

# 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 Mhlaho, 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 Daniele 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 Kusckke, 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.

# ACKNOWLEDGEMENTS

---

THE PRODUCTION of this history would not have been possible without the help of a large number of past and present employees of Sappi Limited and of others who have taken special interest in Sappi's progress. They have included the following:

Hans Alink	Keith Fisher	Basil Landau
Nick Bandich	Ian Forbes	Lou le Roux
Bill Birch	Attie Fourie	Ken Lechmere-Oertel
Bokkie Botha	Don Fourie	Tony Lee
Dawie Botha	Piet Fourie	Maureen Leslie
Molly Buchanan	Erich Fuchs	Peta Lomborg
Bob Burns	Bob Garden	Curly Loots
Ina Burns	Bruce Geddes	Pat Loots
Peter Carr	François Gerke	Bruce MacIntosh
Arnold Clark	Penny Gracie	Alec Mackenzie
Bruce Clement	Dick Gray	George Mackenzie
Carl Clur	Bill Hemmings	George Main
Ben Coetzee	John Henderson	Vera Makkink
Max Cohen	Mary Henderson	Clive Malkin
Denis Crosby	Liff Hewitt	Brian Margerison
Claire Dalfen	Harry Hirsch	Dennis Masson
Stan de Jong	Johnny Holmes	Ellen Masson
Vincenzo di Paolo	Jack Hooper	Roland Mazery
Peter Dixon	Robert Hope	Don McCartan
Gordon Douglas	Bert Ibbotson	Pat McGurk
Lyn Drake	Frans Jacobs	John McManus
Doep du Plessis	Kim Jakopii	Barry Melrose
Gert du Toit	John Job	Kitty Merry
George Dyason	Lillian Job	Phil Mijburgh
Sigi Eggers	Alice Jones	Brian Mills
Penny Els	Andre Jonker	Derek Minnie
Elaine Erasmus	Colin Kerr	Clive Mocke
Jerry Farrell	Pat Kerr	Allan Morris
Bob Figgins	Ivan Knock	Chris Myburgh
Jean Findlay	Roy Knowles	Henry Myburgh
Tony Firmani	Lappies Labuschagne	Travers Nettleton



## ACKNOWLEDGEMENTS

---

Moore O'Hara  
Peter Parkes  
Sandy Paul  
Keith Partridge  
Daan Pauw  
Ted Pavitt  
Johnny Peden  
Ione Pepper  
Ivan Pepper  
Mike Pienaar  
Marino Ponzo  
Cyril Potter  
Alan Povall  
Di Prentiss  
Anna Pretorius  
Rita Raimondo  
Vittorio Raimondo

Gerry Renaud  
Jean Richards  
Grant Robertson  
Alex Rodger  
Annette Roos  
Mike Ross  
Bob Scott  
Mike Sharky  
Layton Slater  
E J Smith  
Harry Smith  
Leon Smith  
Richard Squires  
Wendy Stead  
Peter Stoker  
Peter Stratten  
Roland Streatham

Quintin Stubbings  
Gail Taylor  
Fred Tinsley  
Gerrie Uys  
Mary-Anne Uys  
Winifred Uys  
Eugene van As  
Louis van der Walt  
Tjaard van der Walt  
Maria van Niekerk  
Bill Vaughan  
Clarice Verster  
Rene Vinson  
Andre Vlok  
Lon Wayburne  
Tessa Weber  
Sonia Wilkins

Thanks are also due to the directors and staffs of the Johannesburg Public Library and the South African Library in Cape Town. Much of the information in the book has been drawn from the annual reports, minutes books and internal reports of Sappi Limited, from the house magazine *Sappi News* and from other material in the Sappi Library, Enstra. Photographs were supplied from the Sappi Library, from *Sappi News*, from Tugela mill and from the private collections of Piet Fourie, John Job, Mary Henderson, Kitty Merry, Bill Hemmings, Cyril Potter, Clive Malkin, Alan Povall and others.

