COMMISSIONER'S DECISION

ADEQUACY OF DISCLOSURE; CLAIMING: Rubber Vulcanization Agents.

When all members of a generic chemical claim have not been prepared and tested, the scope of the generic claim which may be allowed depends upon what is reasonably predictable from the disclosure itself, the actual compounds that have been prepared and tested, the nature of the invention, and the state of the prior art. Claims which are clearly speculative should be refused. The generic claim was found to be too broad, but restriction would make it allowable. A second claim to 126 listed species was refused because the disclosure provided inadequate support for all but three species. The remainder had never been made when the application was filed. Generic and species claims distinguished. Rule 25 considered.

FINAL ACTION: Affirmed.

Under Rule 46(5) of the Patent Regulations, the Monsanto Company has requested a review of the final rejection of its application 095,945 (Class 260/315.05). The petition, which was filed on October 19, 1970, states that the inventors are A.Y. Coran and J.E. Kerwood. The title of the invention is "Inhibiting Premature Vulcanization of Diene Rubbers." A hearing was conducted on October 7, 1974, at which Messrs. McFadden, Fincham, Zerbz, Trivett and Coran represented the applicant.

In the final rejection two sets of claims (1-8) and (9 & 16) were refused, but the examiner subsequently withdrew his objections to claims 1-8, Consequently the Board need consider only the refusal of claims 9 & 16. The reasons for their rejection was quite unrelated to the objections that had been made to claims 1-8, and there is no necessity for reviewing either the reasons for refusal of claims 1-8, or why those objections were subsequently withdrawn.

Claims 9 and 16 were rejected under Section 36 of the Patent Act and Rule 25 on the grounds that they are too broad, covering subject matter going beyond what was invented. In them the applicant has claimed certain chemical compounds to be used as rubber vulcanization agents. The record indicates that the applicant actually prepared only three of these compounds before

the application was filed (others were prepared later), but his claims cover many compounds, and specifically recite 126 species. What the Board must determine is whether the applicant is entitled to claim the invention in such broad scope.

The claims rejected are given below. The chemical structure of the sulfonimides covered by them is immaterial to the issue to be decided.

Claim 9:

A compound of the formula

R'-S-R-S-R'

wherein R contains 1 to 8 carbon atoms and is alkylene, arylene, or cycloalkylene and R' is an imido radical.

Claim 16:

The product of claim 9, wherein the di-imdo compound is chosen from the group consisting of:

