SAPPI FINE PAPERS (PTY) LTD v ICI CANADA INC (Formerly CIL INC)

APPELLATE DIVISION

CORBETT CJ, E M GROSSKOPF JA, NESTADT JA, VIVIER JA and NICHOLAS AJA

1992 February 24–26; March 30

Patent—The specification—Construction of—To be construed with reference to state of knowledge of those skilled in the art —Relevant state of knowledge being that obtaining at time of publication of specification, ie at time of filing application for registration—Court to be instructed by expert evidence as to state of art in field to which invention relates at relevant time—Court to be placed, as far as possible, in position of skilled addressee —Court thus to adopt purposive approach to interpretation of patents.

Patent—The specification—Construction of—Skilled addressee—Who is—Someone expected to bring reasonable intelligence to bear upon language of specification—Skilled addressee, while not required to struggle unduly with specification, must not adopt attitude of studied obtuseness.

Patent—Convention patent—Revocation of—On grounds of misrepresentation—Patents Act 37 of 1952, s 23 (now repealed) —Section 23(1)(i) *and* (k) *providing for revocation in case of misrepresentation—Section 23(1)*(k)*, providing for specific case of convention patent, laying down additional requirements in subparas (i) and (ii)—Patent in suit a convention patent—No suggestion that requirements of subparas (i) and (ii) met —Applicant for revocation nonetheless pursuing case for revocation on basis of alleged disconformity between application in convention country and patent in suit—Court holding that, while alleged disconformity could fall under wide and general wording of s 23(1)*(i), generalia specialibus non derogant *rule supporting conclusion that Legislature intended para* (k) *to deal specifically with disconformity as to invention in convention application —Disconformity as to invention in case of convention application and consequential misstatements in application thus not constituting ground for revocation under s 23(1)*(i).

A patent specification must be construed with reference to the state of the knowledge of those skilled in the art and, according to English authority and, it appears, the South African law, the relevant state of knowledge is that obtaining at the time of the publication of the specification, ie at the time of filing of the application. In order to enable the Court to construe a specification properly, it must be instructed by expert evidence as to the state of the art in the field to which the invention relates as it was at the relevant date. The Court must be placed, as far as is possible, in the position of the skilled addressee. The skilled addressee is someone who is expected to bring reasonable intelligence to bear upon the language of the specification and who, while not required to struggle unduly with it, is to make the best of it and not to adopt an attitude of studied obtuseness. The Court should, thus, adopt a 'purposive' approach to the interpretation of patents.

Wood has to be pulped, by mechanical or chemical means, in order to produce paper. Delignification, in terms of chemical pulping, involves the removal of lignin from the wood. This is achieved by a process known as 'cooking', which entails the wood being placed in a vessel, known as a 'digester', together with a chemical agent in an aqueous solution, known as the 'pulping liquor'. The contents of the digester are then heated under pressure for a chosen period, during which period the pulping liquor penetrates the wood, reacts with the lignin and takes it into solution, leaving the wood fibres as lignin free as possible. The wood fibre and liquor are then separated. A problem inherent to the chemical pulping process is the degradation of the cellulose fibres themselves, resulting in lower yields of cellulose and a reduction in the strength of the pulp produced. One of the two best-known processes using an alkaline pulping liquor produces a 'stronger' pulp, but also produces unacceptable air pollutants as a side-effect; the other, while not producing unacceptable pollutants, is inclined to degrade cellulose faster and consequently produces an inferior pulp.

The respondent's patent concerned a process for the delignification of lignocellulosic material (ie the removal of lignin from, *inter alia*, wood in order to produce cellulose suitable for the manufacture of paper products). In its patent specification, the respondent described the objects of its invention as providing an increased yield of cellulosic pulp with a lower pollution potential. The delignification process protected by the patent entailed the treatment of lignocellulosic material in a closed reaction vessel with an alkaline pulping liquor, which pulping liquor contained a specific range of percentage (by weight based on the material) of a cyclic keto compound selected from a specified group of compounds, the treatment taking place at a maximum temperature in a stated range for a stated range of time.

The process used by the appellant at one of its mills seemed, *prima facie*, to fall within the process protected by the patent, using as it did one of the selected cyclic keto compounds, namely anthraquinone (AQ), in an alkaline pulping liquor. The appellant's denial that it had infringed the respondent's patent was based upon the chemical reactions which occurred during the 'cooking' process: the conversion of AQ, which was virtually insoluble in aqueous systems and thus did not dissolve into the pulping liquor when added to the digester, into semi-anthraquinone (semi-AQ), then into anthrahydraquinone (AHQ) by reduction and, subsequently, by oxidation when AHQ was converted back to AQ, possibly via semi-AQ. Unlike AQ, AHQ is highly soluble in an alkaline solution. The conversion of AQ into AHQ accordingly enabled the latter to go into solution, to penetrate the wood chips in the digester, to react with the lignin and to facilitate and speed up the delignification process. AHQ also counteracted the degradation of the cellulose.

The appellant's defence was that: *(a)* claim 1 of the respondent's patent, properly interpreted, meant that during the process of treatment the alkaline pulping liquor had to contain a prescribed concentration of a cyclic keto compound and, more particularly, one of those included in the group of selected compounds; *(b)* while at its mill the compound initially added to the alkaline pulping liquor before digestion commenced was one of the selected compounds (AQ), as the treatment progressed the AQ was converted to semi-AQ and AHQ, neither of which was a cyclic keto compound; and *(c)* it was not possible at any given time during the process of digestion, or immediately upon its termination, to say how much, if any, AQ was still contained in the pulping liquor.

The appellant led expert evidence, which was undisputed, with reference to the process at its mill to the effect (i) that the major delignification took place at maximum temperature; (ii) that during the period while the contents of the digester were heating to maximum temperature the AQ was progressively converted to AHQ, so that by the time that maximum temperature was reached the amount of AQ left in the pulping liquor would not be substantial and at the end of time at temperature (ie the period for which the contents of the digester were maintained at maximum temperature) would be minimal; (iii) that during the process of digestion it was not possible to determine at any particular time what the concentration of AQ in the pulping liquor was; and (iv) that after the termination of the digestion process and the emergence of the liquor from the digester the semi-AQ and AHQ, immediately

upon contact with air, were oxidised and converted to AQ, thus preventing any measurement at that stage in order to determine what the concentration of AQ during the digestion process had been.

Held (*per* Corbett CJ; EM Grosskopf JA, Nestadt JA, Vivier JA and Nicholas AJA concurring), that at the relevant date the skilled addressee would have known that a high pressure built up in a digester while cooking was in progress and that there inevitably would be problems in then introducing pulping liquor or additives, or in removing additives in order to measure quantities.

Held, further, that it could be inferred from the evidence of the respondent's expert witness that the insolubility of AQ in aqueous systems and the solubility of AHQ had been well-known facts at the relevant date.

Held, further, that it appeared, too, that at least part of the reduction-oxidation reaction involving the conversion of AQ into AHQ would have been known.

Held, further, accepting the above to have been the state of the art at the relevant date, that the following conclusions reached by the Court *a quo* had, in the main, been well founded: *(a)* that a skilled addressee would have been surprised to have been told that the addition of one of the selected cyclic keto compounds had to take place when the interior of the digester had reached high temperature and pressure; *(b)* that it followed that any reasonable reader of the claim would have realised that, in order to 'treat' the wood chips, the AQ had to change from AQ into AHQ, and that a reference in the patent claims to AQ had to be a reference to AQ in some other form, for example the reduced form, AHQ; and *(c)* that if it were taken into account that AHQ could not be measured, especially not in a closed vessel at high temperature and high pressure, it had to follow that the pulping liquor would have had to have contained AQ in the prescribed quantities when added to the wood—the AQ 'treated' at high temperatures, but it treated via its reduced form.

Held, further, that the essence of the invention was the additive which had been found, when applied to the conventional pulping process, to have various beneficial effects.

Held, further, that, while it was true that claim 1 spoke of treating cellulosic material in a closed reaction vessel with an alkaline pulping liquor *containing* AQ, in view of the knowledge of the art ascribed to the skilled addressee, on a purposive or realistic construction of claim 1, 'containing' had to be interpreted as meaning 'initially containing' or 'to which has been added'.

Held, further, that, although on a purely verbal analysis of claim 1, the treatment could be said to commence only when maximum temperature was reached, a more purposive or realistic approach, based upon the skilled addressee's knowledge of the art (that, while treatment during the time at maximum temperature constituted the most important phase during which the bulk of delignification took place, a significant and important part of the treatment took place during the fairly lengthy period during which heating to maximum temperature took place), would lead to the conclusion that the treatment referred to in claim 1 included the phase during which the contents of the digester were heated to maximum temperature.

Held, accordingly, that the appellant had infringed the respondent's patent.

The appellant had counterclaimed for the revocation of the respondent's patent on the grounds of, *inter alia*, misrepresentation. The patent in issue had been granted on a convention application. In its application for the registration of the patent in South Africa the respondent had stated that protection of its invention had been sought in Great Britain, and had cited four applications, numbered consecutively, all bearing the date 5 September 1975. The appellant's case was that, since the British applications had described inventions different from the invention claimed in the patent in suit, the South African application had contained a material misrepresentation. The respondent denied that there had been any misrepresentation, alleging that the only difference had been that, for the British applications, the invention had been split into four categories.