# 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



# INDEX

---

- AECI, *see* African Explosives and Chemical Industries
- APM, *see* Australian Paper Mills
- APPM, *see* Australian Pulp and Paper Mills
- acid, hydrochloric 39, 67, 69
- Adamas mill 138-139, 142, 146, 157, 164-165, 186, 190, 194-195, 205, 211, 224, 230-231, 234, 238, 251, 276, 293
- No 3 machine 139, 190, 199
- No 4 machine 164-165, 190, 212
- African Cellulose Syndicate 18-19, 21, 22
- African Coasters Line 147-148
- African Explosives and Chemical Industries 67
- l'Air Liquide 159, 161
- Aitken, Alex 18
- Amalgamated Packaging Industries 142
- America, North 55, 58, 108, 164, 224
- America, South 18, 22, 23, 28, 29
- Anderson, Colin 132
- Anderson, P M 22, 26, 59, 70, 92-93, 132
- Anderson, Percy 70, 71
- Anglo American Corporation of South Africa 177, 179
- Argentina 18, 28, 55, 138
- Associated Scientific and Technical Societies of South Africa 193
- Auditor 190
- Australia 30, 58, 92, 108, 119
- Australian Paper Makers 92, 183
- Australian Pulp and Paper Mills 92
- bagasse 17, 122, 212
- bags, paper 17, 212
- Bambatha Rebellion 85-86
- baobab 17
- Barberton Sawmills 286
- Barclays Bank 165
- Barlows 215
- Barrett, A H 180
- beatermen 43, 44
- Bell, I A, and Company 241, 272
- Bellville 138
- Beloit International 108, 115, 122, 125, 128, 146, 157
- Beloit-Walmsley 263, 266
- Benoni 181, 211, 221
- Bertrams 26, 103
- Billingförs-Langed 115
- Black, Dugald 272
- Blane, Robert 17, 18, 19
- bleaching 26, 69, 122, 158-161, 175, 202, 212, 222, 254
- board of directors 22-23, 42, 58, 71, 80, 92, 96, 128, 132, 193, 247, 285, 294
- Board of Trade and Industries 97, 115
- Bonus Bonds 211
- Boston 257, 262
- Botha, P W 272
- Bowaters 161, 164, 176
- Boxes & Shooks 257-258, 276
- Braamfontein 211, 239
- Bracken, Lord 90-91
- Brazil 18, 269
- Britain 17, 21, 27, 29, 39, 54, 75, 76, 81, 108, 119, 151, 161, 164, 176
- Brits 29
- Bulwer 107, 240, 246
- Bureau of Standards, *see* South African Bureau of Standards
- Burns, Bob 30, 92
- CSIR, *see* Council for Scientific and Industrial Research
- calendars 180, 194, 239
- Canada 17, 54, 65, 66, 108, 114, 213, 224, 247, 275
- Cape, Northern 29, 48, 107
- Cape Kraft 235-238, 251, 254, 276, 293
- Cape Town 37, 70, 95, 103, 119, 138, 147, 151, 157, 170, 235-239
- capital 22, 34, 77, 80, 146, 287
- cardboard 34, 67, 115

- Carlton Paper Corporation 142, 202, 203, 205, 224, 287  
 Celdecor, *see* Cellulose Development Corporation  
 cellulose 15, 17-18, 159  
 Cellulose Development Corporation 54, 58, 63, 65, 66  
 Cellulose Products 115, 116, 119, 134, 142, 145  
 cells, electrolytic 23  
   — Hooker 69  
   — Pomilo 17, 69, 81  
 Central Adamas 138  
 Cetshwayo 85, 194  
 Ceylon, *see* Sri Lanka  
 chemicals 17, 39, 67, 107, 202  
 chemists 21, 39, 48, 59, 60-61, 69, 92, 106, 122, 160, 179  
 Chile 18, 28  
 chipboard 15, 208, 257-258, 293  
 chlorination 45-46  
 chlorine 65, 159  
   — gas 17, 45-46, 50  
   — liquid 50  
 Clark, Arnold 58, 66  
 Cluett, Sanford L 130  
 Clupak 130, 179, 194  
 coal 26-27, 29, 107, 109  
 Coetzee, Ben 175, 193  
 computers 146, 266, 276  
 Comrades' Marathon 165, 167  
 Conroy, Bernie 145  
 conservation 149-150, 180, 213  
 construction 29, 31, 86-88, 135, 138, 151, 255, 261-263, 266, 269, 279  
 controls, paper 53, 54, 75  
 controls, price 75, 96  
 converters, paper 15, 128, 158, 176, 199, 251  
 Cooper, Keith 239-240  
 Copeland, George 183  
 corrugating industry 75, 236, 251  
 Council for Scientific and Industrial Research 170-171, 235  
 Craig, Tom 183  
 Crown Carlton 142, 145, 157, 179  
 Crown Zellerbach 142  
 Curson, Allan 112, 165  
  