1,4-bis(N-thio-5,5-dimethylhydantoin)benzene

1,4-bis(N-thio-5,5-dimethylhydantoin)nitrobenzene

1,4-bis(N-thio-5,5-dimethylhydantoin)toluene

1,1-bis(N-thiohexahydrophthalimido)methane

1,2-bis(N-thiohexahydrophthalimido)ethane

1,3-bis(N-thiohexahydrophthalimido)propane

1,2-bis(N-thiohexahydrophthalimido)isopropane

1,4-bis(N-thiohexahydrophthalimido)butane

1,3-bis(N-thiohexahydrophthalimido)isobutane

1,5-bis(N-thiohexahydrophthalimido)pentane

1,y-bis(N-thiohexahydrophthalimido)hexane

1,7-bis(N-thiohexahydrophthalimido)heptane

1,8-bis(N-thiohexahydrophthalimido)octane

1,4-bis(N-thiohexahydrophthalimido)cyclohexane

1,4-bis(N-thiohexahydrophthalimido)benzene

1,4-bis(N-thiohexahydrophthalimido)nitrobenzene

1,4-bix(N-thiohexahydrophthalimido)toluene

1,3-bis(2-thiophthalimido)-3-isobutane

1,5-bis(2-thiophthalimido)pentane

1,6-bis(2-thiophthalimido)hexane

1,7-bis(2-thiophthalimido)heptane

1,8-bis(2-thiophthalimido)octane

1,4-bis(2-thiophthalimido)cyclohexane

1,4-bis(2-thiophthalimido)benzene

1,4-bis(2-thiophthalimido)nitrobenzene

1,4-bis(2-thiophthalimido)toluene

1,1-bis(2-thiosuccinimido)methane

1,2-bis(2-thiosuccinimido)ethane

1,3-bis(2-thiosuccinimido)propane

1,2-bis(2-thiosuccinimido)isopropane

1,4-bis(2-thiosuccinimido)butane

1,3-bis(2-thiosuccinimido)-3-isobutane

1,5-bis(2-thiosuccinimido)pentane

1,6-bis(2-thiosuccinimido)hexane

1,7-bis(2-thiosuccinimido)heptane

1,8-bis(2-thiosuccinimido)octane

1,4-bis(2-thiosuccinimido)cyclohexane

1,4-bis(2-thiosuccinimido)benzene

1,4-bis(2-thiosuccinimido)benzene

1,4-bis(2-thiosuccinimido)nitrobenzene

1,4-bis(2-thiosuccinimido)toluene

1,1-bis(2-thioglutarimido)methane

1,2-bis(2-thioglutarimido)ethane

1,2-bis(2-thioglutarimido)ethane

1,3-bis(2-thioglutarimido)propane

1,2-bis(2-thioglutarimido)isopropane

1,4-bis(2-thioglutarimido)butane

1,3-bis(2-thioglutarimido)-3-isobutane

1,5-bis(2-thioglutarimido)pentane

1,6-bis(2-thioglutarimido)hexane

1,7-bis(2-thioglutarimido)heptane

1,8-bis(2-thioglutarimido)octane

1,4-bis(2-thioglutarimido)cyclohexane

1,4-bis(2-thioglutarimido)benzene

1,4-bis(2-thioglutarimido)nitrobenzene

1,4-bis(2-thioglutarimido)toluene

1,1-bis(2-thiomaleimido)methane

1,2-bis(2-thiomaleimido)ethane

1,3-bis(2-thiomaleimido)propane

1,2-bis(2-thiomaleimido)isopropane

1,4-bis(2-thiomaleimido)butane

1,3-bis(2-thiomaleimido)-3-isobutane

1,5-bis(2-thiomaleimido)pentane

1,6-bis(2-thiomaleimido)hexane

1,7-bis(2-thiomaleimido)heptane

1,8-bis(2-thiomaleimido)octane

1,4-bis(2-thiomaleimido)cyclohexane

1,4-bis(2-thiomaleimido)benzene

1,4-bis(2-thiomaleimido)nitrobenzene

1,4-bis(2-thiomaleimido)toluene

1,1-bis(2-thionaphthalimido)methane

1,2-bis(2-thionaphthalimido)ethane

1,3-bis(2-thionaphthalimido)propane

1,2-bis(2-thionaphthalimido)isopropane

1,4-bis(2-thionaphthalimido)butane

1,3-bis(2-thionaphthalimido)-3-isobutane

1,5-bis(2-thionaphthalimido)pentane

1,6-bis(2-thionaphthalimido)hexane

1,7-bis(2-thionaphthalimido)heptane

1,8-bis(2-thionaphthalimido)octane

1,4-bis(2-thionaphthalimido)cyclohexane

1,4-bis(2-thionaphthalimido)benzene

1,4-bis(2-thionaphthalimido)nitrobenzene

1,4-bis(2-thionaphthalimido)toluene

1,1-bis(N-thio-4-cyclohexene-1,2-dicarboximido)methane

1,2-bis(N-thio-4-cyclohexene-1,2-dicarboximido)ethane

1,3-bis(N-thio-4-cyclohexene-1,2-dicarboximido)propane

1,2-bis(N-thio-4-cyclohexene-1,2-dicarboximido)isopropane

1,4-bis(N-thio-4-cyclohexene-1,2-dicarboximido)butane

1,3-bis(N-thio-4-cyclohexene-1,2-dicarboximido)-3-isobutane

1,5-bis(N-thio-4-cyclohexene-1,2-dicarboximido)pentane

1,6-bis(N-thio-4-cyclohexene-1,2-dicarboximido)hexane

1,7-bis(N-thio-4-cyclohexene-1,2-dicarboximido)heptane

1,8-bis(N-thio-4-cyclohexene-1,2-dicarboximido)octane

1,4-bis(N-thio-4-cyclohexene-1,2-dicarboximido)cyclohexane

1,4-bis(N-thio-4-cyclohexene-1,2-dicarboximido)benzene

1,4-bis(N-thio-4-cyclohexene-1,2-dicarboximido)nitrobenzene

1,4-bis(N-thio-4-cyclohexene-1,2-dicarboximido)toluene

1,1-bix(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)methane

1,2-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)ethane

1,3-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)propane

1,2-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)isopropane

1,4-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3,-dicarboximido)butane

1,3-bis(N-thio-1,4,5,6,7,7Ohexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)-3-isobutane