Since the patent had been granted on an application made before 1 January 1979, the now repealed Patents Act 37 of 1952 governed the situation. Section 23(1) of that Act listed all the grounds upon which the grant of a patent could be opposed or revoked. The provisions relevant to misrepresentation were s 23(1)*(i)*, which provided for revocation if the application contained a material misrepresentation, and s 23(1)*(k)*, which governed the case where a convention application was in

issue. Assuming the application in the convention country to have been in Great Britain (as it had been in this case), s 23(1)*(k)* provided that it would be a ground for opposition or revocation, in the case of a convention application in South Africa, that the specification of the South African patent described or claimed an invention different from that for which application for protection in Great Britain had been made, *and* that the invention described or claimed in the South African patent specification (i) formed the subject of an application for a patent in South Africa which, if granted, would anticipate the convention patent applied for; or (ii) was not an invention as defined in the Act.

Held, assuming in favour of the appellant that the differences alleged by it existed and were material, that, since there had been no suggestion that the requirements of subparas (i) and (ii) of s 23(1)*(k)* had been met, acceptance of the appellant's argument would have meant that, although the disconformity in question could not constitute a ground for revocation under s 23(1)*(k)*, it could constitute a ground under s 23(1)*(i)*.

Held, further, that it was highly improbable that the Legislature, having laid down specific additional (and alternative) requirements before disconformity as to invention could invalidate a convention application, could have intended that under another provision in the same section such disconformity could invalidate without the existence of one or other of the additional requirements.

Held, further, that, while it was true that such disconformity could fall under the wide and general wording of para *(i)*, the rule of construction *generalia specialibus non derogant* supported the conclusion that the Legislature had intended in para *(k)* to deal specifically with the case of disconformity as to invention in a convention application.

Held, accordingly, that a disconformity as to invention in the case of a convention application and the consequential misstatement in the application were not grounds for opposition or revocation under s 23(1)*(i)*. Appeal dismissed.

The decision in the Transvaal Provincial Division in *ICI Canada Inc (formerly CIL Inc) v Sappi Fine Papers (Pty) Ltd* confirmed.

Appeal from a decision in the Transvaal Provincial Division (Harms J, Kirk-Cohen J and MacArthur J). The facts appear from the judgment of Corbett CJ.

D J B Osborn SC (with him *C E Puckrin SC*) for the appellant referred to the following authorities: As to the relevant rules as to the construction of patents, see *Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A) at 613F–G, 614A–H, 615E–G; Burrell *South African Patent Law and Practice* 2nd ed para 5.14 and the cases there cited, para 5.15; *Power Steel Construction Co (Pty) Ltd v African Batignolles Constructions (Pty) Ltd* 1955 BP 155 at 162D–F; *Electrical and Musical Industries Ltd v Lissen Ltd* [1939] RPC 23 at 39; *Catnic Components Ltd and Another v Hill and Smith Ltd* [1982] RPC 183 (HL); *Stauffer Chemical Co and Another v Safsan Marketing and Distribution Co (Pty) Ltd and Others* 1987 (2) SA 331 (A); *Multotec Manufacturing (Pty) Ltd v Screenex Wire Weaving Manufacturers (Pty) Ltd* 1983 (1) SA 709 (A) at 720–1. As to the doctrine of purposive construction and its application, see the *Catnic Components* case *supra* at 242; the *Stauffer Chemical Co* case *supra* at 343 *et seq*, 344C, 344F, 346G–347A, 347C–D; the *Multotec Manufacturing* case *supra* at 721H–722A. As to who the man in the art is, see *B-M Group (Pty) Ltd v Beecham Group Ltd* 1980 (4) SA 536 (A) at 553D–F; *Colgate-Palmolive Co v Unilever Ltd* 1983 BP 121 at 126B–130F; Blanco White *Patents for Inventions* 5th ed para 4–503 at 129. As to priority date, see *Bendz Ltd and Another v SA Lead Works Ltd* 1963 (3) SA 797 (A) at 807D–E. As to the test to be applied in the case of misrepresentation, and its application, see the *Bendz* case *supra* at 807F; *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A)

at 272F; the *Stauffer Chemical Co* case *supra* at 347B–C; *Rodi and Weinenberger AG v Frank & Hirsch (Pty) Ltd* 1960 (3) SA 747 (A) at 762H–763A; *De Beers Industrial Diamond Division (Pty) Ltd v Ishizuka* 1980 (2) SA 191 (T) at 195G–H. And, generally, see the Patents Act 37 of 1952; the Patents Act 57 of 1978; *The Shorter Oxford Dictionary*; *Webster's New Twentieth Century Dictionary*. As to the respondent's application to amend, see *South African Inventions Development Corporation* 1982 BP 317 at 332A; *Bendz Ltd and Another v SA Lead Works Ltd* (*supra* at 810A–B, 809H–810D); the Patents Act 57 of 1978, s 3(1); the Patents Act 37 of 1952, ss 53(*a*), 65(4); *Dresser Industries Inc v SAIDCOR* 1982 BP 307; *Gordon v Tarnov* 1947 (3) SA 525 (A) at 531–2; *Bellairs v Hodnett and Another* 1978 (1) SA 1109 (A) at 1150F–1151A; *De Villiers v De Villiers* 1947 (1) SA 264 (C); Herbstein and Van Winsen *The Civil Practice of the Superior Courts of South Africa* 3rd ed at 733–4; *Van Aswegen v Fechter* 1939 OPD 78 at 88; *Plimpton v Malcolmson* 3 ChD 531; *Plimpton v Spiller* 6 ChD 412; *Harris v Rothwell* (1887) 4 RPC 225 at 229–33 (35 ChD 416 at 419, 422 *et seq*); *VD Ltd v Boston Deep Sea Fisheries* [1952] RPC 303 at 328; Deller's *Walker on Patents* 2nd ed vol 1 at 273; *Siemens-Elema AB v Puritan-Bennett Corporation* 13 USPQ 2nd ed at 1804, 1806; *Sharpe and Dohme Inc v Boote's Pure Drug Co Ltd* [1927] RPC 367 at 402 and [1928] RPC 154 at 179, 180; *Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A); *Humpherson v Syer* [1887] RPC 407 at 413; *Bristol Myers Co's Application* [1969] RPC 146 at 155; Hoffmann and Zeffertt *The South African Law of Evidence* 4th ed at 429; *Cole v Government of the Union of South Africa* 1910 AD 263 at 273; *United Building Society and Another v Lennon Ltd* 1934 AD 149 at 162–3; *Union Government v Hawkins* 1944 AD 556 at 559–60.

L Bowman SC (with him *Brahm du Plessis*) for the respondent referred to the following authorities: As to the interpretation of patent specifications, see *Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A) at 614A–D, 614D–G; *British Celanese Ltd v Courtaulds Ltd* [1935] 52 RPC 171; *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A) at 250A–251B; *Selero (Pty) Ltd and Another v Chauvier and Another* 1984 (1) SA 128 (A) at 139D–H; *Catnic Components Ltd and Another v Hill and Smith Ltd* 1981 FSR 60 at 65–6, also [1982] RPC 183 (HL) at 242–3; *Multotec Manufacturing (Pty) Ltd v Screenex Wire Weaving Manufacturers (Pty) Ltd* 1983 (1) SA 709 (A) at 722A–D; *Stauffer Chemical Co and Another v Safsan Marketing and Distribution Co (Pty) Ltd and Others* 1987 (2) SA 331 (A) at 342G–347H; *Codex Corp v Racal-Milgo Ltd* [1983] RPC 369 (CA) at 382; *Societe Nouvelle des Bennes Saphem v Edbro Ltd and Another* [1983] RPC 345. As to the addressee of a patent specification, see *Colgate-Palmolive Co v Unilever Ltd* 1981 (9) BP 121 at 131B–132B; Burrell *South African Patent Law and Practice* 2nd ed para 4.18 at 163–4; Blanco White *Patents for Inventions* 5th ed para 4–503 at 129–31; Terrell on the *Law of Patents* 3rd ed paras 5.03–5.05 at 86–7. As to infringement, see *Selero (Pty) Ltd and Another v Chauvier and Another* 1984 (1) SA 128 (A) at 137F–G; cf *Swart en 'n Ander v Cape Fabrix (Pty) Ltd* 1979 (1) SA 195 (A) at 202. As to misrepresentation, see *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A) at 272; *Power Steel Construction Co (Pty) Ltd v African Batignolles Constructions (Pty) Ltd* 1955 (4) SA 214 (A) at 224A–G; cf *Veasy v Denver Rockdrill and*

Machinery Ltd 1930 AD 243 at 280; *Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A) at 656B–E; *I G Farben* [1931] 49 RPC 190 at 199; *Andre Becq's Application* (1932) 49 RPC 52; Terrell on the *Law of Patents* 8th ed at 118–20; *Terrell* 9th ed at 62; *Blanco White* (*op cit* para 2.202 at 31); *Polaroid Corporation (Land's) Patent* [1981] RPC 111 at 119 and [1980] RPC 441 at 445; *Bendz Ltd and Another v SA Lead Works Ltd* 1963 (3) SA 797 (A) at 807F–G, 809H–810A; *Reeves Bros Incorporated and Spunnyfoam Laminations (Pty) Ltd v Furpile (Pty) Ltd* 1971 (5) BP 21 at 37E–38A; *Unilever v Colgate-Palmolive Co* 1974 (6) BP 12 at 21H–F; *Dresser Industries Inc v South African Inventions Development Corporation* 1982 (9) BP 317 at 329 *et seq*. As to anticipation, see the *Gentiruco* case *supra* at 646E–G. As to the application to amend, see *Robinson v Randfontein Estates Gold Mining Co Ltd* 1921 AD 168 at 243; *Trans-Drakensberg Bank Ltd (under Judicial Management) v Combined Engineering (Pty) Ltd and Another* 1967 (3) SA 632 (D) at 638A–B; Harms *Civil Procedure in the Supreme Court* para J40 at 293; *Euro Shipping Corporation of Monrovia v Minister of Agriculture* 1979 (2) SA 1072 (C) at 1080H–1081C; *Benjamin v Soba South African Building and Construction (Pty) Ltd* 1989 (4) SA 940 (C) at 957G–958A; *Bellairs v Hodnett and Another* 1978 (1) SA 1109 (A) at 1150E–1151B; *President Versekeringsmaatskappy Bpk v Moodley* 1964 (4) SA 109 (T) at 110F–111A; *Amod v South African Mutual & Fire and General Insurance Co Ltd* 1971 (2) SA 611 (N) at 614C–615F; Herbstein and Van Winsen *The Civil Practice of the Superior Courts in South Africa* 3rd ed at 357, 358; Hoffmann and Zeffertt *The South African Law of Evidence* 4th ed at 428–30.

