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PLANT VARIETY PROTECTION

Gazette and Newsletter
of the
International Union for the Protection of New Varieties of Plants (UPOV)

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NEWSLETTER

UPOV

This issue contains the second part
of the Records of a Symposium on

INDUSTRIAL PATENTS AND PLANT BREEDER'S RIGHTS -
THEIR PROPER FIELDS AND POSSIBILITIES
FOR THEIR DEMARCATION

held on October 17, 1984,
on the occasion of the eighteenth ordinary session
of the Council of UPOV*

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* The Records have also been printed in English, French, German and Spanish in UPOV publications No. 342(E), (F), (G) and (S) respectively and may be obtained free of charge from the Office of the Union.

REPORT OF DISCUSSIONS

prepared by the Office of the Union and approved by the Speakers

1. The lectures were followed by a lively debate which was presided over by the President of the Council of UPOV, Mr. J. Rigot. Mr. Rigot was assisted by a panel comprising the four lecturers (Professor F. Savignon, Dr. P. Lange, Sir Ralph Riley and Professor N. Monya), and the Vice Secretary-General of UPOV, Dr. H. Mast.

2. The President, speaking on behalf of all the participants, thanked all the lecturers for having given such interesting and thought-provoking lectures. He then invited questions from the participants.

3. Mr. Skov said that he had been very pleased to hear Dr. Lange say in his lecture that Article 5(3) of the UPOV Convention should remain as it was. He felt, and he believed that many of his colleagues felt, that the right to use protected varieties for further breeding was a fundamental issue, a fundamental provision that could not be given up. He had feared that it was the intention that that provision should be abolished. He now understood that he need have no fear in that direction.

Mr. Skov went on to say that he would like to have answers to and comments on three questions. First, he wondered why some people were interested in patent protection if plant breeding could continue in the way foreseen in the UPOV Convention, namely that protected varieties could be used for further breeding. Secondly, regarding the free exchange of genetic resources, he wondered whether patenting would hinder the application of the FAO Resolution and Undertaking which had been adopted in Rome in 1983. Finally, he wondered whether anybody had considered the even more important question of the social consequences, for instance in Europe, in the developed countries and elsewhere, of the protection of genetic engineering in relation to plants. In the European context, surpluses of cereals, sugar beet and other crops already existed. There were already some restrictions in the Common Market concerning milk production and further restrictions could be expected on other commodities, leaving the European farmer in a precarious situation. Many of the developing countries had patent laws but not laws in respect of plant breeders' rights. Mr. Skov concluded by asking again whether anybody had thought about the social consequences in developed and developing countries.

4. Dr. Mast mentioned that Mr. Perizonius of the Netherlands Patent Office had asked a similar question in writing. He asked Mr. Perizonius to repeat his question orally.

5. Mr. Perizonius remarked that those who worked in a patent office, as he did, had, when deciding whether an invention was patentable, to approach problems like those under discussion from another direction. Mr. Perizonius went on to describe the case of an inventor developing in his laboratory by genetic engineering a new gene, a new polynucleotide, that was valuable to plant breeders. The inventor was interested in obtaining a patent, not plant breeders' rights. He therefore filed a patent application for the new gene, disclosing, for example, its formula.

Mr. Perizonius then explained that when he received the application in question he had to decide whether the invention was patentable, applying the rules laid down in the Netherlands Patent Act. Those rules were in fact the same as the rules laid down in the European Patent Convention. The gene was undoubtedly new and therefore met the first requirement for patentability. It had rather unexpected properties and might be said to be non-obvious, thus meeting the second requirement. As far as meeting the third requirement, industrial applicability, was concerned, the gene could be produced, for example, in a cell culture. The inventor could, of course, meet the fourth requirement, reproducibility, by describing the process used in his laboratory or by making a deposit of a cell culture in which the gene was present that anyone could then propagate. The gene had therefore met the four normal criteria for patentability. There were, however, two special criteria, as already

mentioned by Dr. Lange. The first was that a plant variety could not be patented. The inventor had, however, merely requested a patent for a gene, a chemical compound. The second was that essentially biological processes were not patentable. It was very clear, however, that cultivating a cell culture from a given cell, isolating from that cell culture a gene and reproducing the gene were all technical measures. Apart from that, the application was not related to a process, but to a compound. All the criteria had therefore been met and, in Mr. Perizonius' opinion, the patent had to be granted.

Mr. Perizonius then said that he would like to consider the consequences of patenting the gene. He believed that a breeder who introduced the gene into a plant and used it to develop a new plant variety did in fact produce the gene. The patent owner had exclusive rights in the gene and in Mr. Perizonius' opinion the plant breeder was not free to use it to develop new varieties. He believed that there were further consequences for plant breeders. He expressed the hope that there was a mistake in his reasoning but, for the moment, he could not see any.

Many patent laws provided that when someone developed an existing patented invention and obtained a patent for that development, then he, as the "dependent" inventor, could obtain a compulsory licence that authorized him to use the "basic" invention. The plant breeder who wanted to develop new plant varieties, however, could not obtain a patent because plant varieties were not patentable. Therefore, the breeder, not being able to obtain a patent for his new variety, could not obtain a compulsory licence in respect of the patented gene. As a result, the breeder would be totally blocked by the patent.

6. Dr. Lange pointed out that he had already indicated legal consequences that might arise from the protection of a man-made gene in his lecture. The area was a new one, of course, in which there was as yet no experience available. On the other hand, he thought that there were general principles of law that could be applied. Mr. Perizonius had been right to suggest that, at first sight, all the conditions for patent protection seemed capable of being met. He himself had only added, parenthetically as it were, that there was just a possibility of certain difficulties arising in relation to the normal conditions for patent protection. There he was thinking in particular of the distinction between inventions and discoveries. In any event there had to be an inventive step. That condition was not fulfilled when the gene as such already existed and had merely been isolated. Assuming, however, that there was indeed novelty and that all the other conditions of patent law had been met, there still remained the question of how far the protection extended, and it was there that he considered that the principles that had established themselves in patent law with respect to combination and mixing should be brought into play. If the gene were capable of being regarded as part of the plant material, he considered that an evaluation would have to be made of the general public's interest in free use of the material for further breeding as compared with the individual interest of the inventor in compensation for his creative work. That implied that Article 5(3) of the Convention would be the reference point in the comparative evaluation, and breeders would have to pay particular attention to that fact. He felt that a further distinction should be made between the incorporation of the gene in the material and the further use of the resulting material for breeding. In his opinion the latter should be free.

7. Mr. Tsuchiyama said that he would like to comment on the lecture given by Professor Monya. Close attention should be paid to several questions that had been raised regarding the protection of plant varieties under the Japanese Patent Law. As had been mentioned in the lecture, the plant variety protection system in Japan was administered on the basis of the understanding that protection under the Patent Law would not be practical. He therefore believed that several indications by Professor Monya relating to the Patent Law had to be seen as purely theoretical. Professor Monya had mentioned that some problems, such as the difficulties in qualifying as an invention and in satisfying the requirements for a patent and for the disclosure of the invention might be solved as a result of future developments in biotechnology. Professor Monya had also mentioned that there were many other unsolved problems in protecting plant varieties under the Patent Law. This could be interpreted to mean that it was reasonable to protect plant varieties under the Patent Law if those problems could be solved. However, the Japanese plant variety protection authorities thought that plant varieties should be protected under a system which took account of the particularities of plants and that if the present protection system became unsatisfactory then they should be protected under a

new and improved plant variety protection system rather than under the general patent system. The Japanese plant variety protection authorities entirely agreed that the problems under discussion should be resolved on the basis of internationally harmonized principles.

8. Dr. Teschemacher said that he wished to revert once again to the question that had been put to Dr. Lange earlier, and to provide some more clarification of the problems that would be facing patent practitioners in the not-too-distant future. In that connection Dr. Lange had mentioned a Decision of the Third Appeal Board of the European Patent Office,* which afforded a clearer picture of future developments. In the case concerned, the invention had been a new chemical compound with the property of protecting plants against agricultural chemicals. What was claimed was not only that chemical compound and its use for the protection of plants, but also the propagating material of cultivated plants treated with the compound. The Board had had to decide on the validity of the latter claims, and it had found for patentability, as in the case in point the subject matter of the claim had been not an individual plant variety with its specific characteristics, but rather all plants treated chemically in a particular way. If he had understood the lecturer correctly, the criterion was endorsed by him too. If then the facts of the case were transposed to the context of genetic engineering, an invention could for instance consist of hereditary information Y (in DNA form) that was capable of being incorporated in plants--one could take wheat, and indeed any type of wheat, as an example--and which then protected the wheat so treated against disease X. The inventor could then, if he allowed himself to be guided by the principles of the ruling referred to, claim not only the hereditary information, not only the process for the incorporation of that hereditary information in wheat: he could also draw up a claim worded as follows: "Wheat containing hereditary information Y for protection against disease X." In that case he would not be claiming a plant variety with its specific individual characteristics, but any type of wheat that had been processed genetically in that way. He wondered, and also asked Dr. Lange, whether such work could be adequately protected by plant breeders' rights law, and he wished to know whether there were grounds under patent law for excluding such work from patent protection.

9. Dr. Lange showed understanding for Dr. Teschemacher's question regarding the extent to which plant breeders' rights law could offer adequate protection in such cases. The question was however liable to remain open as, if he understood the Decision of the Third Appeal Board of the European Patent Office correctly, any cultivated plants treated chemically in a particular way could be claimed in the form of their propagating material. On the other hand, the individuality of a variety could not be claimed in the form of propagating material or the plant itself. That distinction was a difficult one to make, and he also did not know how a better practical distinction could be made. Nevertheless, it was said in the ruling that propagating material of a large number of plants was claimed, not propagating material of plants of a particular variety. There another distinction certainly had to be made between what was claimed in connection with a process patent and what could be achieved with a substance or product patent. In any event a process patent would only go up to that limit and no further.

10. Mr. Perizonius said that he wished to make some small remarks on the reply he had received from Dr. Lange. The starting point must, of course, be that it was a new gene, developed in the laboratory, and not a gene extracted from a plant. In the latter case the novelty requirement would not be met. He wished to emphasize, as far as Dr. Lange's reference to Article 5 of the UPOV Convention was concerned, that what in his opinion a judge had to decide upon in an action for patent infringement was not what was allowed by plant breeders' rights law but what was forbidden by patent law. In connection with the question of immediate products and the reply given by Dr. Lange to Dr. Teschemacher, he wished to draw attention to the possibility of establishing a whole chain of claims, for instance covering the process for producing the gene, for introducing the gene thus produced into a cell and for cultivating therefrom the cell culture. From there one could go on and on until one covered the plant produced at the end of the process and all the varieties derived from that plant.

* See pages 33 to 38 below.