1,5-bis(N-thio-1,4,5,6,7,7Ohexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)pentane

1,6-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)hexane

1,7-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)heptane

1,8-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)octane

1,4-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)cyclohexane

1,4-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)benzene

1,4-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)nitrobenzene

1,4-bis(N-thio-1,4,5,6,7,7-hexachlorobicyclo(2.2.1)hept-5-ene-2,3-dicarboximido)toluene

1,1-bis(N-thio-5,5-dimethylhydantoin)methane

1,2-bis(N-thio-5,5-dimethylhydantoin)ethane

1,3-bis(N-thio-5,5-dimethylhydantoin)propane

1,2-bis(N-thio-5,5-dimethylhydantoin)isopropane

1,4-bis(N-thio-5,5-dimethylhydantoin)butane

1,3-bis(N-thio-5,5-dimethylhydantoin)isobutane

1,5-bis(N-thio-5,5-dimethylhydantoin)pentane

1,6-bis(N-thio-5,5-dimethylhydantoin)hexane

1,7-bis(N-thio-5,5-dimethylhydantoin)heptane

1,8-bis(N-thio-5,5-dimethylhydantoin)octane

1,4-bis(N-thio-5,5-dimethylhydantoin)cyclohexane

1,1-bis(2-thiophthalimido)methane

1,2-bis(2-thiophthalimido)ethane

1,3-bis(2-thiophthalimido)propane

1,2-bis(2-thiophthalimido)isopropane and

1,4-bis(2-thiophthalimido)butane.

The reason given by the examiner for refusing claims 9 & 16 was put succinctly as follows:

> These product claims are much too broad in view of the disclosure which only discloses the preparation of three of the compounds being claimed. Product claim 16 is directed to 126 species altogether; they are just recited from the disclosure. As previously mentioned only the preparation of three of these species is exemplified and have a physical constant (melting point) and elemental analyses (for two species only). There is no way of proving that all these species have been prepared for there are no methods of preparation, physical constants and/or elemental analyses results given. Claims must be adequately supported by the disclosure (Rule 25 under the Patent Act) and when 126 species are being claimed in the broad product claim, the specific disclosure of the preparation of three species only is insufficient. The invention claimed is far from being fully described and hence this is contrary to Rule 25 under the Patent Act. The exemplification of three compounds is certainly not sufficient to support the vast expanse of subject matter covered by these claims and does not entitle the applicant to monopolize the large number of compounds which are covered by these claims. In order to sustain claims to a broad group of compounds, the specification must illustrate with reasonable certainty that all members of the group are capable of being prepared by the disclosed process of preparation and have the same utility (inhibiting premature vulcanization) upon which their patentability is based. Certainly broad product claims must be adequately supported by a sufficient number of examples. A specific product or species, which is not specifically described and exemplified in the specification, may not be claimed. Product claims 9 and 16 must be restricted in scope to that which is adequately supported by the disclosure.

The applicant's written submission (response of July 9, 1974) discusses the refusal of claims 9 and 16 beginning at page 41. In it he makes the following points, inter alia:

> The compounds named in claim 16 are compounds specifically mentioned in the disclosure at page 4, lines 26 and following including those of the examples of this case.