Cur adv vult.

Postea (March 30).

Corbett CJ: The respondent in this appeal, ICI Canada Incorporated (formerly CIL Incorporated and hereafter referred to as 'CIL'), a Canadian corporation, is and at all material times has been the patentee of South African patent No 76/5250 for an invention entitled 'Delignification Process'. The patent was granted on a convention application which was lodged at the patent office on 1 September 1976. The application for the protection of the invention in the convention country (Great Britain) was made on 5 September 1975.

Towards the end of 1984 CIL instituted action against the appellant, Sappi Fine Papers (Pty) Ltd ('Sappi'), in the Court of the Commissioner of Patents, alleging that Sappi was and had been infringing certain of the claims in patent No 76/5250 ('the patent in suit') and claiming an interdict and certain other relief, including an inquiry as to damages. Sappi defended the action, denying infringement and damages, and it also counterclaimed for the revocation of the patent in suit, alleging that it was invalid upon a number of grounds.

The case was heard by Van Zyl J as Commissioner. After a lengthy trial he non-suited CIL on the infringement issue and dismissed its claim. In regard to the counterclaim the learned Commissioner upheld two of Sappi's grounds of invalidity, viz material misrepresentation and anticipation, and made an order revoking the patent in suit. The finding

of anticipation related to only six of the 12 claims of the patent in suit (Sappi claimed that two other claims, Nos 9 and 11, were also anticipated) and was made in respect of only one of four alleged anticipatory documents, viz a printed publication known as 'the Swedish Honshu' patent application. Because Sappi failed in establishing several of the grounds of invalidity claimed by it, including inutility, ambiguity and insufficiency, and was partially unsuccessful on the issue of anticipation, the Commissioner made an order granting Sappi only two-thirds of its costs in respect of the claim and the counter-claim.

CIL appealed successfully to the Transvaal Provincial Division ('TPD'), which set aside the order of the Commissioner and substituted one interdicting Sappi from infringing claims 1, 3, 4, 5, 6, 9 and 11 of the patent in suit, ordering an inquiry as to damages and dismissing Sappi's counterclaim. The TPD granted Sappi leave to appeal against the order interdicting the infringement of the aforementioned claims, against the order dismissing the counterclaim for revocation (but only in respect of the ground of material misrepresentation) and against the consequential order for costs. On a petition to this Court leave to appeal was given in respect of a further ground of revocation, viz anticipation by the Swedish Honshu patent application.

There are thus three main issues on appeal: infringement, material misrepresentation and anticipation by the Swedish Honshu patent. Before considering these issues it is necessary, however, to sketch the general industrial background to the invention which forms the subject-matter of the patent in suit and to examine the patent specification.

Background

The invention of the patent in suit relates to a process for the delignification of lignocellulosic material, such as wood, straw and bagasse (the residue after extracting the juice from sugar cane) undertaken in order to produce cellulose suitable for the manufacture of paper products. As this case relates to the process as applied to wood I shall omit further reference to straw and bagasse.

Wood is composed mainly of hairlike fibres, consisting primarily of cellulose, which are bound together by a substance known as lignin. Cellulose is a sugar polymer with a very long molecular chain. Lignin is also a polymer and similarly has a long molecular chain. In wood the cellulose and the lignin are intermixed to form a solid matrix with a rigid structure. There is a third minor component of most woods, comprising gums and oils, but these may be disregarded. Woods are classified into soft woods and hard woods. Soft woods are derived from trees of the conifer class, whereas hard wood come from certain types of deciduous trees. Soft woods contain much longer fibres than hard woods, but both are valuable in the making of paper products.

In order ultimately to produce paper it is necessary that the wood be pulped. There are basically two methods of pulping: mechanical pulping and chemical pulping. Mechanical pulping is achieved by grinding, using stone mills. It does not involve delignification and it produces a pulp suitable for making newsprint. In the case of chemical pulping, on the other hand, delignification is the object of the process and it produces pulp

suitable for a wide range of paper-making. There is also a hybrid process called semi-chemical pulping. In this matter, however, we are concerned only with chemical pulping.

Delignification in terms of chemical pulping involves the removal from the wood of the lignin and the other non-cellulosic components, such as gums. It is achieved by means of a process known as 'digesting' or 'cooking', in which the wood (usually in the form of chips) is placed in a vessel, called a 'digester', together with a chemical agent in an aqueous solution, known as the 'pulping liquor', and the contents of the digester are heated under pressure for a chosen period of time. During this process the liquor penetrates the wood and reacts with the lignin and takes it into solution, leaving the wood fibres relatively lignin-free (depending on the degree of effectiveness of the cooking process). When the cook is complete the liquor (with the lignin in solution) is separated from the cellulose, which then constitutes the wood pulp available for paper-making. Different types and concentrations of chemical agents in the liquor and different conditions and methods pertaining to the cook will produce varying degrees of delignification; and in general the greater the degree of delignification the higher will be the quality of the paper produced by the wood pulp.

One of the problems inherent in the chemical pulping process is that while the delignification is taking place the cellulose fibres themselves are to some extent degraded and in particular tend to undergo a process known as 'peeling', which has the effect of shortening the molecular chains, thereby decreasing the yield of cellulose and reducing the strength of the pulp produced. For many years it has been the object of research chemists in the pulping field to devise ways and means of controlling or eliminating the peeling reaction and of removing the lignin while minimising the degradation of the cellulose in the fibres.

Chemical pulping processes fall into two main categories, based on the ingredients of the pulping liquor. These are (i) the acid, which uses an acid pulping liquor and of which the sulphite process is an important example; and (ii) the alkaline, which uses an alkaline pulping liquor and of which the soda and kraft (or sulphate) processes are the best known. This case is concerned only with the alkaline processes.

The soda process involves the use of a liquor containing sodium hydroxide (popularly known as caustic soda); while the kraft process employs a mixture in solution of sodium hydroxide and sodium sulphide. There is also a modification of the kraft process, which involves the inclusion in the pulping liquor of polysulphide, but this does not call for separate consideration.

The soda process is the oldest of the alkaline processes, but the kraft process, which was subsequently invented, was found to have the advantage of producing 'stronger' pulp (hence the name 'kraft', meaning, in German, strong). On the other hand, the kraft process has the side-effect of producing a very obnoxious odour, which tends to pollute the atmosphere. The soda process does not have this side-effect, but the process is inclined to degrade the cellulose faster than the kraft process does and consequently produces an inferior pulp.

There are fundamentally two types of cooking or digestion used in pulping: batch digestion and continuous digestion. In the case of the batch digestion the process consists of a single complete operation, which may be repeated as often as required. Typical apparatus for batch digestion consists of a large cylindrical metal vessel, which stands upright and which is connected by pipes to a circulation pump and a heat exchanger. At the bottom of the cylinder is a 'blow' valve, connected to a blow line. The batch digester is operated by filling the vessel with wood chips to the desired level and then pumping in cooking liquor, which enters the vessel at the top. When the appropriate amount of liquor is in the digester, it is closed up. (Usually the proportion of liquor to wood chips would be between 3:1 and 5:1.) Thereafter the circulation pump is brought into operation and this causes the liquor to be drawn off at a point called 'the circulation screen' near the bottom of the vessel, to pass through the heat exchanger, where it is heated, and to re-enter the vessel at the top. The liquor continues to circulate in this way and the temperature thereof to be raised until the desired maximum is reached. This temperature is then maintained for a desired period of time. The period during which the contents of the digester are being heated up to the maximum temperature, which could be from 35 to 120 minutes, is known as the 'time to temperature'; and the period during which the maximum temperature is maintained, which varies considerably but on average could be about 90 minutes, is known as the 'time at temperature'. A typical maximum temperature would be 170 °C. Attainment of this temperature causes a high pressure—of the order of seven times atmospheric pressure—to build up inside the digester. When the cooking process is complete the blow valve at the bottom of the vessel is opened and by reason of the pressure build-up within the system the contents of the vessel are ejected or blown through the valve and the connected blow line into a blow tank. In the blow tank the delignified pulp is separated from the lignin-containing liquor (called 'black liquor', in contrast to fresh or unused liquor, which is called 'white liquor') and the pulp is washed. The pulp is then ready for use or for other treatment, such as bleaching.

The continuous digestion process, which is a more recent development than the batch digestion process, involves essentially the same steps, ie applying a pulping liquor to the wood, raising temperature to a maximum temperature, maintaining that temperature for a period, ultimately blowing out the pulp and the liquor and then washing. The difference between the two processes lies in the fact that in the continuous digestion process the wood and liquor is not closed up within a specific vessel. The continuous digester may be likened to a large pipe in which wood and liquor are continuously being fed at one end and pulp and black liquor are continuously emerging at the other end. It is part of the engineer's art to design the apparatus required to accomplish this.