11. Dr. Straus wished to make two minor comments on the statements of individual lecturers, as a member of an organization that carried on basic research. The first had to do with the statement made by the President to the effect that patent protection for new plant varieties could benefit only a small elite. He would very much like to hear what the term "small elite" was actually intended to mean. Was it intended to mean the wide-ranging basic research carried on in academic circles? Did it mean the basic research of major industrial undertakings, on which billions were spent annually? And if that were so, who then were the great, non-elite majority who would be prejudiced by such protection?

One of the previous speakers, Mr. Perizonius, and also Dr. Lange, had mentioned the case of the invention of a new gene. Dr. Straus wished to point out that the creation of a new gene and everything associated with it entailed a very great research effort. He failed to understand why one should want to make the results of that research freely available for use by breeders by virtue of Article 5 of the UPOV Convention, regardless of any patents that might exist. That was the first comment. The second comment had to do with the question of the distinction between discoveries and inventions. He had to admit that he greatly welcomed the possibility given to plant breeders also to have discoveries protected. He did however wish to make the observation that he never failed to be amazed when plant breeders presented their work of discovery as something quite especially creative compared with what was understood by a discovery outside the field of plant breeding. He wished to refer to the many Nobel prizes that had been awarded for discoveries in the field of the natural sciences, and it was after all to be assumed that the Nobel Prize Committee awarded prizes only for creative work. That distinction, which was being made again and again by implication, was always somewhat painful to basic researchers, and Dr. Straus of course would be pleased if in that area plant variety protection could perhaps do some pioneering for the benefit of other areas of industrial property.

12. Professor Savignon wished to subscribe to the last point made by the previous speaker. He felt that discoveries and inventions belonged to a wider category, which he would call positive research results. Research did of course also produce negative results, which were useful to the progress of science, as well as positive results. The latter were a positive contribution to science. They either were or were not susceptible of industrial application. Professor Savignon saw only one criterion for distinction, in a research process, between what could be called a discovery and what could be called an invention, namely the presence, in the latter case, of industrial applicability. That to him seemed the only operative criterion. The definition of a criterion for distinction between what was present in nature and what was the work of man was of conceptual interest, but had little operative value in relation to the rights deriving from positive research results.

13. Dr. Williams said that he believed that an excellent way of approaching the problems under discussion would be to try to determine the complementary aspects of plant breeders' rights and patent protection rather than to focus on potential conflicts. He thought that there were some inevitable contacts between the two types of protection, but not necessarily conflicts. Article 5(3) of the UPOV Convention might, however, give rise to one. He believed that one of the speakers had referred to Section 7 U.S.C. 2544, the research exemption under the United States Plant Variety Protection Act, which indicated that protected varieties could be utilized for breeding and research. In his view, however, the problem was not really with that particular section but with the provisions of the Patent Act. The effect of the research exemption was that one could take protected varieties, experiment with them and create new varieties. A patented gene, however, that had been the subject of a great deal of research and had been made by using a genetic engineering process such as recombinant DNA, was something that was certainly going to last for a period of time. He believed that it would be a problem to determine whether someone should be allowed to continuously reproduce for commercialization a variety using that gene. Those systems that had provided for a link between basic patents and improvement patents, and for some sort of licencing, might provide the answer to the problem. There was nothing in United States legislation to prevent such a licencing process. Compulsory licencing did not exist in the United States legislation and an improvement patent was not necessarily tied into the basic patent.

Dr. Williams said that he would also like to comment on Dr. Lange's reference to the law regarding mixtures. In the United States of America, if one had a mixture that was comprised of elements A, B and C and element A was a patented element or a patented compound then, regardless of what other mixtures one put that patented element or compound into, one would have an infringement problem unless a licence was obtained. In his opinion that very same situation would exist in respect of a patented, genetically engineered gene that was incorporated into new varieties.

14. Sir Ralph Riley said that he, as a mere scientist, wished to comment on the problem that he had heard lawyers discussing for the last half an hour or so. It seemed to him that laws were made for man and not man for laws. The discussions, however, seemed to imply that the system had to be made to fit the existing regulations. The purpose of patent legislation, as he had understood it, was to encourage invention and the commercial development of invention and discovery. Unless the legal system did that, we might as well not have it. Consequently, one had better adjust the legal system so that it enabled the science to be practiced as effectively as possible.

15. Dr. Williams said that he completely agreed that laws were made for society and that they should benefit society. He took the position, however, that there was nothing inconsistent with that view in providing strong patent protection and strong plant breeders' rights protection, both of which encouraged innovation and benefitted mankind. He therefore saw nothing inconsistent in trying to harmonize the two sets of laws and regulations.

16. Dr. Lange felt that some more thought should really be given to the question that he had tried to present at the close of his lecture, namely whether or not a protected gene could be part of a variety. He had merely attempted to devise a legally defensible interpretation. He had at any rate refrained from embarking on a full-scale legal debate on the problem. Even in connection with legal interpretation, the question immediately arose whether the protected gene--which certainly should be protected if it met the general conditions under patent law--could legally form part of the variety. Even if it were true that the UPOV Convention was not applicable to industrial patents, the patent lawyer in Europe would still have to heed Article 53(b) of the European Patent Convention, in which there was an exclusion in respect of plant varieties. And if the gene were part of the plant variety, the eventuality of patent protection for a gene would cause a part of something to be protected that subsequently was not eligible for protection; the real problem was therefore not so much that of the protection of the gene itself, but that of the extent of protection. How far should the protection of the protected gene go? And there Dr. Lange did mean that propagating material of an individual variety could not be claimed. That was precisely the borderline drawn by the Third Appeal Board of the European Patent Office. Apart from that there was the problem of whether subsequent stages of propagation could be claimed. There was absolutely nothing to be gained if the gene, and possibly also the basic material produced directly after incorporation of the gene, were protected. That material had after all to be propagated further, and possibly in a number of stages. And that was what he considered inadmissible, namely the inclusion of such stages of propagation in the protection. Moreover the principle of the exhaustion of protection rights should be considered in that connection.

17. Mr. Fikkert said that for him the first objective of the discussions should not be to decide what was desirable. One had first to try to analyse whether there was a problem and, if so, what the scope of it was. He believed that Dr. Lange had already pointed out that patent protection for a gene was possible. A man-made gene could be patented and one could not deny that a gene incorporated into a plant was a part of that plant. Even if the plant was of the second, third, fourth or tenth generation, if it still had the gene in it and one made use of the plant, one would be using the gene. If a patented gene was incorporated into a plant that would mean that one needed the authorization of the patent owner as soon as one was going to use that plant. He believed that it was not fair to try to reassure people by saying that a gene could not be part of a variety because a gene was material and a variety was abstract. A variety was an abstract concept but one mostly used the variety in its materialized forms, namely the plants or the propagating material.

18. Mr. Kunhardt said that one particular point that was made in many statements on plant breeders' rights law was that it owed its origin, so to speak, to the fact that patent law had placed certain obstacles in the way of protection, and that plant breeders' rights law had removed those obstacles; that was moreover basically correct. He did want to mention one further point, however. Plant breeders' rights law was not designed solely for the removal of obstacles to patenting that had existed under earlier patent law: it had also been designed--as Dr. Lange himself had indicated--with reference to specific aspects of the plant material, and also the social and agricultural considerations that governed it, and the problems that a monopoly right for biological material tended to create. They had been taken into consideration in the drafting of the Conventions concerned--on the one hand the UPOV Convention, and on the other those that excluded the protection of plant varieties as a safeguard for the UPOV Convention. One should not overlook the fact that this special system of variety protection law showed the effect of a certain political influence. He was also referring in that connection to national law, for instance to the US Plant Variety Protection Act, Section 113--the "crop-exemption" provision--which did not exist in patent law. There was quite clear evidence of a specific agricultural-policy aspect. On the other question, raised for instance by Dr. Teschemacher, as to what obstacles under patent law stood in the way of protection, it had first to be said that one could, if one wanted, design patent law throughout in such a way that it covered everything worth covering. Apart from that, a great deal could be covered through interpretation of the patent. Patent law was not so rigid as to exclude expressly the protection of genes, for instance. However, where there were several conventions that required interpretation, it was important to interpret them in such a way that there was no conflict. Dr. Lange had undertaken to interpret patent law in such a way that it did not allow effects to be obtained that when considered in the overall context of the legal order should be excluded. If on the other hand one opted for an interpretation that did lead to such conflict, one was again exposed to the risk of patent law becoming available once more, whereupon a further check would have to be made on the consequences that it might possibly have in that area. And that was a point that would very probably have to be taken into account if excessive advantage were to be taken of the possibilities under patent law.

19. Mr. Skov recalled that he had asked earlier whether anybody had considered the social consequences of patenting plant varieties. He wondered whether he might conclude from the fact that he had not received an answer that they had not so far been considered. One unpleasant consequence could be that the multinational chemical companies would take control of all plant breeding and plant production. He certainly believed that such a development was not wished by anyone. Mr. Kunhardt had just clearly explained that legal provisions concerning plants were largely dependent on agricultural policy. Mr. Skov said that, for him, it was quite clear and very important that agricultural policy should have its rules and that the farming community should be able to live with those rules. There had been much academic discussion concerning the possibility and desirability of patenting plants but nothing had been said about the needs of agriculture and of the farmer. It seemed to him that if the worst happened, if Dr. Lange's theories did not prevail, there would be monopolies that would be intolerable for agriculture in the developed world and in the developing world. Mr. Skov believed that it was therefore very interesting to look at Article 53(b) of the European Patent Convention. He noted that Sir Ralph Riley had said that if the law was wrong it should be changed. Mr. Skov said that he understood that it might be twenty-five years before developments arose that would really have an effect on agriculture. In his opinion it was much more important to look at the social consequences for farmers in developing and in developed countries than at existing legal texts.

20. Sir Ralph Riley noted in reply that in his lecture he had tried to describe some scenarios that might apply to agriculture in the developed part of the world, where production was currently in surplus. He had mentioned that crop agriculture might be diverted to make products which were at present unconventional. The social consequences of genetic engineering for agriculture were, however, wider than that and he was sure that it would be apparent to many that by its use it might well be possible, over the course of time, to incorporate into crop plants resistance, for example, to insects. People were already working at incorporating from bacteria into plants the genes that determined the toxins produced by the bacteria that were operative against insects. Many other such changes might be expected to be made to crops,

changes that would enable crops to be produced in a less environmentally damaging way than at present. Such changes would also be of consequence in the developing world where the costs of inputs were often prohibitive, acting as an excessive constraint on effective crop production that would otherwise reduce hunger. It was not true to say that the social consequences of genetic engineering had not been considered.

Sir Ralph went on to say that if he were asked whether he had considered the social consequences of patent legislation then he would have to confess that he had not. Indeed, he had not realized that a problem existed in that direction but, if it did, the solution did not seem to him to be beyond the wit of man. The answer would be to include in the legislation, as had been done in the legislation dealing with plant varieties, an arrangement that precluded the total blocking of the use of a patent. There should always be an entitlement for a potential user to use a patent, with due payment, of course, and after due notice. He concluded by asking whether what he had said actually made sense to lawyers.