Accordingly, there is no doubt that claims 9 and 16 find verbatum support in the disclosure. In applicant's submission, this alone clearly establishes that claims 9 and 16 are thus fully supported by the disclosure and further, as will be seen from the disclosure, and specifically pages 4 and following thereof, the disclosure clearly describes the characteristics of claims 9 and 16 in their totality.

and: Attached to this amendment is an Affidavit by one of the co-inventors of this application, together with an Affidavit by Dr. Chester Trivette, which, it is respectfully requested, be entered as part of this submission. With respect to the sworn statements by these affiants, attention is respectfully directed to those of Dr. Trivette who is a skilled organic chemist, and would be, in our opinion, classified as "a person skilled in the art to which this invention pertains". As will be noted from Dr. Trivette's Affidavit, he has stated that to him, as an organic chemist skilled in this art, he would be capable of preparing each and every compound of product claims 9 and 16, based on the teachings provided in this application, with the ordinary, everyday skill that one skilled in the art would have which he does have.

and: Rule 25, in our opinion, must be read in conjunction with Section 36(1) of the Patent Act, which reads in part:

> The applicant shall in the specification correctly and fully describe the invention and its operation...as contemplated by the inventor, and set forth the various steps in a process...in such full, clear concise and exact terms as to enable any person skilled in the art or science to which it appertains, ... to make, construct, compound or use it....

Therefore, in view of the Examiner's comments, and the specific statement that "the specification must illustrate with reasonable certainty that all members of the group are capable of being prepared by the disclosed process", the real issue appears to be whether or not the specification of this application does meet the requirements of Section 36(1) and, this has been fully answered by the Affidavit of an organic chemist skilled in this art, namely Dr. C. Trivette.

and: In rejecting applicant's product claims 9 and 16, the Examiner has also stated in the Official Action that the members of the group not only must be capable of being prepared by the disclosed process but also they must have "the same utility...upon which their patentability is based". To this end, attention is respectfully directed to both Affidavits submitted, where the affiants have sworn that the unexpected utility of the tested members of the class of compounds disclosed at page 4, lines 19 et seq., and those of claims 9 and 16, do, in their opinion, and as persons skilled in this art, definitely afford a sound prediction that all

> or substantially all of the members of the class of compounds possess the utility. Thus, not only can the complete class of compounds be prepared as sworn to by the affiants, but also, each of these affiants has clearly and positively sworn and stated that the class could be expected to have the utility as disclosed in this application and as supported by the examples given in this case.

and

> in addition, Section 36(1) makes it clear, and it is settled in law, that an applicant is under no obligation to describe more than a single preferred embodiment, which embodiment may be an exemplification of an invention of wider scope that can be claimed.

He has also relied on such prior precedents as Scragg v. Leesona (1964) Ex. C.R. 649 at 747; American Cyanamid V. Frosst (1965) 2 Ex. C.R. 355 at 435; B.V.D. v. Canadian Celanese (1936) Ex. C.R. 139 and (1937) S.C.R. 221 and 411; Minerals Separation v. Noranda Mines (1947) Ex. C.R. 306, (1950) S.C.R. 36 and 69 R.P. C. 81; British Dynamite v. Krebs (1896) 13 R.P. C. 190; Leonhardt v. Kallé (1895) 12 R.P.C. 103; Edison v. Woodhouse (1887) 4 R.P.C. 99, Hopkinson v. St. James (1893) 10 R.P.C. 46; and certain previous decisions of the Commissioner of Patents. He has submitted affidavits from undoubted experts in this field to show that in their view both that skilled chemists would have received adequate direction from the specification so that they could have prepared all the compounds covered by the claim, and further to suggest that it would have been equally apparent to them what utility the compounds would have possessed. At the hearing those conclusions were reaffirmed by the two affiants who were present, though on questioning they did state that none of the compounds (other than the three described in the application) had actually been prepared before the application was filed.

The jurisprudence relied upon by the applicant stresses that a specification will be sufficient if it contains directions enabling a person having a reasonable competent knowledge and skill of the subject to make the invention described, without the exercise of further invention. Within that limitation, some trial or experimentation may be necessary, and a disclosure of only one embodiment of the invention may suffice. The Leonhardt v. Kallé decision, a chemical case, stands for the proposition that

in a process claim a reducing reagent used in the process may be defined broadly where the applicant has pointed out "numerous" reducing agents which do work. The applicant has stated that two of the decisions, Edison v. Woodhouse and what he has referred to as the Electric Light Co. case, which we take to be Hopkinson v. St. James and Pall Mall Electric Light (1893) 10 R.P.C. 46, stand for the proposition "that if one skilled in the art deposes that the specification is a sufficient guide for him, a court cannot hold that the specification is insufficient." We think this overstates the proposition, which would be more accurately put as being that a court is "entitled to take into consideration the views of the experts called as witnesses before it" (Hopkinson, p. 59), and while it may find those views persuasive, it should exercise its own judgement in assessing their persuasiveness.