 Davy McKee 257, 262, 266  
 Day, Ron 142, 176, 180, 186, 205, 208, 214, 215, 221  
 De Beer, Tom 285, 294  
 De Jong, Ernst 180  
 De Villiers, Wim 214  
 Delagoa Bay, *see* Maputo  
 Di Paolo, Vincenzo 33  
 digesters 69, 160  
   — batch 58, 86, 91, 151, 202  
   — continuous 151, 154, 183, 202, 212, 229, 269, 278  
   — spherical 23, 55  
  
 directors, *see* board of directors  
 dividends 54, 96, 176-177, 179, 246  
 Dixon, Peter 257, 262, 269  
 Domtar Group 65  
 Douglas, Gordon 103, 180, 194  
 Durban 27, 48, 70, 86, 87, 95, 113, 147, 149, 157, 165, 170, 177, 183, 199, 251, 269  
 Düsseldorf 114  
  
 East Geduld mine 26, 46, 59, 63, 96, 146, 175  
   — recreation club 60, 66, 99  
 East London 37, 147  
 Edinburgh 26, 29  
 effluent 21, 26, 65, 69, 70, 158  
   — gaseous 170-171, 174, 202  
   — liquid 46, 112, 181-182, 196, 222, 251  
 Eggers, Sigi 235  
 Elands River 132, 151  
   — valley 48, 132, 174, 261  
 Elandshoek 262  
   — sawmill 175, 245-246, 275, 286  
 Elandshoogte 155, 180  
 electricity, *see* power, electric  
 Empangeni 241, 272  
 Engelhard, Charles 107  
 engineers 48  
   — chemical 17, 28, 62, 69, 106  
   — mechanical 108, 180, 202  
 Enstra mill 36-37, 39, 42-43, 45, 48, 50, 53, 54, 58, 59, 65, 66, 67, 69, 70, 74, 75, 76-77, 91, 92, 95-96, 103, 106, 107, 115, 123, 125, 131, 139, 145, 146, 157, 161, 175, 183, 186, 202, 205, 208, 209, 222, 224-225, 229, 234, 254, 276, 280, 286, 293  
   — No 1 machine 26, 30, 31-32, 96, 103, 125, 276  
   — No 2 machine 26, 30, 31, 96, 103, 211, 276  
   — No 3 machine 77, 81, 96, 199, 235  
   — No 4 machine 76-77, 96, 165, 190, 199, 211, 276  
   — No 5 machine 115  
   — No 6 machine 122-123, 125, 126, 131, 254, 276  
 Epping 138, 236  
 Epsom sawmill 246, 286  
 Er-We-Pa 114, 115, 164  
 Escom 148, 293, 294  
 Eshowe 86, 91  
 eucalyptus 17, 58, 66, 92, 107, 240, 257  
 Excellence in Achievement Awards 282  
 exports 42, 130-131, 245, 254, 289, 293  
  
 farmers 29, 48, 63, 66, 112, 135, 151, 174  
 Federale Mynbou 214, 255  
 Fedrigoni, Gianfranco 138-139, 142  
 Felixton 122, 190, 225  
 Ferreira, Leo 134  
 fibreboard 138, 157, 194, 293  
 Finland 108, 151, 245, 266, 278, 285  
 firefighters 60, 181, 195-196, 275