21. Mr. Tsuchiyama said that, to aid understanding, he would like to give participants some further information on the specific case, mentioned in the lecture of Professor Monya, of a patent application in Japan for a plant variety. The patent application for the invention relating to a pentaploid mugwort with the characteristic of high santonin content had been filed by Nihon Shinyaku Co. Ltd. in February 1977. The application had been laid open in August 1978 and, after examination, it had been published in January 1983, it having been concluded that the invention was patentable. Following publication, the Japan Seed Trade Association had filed opposition to the grant of a patent with respect to the application. That opposition was being considered by the Patent Office. In the meantime, the matter had made the headlines in the newspapers from the point of view that if the patent was granted the problem of double protection would arise in relation to the Seeds and Seedlings Law. As a result, the problem had been considered in the Diet. The Diet had indicated that the Ministry of Agriculture, Forestry and Fisheries and the Patent Office should discuss the problem with each other to eliminate obstacles. Furthermore, several parties involved in the seed industry had filed a petition with some of the authorities concerned requesting that new varieties of plants should be protected only under the Seeds and Seedlings Law. As indicated by the Diet, the Ministry of Agriculture, Forestry and Fisheries and the Patent Office had been discussing the problem. It seemed, however, that much time would be required to solve it. For the time being, the Ministry of Agriculture, Forestry and Fisheries had asked the Patent Office to reject the application, because if a patent right were granted Japan would be in contravention of Article 2 of the UPOV Convention, under which double protection was prohibited. The Patent Office, however, had insisted that if the two protection systems had been in existence simultaneously, problems would not have occurred because the purposes and the modes of protection under the Seeds and Seedlings Law differed from those under the Patent Law. Thus, the views of the Ministry of Agriculture, Forestry and Fisheries and the Patent Office were different. Mr. Tsuchiyama concluded by saying that he would very much appreciate hearing the views of the lecturers.

22. Dr. Lange and Dr. Mast said that it was extraordinarily difficult for them to say anything definite on a case in which an appeal procedure was pending, and which indeed was under discussion before the Parliament of a member State, without first knowing the details. Dr. Lange mentioned however that Professor Monya had stated in his lecture that there was a practice in Japan according to which varieties were not protected under patent law; all the same, if he had judged the situation correctly, there was not actually any express legal provision.

23. Professor Monya commented that he did have some knowledge of the application in Japan for a patent for a variety of pentaploid mugwort. In his opinion there was doubt as to whether that application should be granted by the Patent Office since there was a question regarding inventive step. Generally speaking, he believed that the patenting of a plant variety that belonged to a species which was eligible for protection under the plant variety rights law would not be consistent with Article 2 of the UPOV Convention.

24. Mr. Perizonius said that he wished to refer to the question posed by Sir Ralph Riley. That question had been addressed to the lawyers but, even though he was not a lawyer, he wished to answer it. He believed that a solution had to be found in the direction mentioned by Sir Ralph. Some kind of compulsory licencing arrangements would be necessary. Mr. Perizonius felt sure that all participants would agree that barriers that could not be overcome were in no way acceptable. He particularly noted in Sir Ralph's remarks the words "with due payment," words that he believed many participants would be very happy with and others very unhappy with.

25. Dr. von Pechmann indicated that he had a specific question to ask Dr. Lange, and that he also wanted to add something to what Dr. Teschemacher had said. Dr. Lange had of course described the Decision of the Third Appeal Board of the European Patent Office as acceptable to breeders because in that case the protection did not relate to an individual variety, but generally to those plants that had been endowed with a particular characteristic. Some thought should be given to the case where a gene had been created or isolated. In his opinion it made no difference in inventive terms whether a gene was synthesized from the individual four bases, or whether it was separated off from the complete strands of deoxyribonucleic acid, extracted from them, as it were, with the subsequent recognition that the specific sequence of bases had an effect on the cell in that it induced the production of a particular protein. If the inventor recognized that and incorporated the gene in a plant, Dr. Lange considered that there should be no protection for a particular variety that possessed the gene in question, but rather that there should be protection for all plants that possessed the gene. He had to admit that he did not understand that opinion, as the protection achieved through that formulation was possibly as much as a hundred times broader than the protection that the inventor would obtain for a very specific variety embodying the gene. He wished to give an example in that connection, as there was no harm in putting such questions in the setting of concrete instances. It was well known that the drug Interferon was at present produced by bacterial means. However, one of the most difficult specific problems in doing so was that of isolating such a complex protein from the other albuminoid substances of the Escherichia coli bacterium, and consequently the recovery of Interferon was extraordinarily complex, apart from which side-effects sometimes occurred in the administration of Interferon obtained in that way. If now a plant breeder discovered that he was able to incorporate the Interferon-producing gene in a tomato plant, in such a way that the tomato juice contained Interferon, or alternatively in a grape, so that the grape juice contained it, and if it were demonstrated that Interferon was easier to isolate from the mixture with the other components than from the bacterium, then that was indeed a great invention which should be protected to its fullest extent, whereupon he would, as a patent agent acting on behalf of his employer, file a claim which, in terms of the Decision of the Third Appeal Board of the European Patent Office that Dr. Lange had described as correct, would in practical terms apply to all plants collectively. He saw this as something of a contradiction in Dr. Lange's line of argument.

26. Dr. Lange replied that he had not said that he regarded the Decision as being correct in every way. That was something that he could not evaluate, as he was not specifically a patent lawyer. He had mentioned the Decision by way of example because, in his opinion, it drew the same borderlines as he himself had recommended in his lecture. Dr. von Pechmann had expressed the view that it was actually disadvantageous for the plant breeder when such a wide area of protection was granted through the expedient of claiming all plants, and not merely the plants of a single variety. He was as yet unable to determine fully the practical implications of the question, especially since the Decision spoke not of "all" but of "any" plants, quite apart from the fact that he also felt obliged to question whether such a gene was eligible for protection at all. That for the time being was still an entirely open question. Nevertheless he considered that the Decision had indicated a possible borderline. Plant breeders had only to ensure that material of a variety, whether protected or unprotected, could be freely used for further breeding work. That was a principle of variety protection, and something that precisely distinguished variety protection law from patent law. That alone was his concern, namely that the possibility should exist, quite irrespective of whether the individual variety was protected or not. One should indeed make the somewhat difficult distinction between plants of an individual variety and plants in a population to which no individuality could yet be attributed.

27. Mr. Urselmann said that for more than fifty years plant breeders had tried to obtain protection for their inventive work. That had been achieved in various countries and for various species, but not in all countries and not for all species. Currently, in general, there were reasonable possibilities for obtaining protection for say a new variety which combined existing genes. The existing genes were not protected of course, only the combination. Furthermore, under the various plant variety protection laws the free use of the individual genes was allowed but not that of the new combination. Now the plant breeding industry was also trying to create man-made genes. He held the view that, in principle, there was no difference between rewarding the efforts needed to make a new combination and those needed to create a new gene. He therefore believed that the question to be discussed was not whether a man-made gene was protectable or not but how far the scope of protection should extend. He believed that the law should only be changed if the social consequences were shown to be unacceptable. In that event everyone would wish to comment on how to delineate the two fields.

Mr. Urselmann said that he wished to revert to the lecture given by Dr. Lange and to his statement that essentially technological processes for the breeding of plants were not patentable. He would then very much like to hear why that was so. Dr. Lange had also said that a gene was material but that a variety was immaterial. If that was true, Mr. Urselmann wondered how a breeder could make use of a variety, of something abstract, when creating new varieties. He could understand that hope and trust were abstract and could not be taken hold of but it was not quite clear to him why a variety was immaterial.

28. Dr. Lange agreed with the statements made by Mr. Urselmann on his first point. The question was not so much whether genes were eligible for protection, that being a question which, as mentioned before, was still completely open, but rather what the extent of protection should be. He was also of the opinion that no amendment of the law should be considered as long as there were clear possibilities of rational borderlines or demarcation being achieved by means of interpretation. He was of the opinion that such possibilities definitely did exist and hoped to have provided one or two usable points of reference for the purpose. He did not quite understand the second point raised by Mr. Urselmann, on the other hand. There had to be a misunderstanding, as he had not said that technical processes for the breeding of plants were not eligible for protection. He had however made a clear distinction between plants and plant varieties. On the third point made by Mr. Urselmann, he wondered what in that case a variety really was. In his opinion it was an abstract concept. How else could one encompass a variety? It could not be seen, it could not be touched, it was characterized by specific features or conditions that were laid down by the law. To that extent, therefore, he thought that a variety could be regarded as immaterial property. Of course that did not mean that one could not use the propagating material of a variety for breeding. Propagating material was a highly material thing, and yet it did not actually constitute the variety in the physical and legal sense. With his statements he had endeavored to present the fact that a material thing could not readily, at least in legal terms, be part of an abstract thing.

29. Mr. Goebel asked Dr. Lange, and on some points also Professor Savignon, what possibilities there were for the demarcation of the fields of application of the two types of protection right. A substantial area of discussion had grown up round the suggestion that, through the grant of patents for genes or comparable subject matter, breeders or those interested in plant breeders' rights could quite possibly be obstructed, even throughout successive generations. It had been very accurately pointed out by Sir Ralph Riley that the legal possibilities should be determined by the needs that emerged for those concerned, and not the reverse. Sir Ralph had also touched on compulsory licensing, which was indeed a possibility for the solution of the problems. In that connection one had to consider what interpretation possibilities could be found in the special subject matter of protection that had evolved recently in the area between plant variety protection and patent protection. Did not the question of the exhaustion of protection rights such as patent rights have a bearing there? If the patented gene were commercialized, then all subsequent generations would very possibly be affected by the exhaustion. He himself had not studied the matter. However, even if that were not immediately apparent from the systematic evidence, was one not bound, in line with the considerations of Sir Ralph Riley, to look for a harmonizing interpretation that would make such freedom of choice possible?

30. Dr. Lange replied that principle of exhaustion had to apply also in the cases mentioned. The principle was an entirely general one that had been specially developed for patent law and which, when applied to plant material, led to a situation where, after the protected material had been commercialized with the consent of the owner of the protection right, further propagation of the material would no longer be covered by the protection. To that extent the plant breeders' rights would be exhausted. Of course it was beyond dispute that legal factors would also have some bearing on the question of the demarcation of the two legal areas, patent law and plant variety protection law. That had been rightly indicated in the course of the discussion, and he did not intend to comment on it, as such a thing naturally formed part of the interpretation process. Mr. Kunhardt had accurately pointed out that agricultural arguments had to be taken into account at the same time, and no decision on demarcation in specific individual cases could ever be reached if it were dissociated from that background. He hoped in that way to have adequately answered the question, especially its second part.