To the jurisprudence relied upon by the applicant we add the recent findings of the Supreme Court of Canada in Burton Parsons Chemicals v. Hewlett-Packard, which has been reported in 17 C.P.R. (2d) Part 2, April 1975, 97 ff. In considering whether the claims of Burton Parsons were broader than the invention, Mr. Justice Pigeon stressed that:

> While the construction of a patent is for the Court, like that of any other legal document, it is however to be done on the basis that the addressee is a man skilled in the art, and the knowledge such a man is expected to possess is to be taken into consideration (p. 104).

and further

> The evidence makes it clear that this was obvious to any person skilled in the art because the characteristics of suitable emulsions and of suitable salts were well known.

From this it is clear that due consideration must be given to what persons skilled in the art would take from a disclosure. We use the word "persons" in the plural advisedly. Experts have been known to reach divergent conclusions. The reports of patent cases are replete with such conflicts, and it may well be imprudent to lean too heavily upon the opinions of any one, or even of several "skilled persons". It is necessary to assess what would be the views of skilled persons "generally". Where there was just such a conflict of opinion among experts (Travers Investment v. Union Carbide (1965) 2 Ex.C.R. 126 at 143), Mr. Justice Gibson stated:

> The experts can only weigh the probabilities based on their training and experience and make their best educated guesses, but the Court is left with the usual legal standard of proof, namely, more probable than not, or as it is sometimes put, the preponderance of believable evidence.

We come to the conclusion that the disclosure provides sufficient direction so that a skilled chemist could prepare the compounds using methods previously known in the art. We also recognize that the disclosure has mentioned all the compounds covered by claim 16. The Board is left, however, with a more difficult problem, one of assessing whether the rejected claims are too broad in the sense that they cover more than the invention made. We are concerned about such issues as "speculative claiming," and "paper inventions." Section 36 is satisfied in that the applicant has fully described something, but is it his invention which he has described? What we must now determine is whether the applicant completed the invention in sufficient detail that it can be fairly said that he invented all the compounds of the two claims.

The objection that a claim is too broad because it covers unknown and unchartered areas where the applicability of the invention is unpredictable, and further inventive experiments would be needed, arises most frequently in the chemical arts, because as has been recognized "There is no prevision in chemistry" (Chipman Chemicals v. Fairview Chemical 1932 Ex. C.R. 107 at 115). While that may be an overstatement, nevertheless it indicates the special caution to be exercised when extrapolating in the chemical arts. Since claims are defective if they are speculative, there are important limitations upon an inventor's right to claim a generalization from his disclosure. We now turn to the jurisprudence which examines such issues.

In Hoechst v. Gilbert, (1966) S.C.R. 189, a chemical case where certain drugs were claimed, the Supreme Court of Canada has come out (at p. 194) against overclaiming in these terms:

> In challenging the validity of the patents in question, counsel for the respondents put his case upon the footing that no one could obtain a valid patent for an improved and untested hypothesis in an unchartered field. That is what the appellant has tried to do in claim 1 of each of the patents. It has sought to cover, in the words of Thurlow J., "every mathematically conceivable sulphonyl area of the class" and has consequently overclaimed, and, in so doing, invalidated claim 1 in each patent.

The point has also been considered in Rhone-Poulenc v Gilbert (1968) S.C.R. 950 at 953.

In Steel Co. of Canada v. Sivaco Wire and Nail, 11 C.P.R. (2d) 153 at 195, we find the term "mere paper suggestions" applied to patents for inventions which have not been developed.

In B.V.D. v Canadian Celanese (1936) Ex. C.R. 139 at 148 it was stated that before a prior patent may be relied upon to anticipate a later patent "It must be shown that the public have been so presented with the invention that it is out of the power of any subsequent person to claim the invention as his own. And an improvement, claimed to be invention, must not be dismissed as unpatentable merely because of some vague adumbration of it in the prior art." It seems to us that a corollary of that, which should be equally valid, is that a prior patentee should not be entitled to claim an invention which he may have outlined or foreshadowed without bringing it into being. The Supreme Court (1936 S.C.R. 221 at 237) found the B.V.D. patent invalid because: "The claims in fact go far beyond the invention."