- fluting 76, 92, 120, 293  
 Foggia 18, 22  
 Forbes, Ian 275, 285, 293  
 foresters 107, 134, 155, 181, 211, 257, 273, 275  
 Forestry, Department of 245, 246  
 Fourie, Attie 276  
 Fourie, Don 135  
 Fourie, Piet 114, 158  
 France 142, 159, 193  
 Frye, Colin 92, 176  
 Fuerst, Fritz 108, 176  
 Fulton, William 16, 17  
 furnaces, recovery 65, 66
- Garden, Bob 95, 158, 176, 208, 221  
 Geduld 26-27, 28, 34-35, 175  
 — East, *see* East Geduld  
 — gold mine 26  
 Gencor, *see* General Mining Union Corporation  
 General Mining and Finance Corporation 214, 246  
 General Mining Union Corporation 246, 257, 285, 287  
 General Products Manufacturing 115, 116, 134, 142  
 George 138  
 Germany 23, 26, 39, 42  
 — West 108, 114, 164, 165, 278  
 Germiston 19, 22  
 Gill, Ron 202, 209  
 Glazebrook, Colin 208  
 Gledhow mill 212, 247  
 Government Printer 34, 42, 53  
 Grahamstown 15  
 Graskop 29  
 grass 48  
 — esparto 48  
 — tamboekie 48, 132  
 Gravesend 29, 30, 58  
 Grobbelaar, Charl 151  
 Grootgeluk 134, 155, 180, 240, 257  
 Gutsche, Josef 26, 29, 31, 39
- Haak, Jan 155  
 hardwoods 55, 92, 175, 183, 202, 212  
 Harrison, John 158  
 harvesting, forest 15, 107, 155, 157, 180, 240, 241, 242, 272  
 — Nordfor 212, 245  
 harvesting, straw 29  
 head office 81, 95, 125, 180, 205, 239, 262  
 Health, Department of 202  
 Hemmings, Bill 167-168  
 Henderson, John 59, 60-63, 65, 69, 70, 74-75, 80-81, 90, 92, 95, 106, 107, 108, 115, 122, 128, 132, 134, 139, 146, 151, 158, 161, 164, 167, 176, 179, 180, 186, 203, 205  
 Henderson, Mary 60, 151  
 Hirsch, Harry, 103, 148, 149, 230  
 Hisey, Oury 55, 58, 63, 65-66, 69, 70, 71, 74, 75, 81, 92, 103, 202  
 Hoffenbacher, Dean 145  
 Holmes, Johnny 90-91, 107  
 Horwood, Owen 251  
 Howard Smith Paper Mills 65, 66, 69, 80, 92, 114, 224  
 Howick 107  
 Hulett's mills 122, 190, 225, 254
- imports 17, 34, 53, 54, 96, 108, 115, 177, 179, 247, 285  
 India 30, 74, 119  
 Indians 87, 183, 278  
 Industrial Development Corporation 80, 132, 138, 202  
 Inland Revenue, Department of 278  
 Isando 211  
 Iscor 18  
 Isithebe 197  
 Italians 17, 21, 28, 29, 31, 33, 42, 138, 142, 194, 230, 287  
 Italy 17, 18, 21, 22, 23, 28, 29, 42, 54, 138, 142, 278  
 Ixopo 75, 107, 155
- Japan 193, 294  
 Job, Leonard 62-63, 69, 81, 103, 114, 122, 123, 132, 134, 154, 158, 164, 165, 176, 180  
 Johannesburg 15, 17, 18, 22, 26, 28, 54, 66, 70, 75, 81, 82, 113, 115, 122, 131, 142, 145, 157, 180, 205, 211, 221, 246, 251, 258, 262, 266, 272, 275  
 Johannesburg Stock Exchange 26, 214  
 Johnson, Peter 239  
 Jössfors 161
- KCSA, *see* Kimberly-Clark of South Africa  
 Kaapsehoop 138  
 Kalmanson, Geoffrey 142, 145, 179  
 Kalmanson, Willie 142, 145, 179  
 Kamy AB 154, 161, 175, 183, 202, 269, 278  
 Kardol, Bas 229  
 Kartwell 194  
 Kerr, Colin 225, 261, 276, 278  
 Keys, Derek 285, 294  
 Kilgour, Don 90  
 Kimberly-Clark Corporation 115-116, 142, 145, 157, 289  
 Kimberly-Clark of South Africa 115-116, 142, 145, 157-158, 179, 203, 205  
 Kliprivier 16, 18, 48  
 Kohler Brothers 213, 214, 235  
 Komati Pulp 122  
 Komatipoort 122, 132, 134  
 Kopychief 190  
 Kotzenberg, H R P A 158  
 kraft, *see* papers, kraft  
 Kraftguard 190  
 Kruger, Paul 15, 26  
 Kuschke, G S J 176