The specification

The body of the specification commences with the announcement that 'this invention' relates to a process for the delignification of lignocellulosic material such as wood, straw and bagasse. It then goes on to describe the need for delignification in order to produce cellulose suitable for the manufacture of paper and to express a preference for reagents which attack the lignin without appreciably affecting the cellulose component. Mention is made of the kraft process, the soda process and a 'soda-oxygen' process patented in Canada in 1972, which produces a pulp yield comparable to that of the kraft process. It is pointed out, however, that although these processes are effective in the removal of lignin, they also cause the cellulose component of the material used to be attacked to a certain degree, resulting in the lowering of yields and the degradation of the product. Long cooking times and low yields render the soda process unsuitable for pulping coniferous woods; and even in the case of hard woods the yields from the soda process are usually inferior to those achieved by the kraft process. On the other hand, a serious disadvantage of the kraft process is the air pollution which it causes.

The specification then refers to a recent publication by Bach and Fiehn and a related East German patent, which disclose the use of anthraquinone-2 monosulphonic acid ('AMS') as a means of improving yields in the soda process. AMS, when used as an additive in the first stage of the soda-oxygen process, results in yields superior to those of the kraft process and the pulp possesses strength properties comparable to that of the kraft process. Disadvantages of the soda-AMS pulping process are that it also causes an obnoxious odour and that the economic advantages resulting from higher yields are largely offset by the relatively high cost of AMS.

The specification then describes the invention:

> 'It has now been found that ligno-cellulosic material can be delignified in high yield by a process which comprises a digestion with an alkaline pulping liquor in the presence of cyclic keto compound selected from the group consisting of naphthoquinone, anthraquinone, anthrone, phenanthrenequinone, the alkyl, alkoxy and amino derivatives of said quinones, 6,11 dioxo-1H-anthra 1,2-c pyrazole, anthra-quinone-1, 2-naphthacridone, 7,12-dioxo-7,12-dihydroanthra, 1,2-b pyrazine, 1,2 benzanthraquinone and 10-methylene anthrone. Optionally the digestion with alkaline pulping liquor may be followed by a second stage digestion in alkaline medium with oxygen or an oxygen-containing gas under pressure.'

(For convenience I shall refer to the group of compounds nominated, commencing with naphthoquinone, as 'the selected compounds'.)

The specification proceeds to aver that this 'novel process' provides pulp in higher yield at an increased rate of delignification in comparison to similar processes without the additive; that it has the advantage over the process using AMS of not causing air pollution; that the concentrations of the selected compounds required are at 'an economically advantageous level' and are often less than those required with AMS. The specification then sets out the objects of the invention as follows:

> 'Thus the main object of the invention is to provide a pulping process which gives an increased yield of cellulosic pulp. Another object is to provide a pulping process having an increased rate of delignification, thus permitting a lower energy consumption and a higher throughput. A further object is to provide a pulping process which has a lower pollution potential. Additional objects will appear hereinafter.'

This statement of objects is followed by the consistory clause describing the invention, which comprises two steps. Since claim 1 of the invention

follows faithfully the wording of the consistory clause and will be fully set forth, it is not necessary to quote the latter. After the consistory clause it is stated that:

'The lignocellulosic material produced by the above two steps may be used without further treatment or may be subjected to conventional bleaching steps.

Alternatively, the lignocellulosic material may be subjected to the following additional treatment steps:

(3) treatment of the material in aqueous suspension at a consistency of 2 %–40 % by weight for 0,5–60 minutes at 20 °C–90 °C with 2 %–20 % by weight of an alkali metal base, and

(4) treatment of the alkaline material in aqueous medium at a consistency of from 3,0 %–40 % by weight with oxygen or an oxygen-containing gas for 0,5–120 minutes at a temperature of 80 °C–150 °C and a partial pressure of oxygen of 20–200 pounds per square inch.'

The remainder of the body of the specification consists of further elaboration of the invention and its application, descriptions of preferred embodiments and the illustration of the invention and its advantages by means of examples consisting of laboratory tests done with reference to various embodiments of the invention.

I come now to the claims and I set forth claim 1 divided into what, it is common cause, are its basic integers:

(a) A process for the delignification of ligno-cellulosic material comprising the steps of

(b) treating the cellulosic material in a closed reaction vessel

(c) with an alkaline pulping liquor

(d) containing from 0,001 %–10 % by weight based on the cellulosic material of a cyclic keto compound

(e) selected from the group consisting of (then follow the selected compounds as listed above),

(f) the treatment taking place at a maximum temperature in the range of from 150 °C–200 °C for a period of 0,5–480 minutes, and

(g) displacing the pulping liquor from the ligno-cellulosic material with water or an aqueous liquor inert to the lignocellulosic material.

(As the claim is set forth in the specification, step (1) comprises integers *(b)*, *(c)*, *(d)*, *(e)* and *(f)*, while step (2) consists of integer *(g)*.)

Of the further 11 claims only two need be described in any detail. In its infringement action respondent relies on claims 1, 3, 4, 5, 6, 9 and 11 only. Claims 3, 4, 5 and 6 are all based on claim 1 and are narrower in scope. It is common cause that if respondent cannot succeed on the infringement issue on the basis of claim 1, it must equally fail on the basis of claims 3, 4, 5 and 6. Claim 9 claims a process, as claimed in claim 1, 'wherein the lignocellulosic material is subject to the following additional steps . . .' and then follows steps (3) and (4) described in the body of the specification and quoted above. Claim 11 claims a process as claimed in claim 9 'wherein the oxygen-treated cellulosic material is subjected to conventional bleaching'.

Interpretation of the specification and infringement

Before analysing and interpreting the specification, more particularly claim 1 thereof, I propose to make brief reference to Sappi's alleged

infringement in order to identify the areas of dispute between the parties and the issues which arise in regard to the question of interpretation. (Compare *Selero (Pty) Ltd and Another v Chauvier and Another* 1984 (1) SA 128 (A) at 137F–H.)

Sappi is one of the largest manufacturers of pulp and paper in South Africa. It conducts its operations at mills located in different parts of the country. One of these is the Enstra Mill at Springs. CIL's case on infringement is limited to what happens at the Enstra Mill. This mill was converted to the soda process in 1978. It is admitted in effect by Sappi that the process employed at this mill consists of batch digestion in a vessel filled with wood chips, to which is added soda pulping liquor, the volume of which amounts to about 70 % of the volume of the digestion vessel. The liquor contains more than 8 % of effective alkali and is an alkaline pulping liquor. Anthraquinone ('AQ')—one of the selected compounds—in solid powder form, constituting 0,05 %–0,06 % by mass of the dry wood, is introduced into the vessel. The vessel is closed and the heating-up process takes place in the conventional manner. The time to maximum temperature of 170 °C is about 90 minutes and this temperature is maintained for 30–40 minutes (time at temperature). Thereafter the contents of the vessel are blown in accordance with conventional practice. Bleachable grade pulp is obtained, which is then bleached in various ways, including oxygen bleaching.

Prima facie, these facts would seem to bring the process employed at the Enstra Mill within the integers of claim 1. A difficulty arises, however, by reason of what is now known or thought to be known about the chemical reactions which take place in the digester during the cooking process. In short, and without going into too much chemical detail, the position is as follows.

AQ, the additive used by Sappi, is virtually insoluble in aqueous systems. Consequently, when it is first introduced into the digester it does not dissolve in the pulping liquor: it simply floats or possibly is suspended therein. As the process proceeds, however, the AQ undergoes a chemical transformation by reason of what is termed a 'redox reaction'. 'Redox' is a word formed by combining the words 'reduction' and 'oxidation' in order to describe the concomitant occurrence of reduction and oxidation. Reduction of a compound takes place when hydrogen atoms (or electrons of some kind) are gained by it; and oxidation when hydrogen atoms (or electrons of some kind) are removed. During the cooking process and by reason of the presence of organic components in the liquor the AQ is reduced by gaining a hydrogen atom to form semi-anthraquinone ('semi-AQ'). This is an intermediate step, for subsequently a further hydrogen atom is gained by the semi-AQ and anthrahydraquinone ('AHQ') is formed. Thereafter, by an oxidation process involving the loss of the hydrogen atoms the AHQ is converted back to AQ, possibly *via* the semi-AQ form. During this oxidation process the lignin itself is reduced and becomes solubilised, which is the aim of the chemical pulping process. These two processes, reduction and oxidation, proceed side by side.

There are two very important scientific truths relating to AHQ. The first is that AHQ, unlike AQ, is highly soluble in an alkaline liquor. It is clear that a compound which is insoluble will not easily react with wood,

itself insoluble. The conversion of AQ to AHQ accordingly enables the latter to go into solution, to penetrate the wood chips in the digester, to react with the lignin and to facilitate and speed up the delignification process. The AHQ also counteracts peeling. This conversion from AQ to AHQ is, therefore, an essential feature of the invention. The second truth is that neither semi-AQ nor AHQ is a cyclic keto compound. *A fortiori*, neither of them constitutes or falls under any of the selected compounds. Herein lies the kernel of Sappi's defence to the infringement action.

Also of cardinal importance to Sappi's defence is the undisputed expert evidence with reference to the process at the Enstra Mill (i) that the major delignification takes place at maximum temperature; (ii) that during the time to temperature the AQ is progressively converted to AHQ, so that by the time that maximum temperature is reached the amounts of AQ left in the pulping liquor would not be substantial and at the end of the time at temperature the amounts would be minimal; (iii) that during the process of digestion it is not possible to determine at any particular time what the concentration of AQ in the pulping liquor is; and (iv) that after the termination of the digestion process and the emergence of the liquor from the digester the semi-AQ and AHQ, immediately upon contact with the air, are oxidised and revert to AQ, thus preventing any measurement at that stage in order to determine what concentration of AQ was in the pulping liquor during the digestion process.