31. Mr. Royon pointed out that CIOPORA was acquainted with the subject of the present Symposium, as it had been proposing since 1961 that the protection of new plant varieties should be secured by patenting under a special agreement within the framework of the 1883 Paris Convention, and by adapting patent laws, notably to provide for the deposit of samples in reference collections. As Professor Savignon had explained, such an adaptation had been achieved in the field of microorganisms as from 1970. Mr. Royon felt that the prevailing difficulties, which were the subject of the present debate and which had to do with the possible demarcation of two protection systems, were a good illustration of what had motivated CIOPORA at that time; then it had been a question of producing the most general legislation possible, precisely in order to permit adaptation to future developments, and to events that were now revealing themselves. CIOPORA obviously had to go along with the present Convention, namely the UPOV Convention. Indeed it was making full use of it. For the moment it did not have to pronounce on the possible choice between two systems; the question seemed moreover to be somewhat premature. There were certain other arguments that inspired it neither with fear nor with any particular enthusiasm. Nevertheless, it had to be pointed out that patent protection was bound to have a certain attraction for breeders who used the sophisticated research methods that were being discussed at the present time--but also for certain other breeders who used more classical techniques--precisely owing to the fact that it gave the owner of the patent an extremely wide scope of protection, as Professor Savignon had explained. Mr. Royon considered that the present Symposium could be the opportunity for more reflection on certain concerns expressed by breeders, notably regarding the definition of the scope of the breeder's right as specified in Article 5 of the Convention, and on problems of international cooperation in prior examination. That reflection should make it possible on the one hand to afford more ready access to protection than at present, and on the other to open the UPOV Convention to a greater number of States by facilitating the exchange of examination results between States members of UPOV. Mr. Royon wished to add that it was extremely unfortunate that protection should not always be available to certain breeders who worked alone or practically alone on a species, on the sole ground that the installations necessary for prior examination did not exist. Even though that remark was not immediately relevant to the subject of the present Symposium, it had to be borne in mind when all the implications of the debate were considered.

32. Dr. Leenders said that he wished to comment on the reference that had been made to exhaustion of rights. He was concerned that the idea might have been given that someone who bought a patented product had the right, on the basis of the principle of exhaustion, to produce ten thousand or a hundred thousand similar products. That, of course, was not the essence of exhaustion, as this related in principle only to the one product bought. ASSINSEL had not been able to formulate a common view on the matter that had been under discussion at the Symposium, but there was one area about which there was general agreement among its members. That was that the breeders should not deny others doing inventive work the protection they sought for their own results. In that connection, he thought that the reference made to exhaustion had not been a very happy one.

33. Dr. Mast regretted that he would only be able to make very summary closing observations owing to the late hour. It was already difficult enough to give a concise account of the result of such a lively and wide-ranging discussion on questions so varied in nature. And yet that was perhaps not the purpose of a symposium anyway, at which more than anything else a wide exchange of views on outstanding questions should take place. Dr. Mast first expressed his appreciation to the four lecturers. They had provided so much material that a really penetrating discussion had been able to take place. Brains had been racked, problems had been discussed with which, *inter alia*, the Third Appeal Board of the European Patent Office had had to concern itself, and questions had even been touched on that the Parliament and courts of a country would apparently be dealing with. Under the circumstances it was not surprising that it should be impossible to record the result clearly in just a few sentences. Nevertheless a few important results had been achieved which he wished to present briefly and thereby establish for the purposes of further discussion.

First he wished to recall the statement made by Dr. Lange in his lecture, which had been confirmed by the representatives of breeders' organizations. What Dr. Lange had said was that breeders did not adopt a defensive attitude towards justified claims made by others who wished to secure protection for their own research results. Dr. Mast assured his listeners that he had heard similar statements made by breeders on other occasions, and that he was in no doubt that they were not just empty words. The breeders who required protection for their own breeding results were far from denying similar protection-- or so they had asserted time and time again-- from others who had made valuable achievements for the benefit of society; they did not want to withhold from anyone what they were claiming for themselves. The protection did of course have to be adequate. It had to take account of the same legal criteria as were applicable in plant breeders' rights law, which consequently had to be heeded by the breeders themselves.

Another important point that he wished to mention in his summation was that there had not, at the present Symposium, been any questioning of plant breeders' rights law from any quarter. It had been unmistakably shown that plant breeders' rights law would continue to exist in the future, regardless of what genetic engineering might bring. It had been repeatedly emphasized by the lecturers and also by the speakers in the discussion that plant breeders' rights law was the appropriate form of protection for new varieties of plants. The question had however been asked whether one should not, *de lege ferenda*, allow protection by industrial patent alongside plant breeders' rights. In that connection the discussion had been based on the fact that, in a large number of member States of UPOV, there were rules complementing Article 2 of the UPOV Convention that would preclude that protection under patent law for plant varieties as such. And yet no such express rules seemed to exist in the United States of America, where admittedly the situation was rather special. In Japan it was reported that there were some differences of opinion on the question. One of the lecturers had however stated that even in Japan clarification was being sought, the effect of which would be that there could as a general rule only be protection under plant breeders' rights law and not under patent law for new varieties of plants.

With regard to the question whether one might not in future, as a quite general measure, allow double protection of plant varieties by both plant breeders' rights law and patent law, Dr. Lange and individual speakers in the debate had pointed to the substantial reasons that spoke against such an arrangement. To him too it did not seem possible for protection rights of different type to be granted in respect of varieties of the same genus or species by two different authorities in the same country. In that connection he did have one further doubt, however, namely why a second type of protection right, the patent, should be allowed at all for a plant variety, when there were already plant breeders' rights for varieties of that species. What plausible reason could possibly be given for that? It had been emphasized many times that plant breeders' rights law afforded the owner of rights less far-reaching powers than patent law, and in particular that the scope of protection was much more restricted, the latter having been confirmed by Dr. Lange in his lecture. Yet the scope of protection of plant breeders' rights law had not been restricted because that was in the nature of things, or because breeders had emphatically desired such a restriction. Rather, as had emerged a number of times in the course of the discussion, the scope of protection had been restricted in the interests of the public at large. If patent protection were once again to be allowed for plant varieties alongside the protection deriving from plant breeder's rights law, then legislation, which had itself imposed

specific limitations on plant breeders as the price for the introduction of plant breeders' rights, would certainly make the same limitations on protection by industrial patent. He therefore believed that the different, more restricted scope of protection of plant breeder's rights law as compared with the scope of protection of an industrial patent could not be invoked as a reason for demanding that the industrial patent be allowed alongside the plant breeder's right.

Even the fact that the European Patent Convention and most of the patent laws of UPOV member States excluded from patent protection not only plant varieties as such, but also essentially biological processes for the production of plants, had been touched upon by the lecturers, and the grounds for that exclusion had been presented in detail. The discussion on that subject had not quite been concluded, however. It had been asked, for instance, whether there was any likelihood of patent protection for processes of that kind ever leading to a rational result. That, it had been said, depended essentially on how far the scope of protection of such a process patent actually reached. It had been mentioned that, while the process patent did indeed tend to cover also the product resulting directly from the process, it was very questionable just what should be regarded as a directly-resulting product. That in his opinion was one of the key points for future discussion. A similar question arose for what was still the hypothetical case of patent protection being sought retrospectively for a man-made gene that was incorporated in a population of plants as a means of creating a new variety. He personally doubted whether, in the case under consideration, the protection right in the gene could extend beyond the population of plants directly resulting and include also future generations produced with that same population. If one succeeded in binding the new gene so tightly to the hereditary material of the plant that the hereditary information passed on to subsequent generations every time the variety was propagated, then the courts, which ultimately would have to rule on such cases, would have to determine whether the gene was still present as an independent object. Only if the courts were to answer that question in the affirmative would patent protection for an isolated gene lead to the result sought by the patent applicant. He could not help noting, however, that widely diverging views had been presented during the Symposium on that set of questions, and the discussion on the subject would certainly be continuing in another framework.

Finally--a thing that he wished to mention with special emphasis by way of conclusion--the question had been asked whether there were not also legal-policy arguments against the extension of protection possibilities under patent law. Mr. Skov had been the first to ask it, and many had subscribed to his viewpoint. Dr. Mast himself believed that the question was entirely justified, and should be given the necessary attention in the continuation of the discussion both within UPOV and outside. It should not be forgotten, and it was unlikely that patent lawyers would forget, that only two decades previously a great deal of subject matter for which patent protection was now available was still excluded from it on grounds of legal policy. Article 167 of the European Patent Convention showed for instance that, at the time of drafting and concluding the Convention, in other words some ten or 15 years previously, processes for the manufacture of foodstuffs and also agricultural and horticultural processes were not patentable in certain countries. That exclusion of certain subject matter had to a large extent been removed, but only then because justice had been done to the public interest in another way, in the European Patent Convention for instance by the exclusion of plant varieties from patent protection. If the next stage were to extend protection under patent law further, it was to be feared that the old legal and economic controversy about the limitations of patent law, and its justification from the point of view of the public interest, would revive. Then perhaps the questions that Mr. Skov had raised, and to which no answer had been found at the present Symposium, would be asked.

In conclusion, Dr. Mast addressed his special appreciation to Sir Ralph Riley for having had the courage to make a clear prognosis as to when genetic engineering would be important to plant breeding. He had mentioned the beginning of the next century. That indication would be undoubtedly of great value to subsequent reflections.

34. The President closed the Symposium, having expressed his gratitude once again to the lecturers and thanked all those who had taken part in the debate.

INDUSTRIAL PROPERTY AND PLANT BREEDERS' RIGHTS*

Some basic thoughts developed by the Office of the Union

OUTLINE OF PATENT LAW

10. The legal basis for the protection of inventions is constituted by patent law. This is based mainly on the following social and economic considerations, to which varying degrees of importance are attached:

- (i) a patent acknowledges the right of the inventor in the fruits of his intellectual activities in the industrial field;
- (ii) the patent system is an instrument for promoting and disseminating technical progress and for stimulating inventive activity;
- (iii) the patent system is an instrument for the transfer of technology.

11. The national patent laws are largely based on the same fundamental principles, particularly since the concept of protection of industrial property became accepted in its modern shape in the course of the last century and at the beginning of the present one; some of the principles have been incorporated in the Convention for the Protection of Industrial Property, signed in Paris on March 20, 1883, and since revised on six occasions. In addition, the laws have been subject to a great deal of harmonization from the fifties onwards and have been capped by international and supranational arrangements. The start was given for this trend principally by the work on European patent law, which led to the European Patent Convention. Two complementary treaties were drawn up in parallel, the Convention on the Unification of Certain Points of Substantive Law on Patents for Invention and the, worldwide, Patent Cooperation Treaty (PCT). In addition, the World Intellectual Property Organization (WIPO) drew up a "Model Law for Developing Countries on Inventions"; that Model Law was prepared by experts acting in a personal capacity and was given the approval of the WIPO Coordination Committee and the Executive Committee of the International Union for the Protection of Industrial Property (Paris Union). It therefore constitutes the outcome of an international consensus and a model for up-to-date legislation on patents and, consequently, a valid basis for this study. Extracts from the WIPO Model Law and from the European Patent Convention are given on pages 24 to 28 below.