- KwaZulu 186, 197
- labour 39, 67, 96, 112, 142, 175, 183, 186
- Labuschagne, Lappies 151
- Lake, Wally 90
- Landau, Basil 205, 218, 221, 246, 255, 285, 289
- Le Roux, Lou 106, 158, 164, 190
- Learmonth, Jimmy 34
- Lechmere-Oertel, Ken 221, 235, 285
- Leroy, Ets G 258
- liaison committees 186, 231
- lime 29, 45, 107
- Limpopo River 70
- linerboard, kraft 76, 113, 115, 130, 254, 262, 285, 293
- liquid packaging board 293
- Liversage, Tom 209, 238
- Loebecke, Hans 29-30, 31, 42, 115, 139
- London 18, 19, 21, 22, 28, 30, 90, 130, 131
- Lord Ariston 190, 194
- Lot 25, 86, 112
- Loubser, J G H 285
- Lourenco Marques, *see* Maputo
- machines, paper 31, 45, 74-75, 76-77, 81, 86, 103, 114-115, 122-123, 128, 131, 139, 148, 179, 190, 211, 229, 254, 263, 266, 276, 285, 293
- MacIntosh, Bruce 229
- Mackenzie, Alec 134
- Magic Flute 190
- Main, Charles T 255, 257, 262, 266
- Malkin, Clive 145, 231
- Mandini 86, 91, 92, 109, 112, 128, 148-149, 151, 165, 167, 169-170, 186, 194, 196, 197, 237
- recreation club 128, 167, 190
- Maputo 122, 128
- marketing 189-190, 211
- Masson, Dennis 60
- Matthews, Ted 132
- Mayfair 115, 145, 146, 158
- McDonald, Jock 30
- McKellar, Archie 107
- McManus, John 221-222, 229, 255, 278, 285
- McWilliam, Les 122
- Melmoth 240
- Melrose, Barry 224
- merchants, paper, *see* supply houses
- Merebank mill 71, 177
- Mexico 18
- Meyer, John 205
- Mijburgh, Phil 158
- mills, paper, *see* Adamas, Cape Kraft, Carlton Paper, Cellulose Products, Enstra, Felixton, Hulets, Merebank, Ngodwana, Piet Retief, Stanger, Tugela and Usutu.
- mills, sugar 87, 212
- Milnerton 236, 238, 247
- mines, gold 19, 23, 26, 29, 34, 59-60, 87, 96, 138, 175
- mining houses 18, 19, 22, 34, 70, 75, 177, 202, 205, 214
- Mitsubishi 285
- Mondi Paper 70, 177, 179, 190-191, 202, 213, 214, 239, 254
- Montreal 65, 69
- Mozambique 87, 122, 128
- Mtubatuba 70, 211, 240, 241, 273
- Mussolini, Benito 18, 21, 22, 42
- Mweti 122
- Myburgh, Chris 69, 81, 90, 108, 122, 158, 161
- Myburgh, Henry 106, 122, 158, 161, 175
- NSSC, *see* pulp, NSSC
- Nampak Limited 213, 214, 221, 236
- Natal 15, 17, 58, 66, 70, 75, 85, 92, 107, 113, 128, 149, 167, 180, 194, 197, 211, 240
- Midlands 148, 157, 177, 180, 208, 211, 239
- North Coast 71
- Northern 55, 92
- Natal, University of 170
- Natal Parks Board 151
- Natal Waste 251
- National Monuments Council 194
- National Pulp and Paper 48
- Nelspruit 48, 138, 154, 174, 211
- New Zealand 18, 108, 183
- Newport, Ted 151
- Newspaper Press Union 107-108, 125, 132, 177, 179, 190-191
- newsprint 15, 17, 65, 81-82, 107-108, 119, 122-123, 125, 128, 131, 146-148, 157, 159, 177, 179, 190-191, 193, 202, 254, 262, 276, 289
- Ngodwana mill 134, 138, 146, 151, 155, 157, 161, 171, 174, 175, 181, 183, 196, 199, 202, 205, 208, 239, 245, 254-255, 257, 261-263, 266, 269, 272, 276, 278-279, 294
- linerboard 254, 285-286, 293
- newsprint 254, 263, 266, 276
- pulp 151, 154, 155, 157, 199, 202, 230, 254
- recreation club 151, 261
- village 138, 151, 174, 261, 279
- Ngodwana River 132, 261
- Niven, Robert 18
- Nordfor, *see* harvesting, forest
- Novobord, *see* Sappi Novobord
- nurseries 155, 157, 240, 257, 262, 273
- Ogram, Denis 212
- O'Hara, Moore 95, 115, 122, 130, 132, 142, 158, 176, 180, 186, 199
- Old Mutual 165, 202
- Operation Streamline 189-190
- Orange Free State 22, 48, 63
- Orange River 48
- Orange River Salt Works 107, 134
- Ottawa 65
- oxygen 159, 161