In the light of these facts Sappi contends that no infringement is shown to have occurred by reason of what is done at the Enstra Mill. Its defence may be summed up as follows:

(a) Claim 1 of the patent in suit, properly interpreted, means that during the process of treatment the alkaline pulping liquor must contain a prescribed concentration of a cyclic keto compound, and more particularly one of those included in the group of selected compounds.

(b) While, at the Enstra Mill, the compound initially added to the alkaline pulping liquor before digestion commences is one of the selected compounds, viz AQ, as the treatment proceeds this AQ is converted into semi-AQ and AHQ, which are not cyclic keto compounds.

(c) It is not possible at any given time during the process of digestion, or immediately upon its termination, to say how much, if any, AQ is still contained in the pulping liquor.

(d) Consequently integers *(d)*, *(e)* and *(f)* are not shown to have been satisfied by what happens at the Enstra Mill.

Paragraphs *(b)* and *(c)* above are not in dispute. Thus the crucial issue relates to *(a)*, which turns on the interpretation of the specification, more particularly claim 1 thereof. It is to this that I now turn.

The general principles of law relating to the interpretation of a patent specification have been fully enunciated in the leading cases on the subject and it is not necessary to restate them all in this judgment. I would, however, stress certain of them.

To begin with, as was stated by Lord Diplock in *Catnic Components Ltd and Another v Hill and Smith Ltd* [1982] RPC 183 (HL) at 242 line 44–243 line 1:

'. . . (A) patent specification is a unilateral statement by the patentee, in words of his own choosing, addressed to those likely to have a practical interest in the subject-matter of his invention (ie "skilled in the art"), by which he informs them what he claims to be the essential features of the new product or process for which the letters patent grant him a monopoly.'

Consequently, a patent specification must be construed with reference to the state of knowledge of those skilled in the art; and, according to English authority, the relevant state of knowledge is that obtaining at the time of the publication of the specification (see *Nobel's Explosive Co Ltd v Anderson* [1894] 11 RPC 519 (CA) at 523 lines 9–29; *Marconi's Wireless Telegraph Co Ltd v Mullard Radio Valve Co Ltd* [1924] 41 RPC 323 (HL) at 334 lines 40–2; the *Catnic* case *supra* at 243 lines 12–18; Terrell on the *Law of Patents* 13th ed at 77 para 4.35). I take this to be the time of filing of the application. This appears to be in accordance with our law. It is not necessary to decide whether, in the case of a convention application, the date of publication should be understood to be the priority date (cf Burrell *South African Patent Law and Practice* 2nd ed at 246 para 5.23).

Accordingly, in order to enable the Court to construe the specification properly, it must be instructed by expert evidence as to the state of the art in the field to which the invention relates as it was at the relevant date (*Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A) at 614E–F). In this way the Court is placed, as far as possible, in the position of the skilled addressee. In this connection, too, the Court should bear in mind that the skilled addressee is someone who is expected to bring reasonable intelligence to bear upon the language of the specification and who, while not required to struggle unduly with it, is to make the best of it and not to adopt an attitude of studied obtuseness (see Holmes JA in *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A) at 251A, quoting Colman J in the Court *a quo*).

In the *Catnic* case *supra*, Lord Diplock also stated (at 243 lines 3–5):

'A patent specification should be given a purposive construction rather than a purely literal one derived from applying to it the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge.'

This 'purposive' approach to the interpretation of patents was further elaborated and explained by the Court of Appeal in England in the case of *Codex Corporation v Racal-Milgo Ltd* [1983] RPC 369 (CA), May LJ stating (at 381 line 52–382 line 3), with reference to the question of infringement:

'The question to be asked is one of construction, but of purposive or realistic construction through the eyes and with the learning of a person skilled in the art, rather than with the meticulous verbal analysis of the lawyer alone.'

(See also *Improver Corporation and Others v Remington Consumer Products Ltd and Others* [1990] FSR 181.) The purposive approach has been approved and adopted by this Court (see *Multotec Manufacturing (Pty) Ltd v Screenex Wire Weaving Manufacturers (Pty) Ltd* 1983 (1) SA 709 (A) at 721C–722D; *Stauffer Chemical Co and Another v Safsan Marketing and Distribution Co (Pty) Ltd and Others* 1987 (2) SA 331 (A) at 343A–344D).

In argument before us (as also in the Court of the Commissioner of Patents and in the Court *a quo*)debate as to the interpretation of claim 1 revolved mainly around

(*a*) the meaning of the words 'treating' (in integer (*b*)) and 'treatment' (in integer (*f*)) and, more specifically, whether the treatment process was confined to the time at temperature or whether it included also time to temperature;

(*b*) the meaning of the word 'containing' (in integer (*d*)) and particularly whether claim 1 required a cyclic keto compound, one of the selected compounds (in this case AQ), to be present in that form and in the prescribed proportion in the alkaline pulping liquor throughout the process of treatment.

The Commissioner appears to have held in terms of claim 1(*a*) that the 'treatment' commences when the contents of the reaction vessel reach the maximum temperature; (*b*) that consequently the time to temperature is not part of this treatment process; and (*c*) that the additive (in this regard I shall merely refer to AQ) must at least be present in the pulping liquor in the minimum required quantity at the commencement of the treatment. In reaching finding (*c*) above, the Commissioner rejected a submission made on behalf of Sappi that the pulping liquor should contain the required additive throughout the time-at-temperature phase for the following reasons:

'. . . (S)ince it is clear that it (ie the additive) does not retain its original form during this phase, but is speedily converted to semi-AQ and AHQ by means of the redox process. This will be known to persons skilled in the art and is also logical, since AQ as such is not soluble in the pulping liquor but must first be converted to AHQ before it can carry out its delignification function. All that is hence required is that the necessary quantity of AQ should be present at the commencement of the treatment, that is at the time when the pulping liquor first reaches maximum temperature.'

(For purposes of future reference I shall call this 'the Commissioner's finding on the state of the art'.) On the other hand, the Commissioner also rejected an argument advanced by CIL's counsel that AQ, or at any rate its derivative AHQ, would be present at maximum temperature, even if introduced at the inception of the heating up process. He did so on the basis that AHQ and semi-AQ were not cyclic keto compounds as envisaged by integers (*d*) and (*e*) of claim 1.

The Commissioner then compared the process at the Enstra Mill with the integers of claim 1, so interpreted, and held (i) that at Enstra the treatment commenced once the liquor started circulating and being heated up and continued throughout the phase of time to temperature; and (ii) that the treatment continued during the phase of time to temperature. He then concluded:

'Although it cannot be established how far the treatment has progressed by the time the maximum temperature is reached it is clear that a certain amount of delignification will already have taken place before the attainment of this temperature. Insofar as claim 1 of the patent does not make provision for the phase of time to temperature and for the treatment which is already taking place during this phase, it cannot, to my mind, be said that the defendant's Enstra process is infringing claim 1 of the patent in suit.'

The judgment of the TPD, which was delivered by Harms J (Kirk-Cohen J and MacArthur J concurring), emphasises the purposive approach to patent interpretation and then proceeds to state what the man

in the art (in this case someone whose qualifications include a degree in chemistry) would have known at the relevant date. This knowledge may be summarised in the following propositions:

(1) that when the contents of the closed pressure vessel are heated and a high pressure builds up there are problems in introducing pulping liquor or additives or both;

(2) that there would be even greater difficulties in removing additives purely in order to measure their quantities at operating temperatures;

(3) that the pulping liquor begins to operate upon the chips when the liquor comes into contact with them;

(4) that AQ is barely soluble in aqueous systems, including alkaline pulping liquor;

(5) that AHQ and semi-AQ are highly soluble in hot pulping liquor;

(6) that in order to react with the lignin the chemicals must be in solution because they must penetrate the chips to reach the lignin;

(7) that AQ is susceptible to a redox reaction.

From this knowledge the Court drew the following conclusions:

(*a*) 'the addressee would be surprised if told that, although examples in the specification were done by adding the additive to the pulping liquor at the beginning, the claims require that the addition must take place when the interior of the closed vessel has reached a high temperature and pressure.'

(*b*) 'It follows that any reasonable reader of the claim would realise that, in order to "treat" the wooden chips, the AQ had to change from AQ to AHQ and that a reference in the claims to AQ must be a reference to AQ in some other form, eg the reduced form of AHQ.'

(*c*) 'If one takes into account that AHQ cannot be measured, especially not in a closed vessel at pressure and temperature, it must follow that the pulping liquor must contain the AQ in the prescribed quantities when added to the wood. The AQ does "treat" at these high temperatures but it treats via its reduced form.'

The Court accordingly held that, as contended by CIL, claim 1 does not unduly alter the ordinary processes of pulping and merely requires the addition of the prescribed quantity of additive to the pulping liquor at the outset of the process and, then, the following of the procedures of heating up to a temperature of between 150 °C–200 °C in a closed reaction vessel and of holding that maximum temperature for the specified time before discharging the material for further steps.

It was evidently common cause between the parties that if claim 1 were interpreted in this way, it followed that there had been infringement at the Enstra Mill of, not only claim 1, but also claims 3, 4, 5, 6, 9 and 11. And the TPD so held.

On appeal before us, Sappi's counsel strongly criticised both the findings of the Court *a quo* as to what the man in the art, the skilled addressee, would have known as at the relevant date (either 1 September 1976 or 5 September 1975), and the conclusion as to the meaning of claim 1. It was argued that the Court had not properly distinguished evidence given as to the knowledge of the art at the time of trial and that given with reference to the state of the art at the relevant date. I shall deal with these criticisms with reference to the various propositions listed above.