12. The basic principles of patent law may be stated as follows:

- (i) A patent is granted for an invention which, for the purposes of this document, may be, principally:
 - (a) a product (a substance) as such, independently of the process used to obtain it;
 - (b) a process for manufacturing a product (in this respect, it may be noted that numerous patent laws automatically extend the protection afforded by a process patent for manufacturing to the product that results directly from use of the process).
- (ii) The invention must be new, must involve an inventive step (not be obvious) and be capable of industrial application (be useful).
- (iii) A patent is granted for a limited period.
- (iv) A patent affords to the patentee the right to prevent other persons from working the invention (manufacture, offering for sale, selling and other forms of use).
- (v) A patent must disclose the invention in a manner sufficiently clear and complete for it to be carried out, in accordance with the description, by an average person skilled in the art concerned; this requires that the invention be "reproducible."

* This study was submitted to the Symposium as document SYMP/1984/4. It is an extract of a document submitted earlier to the Administrative and Legal Committee of UPOV.

13. Patents may be dependent on each other. Thus, where a patent has been granted for a product and a patent for a new process for manufacturing that product, the holder of the process patent cannot manufacture and market the product without the authorization of the holder of the product patent who, in turn, cannot use the patented manufacturing process without the authorization of the holder of the process patent.

14. Certain fields are considered, by their very nature, to be excluded from patent protection. This is the case, in particular, of discoveries and scientific and mathematical theories, treatments of the human and animal body by surgery or therapy, diagnostic methods and methods for performing mental acts. As far as legal doctrine is concerned, the reasons for exclusion are varied. Other fields are excluded for other reasons, for example inventions whose publication or implementation would be contrary to public policy or to morality. Finally, some categories of invention cannot be given a patent, or certain types of patent, for reasons that are mostly of an economic nature. The recent trend is, however, to abolish that exclusion, that was frequent in earlier times, particularly as regards foodstuffs and product patents for pharmaceutical and chemical substances, and to open up the possibility of a patent for all categories of invention. Article 167(2) and (3) of the European Patent Convention illustrates this trend (see page 27 and 28 below).

15. However, this opening up does not go without problems. Thus, the patentability of computer programs is not universally admitted. Another field in which legal writers have disagreed and case law has fluctuated for a number of decades is that of plant and animal varieties and processes for breeding plants and animals. The main objections to patentability for plant varieties are summarized below.

PATENTABILITY OF PLANT VARIETIES PRIOR TO THE INTRODUCTION OF THE UPOV CONVENTION

16. An objection that is repeatedly raised to the patentability of the result of plant breeding work is the fact that the creation of a new variety results from joint action by man and by nature. Can one therefore speak of "inventing," "that is to say (to use the definition given by Littré 'creating a new object by the sole force of the mind?'" (LE GRAND, 1961). This question, put some months before the signing of the UPOV Convention, echoed a remark made half a century earlier that "a new variety ... [is] the fruit of the forces of nature brought into play by a given process" (La Propriété industrielle, 1911).

17. However, the main obstacle was seen in the fact that a new variety was created by means of a non-reproducible process which did not enable a man skilled in the art "to carry out the invention without having himself to act as an inventor or to possess particular gifts" (FREY-GODET, 1923). In that objection, the fact that man has at his disposal a whole range of methods of reproduction or vegetative propagation starting from the original plant was completely ignored. And where that obvious fact was admitted, it was often in order to deny patentability on the grounds that the methods were not faithful or again to restrict it to vegetatively propagated varieties, as was done by the Congress of the United States of America in 1930 when it adopted what has since been known under the name of the "Plant Patent Law." Credit must nevertheless be given to Congress for having innovated.

18. Finally, it was objected that the breeder of a variety was faced with the impossibility of providing a complete description that was valid for every plant. "A level is always a level; a rotating shaft is always a rotating shaft and even a complex chemical compound always maintains the same molecular structure. On the other hand, as conditions change, plants also change... The result is that a verbal description, or even well prepared color plates, are not sufficient when it is necessary to define a new plant variety with the required accuracy" (unsigned article published in 1933 in La Propriété industrielle following the adoption of the Plant Patent Law of the United States of America). That objection had also been waived by the Congress of the United States of America.

19. However, the above-mentioned note concluded in the following terms: "The Courts will have to attenuate yet further the rigidity of the principle that the inventor, in exchange for the rights afforded to him, must reveal his invention to society in such a way that any person 'skilled in the art' may

carry it out; apply in a broad sense the theory which considers the products of nature as excluded from patentability... In fact, it would seem that even if the law represents good seed, case law will have to prove that it is not unfertile ground!" In actual fact, the innovation adopted by the Congress of the United States of America was only rarely to be copied by lawmakers and the judiciary was to prove incapable, in the majority of countries, of finding a satisfactory solution to the problem of protecting the breeder's work within the framework of patent law.

PLANT VARIETY PROTECTION LAW - ITS INTRODUCTION AND ITS GENERAL PRINCIPLES

20. The uncertainty of protecting plant varieties by means of patents led a number of States, as of the 1920s, to give breeders a different form of protection. This was based, to begin with, on the exclusive use of a denomination of a category of seed or seedlings (e.g., elite seeds) or of a denomination trademark--thereby doing violence to trademark law--or both (Czechoslovakia in 1921, France in 1922), and subsequently on a limited form of exclusive commercial exploitation of the variety (Netherlands in 1942, Federal Republic of Germany in 1953). In some States, the special arrangements assumed a place in the legal order side by side with the patent law. Such is the case, in particular, in the Federal Republic of Germany where the patent system finally opened up to plant varieties. However, already then, the legislator took care to clearly demarcate the respective fields of the two systems and to avoid double protection: the special arrangements being applicable to certain agricultural and vegetable species and the patent system, *de facto*, to the other plants since Article 68 of the 1953 Seed Law stipulated that where a variety was protected under both systems, the rights deriving from a patent could not be relied on except where they were not in contradiction with the provisions of that Law. In Italy, patents have become the sole form of protection for new plant varieties after case law had removed all objections that had been raised in opposition. Finally, no form of protection was available to breeders in countries such as Denmark, Switzerland or the United Kingdom.

21. The summary of the situation made in the preceding paragraph suffices to show that it was unsatisfactory, both for the breeders and for the industrial property specialists. In view of that state of affairs, the industrial property circles expressed an opinion at the International Association for the Protection of Industrial Property (AIPPI) Congress in Vienna in 1952 that it was necessary to protect new varieties by means of patents or by any other means. As for the breeders, grouped together within the International Association of Plant Breeders for the Protection of Plant Varieties (ASSINSEL), they expressed an urgent wish at their 1956 Congress, held in Semmering in Austria, that an international conference be held to study the matter at an official level and if possible to lay down in a convention the principles governing such protection. It may be noted in passing that these initiatives also followed on work undertaken from 1946 onwards within the Food and Agriculture Organization of the United Nations (FAO) but which had failed for reasons expressed as follows by the latter's Technical Activities Committee: "It is the duty of governments to make discoveries in the field of agriculture available in all countries; too many obstacles would prevent the building-up of reserves; the research institutes are governmental and the true nature of reproduction is opposed to a patent" (MATTHEY, 1954).

22. As the final stage in the historic process described above, the UPOV Convention, of which extracts are given on pages 28 to 30 below, basically does no more than to adopt solutions that already existed, either in theory or in practice, and to assemble them into a coherent legal system adapted to the aims pursued. The provisions of the Convention of concern within the framework of this study are the following:

(i) The purpose of the Convention is the granting of a title of protection for a variety (Articles 1 and 2). It is similar in that respect to the product patent, as opposed to the process patent.

(ii) The substantive conditions for obtaining protection are adapted to the subject matter to be protected, that is to say a variety. These conditions are distinctness from any other existing variety that is a matter of common knowledge, homogeneity and stability, commercial novelty and the denomination (Articles 6(1) and 38). The Convention therefore does not contain the notion of inventive step (any variety is protectable whatever the means by which it

has been bred) nor the concept of industrial applicability (every variety is presumed to be usable in agriculture). It contains a modified concept of novelty formed by the combination of distinctness and commercial novelty; this latter refers to the availability of the variety to the public and not to the disclosure of its description (based on publication, in particular) since a published description would not generally enable the variety to be recreated or reproduced.

(iii) The effects of protection are limited: firstly, in a simplified way, the exclusive right of exploitation is limited to production for the purposes of commercial marketing, offering for sale or marketing of seed and planting material of the variety. This gives a farmer the possibility--supposing that he has the technical capability--of producing his own seed without having to apply for a license and to pay royalties. Secondly, the right that is afforded comprises no rights in any further variety that is created (but not produced by repeated use) from the protected variety. Three further differing features are involved as compared with patents: the scope of protection is restricted and does not generally extend to the products of the variety; there is no system of dependency (except in the special case of varieties requiring repeated use of another variety for their commercial production); there are no claims that may define the scope of protection (Article 5).

(iv) Article 2(1) of the Convention lays down that the rights afforded to the breeder may take the form of a special title of protection--thus following the views of the great majority of States that signed the Convention--or of a patent--following the views of Italy. It further stipulates that where both forms of protection coexist in a State, they may not be available simultaneously for the same botanical genus or species. The possibility of double protection is therefore excluded. In the 1978 Act of the Convention, a derogation was added to the provision, contained in Article 37 of the Act, with the main purpose of enabling the United States of America to become a member of UPOV. In that country, the allocation of the respective fields of application of the Plant Patent Law and the Plant Variety Protection Act is, for historical reasons, a function of the mode of propagation of the variety to be protected, meaning that double protection can only be the exception.

THE PATENTABILITY OF PLANT VARIETIES UNDER PRESENT LAW

I. Exclusion of Plant Varieties from Patentability

23. International instruments. - In particular in view of the fact that it was drawn up at about the same time as the UPOV Convention and that to some extent the same experts were involved, the Strasbourg Convention on the Unification of Certain Points of Substantive Law on Patents for Invention reads as follows in Article 2:

"The Contracting States shall not be required to grant patents for:

...

(b) plant or animal varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof."

24. Similar provisions are contained in other international instruments, in particular:

(i) in Article 53(b) of the European Patent Convention, in the form of a strict exclusion from patentability (see page 27 below);

(ii) in Article 112(3)(ii) of the WIPO Model Law for Developing Countries on Inventions, also in the form of a strict exclusion from patentability (see page 24 below);

(iii) in Rule 67(1)(ii) of the Regulations under the Patent Cooperation Treaty (PCT), in the form of the faculty given to International Preliminary Examining Authorities not to carry out such examination in the case of applications whose subject matter is an invention in this field.