In Boehringer Sohn v Bell Craig, 1962 Ex. C.R. 201 we find:

> ... a patent purporting to give an exclusive property in more than the inventor has invented is also contrary to what the statute authorizes....(p.239)

and

> ... a patent which includes in its specification a claim which claims more than the inventor has invented purports to grant an exclusive property in more than the inventor has invented and at least in so far as that claim is concerned the patent, in my opinion, is not granted under the authority of the statute and is therefore not lawfully obtained. ...a claim which is invalid because it claims more than the inventor invented is an outlaw and its existence as defining the grant of a property right is not to be recognized as having any validity or effect (p.241).

Mr. Justice Thurlow found the claim in suit to be too broad because it covered a large number of substances of which only a limited number had

been prepared. The Supreme Court (1963 S.C.R. 410 at 412) supported his findings. The Boehringer Sohn case did involve, of course, pharmacological substances whose properties may be even less predictable than other chemical substances, and the group of compounds claimed was extremely large. Similar conclusions in comparable circumstances were reached in Hoechst v. Gilbert (1964) vol. 1, Ex. C.R. 710 and 1966 S.C.R. 189, in which case there was evidence that some 700 members of the class had been synthesized, and in Re May and Baker (1948) 65 R.P.C. 255, (1949) 66 RPC 8 and (1950) 67 R.P.C. 23. The Supreme Court, in the Hoechst decision, adopted the view that "no one could obtain a valid patent for an unproved and untested hypothesis in an unchartered field." The dangers of overclaiming were also explored in Société Rhône-Poulenc v Ciba (1967) 35 F.P.C. 174 at 201-205 and 1968 S.C.R. 950 in which a broad claim was found invalid because the majority of the substances of the class had never been made or tested by anyone.

Objections of this nature are not, however, limited to pharmaceutical inventions, or even to chemical inventions. In the Matter of Abraham Esau et al (1936) 49 R.P.C. 85, it was said of an electrical apparatus that

> I think that it is most desirable that patentees in such circumstances should realize that it is not the practice of the Patent Office to allow broad and indeterminate claims of a speculative character, and that if they put such claims into their complete specification, they must expect to find them disallowed unless they are able to give a sufficiently detailed and full description to support them.

In the Matter of Shell Development, (1947) 64 R.P.C. 151 the circumstances were comparable to what is now before us. The application involved a process for separating organic mixtures with sulfolane solvents. The ten detailed examples dealt with separations where the organic mixtures were all hydrocarbons, and while there was no detailed description of processes involving other organic mixture, the specification listed some forty mixtures other than hydrocarbons. In finding the claim too broad, the Patent Tribunal stated:

> It is, I think, sufficient to say that from the specification it appears, first, that the prior art consists in the separation of organic mixtures by the use of well known solvents; secondly that the extent to which the field, namely, the separation of organic mixtures by the use of solvents has been explored does not appear on the face of the specification, but, upon a fair reading of the document, I am satisfied that it does not assert, putting the matter at its highest, that anything like the whole of that field has been explored; thirdly, that the Applicants' claim that the employment of their sulfolane solvents, of which they give in the specification a list of over one hundred, give results which compare advantageously with other solvents hitherto used; fourthly, that the Applicants make clear that the methods of employing their sulfolane solvents are those which are already well known in relation to the prior art; fifthly, that the Applicants in their specification give particulars of ten experiments, all of which deal with hydrocarbons. It is further, in my view, a fair reading of the specification that the solvent effect of the sulfolanes has been explored by the Applicants primarily in regard to hydrocarbons. It is true that on page 4 of the specification other examples of organic compounds are referred to which, it is stated, "may be separated by the selective solvents of this invention"; but, even so, with the addition of those substances, only the fringe of the field in question is touched.

See also Rohm & Haas v. Commissioner of Patents, (1959) Ex. C.R. 153 where claims were refused for being too broad and going beyond the invention made, Vidal Dyes v. Levenstein (1912) 29 R.P.C. 245, and Eastman Kodak's Application (1970) R.P.C. 548 at 561-563.