A As to propositions 1 and 2

It is clear to me that at the relevant date the skilled addressee (who would be someone engaged at a high technical level in the pulping industry and would have a comprehensive knowledge of the relevant chemistry) would have known that a high pressure builds up in a digester while B cooking is in progress and that inevitably there would be problems in then introducing pulping liquor or additives or in removing additives in order to measure quantities. The evidence is that at a temperature of 170 °C (an average maximum temperature) the pressure inside the digester is about 699 kilopascals, ie seven times atmospheric pressure. The problems referred to are thus virtually self-evident.

C In arguing the contrary, Sappi's counsel pointed to, firstly, the fact that in some of the experiments included under the examples in the body of the specification the additive had been introduced during the cooking process and, secondly, the continuous digestion process in which, according to counsel, 'pulping liquor and additives are added at temperature and D pressure'. These points do not impress me.

Dr Holton, CIL's only witness, was the inventor of the process which is the subject-matter of the patent and he conducted the tests or experiments referred to in the examples. In evidence (while under cross-examination by Sappi's counsel) he explained how in certain instances special apparatus, consisting of a modified digester, was devised E to enable an additive to be introduced at high temperatures. His evidence proceeds:

'Right. Now that of course is something which is not done in practice, is it? In mills?—No this would be really quite absurd to carry out in a mill. It is a theoretical experiment just to confirm the time effects of anthraquinone, or the F temperature effects of anthraquinone.'

This evidence, encouraged as it was by counsel's question, stands uncontradicted and, in my opinion, it disposes of the suggestion that the skilled addressee would have considered the introduction of additives while the cooking was in progress in a batch digester to be a practical proposition under normal pulping conditions. And the same would apply G to the removal of additives while cooking was in progress.

As regards the continuous digestion process, the references to this in the evidence are fragmentary and give very little insight into how exactly the process operates. Dr Holton was asked in cross-examination about certain 'mill trials' in which AQ was introduced into a continuous digester by H being added as a 'slurry in . . . white liquor through a pump'. There is no indication that this was a usual industrial practice or indeed what precisely it signifies. According to Rydholm, whose textbook on *Pulping Processes* was the main authority relied upon by Sappi's main expert witness, Dr Eggers, most digesters were then operated discontinuously (ie by the batch process). It would, in my opinion, be very strange if the skilled addressee I should, therefore, think in terms of continuous digestion when considering the meaning of claim 1, and more particularly the question as to when the AQ should be added, especially if (as mostly would be the case) he was operating a batch digester.

Moreover, Dr Holton's evidence was that in practice the additive was J introduced before the digester was closed and that the ordinary

commercial mill would not be equipped to allow of such introduction after A closure and after heating had started. In addition, the skilled addressee would know that there were advantages in having the additive in the digester from the beginning in that it prevents the peeling reaction and increases the yield. Moreover, the necessity for getting the best possible penetration of the wood chips by the chemicals before reaching high B temperatures had been long understood.

Proposition 3

This does not appear to be in dispute.

Propositions 4, 5 and 6 C

Sappi's counsel criticised these findings on the ground that, while they might represent the knowledge of the man in the art at the time of the trial, there was no evidence to establish that they reflected the state of knowledge as at the relevant date. I have carefully studied Dr Holton's evidence pertinent to these matters. He stated that the insolubility of AQ D in aqueous systems was a well-known fact, to be found in 'reference texts throughout the world'; and that the solubility of AHQ was also a well-known fact. Although Dr Holton did not say specifically that this was so at the relevant date, there are cogent grounds for inferring that this was what he meant. For he went on to say: E

'If I may add something, the important concept here is, or one of them is, that a soluble component can react very well with another component but if it were insoluble and looking at wood of course as being insoluble, reactions between two solid materials then are much more difficult to effect, and this initial reaction between anthraquinone and wood was somewhat surprising because one would not F predict as a chemist two solids reacting. And so in fact it was obvious that some kind of soluble form had to be resulting which could then react. This is an inherent understanding that a chemist would have of this. So that the second component anthrahydraquinone was predicted, once anthraquinone worked one had to predict that anthrahydraquinone or something very similar had to have resulted.'

Here clearly he speaks of the inherent understanding of the chemist when G AQ was found to work so successfully. A little later, and after the witness had been asked to deal with the state of knowledge as at 5 September 1975, the Court asked a question and Dr Holton replied as follows:

'Court: Do I understand you properly that, even though it was not quite certain exactly what was happening with this anthraquinone, the important thing is that H it was known that there was an oxidation reduction process and the only way in which the results which seem to have been obtained by use of this chemical could have been obtained would have been if there had been an oxidation reduction process in the course of which anthrahydraquinone would have been evolved? —Essentially correct. We just say that what we understood is that at least one half I of the cycle had to be occurring initially when anthraquinone was added. We did not at that point in time understand that the second half of this cycle, the return to anthraquinone, necessarily occurred until we learned more about how little anthraquinone could be used and then a chemist can calculate that this reaction cannot be going one way, it has to be going the complete cycle and therefore acting as a catalyst.' J

So far as I am aware the evidence was not challenged in cross-examination. Nor did Dr Eggers dissent from it. It would seem to have formed the basis of the Commissioner's finding on the state of the art. In my view, propositions (4), (5) and (6) are well founded.

Proposition 7

From the evidence quoted above it appears that at least that part of the redox reaction involving the conversion of AQ into AHQ would have been known.

Accepting that to have been the state of the art as at the relevant date, it seems to me that the conclusions of the TPD which I have listed *(a)*, *(b)* and *(c)* above are, in the main, also well founded.

The essential feature of the invention is, in my view, the additive (for convenience I shall call it AQ) which was found, when applied to the conventional alkaline pulping processes (especially the soda process), to have the various beneficial results described in the body of the specification. Admittedly the limits as to the range of the maximum temperatures and as to the period of treatment tend beyond the conventional, but this was mainly to prevent pirating and does not materially detract from the conclusion that the essence of the invention is the additive.

It is true that claim 1 speaks of treating the cellulosic material in the closed reaction vessel with an alkaline pulping liquor *containing* AQ, but it seems to me that the skilled addressee, with the knowledge of the art ascribed to him above, would realise that this part of the claim does not predicate that once AQ has been added to the alkaline pulping liquor it must remain in that pristine state throughout the treatment. He would know that this just does not happen: that in fact chemical reactions take place and the AQ is converted into AHQ. Interpreting the claim 1 purposively or realistically, I am of the opinion that 'containing' should be interpreted as meaning 'initially containing' or 'to which has been added'; and in this regard I agree with the findings of the Commissioner and the Court *a quo* that this integer of the claim is satisfied if the alkaline pulping liquor contains the required quantity of AQ at the commencement of the treatment.

It is also true, as emphasised by Sappi's counsel, that in a reply to a request for further particulars CIL averred that, when 'treating' with an alkaline pulping liquor took place at the Enstra Mill, the liquor contained 0,001 %–10,0 % by weight based on the cellulosic material of a cyclic keto compound, as defined in the claims. It was common cause, however, that it cannot be proved that this was the position throughout the period of treatment; and that towards the end of the period it is unlikely to be the case. Moreover, this statement in the pleadings cannot affect the proper interpretation to be placed on claim 1.

This brings me to the other crucial question, viz as to when the treatment does commence. I have no doubt whatever that, if the man in the art had been asked about this at the relevant time, he would have replied without hesitation that the treatment, for example, in a batch digestion commences as soon as the vessel is closed up and the process of liquor circulation and heating up has started. He would have known that

the chemical changes involved in the delignification process then start taking place and that the process becomes progressively more effective as the temperature increases until eventually the maximum temperature is reached. The evidence further indicates that he would have known that, while the bulk of the delignification takes place during time at temperature, a significant amount also takes place during time to temperature; and that a fairly long slow rise to maximum temperature is very beneficial because it allows for maximum penetration of the wood chips before the final cook starts.

It must be conceded that the period of treatment during time to temperature is not specifically referred to either in claim 1 or in the body of the specification; and that integer *(f)* speaks of the treatment taking place at a 'maximum temperature in the range of . . .'. It is this that gives rise to the problems of interpretation in this case. However, looking at the specification and claim 1 through the eyes of the skilled workman, endowed with a knowledge of the art as at the relevant date (as set forth above), I am of the opinion that the treatment should be taken to commence once the reaction vessel is closed and the process of bringing the cellulosic material into contact with the alkaline pulping liquor and heating up of the contents of the reaction vessel has started. The only alternative is to interpret the specification as meaning that the treatment only commences when time at temperature has been reached. To the skilled workman this would appear an absurdity. He would know that under the conventional pulping procedures the temperature does not suddenly jump to the maximum once the process has been started; and that in fact there is a fairly lengthy time to temperature (lasting 35 to 120 minutes) during which a significant and important part of the treatment process takes place. He would not read the process described in the specification as departing fundamentally from conventional pulping procedures. Consequently, he would not interpret the statement in integer *(f)*, and similar statements in the body of the specification, as excluding treatment during the time-to-temperature phase. On the other hand, he would appreciate that the treatment during the time at temperature constitutes the most important phase during which the bulk of the delignification takes place and would understand why the limits, or ranges, as to time and temperature were explicitly stated in regard to this phase.

While it must be conceded that, on purely verbal analysis of claim 1, the treatment could be said to commence only when maximum temperature is reached, a more purposive or realistic approach, based upon the skilled addressee's knowledge of the art, leads, in my view, to the conclusion that in claim 1 the treatment there referred to includes, by implication if necessary, the time-to-temperature phase as well.

For these reasons I agree with the conclusions reached by the TPD on the questions of interpretation and infringement.

Material misrepresentation

I turn now to the counterclaim for revocation on the ground of material misrepresentation. Since the patent in suit was granted on an application made before 1 January 1979 (the date of commencement of the Patents Act

57 of 1978), the grounds of revocation must be sought in s 23(1), read with s 43(1), of the repealed Patents Act 37 of 1952 ('the Act')—see s 3(1)(*a*) of Act 57 of 1978. Section 23(1) of the Act lists the possible grounds of opposition to the grant of a patent; and s 43(1) provides that application for the revocation of a patent may be made upon one or more of the grounds upon which the grant thereof might have been opposed, but on no other grounds.