25. National laws. - Exclusion from patentability of plant varieties, animal varieties and essentially biological processes for the production of plants and animals is to be found in the national laws of most of the UPOV member States (total exclusion: Denmark, Israel, Netherlands, South Africa, Sweden, Switzerland, United Kingdom; limited exclusion (see paragraph 26 below):

France, Federal Republic of Germany, Spain). From the historical point of view, that exclusion was incorporated in the patent laws for the purpose either of applying Article 2(1) of the UPOV Convention or for harmonizing national law with the patent conventions concluded at European level. This is shown clearly by the changes in the statutory arrangements: in the first case, it appeared in the plant variety protection law, in an article of the final provisions amending the patent law, and in the other case, in a law amending the patent law that was mainly adopted with a view to aligning national law on European law.

26. In those countries that in the past admitted the principle of patentability of plant varieties, exclusion may be limited to those genera and species that enjoy protection under the special law on the protection of plant varieties, thus obliging patent law to provisionally play a stop-gap role (although this is very theoretical) pending extension of the plant variety protection law to the whole of the plant kingdom. Such is the case in France, the Federal Republic of Germany and in Spain (but not in South Africa). In the Federal Republic of Germany, exclusion from patentability of essentially biological processes for the production of plants is also limited to those concerning genera and species covered by the Plant Variety Protection Law. The explanation is that the lawmaker was unable to see his way to an overall solution (despite the controversies on the patentability of varieties and of related processes) and, consequently, he went no further than partial exclusion to avoid duplication of protection by means of a process patent covering the variety as the product of the process (Official Memorandum to the Plant Variety Protection Act of May 20, 1968, and RITGEN (1968)). Extracts from the patent laws of France and Federal Republic of Germany are given in Appendix IV.***

27. In some States, the patent law remains silent as regards the fate to be reserved to them. In Europe, such is the case of Belgium and of Ireland, pending adaptation of the legislation to European law. Elsewhere in the world, such is also the case, for UPOV member States, in Japan and New Zealand (but the law of this latter country, that is relatively old, excludes foodstuffs from patentability).

28. In order to make a complete survey, mention should also be made of a number of States that have adopted the system of patents for protecting plant varieties (and also animal varieties in some cases) on the basis of the UPOV Convention, such as Hungary or Italy, or by setting up special provisions, such as the United States of America (for vegetatively propagated varieties) and three States which are not members of UPOV, Bulgaria, Romania and the Soviet Union.

29. In those member States of UPOV (which therefore have a special law or special provisions under the patent law for the protection of new plant varieties) whose patent legislation does not exclude plant varieties from patentability as industrial inventions, it can be accepted that, theoretically, a variety could be protected at the same time by an industrial patent and by a special title. This has been suggested by WILLIAMS (1983) in respect of the United States of America, based on the Supreme Court decision in the Chakrabarty case (which concerned a man-made microorganism). However, the authorities of that country have expressed a more guarded point of view (document C/XVII/6, page 48):

"The extent to which plant varieties are eligible for protection under the General Patent Law has not yet been judicially determined. The Patent and Trademark Office has, therefore, adopted a case-by-case procedure for determining eligibility. In general, asexually reproduced varieties not patentable under the Plant Patent Law and sexually reproduced varieties not protectable under the Plant Variety Protection Act may, upon satisfaction of the statutory criteria, be patented under the General Patent Law."

In fact, applicants for patents will be faced in those countries with the same objections that were put forward in the 1920s to their predecessors. That may indeed be the reason for which the patent approach would seem to remain theoretical in those countries.

30. Above all, however, exclusion from patentability may derive from application at national level of the provision in the second sentence of Article 2(1) of the UPOV Convention prohibiting the coexistence of a special title of protection and of a patent for varieties of the same botanical genus or species. Such application may result from:

(i) a constitutional principle that international law applies directly at national level;

(ii) failing that, a principle under which the interpretation of national law endeavors to conform with international law;

(iii) the rule under which priority should be given in resolving a conflict of laws to the specialized legislation (it being understood that, generally, the plant variety protection law is to be considered a specialized law in comparison with the patent law) or to the most recent law.

II. Patentability of Plant Varieties where there is no Exclusion from Patentability

A. Product patents

31. The legal point of view. - In those countries in which there is no plant variety protection legislation, case law determines whether patent law is applicable to plant varieties. Experience has shown, however, that case law remains (still) incapable of adapting the patent system to plant varieties. It is highly probable that the major obstacle will remain the non-reproducibility of the breeding method, thus not permitting an average person skilled in the art to "carry out the invention." A further obstacle could perhaps be the requirements of inventive step (in some laws, non-obviousness). Thus, in its decision in the Abitibi (1982) case, concerning a mixture of fungi, the Canadian Patent Office held, incidentally, as regards the patentability of higher organisms, as follows in respect of reproducibility: "If an inventor creates a new and unobvious insect which did not exist before (and thus is not a product of nature) and can recreate it uniformly and at will, and if it is useful, for example, to destroy the spruce budworm, then it is every bit as much a tool of man as a microorganism. With still higher life forms, it is of course less likely that the inventor will be able to reproduce it at will and consistently, as more complex life forms tend to vary more from individual to individual. But, if it eventually becomes possible to achieve such a result, and the other requirements of patentability are met, we do not see why it should be treated differently." The latter considerations, which hardly differ from the objections raised half a century ago already, thus close the door on patents for varieties produced by conventional plant breeding programs, of which the greater part are non-reproducible, and on varieties produced by advanced genetic engineering processes such as protoplast fusion, which are not always reproducible.

32. This objection is also put forward at present in countries such as the Federal Republic of Germany, where there is a long tradition of variety protection by means of patents and where the principle of patentability of certain plant varieties is acknowledged (see paragraph 26 above). HESSE (1969), the author of a detailed study (for his conclusions, see page 31 and 32 below), and KREYE (1983), for example, are in favor of the requirement that the breeding method of the variety should be reproducible, thereby adopting the same approach as the Federal Supreme Court of the Federal Republic of Germany in its 1969 decision in the Red Dove case and the Patent Court in its 1973 decision in the Saintpaulia case, respectively. The old controversy is therefore not yet finished and it would even seem that a new battlefield has presented itself in the form of microorganisms and cell elements.

33. Doubts had also been cast in relatively old writings (particularly HESSE (1969)) as regards the effectiveness of protection afforded by a product patent. The latter affords the patentee an exclusive right in the manufacture of the product by whatever process. It has been held that the reproduction or propagation of a variety, that is to say the multiplication of seed or planting material does not constitute "manufacture" within the meaning of the patent law since it requires the prior existence of the product that is to be manufactured, so that the only activity covered by the patent would be production of the variety in accordance with a method of variety creation, whether stated in the patent document or not. Moreover, if this point of view was not accepted, the patentee would be confronted with the principle of exhaustion of rights afforded by the patent which applies as soon as the product has been lawfully put on the market. In fact, the patentee could no longer exercise control over the use made of the product and the purchaser could exploit at will the properties of the product, particularly, in the case of a plant variety, its faculty to reproduce itself or to propagate. It is not certain that

these objections are still valid at the present time in view of the progress made by bioindustry, which is using microorganisms that themselves have the faculty of self-propagation.

34. The social and economic point of view. - The patentability of plant varieties is not only confronted with obstacles of a legal nature. Both the patent law and the plant variety protection law seek to establish a balance between the objectives they have adopted, that is to say to reward the inventor or breeder and to promote economic development, thus requiring that the public interest should also be taken into due account. This is shown clearly in the preamble to the WIPO Model Law, which sets out the following two recitals:

"(a) that the protection of inventions and the remuneration of innovations involve both private and public interests;

"(b) that the grant of rights with respect to the protection of inventions or the remuneration of innovations is to be balanced by the imposition of obligations."

In the UPOV Convention, this necessary balance is described as follows in the preamble:

[The Contracting States,] "Conscious of the special problems arising from the recognition and protection of the right of the creator in this field and particularly of the limitations that the requirements of the public interest may impose on the free exercise of such a right."

35. Compared with patent law, the balance achieved by the system of plant variety protection gives more advantage to the public interest, as appears clearly from the limitation of the effects of protection (see paragraph 22(iii) above). Such modification was necessary to make the plant variety protection system acceptable both to the public and to the governments. Sight should not be lost of the fact that a large number of patent laws previously contained provisions that excluded foodstuffs from patentability and the people who demanded protection of new plant varieties by means of patents generally limited their claims to an exclusive right in the reproduction or propagation of the variety to take into account not only the difficulty of ensuring respect for a patent with more far-reaching scope by all farmers but also the general reticence in respect of monopolies in a field as vital as that of foodstuffs.

36. This differing balance is still as necessary today as is shown by the hostile attitude of some circles to the protection of new plant varieties. This explains why opening up the patent approach to plant varieties would have serious implications for the patent system, particularly where the lawmaker has pronounced positively in favor of this differing balance by establishing suitable specialized legislation. Indeed, this legislation can but make such an act altogether inappropriate since the need has not made itself felt. It would be a disservice to the public, mainly by reason of the greater scope of a patent, in two ways. By carefully drafting the claims, it is possible to extend the exclusive right of industrial exploitation to the final product of the variety, for example, the preserved green peas, thus annihilating Article 5(1) of the UPOV Convention. Further, a patent could cover a range of varieties that had been created or even that were yet to be created, defined by a limited number of characteristics that had been given pride of place in the claims, for example blue roses or thornless roses, which in this case would annihilate Article 5(3) of the Convention and also the principle that specific protection is afforded only to a variety that truly exists.

37. It would also be a disservice to the public for a special title of protection and patent to exist simultaneously in the same hands or, even worse, in different hands: the coexistence of two titles of protection having the same subject matter but differing in the effects and the conditions of their granting could but impair the clarity of the legal and economic situation, mainly to the detriment of users.

38. Finally, one cannot remain silent on the profound injustice that such a situation would bring with it. It is clear that if the current criteria of patentability and the interpretation given to them are maintained as they stand, a part only of the plant varieties could become the subject matter of a patent, mainly those created by means of a reproducible process. This would favor the breeder of a new variety who had used a variety creation process meeting the criteria--entirely ill-adapted--of the patent law to the detriment of a breeder using processes that did not satisfy them. It is not inconceivable that two breeders could obtain the same variety, for example a variety

has been made resistant to a pathogen by the insertion of exogenous DNA by means of a vector or by the conventional technique of back-crossing. A further injustice would also reside in the fact that the breeder of the initial variety, that was not resistant, would have carried out a far greater amount of variety creation work but would have to be content with a special title of protection.

39. Conclusion. - The product patent as a form of protection is poorly adapted to plant varieties, as is the whole patent system. Only a small number of varieties could profit from that type of protection, not because only those few varieties "merit" protection, but for reasons that are in no way related to the importance of the breeding work or to the value that its result, the plant variety, renders to society. There would be a lack of equality before the law for plant breeders--not only for breeders using conventional methods, but also for those using genetic engineering. This disparity of treatment, not being compatible with the notion of justice, has, on the contrary, been eliminated by the special system for the protection of plant varieties.