- PLC, *see* Programmable Logic Control
- paper
- bag 113
  - blotting 81
  - duplicating 34, 96
  - envelope 34, 39
  - ledger 34
  - security 76, 96
  - tamping 16
  - writing 17, 34, 119, 157
- Paper and Packaging Industries 190, 254
- Paper Controller 53, 54
- papermakers 29-31, 34, 43, 45, 69, 76, 81, 92, 138, 147, 211, 214, 276
- papers
- coated 161, 165, 212
  - curling 15
  - fine 15, 65, 165, 189, 199, 202, 234
  - kraft 15, 17, 65, 70, 76, 81, 92, 97, 115, 130, 147, 157, 190, 202, 222, 234, 251, 289
  - packaging 15, 70, 157, 190, 212
  - printing 17, 34, 119, 157, 212
  - wrapping 16, 34, 99, 113, 114, 157
- particleboard, *see* chipboard
- Parys 22, 23, 26
- Pauw, Daan 160, 161
- Pavitt, Ted 180, 203, 205, 214, 218, 221, 225, 239, 246, 255, 285, 294
- Pepper, Ione 86
- Pepper, Ivan 86, 87, 89-90, 107, 112
- Piet Retief 55, 148, 190, 225, 240
- Pietermaritzburg 149, 165, 181, 211, 240
- pine 17, 19, 45, 48, 58, 66, 92, 107, 132, 202, 245
- Pinerola 157
- Pint, Angus 170
- Piscicelli, Count 28
- plantations 15, 17, 55, 257
- government 92, 107, 154, 245, 275
  - private 66, 92, 107, 154, 275
  - Sappi 107, 132, 154-155, 157, 180, 239-241
- Player, Ian 151
- Plettenberg Bay 278
- Pomilio, Umberto 17-18, 21, 22, 23, 33, 34, 39, 42, 45, 54
- process 18, 33
- Port Elizabeth 95, 138-139, 147, 157, 164, 165, 230-231, 239, 251, 257, 258
- Pott, Denis 54
- Povall, Alan 238
- power, electric 19, 26, 33, 76, 148, 293
- Prefect Wove 194
- Premier Paper 16, 48, 119, 239
- Pretoria 26, 29, 34, 47, 59, 106, 190, 254, 278
- Printer of the Season 229, 254
- Printer of the Year 254
- printers 34, 95, 103, 158
- productivity 245, 269, 272
- Programmable Logic Control 266
- pulp 15, 17, 18, 33-34, 145, 202, 222, 224
- bleached 31, 33, 161-162, 177, 194, 285
  - chemical 17, 92, 125, 148, 151, 159, 194, 286
  - mechanical 17, 81, 125
  - NSSC 183, 190
- pulping 33, 151, 154
- chemical 69, 160-161, 183, 202, 222, 286
  - mechanical 108, 125
  - NSSC 183
- quality control 96, 106, 158
- raft race 167, 197, 198, 230
- railways 26, 71, 85, 86, 92, 107, 108-109, 112, 122, 175, 186, 196, 212, 262, 285
- Raimondo, Giuseppe 28, 54, 63, 65, 66, 120, 138, 190
- recovery, chemical 65, 66, 69, 183, 202, 209, 222, 224, 234
- Red Dog 90, 112, 128
- Reed International 212, 213-214, 215, 221, 225, 229
- Reed Nampak, *see* Nampak Limited
- Reef Waste 251,
- Rees, Trevor 285
- Rennie House, 211, 239, 282
- research 69, 122, 160-161, 235
- Rhodesia, *see* Zimbabwe
- Richards, Whitmore 18, 21, 22, 23, 39, 42, 50, 54-55, 58-59, 60, 70, 71, 75, 90-91, 92, 132, 158, 159, 176
- Richards Bay 70, 211
- rights issues 80, 146, 286
- Robertson, Grant 96
- Rocky Ridge 112, 197
- Rodger, Alex 139, 142, 196, 221, 262, 285
- Rogers, Harold 65
- Roodewal 132, 134, 151
- Rörich, P R 132, 176
- Ross, John 128
- Rosslyn 190
- Russia 159
- SAFI, *see* South African Forest Industries
- S A Adamas, *see* Adamas mill
- S A Paper Processing 142
- Sabie 29, 180, 211
- sack kraft 113, 128, 130, 179, 194, 293
- sacks, paper 16, 17, 113, 130, 194
- Saldanha Bay 70
- sales 34, 39, 54, 67, 95, 96, 157, 199, 202, 251, 289
- salt 17, 19, 27, 47-48, 107
- Sanlam 214
- Sapoxal 161, 175, 193, 202, 222, 278
- Sappi Home Stars 112-113, 149
- Sappi Limited 186, 208, 239, 285
- Fine Papers 208, 211, 221, 224-225, 235, 239, 254, 275, 285, 293
  - Forests 208, 211, 221, 239, 240-241, 245, 257,

