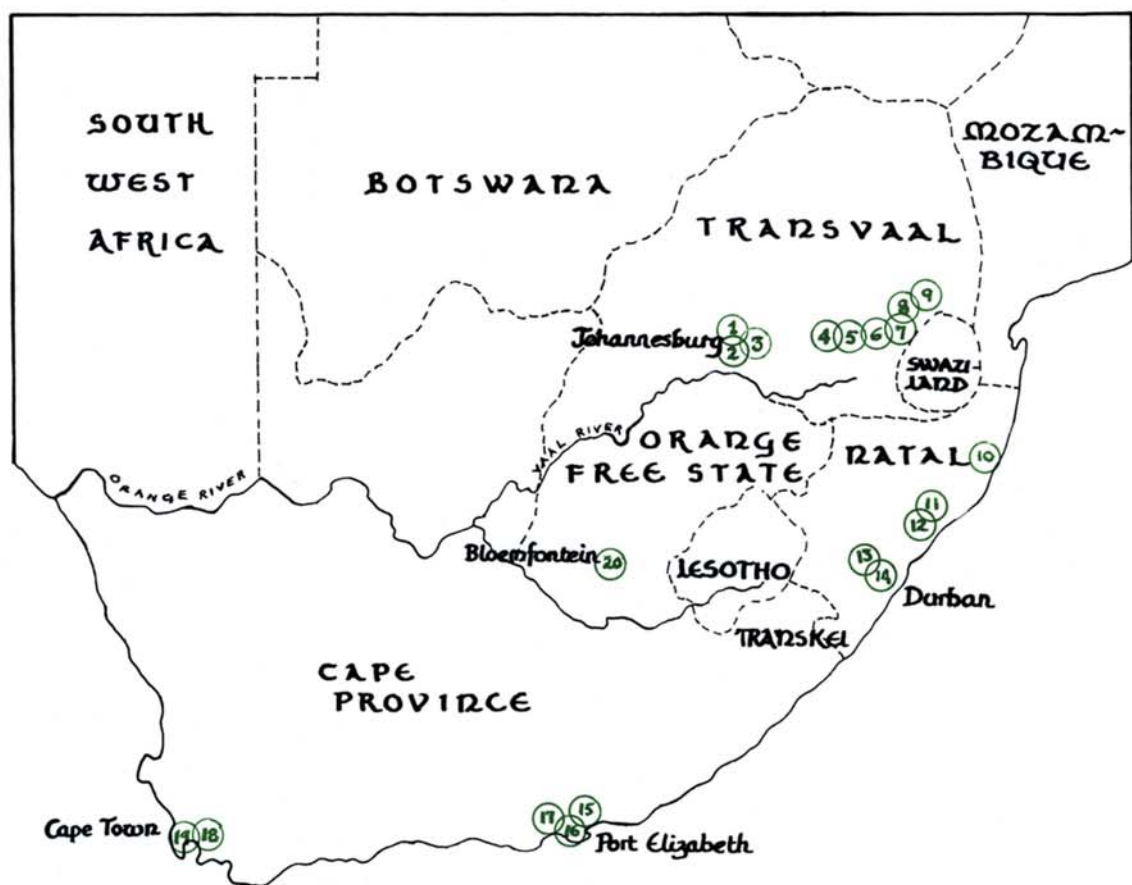
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*If all the world were paper
And all the sea were ink,
And all the trees were bread and cheese,
What should we do for drink?*

ANON 17th Century



SAPPI'S PAPER CHAIN IN THE 1980S

- | | |
|------------------------------|--------------------------------|
| 1 Head office | 11 Tugela mill |
| 2 Noorbord, 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 Noorbord, White River | 17 Noorbord, Port Elizabeth |
| 9 Timber Packaging | 18 Cape Town sales office |
| 10 Mtubatuba | 19 Cape Kraft mill |
| | 20 Bloemfontein sales office |

Introduction

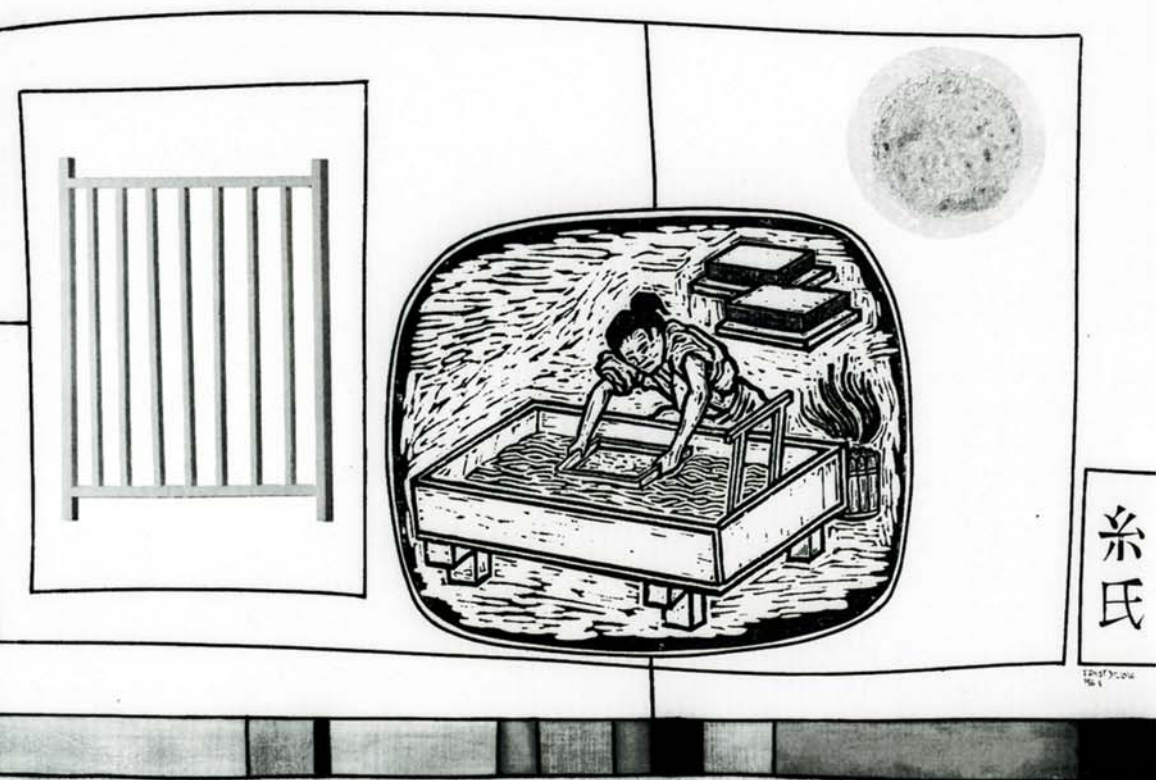
THE BACKGROUND

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.