B. Process patents

40. As biotechnology develops, there will be an increasing number of patent applications for process inventions with the aim of creating plants with new properties, particularly in relation to recombinant DNA, or which represent steps taken towards that aim. The patent offices will have to decide in such cases whether the inventions meet the normal requirements of patentability, that is to say, basically, whether the inventions are reproducible, new, involve inventive step and are industrially applicable. Those patent offices whose legislation contains an exclusion as described above in paragraphs 23 to 26 will further have to decide whether they are not in fact "essentially biological processes for the production of plants" that cannot be deemed microbiological processes. It is not to be excluded, at least in the future, that the requirements of patentability may be met by certain of these process inventions and the question therefore arises whether the granting of process patents of this type will lead to overlapping with plant variety protection.

41. Where protection of the process itself is concerned, there can be no overlapping since plant variety protection does not protect processes. On the other hand, breeders will of course be affected by patent protection for such processes. Positively, due to the fact that certain of these processes will provide additional and attractive means for their breeding work and also, negatively, in that the use of such processes will require them to obtain the consent of the owner of the patent and to pay royalties to him. It is to be assumed that the advantages will far outweigh the disadvantages and breeding circles have indeed already stated that the breeders will always welcome with gratitude the development of new processes that facilitate their work and increase their success and they agree that the inventors of such processes have a right to fair remuneration.

42. Fears have nevertheless been expressed that the patent law rule--already mentioned above--that applies in numerous countries, to the effect that protection under a process patent also extends to a product directly obtained by the protected process (see paragraph 12(b) above and, as examples, paragraph 135.2(b)(ii) of the WIPO Model Law, reproduced on page 26 below, and Article 64(2) of the European Patent Convention, reproduced on page 27 below), could lead to difficulties since its application could mean that protection given by a process patent would extend to a product for which new plant variety protection was available. It is feared that in this way double protection could be obtained for the same product under a patent and under plant breeders' right, based on differing systems of protection having a differing scope and differing effects. Such double protection was held unacceptable by the Contracting States or the national legislators who introduced into the treaty or the law concerned the exclusion provisions referred to in paragraphs 23 to 26 above. They were of the opinion that this danger could be adequately countered by an explicit exclusion of inventions that were "essentially biological processes for the production of plants." However, it is to be feared that future developments may well thwart that aim and that in the other countries that do not have such exclusion provisions the difficulties which such double protection could possibly create would assume even larger dimensions. Those fears may be commented as follows.

43. It should first be made clear that the directly obtained product can never constitute the variety itself. A product can only be understood as a tangible object. In the case of a variety, however, this is an abstract object or, as the experts who drafted the UPOV Convention expressed it, an intangible object (see Records of the Conferences, 1957 to 1961, 1972, page 36). A plant variety comprehends all those plants that show the characteristics of the variety, even those that are produced in ways other than from the patented process, e.g. in nature, with the aid of conventional breeding methods or with the aid of other genetic methods. The product obtained by the patented process can therefore only constitute a given plant stock. On the other hand, this plant stock does not need to meet the requirements that normal usage and plant variety protection law places on a protectable variety. There is no need for such a plant stock to be distinct, or new, or homogenous or stable, it can full well be material that already exists in nature or that has already been obtained by means of another process. This latter circumstance is not likely, however, to allay the fears expressed above, but shows, on the contrary, that if patent protection were to be extended to such material it would indeed result in undesirable overlapping which, as a result of just that difference in the protected material, would be very difficult to check legally.

44. A further question arises, however, as to the extent to which the effects of a process patent for plants obtained by biotechnical processes, can become practical. The following comments may be made:

(i) Protection under a process patent is enjoyed only by the product obtained directly by means of the process. As things stand at present, however, a genetic engineering process for the creation of new plants achieves at most the production of a transformed plant cell which furthermore has to be selected from the mass of other cells for which the process has not been successful and from which, in addition, one or more whole plants have to be regenerated. Whether the result of this selection and regeneration may still be claimed as a direct product is doubtful, to say the least. Furthermore, it is necessary for the economic exploitation of this new plant that it be multiplied in sufficient quantity for marketing. If patent laws are strictly interpreted, the result would have to be that the plants finally produced for marketing are no longer directly obtained by the patented process, but result from subsequent--conventional or other--multiplication processes. However, it should be taken into account that in some countries case law has held in respect of patented chemical processes that measures for extracting or cleansing the manufactured product do not impair its direct quality. Following such court decisions, the conclusion could possibly be reached that even where there is subsequent selection and multiplication the direct quality of the product is still to be accepted if the patented process for the production of the plants has played a decisive part. However, it would definitely not be possible to extend protection under a process patent to material that has only made use of the plant stock obtained directly by the process as initial material for subsequent breeding operations. The result of crossing such material with another plant variety would therefore cease to be covered by protection under the process patent.

(ii) A further aspect is also worthy of attention. Protection under a process patent only extends to the product, of course, if it has in fact been obtained by means of the process. Obtaining equivalent material by means of a different process would not be covered by the patent. This shows that protection under a process patent would in no way be suitable as a basis for effective protection of varieties.

(iii) Where the product obtained directly by the patented process has to be selected or multiplied for marketing, the question is already raised whether the selected and multiplied material may still be regarded as a direct product. It must also be taken into account, however, that most patent laws contain the principle of exhaustion of rights afforded by the patent. Once the seed or planting material has been lawfully procured through the trade, from the owner of the patent or his licensee for example, the person acquiring it is free to use it in accordance with the principle of exhaustion referred to and, in particular, he is free to multiply the material, whether for his own purposes or for marketing.

(iv) It should be pointed out, however, that when the creation of the new plant coincides with the production of the seed that is suitable for marketing, e.g. in the case of a hybrid variety, the direct quality could exist, meaning that the feared double protection could occur. However, it is doubtful whether any appreciable number of such cases would occur since the processes liable to be involved are generally no longer new.

45. As a result, therefore, it may be concluded that the statutory extension of the process patent to a given stock of seed or planting material obtained directly by a patented process can only affect plant variety protection to a limited extent. Nevertheless, problems are conceivable that make it desirable to take action to ensure that cases of this type cannot occur or can only occur in very small numbers. For that reason, the exclusion of "essentially biological processes for the production of plants" from patent protection, whereby the greater part of such patent conflicts could not arise in the first place, would seem altogether justified and should in any event be maintained in those cases where it is already stipulated. In addition, developments in those countries that do not have exclusion should be followed with particular care.

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ANNEXES

Annex I

EXTRACTS FROM WIPO MODEL LAW FOR DEVELOPING COUNTRIES ON INVENTIONS*

Section 112

Inventions

1) For the purposes of this Law, "invention" means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology.

2) An invention may be, or may relate to, a product or a process.

3) The following, even if they are inventions within the meaning of subsection 1), shall be excluded from patent protection:

- i) discoveries, scientific theories and mathematical methods;
- ii) plant or animal varieties or essentially biological processes for the production of plants or animals, other than microbiological processes and the products of such processes;

...

* Publication No. 840(E) of the World Intellectual Property Organization (WIPO), Geneva.

Section 113

Patentable Inventions

An invention is patentable if it is new, involves an inventive step and is industrially applicable.

Section 114

Novelty

1) An invention is new if it is not anticipated by prior art.

2)a) Prior art shall consist of everything disclosed to the public, anywhere in the world, by publication in tangible form or, in the country, by oral disclosure, by use or in any way, prior to the filing or, where appropriate, priority date of the patent application claiming the invention.

...

Section 115

Inventive Step

An invention shall be considered as involving an inventive step if, having regard to the prior art relevant to the patent application claiming the invention, it would not have been obvious to a person having ordinary skill in the art.

Section 116

Industrial Application

An invention shall be considered industrially applicable if it can be made or used in any kind of industry. "Industry" shall be understood in its broadest sense; it shall cover, in particular, handicraft, agriculture, fishery and services.

...

Section 123

Application

1)a) The application for a patent ("the application") shall be filed with the Patent Office and shall contain a request, a description, one or more claims, one or more drawings (where required), and an abstract.

b) Where the applicant's ordinary residence or principal place of business is outside the country, he shall be represented by an agent admitted to practice before the Patent Office.

...

3) The description shall disclose the invention in a manner sufficiently clear and complete for the invention to be evaluated, and to be carried out by a person having ordinary skill in the art, and shall, in particular, indicate the best mode known to the applicant for carrying out the invention.

4)a) The terms of the claim or claims shall determine the scope of the protection. The description and the drawings may be used to interpret the claims.

b) Claims shall be clear and concise. They shall be fully supported by the description.

5) Drawings shall be required when they are necessary for the understanding of the invention.

6) The abstract shall merely serve the purpose of technical information; in particular, it shall not be taken into account for the purpose of interpreting the scope of the protection.

...

Section 125

Unity of Invention

The application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept.

...

Section 135

Effects of Grant of Patent; Definition of "Exploitation"

1) Once the patent has been granted, the exploitation of the patented invention in the country by persons other than the owner of the patent shall require the latter's agreement.

2) For the purposes of this Law, "exploitation" of a patented invention means any of the following acts:

- a) when the patent has been granted in respect of a product:
 - i) making, importing, offering for sale, selling and using the product;
 - ii) stocking such product for the purposes of offering for sale, selling or using;
- b) when the patent has been granted in respect of a process:
 - i) using the process;
 - ii) doing any of the acts referred to in paragraph (a), in respect of a product obtained directly by means of the process.

Annex II

EXTRACTS FROM THE CONVENTION ON THE GRANT OF EUROPEAN PATENTS AND ATTACHED ANNEXES

Section 52

Patentable inventions

(1) European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

- (a) discoveries, scientific theories and mathematical methods;
- (b) aesthetic creations;
- (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;
- (d) presentations of information.

(3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.

(4) Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body shall not be regarded as inventions which are susceptible of industrial application within the meaning of paragraph 1. This provision shall not apply to products, in particular substances or compositions, for use in any of these methods.

Section 53

Exceptions to patentability

European patents shall not be granted in respect of:

(a) inventions the publication or exploitation of which would be contrary to "ordre public" or morality, provided that the exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the Contracting States;

(b) plant or animal varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof.

...

Section 64

Rights conferred by a European patent

(1) A European patent shall, subject to the provisions of paragraph 2, confer on its proprietor from the date of publication of the mention of its grant, in each Contracting State in respect of which it is granted, the same rights as would be conferred by a national patent granted in that State.

(2) If the subject-matter of the European patent is a process, the protection conferred by the patent shall extend to the products directly obtained by such process.

(3) Any infringement of a European patent shall be dealt with by national law.

...

Section 167

Reservations

(1) Each Contracting State may, at the time of signature or when depositing its instrument of ratification or accession, make only the reservations specified in paragraph 2.