- 262, 272-274, 275, 285, 286  
 — International 293  
 — Kraft 208, 211, 221, 229, 235, 239, 254, 275, 285, 293  
 — Novobord 257-258, 275  
 — Timber Industries 275, 282, 286, 293  
 — Timber Products 246, 257, 258, 275
- Sappi News 154, 229  
 Sappi Sales 130  
 Sasol 266  
 Saveall Paper 239, 251  
 Savini, Pietro 195  
 sawmills 15, 175, 181, 208, 245-246, 257, 275, 286  
 Scandinavia 17, 31, 33, 108, 177, 212  
 Schwartz, Hyam 16, 18  
 Scotland 26, 29-30  
 Scott, Bob 134  
 Shangaan 87  
 shareholders 75, 146, 175, 176, 177, 180, 286, 289  
 shares 22, 26, 80  
 Sharky, Mike 164  
 Sheriff, Gordon 90  
 Siemens 26  
 silviculture 107, 155, 180, 211, 240-241, 272-273  
 Sisalana 86, 112  
 Sittingbourne 161, 165, 212  
 Smith, C G 212, 214, 215  
 Smith, E J 122  
 Smith, Howard, *see* Howard Smith Paper Mills  
 Smith, Hugh 285  
 Smith, Leon 160, 161, 225  
 Smith, 'Old' Harry 66  
 Smith, 'Young' Harry 66, 115  
 Snyman, Fred 107, 132, 134  
 softwoods 55, 92, 175, 183, 202, 212  
 sorters 60, 95  
 South African Board Mills, 119, 239  
 South African Bureau of Standards 106, 158  
 South African Forest Investments 107, 108, 125  
 South African Transport Services 285  
 South African War 85, 134  
 South West Africa 194  
 Southern Zululand Athletic Club 167  
 Soviet Union 193  
 Springs 26, 29, 31, 47, 60, 205  
 Stanger 71, 86, 91, 167, 212-213, 214, 215, 276  
 — mill 212-214, 225, 229, 234, 247, 251, 254, 293  
 stationery 53, 158  
 Steyn, Ella 122  
 Stockholm 115  
 Stoker, Peter 240, 241, 257, 272, 285  
 Stratten, Peter 181, 208, 221, 245, 285  
 Stratten, Tommy 18, 22, 23, 28, 53, 58, 59, 63, 65, 71, 90, 92, 95, 96-97, 131, 132, 135, 155, 176, 179, 181, 261  
 straw, wheat 17, 18, 19, 27, 29, 33, 45, 48, 54, 58, 63, 65, 66, 115  
 strikes 58, 183, 186, 231
- Struwig, Mike 221  
 Stubbings, Quintin 151, 230, 285  
 sugar cane 15, 17, 86, 112, 122, 212, 212, 247  
 Sundumbili 149, 197  
 supply houses 15, 19, 21, 34, 39, 42, 54, 59, 95, 96, 158, 176, 190, 199  
 Swazi 87  
 Swaziland 96, 119, 122, 151, 160, 286  
 Sweden 108, 115, 154, 161, 193, 251
- TDC, *see* Total Distribution Control  
 tall oil 183  
 Tampella 285  
 tariffs, protective 16, 115  
 Taylor, Herby 239, 251  
 thinnings 17, 18, 19, 48  
 Thompson & Norris 76  
 timber, mining 15, 58, 181, 245, 257, 275, 276  
 Timberboard 275  
 tissue 106, 115-116, 119, 142, 145, 158, 179, 203, 212, 234, 247, 293  
 Tomlinson, George 65  
 Toshiba 294  
 Total Distribution Control 266, 276  
 trade unions 186  
 training 175, 186, 230  
 Trans Africa Paper Products 234  
 transport 29, 48, 50, 66, 81, 92, 107, 147-148, 199, 263  
 Transvaal 15, 58, 63, 122  
 — Eastern 17, 29, 48, 66, 107, 122, 128, 132, 157, 160, 175, 176, 180, 181, 208, 211, 240, 245-246, 257  
 — Northern 17  
 — Western 29, 81, 107
- Tugela mill 75-76, 96, 97, 103, 108, 113-115, 131, 146, 148, 149, 157, 170, 181, 183, 186, 195-197, 202, 205, 208, 209, 222, 224, 229-230, 234, 254, 285  
 — No 1 machine 74-75, 86, 92, 115, 128, 130, 148  
 — No 2 machine 114-115, 128, 130, 229  
 — No 3 machine 114-115, 190  
 — No 4 machine 128, 146-147, 148, 165, 179, 229
- Tugela River 71, 85-86, 108-109, 112, 128, 149, 151, 167, 194, 196, 199, 230, 240  
 Twello Bosboukorporasie 132, 154  
 Typek Bond 190
- Umlazi River 177  
 Umvoti River 247  
 Unicases 130  
 Unicorn House, 221, 239  
 Union Corporation 18-19, 21-23, 26, 28, 30, 34, 54, 58, 59, 66, 67, 70, 71, 75, 80, 90, 92, 95, 116, 122, 130, 131, 145, 146, 176, 203, 205, 213, 214, 215, 221, 225, 239, 246, 255, 257