The grounds relevant in this matter are contained in s 23(1)(*i*) and (*k*), which read as follows:

'(*i*) that the application contains a material misrepresentation;

. . .

(*k*) in the case of a convention application, that the specification describes or claims an invention other than that for which protection has been applied for in the convention country and that such other invention either—

(i) forms the subject of an application for a patent in the Union which, if granted, would bear a date in the interval between the lodging of the application in the convention country and the date of the application in the Union; or

(ii) is not an invention as defined in this Act. . . .'

As I have indicated, the patent in suit was granted on a convention application. In its completed application (on patent form No 1A) CIL stated that application for the protection of the invention had been made in Great Britain and cited four applications bearing consecutive numbers and all having the same date, viz 5 September 1975. (I shall refer to these as the 'British applications'.) CIL's application goes on to state that the British applications were the first application by it in a convention country in respect of 'the relevant invention'; and to ask that a patent be granted to it for the invention in priority over other applicants and that such a patent should have the official date of the first application in the convention country, viz 5 September 1975.

Sappi's case on material misrepresentation is based upon the averment that the British applications describe inventions different from the invention claimed in the patent in suit. Consequently, so it is said, CIL's application contains a material misrepresentation in that the application for the protection of the invention was not made in Great Britain on 5 September 1975, as alleged; and, therefore, the claims of the patent in suit were not entitled to the priority date 5 September 1975, as alleged. As I shall later explain, the issue as to the correct priority date also has a direct bearing on the other ground of revocation, viz lack of novelty owing to the alleged prior publication of the Swedish Honshu patent.

The British applications were each accompanied by a provisional specification; in each case the inventor is stated to be Dr Holton; and in each case the invention relates to a process for the delignification of lignocellulosic material involving digestion with an additive. In the case of application No 36636/75 the process consists of digestion in a soda-pulping liquor in the presence of a polycyclic aromatic oxy compound 'such as, for example', naphthoquinone, anthraquinone, anthrone or phenanthrenequinone. Application No 36637/75 relates to digestion in a soda-pulping liquor in the presence of a sulphur-free derivative of a polycyclic aromatic oxy compound 'such as, for example', the alkyl,

alkoxy or carboxyl derivatives of naththoquinone, anthraquinone, anthrone or phenanthrenequinone, or the alkali metal salts of the aforesaid carboxyl derivatives. Application No 36638/75 describes a process using a kraft liquor and the additives described in application No 36636/75; while application No 36639/75 combines a kraft liquor with the additives described in application No 36637/75. The ranges as to temperature (160 °C–195 °C), time at temperature (15 minutes–240 minutes) and the proportion of the additive (0,01 %–10 % by weight) are the same in each application. Dr Holton, in describing the applications, said:

'The inherent differences are that we split the invention, if you will, into four categories.'

In my view, the four applications should be read together and as pertaining to a single invention comprising the combined elements of pulping liquor, additive and time and temperature ranges contained in all four.

Sappi founds its case of disconformity between the invention described in the British applications and that claimed in the patent in suit on differences between them in regard to the classes of additives and the ranges of additive proportion, of time at temperature and of maximum temperature.

As a first step in considering the issue of material misrepresentation I shall assume in Sappi's favour that these differences exist and are material. The question which then arises is what the legal consequences of such disconformity are and, more particularly, whether it amounts to material misrepresentation.

The first point to note is that disconformity of this nature, in the case of a convention application, is specifically dealt with in s 23(1)(*k*). This subsection is not happily worded, but reference to the Afrikaans text helps to clarify its meaning. Taking, by way of example, the application in the convention country to have been in Great Britain, the subsection provides that it shall be a ground of opposition or revocation, in the case of a convention application in South Africa, that the specification (of the South African patent) describes or claims an invention different from that for which application for protection was made in Great Britain *and* that 'such other invention' (ie that described or claimed in the South African patent specification)

(i) forms the subject of an application for a patent in South Africa which, if granted, would bear a date in the interval between the lodging of the application in Great Britain and the date of the South African application: in other words, which would, if granted, anticipate the convention patent applied for; or

(ii) is not an invention as defined in the Act.

It is thus apparent that, under this subsection, mere disconformity is not sufficient to constitute a ground of opposition or revocation: there must, in addition, be one or other of the requirements set forth in subparas (i) and (ii).

It is argued by counsel for Sappi that, apart from s 23(1)(*k*), such a disconformity also leads inevitably to an incorrect representation in the application for the South African patent in that in making the application the applicant is required to state, in effect, that the invention for which

protection has been sought in the convention country (in this case Great Britain) is the same as the invention described or claimed in the South African application; and that this amounts to a material misrepresentation in terms of s 23(1)(*i*). In this connection counsel referred to two decisions of this Court: *Bendz Ltd and Another v South African Lead Works Ltd* 1963 (3) SA 797 (A) and *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A).

In the present case there is no suggestion that the requirements of subpara (i) of s 23(1)(*k*) are satisfied and I shall, at this stage, proceed on the basis that the same applies to subpara (ii). Acceptance of the argument of Sappi's counsel would, therefore, mean that, although the disconformity in question could not constitute a ground for opposition or revocation under s 23(1)(*k*), it could constitute such a ground under s 23(1)(*i*). I find it extremely improbable that the Legislature, having laid down specific additional (and alternative) requirements before disconformity as to invention could invalidate a convention application, could have intended that under another provision in the same section such disconformity could invalidate without the existence of one or other of these additional requirements. This would amount to an anomalous and inexplicable inconsistency within the section. I am satisfied, however, that a proper construction of paras (*i*) and (*k*) removes any such possible inconsistency. In my view, the Legislature intended in para (*k*) to deal specifically and comprehensively with the case of disconformity as to invention in a convention application. It is true that, as emphasised by Sappi's counsel, such a disconformity could fall under the wide and general wording of para (*i*), but, in my opinion, the Legislature did not intend this to be so. This conclusion is supported by the rule of construction *generalia specialibus non derogant* (cf *Government of the Republic of South Africa and Another v Government of KwaZulu and Another* 1983 (1) SA 164 (A) at 200H–201H; *Mngomezulu and Others v Soweto City Council* 1989 (2) SA 331 (A) at 341A–H; and see, generally, Steyn *Die Uitleg van Wette* 5th ed at 188–91 and authorities there cited).

It follows from the aforegoing that a disconformity as to invention in the case of a convention application and the consequential misstatement in the application are not grounds for opposition or revocation under s 23(1)(*i*). Moreover, I do not consider this ruling to be in conflict with what was decided in the *Bendz* and *Letraset* cases *supra*.

In the *Bendz* case, which was an application for the amendment of a patent, the facts were that the appellant had applied for provisional specifications in a convention country, Great Britain, on, respectively, 22 January 1952 (No 1725/52) and 23 May 1952 (No 13069/52). Thereafter, on 13 February 1953 appellant made application for a South African patent and in his application cited application No 13069/52 as the application made in the convention country for the protection of the invention and stated that this was the *first* application made in the convention country in respect of the relevant invention. It transpired that of the 15 claims contained in the South African patent specification, only nine had been disclosed in application No 13069/52, while the remaining six had been disclosed in application No 1725/52. Section 95(1) of the Act requires a convention application to be made within 12 months of the date of the application for protection in the convention country, if the priority

date of the latter application is to obtain. It was held that there were two misrepresentations in appellant's South African application: (i) application No 13069/52 was *not* the only application made in a convention country in respect of the invention for which application was being made in South Africa, and (ii) the first application made in respect of the invention was *not* application No 13069/52 but application No 1725/52, which was dated more than 12 months prior to the date of the South African application. These misrepresentations were held to render the South African representation subject to revocation under s 23(1)(*i*). Accordingly, the Commissioner's refusal of the application for amendment was upheld.

In the *Letraset* case the appellant had applied for and obtained a South African patent, stating in its application form 1A that the first application for protection for the invention in a convention country was a certain British patent application No 22206/60 filed on 24 June 1960. In an action for infringement in which the respondent counterclaimed for revocation on the ground, *inter alia*, that the South African application had contained a material misrepresentation, it was alleged by the respondent that in fact the first application in a convention country in respect of the relevant invention was a British application lodged on 21 January 1958. The Court held, however, that the invention of the South African patent had not been described in the 1958 British application and that consequently the attack upon the patent's validity on the ground of material representation failed.

Both these cases were basically concerned with the question as to whether the application in the convention country relied upon by the applicant for a convention patent in South Africa was in fact the first application in the convention country in respect of the relevant invention. In neither case would the provisions of s 23(1)(*k*) have been applicable. Nor was s 23(1)(*k*) referred to in the judgments. Accordingly, in my opinion, these cases are not decisive of the question as to whether a disconformity which relates to the invention and falls under the opening words of s 23(1)(*k*)—ie without reference to subparas (i) and (ii)—can constitute the basis for a material representation under s 23(1)(*i*).

For these reasons I hold that the disconformity (if any) between the invention described in the British applications in this case and that described and claimed in the patent in suit cannot be relied upon to establish a case of material misrepresentation under s 23(1)(*i*). On this view of the law it is not necessary to consider whether there was in fact such a disconformity.

At the eleventh hour (ie at the end of his argument in reply) Sappi's counsel applied for an amendment of one of the grounds of revocation in order to provide the foundation for a contention that the patent in suit was invalidated by s 23(1)(*k*)(ii). I shall deal with this application later in the judgment.