The problem before us is not peculiar to Canadian or British jurisprudence. It has been considered, for example, in In re Stokal et al, 113 USPQ 283 (1957).

The practical problems which can develop from permitting broad speculative claims are illustrated by the reasons leading to the introduction of both Section 41 into the Canadian Patent Act in 1923, and Section 38A into the British Patent and Designs Act in 1919. Section 38A came into being to remedy an abuse which led to the domination of the British dye industry by foreign interests who obtained broad chemical claims covering substances which they had never made or tested, and who subsequently used such claims to restrict the activities of their competitors (Transactions of the Chartered Institute of Patent Agents, vol. 62, p.92).

At the hearing, the applicant's agent indicated he would submit a memorandum based on his hearing notes restating his oral submission. As this had not been provided, the Board called the agent to see if that was still his intent, and such a submission was received on May 15, 1975. It covered some

additional points not previously discussed.

One of these relates to Rule 25, which reads:

> 25. Every claim must be fully supported by the disclosure, and a claim shall not be allowed unless the disclosure describes all the characteristics of an embodiment of the invention that are set out in the claim. (underlining added)

The examining staff had contended at the hearing, the applicant states, that this Rule prohibits the claiming of any embodiment for which all the characteristics (or at least all the principal characteristics) had not been given in the disclosure. In the case where new chemical compounds are claimed, this would mean that the melting points and other vital statistics would have to be provided. The applicant contends that Rule 25 should not be considered by the Board in this context, on the basis that this is a new grounds for rejection not previously raised. We do not see it that way. The rejection was made on the ground that the claims were too broad in view of the disclosure, and Rule 25 was brought in at the hearing in this way by the examiner as a new reason in support of that ground. (The rule had, of course, been referred to in the Final Rejection.) Just as the applicant brought in fresh arguments at the hearing and referred to additional jurisprudence (including in his latest submission one not even decided at the date of the hearing), the examiner was justified in expanding upon his arguments to explain his rejection of the claims as being too broad.

The applicant also referred to the decision of the Supreme Court in the Burton Parsons case, mentioned above in those portions of this decision prepared before delivery of his latest submission. An extension of the findings in Burton Parsons to this case must be treated with caution. It dealt with compositions made up of known compounds, whereas here we are concerned with completely new compounds previously unknown for any purpose whatsoever. The invention in Burton Parsons involved selecting known salts with known properties and incorporating them into an electrocardiographic cream.

It is much easier to predict how known compounds will react when their properties are already recognized. We refer to p. 105 of the decision:

> The evidence makes it clear that this (the salts to be used) was obvious to any person skilled in the art because the characteristics of suitable emulsions and of suitable salts were well known. Only the combination was new. (underlining added)

Before reaching our conclusions we think it also appropriate to refer to a recent British decision, Olin Matheson v. Biorex (1970) RPC 157, and in particular to two passages, the first of which is taken from the arguments for the patentee, at p. 169:

> "Inevitably in a case of this kind broad claims will be open to attack, but the question is whether the inventor ought to be limited to the actual substances which he has tested, and if he be entitled to venture a little further, how much further? If he were restricted to substances actually tested the value of the patent would be nil because the patentee would be making a present to those who would wish to avail themselves of the start made by him and thereby develop improvements upon his tested materials with impunity. Additionally, if the patentee was not entitled to claim more than what he had tested and verified as being useful, there would be no basis for selection patents. The other important point is that there is a world of difference between making a very broad claim in an unexplored field, and making one, as is the case here, where although the claim may cover millions of compounds, the field has been so well explored by others that one may rely upon their work in making a reasonable prediction as to the usefulness of all the compounds within the claim. (It should be noted that the invention involved the insertion of the CF_3 radical into the 2-position of a well known and "well-worked" group of pre-existing compounds.)

The second is taken from the judgement itself, at page 193:

> Where, then, is the line to be drawn between a claim which goes beyond the consideration and one which equiparates with it? In my judgement this line was drawn properly by Sir Lionel when he very helpfully stated in the words quoted above that it depended upon whether it was possible to make a sound prediction. If it is possible for the patentee to make a sound prediction and to frame a claim which does not go beyond the limits within which the prediction remains sound, then he is entitled to do so.