- engineering 106, 134  
Union Corrugated Cases, 76, 81, 115, 131, 145, 158  
United States 55, 58, 65, 108, 115-116, 130, 142,  
151, 165, 193, 257, 269, 278  
Usutu mill 160  
Uys, Phillie 194
- Vaal River 22, 26  
Van As, Eugene 208, 211, 218, 221-222, 225,  
229-230, 235, 239, 245, 257, 278, 282, 285  
Van der Merwe, Jannie 199  
Van Eck, H J 132, 176  
Van Niekerk, Manie 183, 224-225  
Venus Timbers 257  
Vereeniging 16, 23, 30  
Verona 138-139  
Verreyn, Apie 161  
Verwoerd, Hendrik 119, 170  
Viljoen, Ben 134  
Viljoensdrift 23, 26  
Vlok, Andre 158, 194, 202, 209, 224-225, 235, 254,  
257, 285  
Voith-Dorries 251
- Wadeville 142, 157, 258, 275  
Walker, Wendell C 179, 205  
Walmsleys 75, 77, 86, 146, 263  
waste paper 31, 48, 234, 238-239, 251  
Waste Paper Recovery Association 48
- water 19, 26, 29, 47, 70, 76, 87-88, 132, 247, 251  
— bombing 275  
watermarks 81, 96  
Waterval Boven 174, 175, 211, 262, 269  
Waterval Onder 132, 175, 269  
wattle 17, 55, 58, 66, 107, 240  
Wayburne, Lon 108, 122, 161, 164, 180, 183, 208,  
221  
Western Province Paper Salvage 239  
White, J D 92, 108  
White, Joseph 39, 42, 50  
White River 132, 258  
Wiggins Teape 76, 80, 81, 92  
Wildlife Society of Southern Africa 197, 239  
Wisconsin 108, 116, 125, 142, 145, 203  
Witbank 29, 39, 107  
Witwatersrand 87, 125  
World War I 17, 29, 54  
World War II 39, 42-43, 53, 54, 142
- Zimbabwe 70, 181, 221  
Zulu 85, 87, 112, 186, 199  
Zulu War 85, 86, 194  
Zululand 70, 71, 75, 81, 85-87, 90-92, 107, 108, 113,  
148-149, 157, 167, 181, 208, 209, 211, 240,  
257, 272  
Zululand Construction 209, 222, 237-238, 247,  
262, 266

## PAPER CHAIN

is a Hollards book printed on 135 g/m<sup>2</sup> Shaka Premium Matt/Art paper produced by Sappi Fine Papers at Stanger mill on the Natal North Coast. Shaka, a double-coated paper first introduced in 1984, is made from bleached pulp produced at Ngodwana mill. in the Eastern Transvaal. The book's endpapers are printed on 180 g/m<sup>2</sup> Lord Ariston laid paper made by Sappi Fine Papers at Adamas mill, Port Elizabeth.

The text has been set by CTP Book Printers of Parow, Cape Province, in 11 on 13 point Times Roman. Heads and captions are in American Classic and illustrations are scanned duotones in black and lime green. All reproduction work is by Cityset of Sandton, Transvaal.

The book has been designed by Heather Blair with production co-ordination by Alan Bardouleau. It has been lithographed in three colours and bound by CTP Book Printers of Parow.