Lack of novelty

This ground of revocation depends upon what the priority date (or effective date) of the patent in suit is. Sappi's case is that the patent in suit was anticipated by the Swedish Honshu patent. It was alleged by Sappi in its counterclaim that the Swedish Honshu patent was published in print on 9 April 1976. This was formally admitted by CIL in its plea to the

counterclaim. This date of publication was earlier than the actual date upon which the application for the patent in suit was lodged, viz 1 September 1976, but was later than the priority date accorded the patent in suit by reason of the British applications, viz 5 September 1975. At the commencement of the trial before the Commissioner it was formally admitted by counsel for CIL that in the event of 1 September 1976 being the effective date of the patent in suit claims 1, 3, 4, 5 and 6 (but not 9 and 11) were anticipated by the Swedish Honshu patent and that this invalidated the patent in suit.

Sappi contended, upon the grounds already indicated, that there was a disconformity between the invention described in the British applications and that described and claimed in the patent in suit and that one of the consequences of such disconformity was that the patent in suit did not enjoy the priority date based upon the date when the British applications were lodged.

Convention applications are provided for by s 95 of the Act. The relevant portion of s 95(1), as amended, reads as follows:

'. . . (A)ny person who has applied for protection for an invention in a convention country . . . shall be entitled to a patent for his invention under this Act in priority to other applicants, if application therefor is made within 12 months after the date of the first application for protection in the convention country, and the patent shall have the same date as the date of the application in the convention country, but the term of the patent shall run from the date on which the complete specification is lodged at the patent office. . . .'

Section 95(5) provides:

'In determining for the purposes of this Act whether an invention described or claimed in a Union specification is the same as that for which protection has been applied for in a convention country, regard shall be had to the disclosure contained in the whole of the documents put forward at the same time as and in support of the application in the convention country, being documents of which copies have been left at the patent office within such time and in such manner as may be prescribed.'

It was in terms of s 95 of the Act that the patent in suit was applied for and granted by the Registrar. Assuming that, as alleged by Sappi, there was in fact a disconformity as to invention between the patent in suit and the British applications and assuming that (as I have held) this does not provide a ground for the revocation of the patent under s 23(1)(*i*) or (*k*), the question arises as to what effect this has upon the priority date of the patent in suit. Counsel were not able to point to any provision in the Act which specifically deals with this situation. On behalf of Sappi it was submitted, however, that the definition of 'effective date' in s 1 of the Act had the effect of assigning to the patent in suit, as an effective date, the date on which the relevant application was lodged at the patent office, viz 1 September 1976.

This definition reads as follows:

' "(E)ffective date" means, in relation to—

(*a*) an application which has been ante-dated or post-dated, the date to which that application has been so ante-dated or post-dated;

(*b*) an application under s 95, the date on which the application in respect of the relevant invention was made in the convention country in question or is in terms of the laws of that country deemed to have been so made;

(*c*) any other application, the date on which the application was lodged at the patent office. . . .'

This definition, far from substantiating counsel's submission is, in my view, adverse to Sappi's case on this point. For it unequivocally provides, in para (*b*), that in the case of an application under s 95 the effective date is the date on which the application in respect of the relevant invention was made in the convention country in question. And as the definition of 'new' shows, it is the effective date of the application for a patent in respect of an invention which is the point of time by which the novelty of that invention is determined.

Sappi's counsel argued that if there is disconformity as to invention, para (*b*) does not apply and that one therefore falls back on para (*c*), which fixes the date of the lodging of the application at the patent office as the effective date. But para (*c*) deals expressly with 'any other application', ie other than an application falling under para (*a*)—which is not relevant—or an application under s 95, and I do not see how it can be applied to an application under s 95, albeit a flawed application by reason of disconformity. In the circumstances one is driven to the conclusion that in such a case only para (*b*) can in terms apply.

It may be that this reveals a *lacuna* in the Act. Counsel for CIL suggested various remedies which an interested party dissatisfied with a convention patent being on the register because of disconformity as to invention might pursue, but it is not necessary to follow this line of inquiry. For present purposes the only point is that such disconformity would not appear to affect the priority date accorded to a convention patent. It is to be noted that under the Patents Act of 1978 this position is now specifically regulated and it is provided that where a claim is not 'fairly based' on an application in a convention country the priority date of the claim shall be the date on which the application was lodged at the patent office (see s 33(5)).

For these reasons I am of the view that the effective date of the patent in suit is 5 September 1975 and that, accordingly, the ground of revocation based upon lack of novelty cannot succeed.

Sappi's application to amend

As I have indicated, Sappi's counsel moved (at the conclusion of his argument in reply) for an amendment of one of the grounds of revocation, the ground as amended to read as follows:

'The invention claimed in the patent was not new at the effective date of the patent; *alternatively the specification claims an invention other than that for which protection has been applied for in the convention country and is not an invention as defined in the Act in that it is not new.*'

(The proposed amendment consists of the addition of the words which I have emphasised.)

In moving this amendment Sappi's counsel explained that Sappi wished to contend that, in the event of the Court holding that the alleged disconformity as to invention in this case does not constitute a material misrepresentation in terms of s 23(1)(*i*), the patent in suit is nevertheless subject to revocation on the ground that the case fell within the terms of s 23(1)(*k*)(ii). In this context Sappi's case was that the invention described

A or claimed in the patent in suit 'is not an invention as defined in the Act' because it is not new, having been anticipated by the Swedish Honshu patent. Counsel contended that he was entitled to argue this point without amendment, on the principles laid down in the well-known case of *Shill v Milner* 1937 AD 101; but in the event of the Court holding the contrary he
B applied for the amendment.

CIL's counsel opposed the amendment and Sappi's right to raise the point. He evidently had had no prior notice of the amendment and said that he was unable to deal with the point. There was no suggestion that the matter be postponed to give CIL's counsel the opportunity to consider the point and prepare argument.

C Although the amending words are tacked on to the ground based on lack of novelty, it is clear to me that what Sappi seeks to raise is an entirely new ground of revocation not previously raised in any shape or form, or indeed considered by the Commissioner or the Court *a quo*. It involves difficult questions concerning the meaning and effect of s 23(1)(*k*)(ii). For
D instance, if one interprets this provision as meaning that one of the grounds upon which an invention contained in a convention patent can be shown to be 'not an invention as defined in this Act' is lack of novelty, it would seem that what is contemplated is an anticipatory use or publication between the date of the application in the convention country and the date
E of the South African patent. (An anticipation dating from before the date of the application in the convention country would naturally fall under s 23(1)(*e*).) But such an interpretation would seem to render subpara (i) redundant. Moreover, on the facts of this case, Sappi's argument may lead one back to the question as to what the effective date of the patent in suit is; in which event if it be correct, as I have held, that the effective date
F must be taken to be 5 September 1975, then there was no anticipation by the Swedish Honshu patent.

In my opinion, this is not the sort of case where the *Shill v Milner* principles ought to be applied (cf *Horowitz v Brock and Others* 1988 (2) SA 160 (A) at 180B–181B). Nor do I think that the amendment can be allowed
G without prejudicing the respondent. The application for the amendment is dismissed.

CIL's application to amend and reopen

This application, filed before the hearing of the appeal and opposed by
H Sappi, aimed at the withdrawal of CIL's formal admission (in para 6(*a*) of its plea to Sappi's counterclaim) that the Swedish Honshu patent was first printed and published on 9 April 1976 and the reopening of the case to enable CIL to establish that in fact the Swedish Honshu patent was first printed and published on a date after 1 September 1976, the date on which the application for the patent in suit was lodged.

I At the hearing before us CIL's counsel announced that his client abandoned this application and tendered Sappi's costs in regard thereto, such costs to include the costs of two counsel.

I would accordingly order:

(1) that the appeal be dismissed with costs including costs of two
J counsel;

(2) that the respondent's application to amend para 6(*a*) of its plea to A appellant's counterclaim and for an order for the reopening of the case for the taking of further evidence be dismissed with costs, such costs to include the costs of two counsel.

E M Grosskopf JA, Nestadt JA, Vivier JA and Nicholas AJA concurred. B

Appellant's Attorneys: *De Kok & Van Niekerk*, Pretoria; *Israel & Sackstein*, Bloemfontein. Respondent's Attorneys: *John & Kernick*, Pretoria; *Webbers*, Bloemfontein.

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COIN SECURITY GROUP (PTY) LTD v SMIT NO AND OTHERS

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APPELLATE DIVISION

BOTHA JA, MILNE JA, KUMLEBEN JA, VAN DEN HEEVER JA and VAN COLLER AJA

1992 March 19, 30

Jurisdiction—Principle that, if Court has jurisdiction at commencement F
of proceedings, such jurisdiction continues until end of proceedings—No inconsistency between such principle and s 2(1) of Recognition of the Independence of Namibia Act 34 of 1990—Application in Transvaal Provincial Division for review of decision of National Transport Commission refusing amendment of air G
transport service licence so as to include airport in Windhoek, Namibia, as a base of operation—After issue of rule nisi, *Act 34 of 1990 coming into operation—As Commission resident within area of jurisdiction of Court, Court's order able to be enforced—Court's jurisdiction not terminated by Act.*

Aviation—Air transport service licence—Application for amendment of H
an existing licence in terms of s 9(4) of International Air Services Act 51 of 1949—Section 10 of Act not applicable to such application.

Review—When Court will substitute its decision for that of functionary whose decision set aside—Rule nisi *granted in application in* I
Transvaal Provincial Division for review of decision of National Transport Commission refusing amendment of air transport service licence so as to include airport in Windhoek, Namibia, as a base of operation—Confirmation of rule nisi *wrongly refused and reversed on appeal—Rule* nisi *granted more than two years previously and National Transport Commission no longer having jurisdiction in* J