This last paragraph puts succinctly what we have been able to distil from the jurisprudence discussed above. In our view an applicant should be able to put forward a claim in generic terms to a group of like substances, all of which need not have been prepared or tasted, where it would be reasonably able and sound to make a prediction about the area covered. In some instances that area may be quite broad, in others extremely narrow, depending in

large part upon the state of the prior art, in part upon the nature of the invention, and in part upon the extent to which the applicant himself has explored that area. Further, where such exploration is needed, he should have explored the area before he has filed his application for patent. Otherwise the invention was speculative when filed, and only completed subsequently.

In applying that principle to the application before us, we have no hesitation in recommending that the refusal of claim 9 in its present form be affirmed. It is extremely broad, covers a vast number of compounds, and we think it goes beyond the area of reasonable prediction. The compounds covered by it are all new, and we are not satisfied that three specific examples are adequate support for the breadth of the claim. The nature of the imido radical, R^1, requires considerably more restriction and definition. It should be limited by structure to the particular class of imido radicals disclosed, and which it might be reasonably supposed from the disclosure generate the properties which make the compounds useful as vulcanization inhibitors. What we have in mind is something more comparable to the scope of the claims issued in corresponding U.S. Patent 3775428.

Claim 16 is too broad for different reasons. By listing in it specific compounds the applicant purports to have invented those specific compounds. The evidence is that he had prepared and described in any detail only three of them. It is in fact a claim to something which had not yet been invented. Given time a chemist or anyone versed in chemical nomenclature could name all compounds coming within the scope of any broad genus. Such "graphite on cellulose" or theoretical inventioneering on paper does not, in our view, warrant a patent, and for that reason we recommend that it be rejected. Only by restriction to the three compounds actually prepared should that claim be considered allowable.

Though it is not really necessary to bring it in, Rule 25 provides further support for the rejection of claim 16. It specifies that no specific

embodiments are to be claimed for which the characteristics have not been described. The jurisprudence which we discussed previously, including that referred to by the applicant and the Burton Parsons decision, indicate that broad claims in generic form are valid (and therefore allowable) under certain circumstances, where it can properly be said that a generic invention has been made. However none of them indicate, so far as we have been able to ascertain, that claims may be made to particular members of the genus which were not made. The fact that the applicant has drafted a single claim in which he has recited a long list of specific compounds does not, in our view, mean that the claim is in generic form. We distinguish between the invention of a genus, and that for specific members of that genus. Such is the distinction which was made in May & Baker (supra), in Boehringer-Sohn v Bell-Craig (supra) (vide p.p. 210, 211 & 214) and in two American decisions, In re Newton, 163 U.S.P.Q. 34 (1969) and In re Frilette, 162 U.S.P.Q. 163 (1969). The description of some members of a genus may be sufficient support to permit allowance of a claim to the genus while still being inadequate to support claims to other species coming within that genus.

We have also found helpful the reasoning employed in another American decision, In re Ruschig 154 USPQ 119 (1967), in which we find:

> ...Specific claims to single compounds require reasonably specific supporting disclosure and while we agree with the appellants, as the board did, that naming is not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds is required. Surely, given time, a chemist could name (especially with the aid of a computer) all of the half million compounds within the scope of the broadest claim, which claim is supported by the broad disclosure. This does not constitute support for each compound individually when separately claimed.

and

> ...While we have no doubt a person...would be enabled by the specification to make (the compounds), this is beside the point for the question is not whether he would be so enabled but whether the specification discloses the compound to him, specifically, as something appellants actually invented. We think it does not....

For the reasons given we recommend that the rejection of claims 9 and 16 in their present form be affirmed.

Gordon A. Asher
Chairman
Patent Appeal Board

I have weighed the findings of the Patent Appeal Board and concur with its recommendations. If the applicant contemplates appealing this determination, he must commence such action within six months of this date (vide the Patent Act, Section 44).

Decision accordingly,

A.M. Laidlaw
Commissioner of Patents

Dated at Hull, Quebec
this 16th day of
June, 1975

Agent for Applicant

McFadden, Fincham & Co.
Montreal, P.Q.