(2) Each Contracting State may reserve the right to provide that:

(a) European patents, in so far as they confer protection on chemical, pharmaceutical or food products, as such, shall in accordance with the provisions applicable to national patents, be ineffective or revocable; this reservation shall not affect protection conferred by the patent in so far as it involves a process of manufacture or use of a chemical product or a process of manufacture of a pharmaceutical or food product;

(b) European patents, in so far as they confer protection on agricultural or horticultural processes other than those to which Article 53, subparagraph (b), applies, shall, in accordance with the provisions applicable to national patents, be ineffective or revocable;

...

(3) Any reservation made by a Contracting State shall have effect for a period of not more than ten years from the entry into force of this Convention. However, where a Contracting State has made any of the reservations referred to in paragraph 2(a) and (b), the Administrative Council may, in respect of such State, extend the period by not more than five years for all or part of any reservation made, if that State submits, at the latest one year before the end of the ten-year period, a reasoned request which satisfies the Administrative Council that the State is not in a position to dispense with that reservation by the expiry of the ten-year period.

EXTRACT FROM THE GUIDELINES FOR EXAMINATION
AT THE EUROPEAN PATENT OFFICE,
ISSUED BY THE GENERAL SECRETARIAT
OF THE COUNCIL OF THE EUROPEAN COMMUNITIES IN 1976

Article 53(b)

3.4 Also excluded from patentability are "plant or animal varieties or essentially biological processes for the production of plants or animals". One reason for this exclusion is that, at least for plant varieties, other means of obtaining legal protection are available in most countries. The question whether a process is "essentially biological" is one of degree depending on the extent to which there is technical intervention by man in the process; if such intervention plays a significant part in determining or controlling the result it is desired to achieve, the process would not be excluded. To take some examples, a method of crossing, interbreeding, or selectively breeding, say, horses, involving merely selecting for breeding and bringing together those animals having certain characteristics would be essentially biological and therefore unpatentable. On the other hand, a method of treating a plant or animal to improve its properties or yield or to promote or suppress its growth by some mechanical, physical or chemical process--e.g. a method of pruning a tree--would not be essentially biological since, although a biological process is involved, the essence of the invention is technical; the same could apply to a method of treating a plant characterised by the application of a growth-stimulating substance or radiation. The treatment of soil by technical means to suppress or promote the growth of plants is also not excluded from patentability (see also IV, 4.3)."

...

3.5 The exclusion referred to in the preceding paragraph does not apply to microbiological processes or the products thereof. Thus, patents may be obtained not only for processes involving microorganisms, but also for microorganisms themselves (as well as inanimate products) when produced by a microbiological process. In the case of microbiological processes particular regard should be had to the requirement of repeatability, as mentioned in item II, 4.11.

Annex III

EXTRACTS FROM THE INTERNATIONAL CONVENTION FOR THE PROTECTION
OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)*

Article 1

Purpose of the Convention

(1) The purpose of this Convention is to recognise and to ensure to the breeder of a new plant variety or to his successor in title (both hereinafter referred to as "the breeder") a right under the conditions hereinafter defined.

...

* UPOV Publication No. 293(E)

Article 2

Forms of Protection

(1) Each member State of the Union may recognise the right of the breeder provided for in this Convention by the grant either of a special title of protection or of a patent. Nevertheless, a member State of the Union whose national law admits of protection under both these forms may provide only one of them for one and the same botanical genus or species.

(2) Each member State of the Union may limit the application of this Convention within a genus or species to varieties with a particular manner of reproduction or multiplication, or a certain end-use.

...

Article 5

Rights Protected; Scope of Protection

(1) The effect of the right granted to the breeder is that his prior authorisation shall be required for

- the production for purposes of commercial marketing
- the offering for sale
- the marketing

of the reproductive or vegetative propagating material, as such, of the variety.

Vegetative propagating material shall be deemed to include whole plants. The right of the breeder shall extend to ornamental plants or parts thereof normally marketed for purposes other than propagation when they are used commercially as propagating material in the production of ornamental plants or cut flowers.

(2) The authorisation given by the breeder may be made subject to such conditions as he may specify.

(3) Authorisation by the breeder shall not be required either for the utilisation of the variety as an initial source of variation for the purpose of creating other varieties or for the marketing of such varieties. Such authorisation shall be required, however, when the repeated use of the variety is necessary for the commercial production of another variety.

(4) Any member State of the Union may, either under its own law or by means of special agreements under Article 29, grant to breeders, in respect of certain botanical genera or species, a more extensive right than that set out in paragraph (1), extending in particular to the marketed product. A member State of the Union which grants such a right may limit the benefit of it to the nationals of member States of the Union which grant an identical right and to natural and legal persons resident or having their registered office in any of those States.

Article 6

Conditions Required for Protection

(1) The breeder shall benefit from the protection provided for in this Convention when the following conditions are satisfied:

(a) Whatever may be the origin, artificial or natural, of the initial variation from which it has resulted, the variety must be clearly distinguishable by one or more important characteristics from any other variety whose existence is a matter of common knowledge at the time when protection is applied for. Common knowledge may be established by reference to various factors such as: cultivation or marketing already in progress, entry in an official register of varieties already made or in the course of being made, inclusion in a reference collection, or precise description in a publication. The characteristics which permit a variety to be defined and distinguished must be capable of precise recognition and description.

(b) At the date on which the application for protection in a member State of the Union is filed, the variety

(i) must not--or, where the law of that State so provides, must not for longer than one year--have been offered for sale or marketed, with the agreement of the breeder, in the territory of that State, and

(ii) must not have been offered for sale or marketed, with the agreement of the breeder, in the territory of any other State for longer than six years in the case of vines, forest trees, fruit trees and ornamental trees, including, in each case, their rootstocks, or for longer than four years in the case of all other plants.

Trials of the variety not involving offering for sale or marketing shall not affect the right to protection. The fact that the variety has become a matter of common knowledge in ways other than through offering for sale or marketing shall also not affect the right of the breeder to protection.

(c) The variety must be sufficiently homogeneous, having regard to the particular features of its sexual reproduction or vegetative propagation

(d) The variety must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication, at the end of each cycle.

(e) The variety shall be given a denomination as provided in Article 13.

...

...

Article 37

Exceptional Rules for Protection Under Two Forms

(1) Notwithstanding the provisions of Article 2(1), any State which, prior to the end of the period during which this Act is open for signature, provides for protection under the different forms referred to in Article 2(1) for one and the same genus or species, may continue to do so if, at the time of signing this Act or of depositing its instrument of ratification, acceptance or approval of or accession to this Act, it notifies the Secretary-General of that fact.

(2) Where, in a member State of the Union to which paragraph (1) applies, protection is sought under patent legislation, the said State may apply the patentability criteria and the period of protection of the patent legislation to the varieties protected thereunder, notwithstanding the provisions of Articles 6(1)(a) and (b) and 8.

...

Article 38

Transitional Limitation of the Requirement of Novelty

Notwithstanding the provisions of Article 6, any member State of the Union may, without thereby creating an obligation for other member States of the Union, limit the requirement of novelty laid down in that Article, with regard to varieties of recent creation existing at the date on which such State applies the provisions of this Convention for the first time to the genus or species to which such varieties belong.

Annex IVEXTRACTS FROM THE PATENT LAWS OF FRANCE AND
THE FEDERAL REPUBLIC OF GERMANY

FRANCE (Law No. 68-1 of January 2, 1968, as supplemented by Law No. 70-489 of June 11, 1970, and as last amended and supplemented by Law No. 78-742 of July 13, 1978)

Article 7

The following shall not be patentable:

...

(b) plant varieties belonging to a genus or species enjoying the protection established by Law No. 70-489 of June 11, 1970, on the Protection of New Plant Varieties;

(c) animal varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof.

FEDERAL REPUBLIC OF GERMANY (Text of December 16, 1980)

Article 2

Patents shall not be granted in respect of:

...

2. plant or animal varieties or essentially biological processes for the production of plants or animals. This provision shall not apply to microbiological processes or the products thereof, to inventions of plant varieties which, in respect of their species, are not included in the list of varieties annexed to the Plant Varieties Protection Law or to the processes for the production of such varieties.

Annex VTHE CONCLUSIONS OF H.G. HESSE AS REGARDS THE
PATENTABILITY OF ANIMAL AND PLANT VARIETIES*

1. Whether or not patents for breeding can be granted has still not been decided by recent legislation (Plant Varieties Protection Law, amendment of Section 1 of the Patent Law), but has intentionally been left in suspense.

2. The decision of the Federal Court dated March 27, 1969--Red Dove--is of significance for patentability not only of animal varieties but also of plant varieties; no distinction can be made between animals and plants under patent law.

3. The patent law equation of planned exploitation of natural biological forces with the concept of technical activities in the traditional meaning proposed by the Federal Court promotes the flexibility and development potential of patent law and is therefore to be welcomed.

4. The planned breeding of plants and animals is in no way a discovery, but belongs in the realm of inventions.

5. The Federal Court is to be commended for having made the patentability of breeding processes dependent in any event on their reproducibility--and not only in theory--and for requiring that a reproducible method of production be stated for a substantive or application patent; the natural multiplication of the product of breeding does not constitute such a method.

* GRUR 69, pages 644 et seq.

6. Breeding processes that are so time consuming, complex and expensive that it becomes pointless to reproduce them once genetically consistent propagating material of the new species is available, are not industrially applicable.

7. Variety protection under a process patent cannot extend via the second sentence of Section 6 (now Section 9(3)) of the Patent Law to F_{1+x} generations since these are not directly obtained by the process.

8. Propagation patents for new varieties of plants or animals cannot be granted since natural propagation is not an invention.

9. The natural propagation of a new plant or animal variety cannot belong to the modes of fabrication that are protected on behalf of the owner of a substantive patent in the product breeding.

10. The unavoidable application of the concepts of reproducibility and industrial applicability lead to the conclusion that patent law is not suitable for providing adequate protection to breeding activity. Likewise, other basic concepts of patent law, such as novelty, progress and inventive step, do not correspond to the special features of breeding. Patent law does not contain the concept of loss of genetic consistency that is necessary as grounds of nullity if breeding activities are to be patented. International legal developments would seem to be moving towards the exclusion of breeding activities from patent law. For all these reasons therefore, although not excluded, it is nevertheless inappropriate and contrary to the warranted interests of the breeders to direct them towards patents in their justified quest for industrial property protection. Legislative measures would, on the other hand, seem indicated: removal of the list of species from the Plant Varieties Protection Law and creation of specific protection for animal breeding.

The views expressed in the lectures and during the panel discussion are those of the speakers and do not necessarily reflect the views of their governments, companies, firms, institutions or organizations. Similarly, they do not necessarily reflect the views of the International Union for the Protection of New Varieties of Plants (UPOV).

DECISION OF THE EUROPEAN PATENT OFFICE*

**Entscheidung der Technischen
Beschwerdekammer 3.3.1 vom
26. Juli 1983
T 49/83***

Zusammensetzung der Kammer:

Vorsitzender: D. Cadman

Mitglieder: K. Jahn

O. Bossung

Anmelderin: CIBA-GEIGY AG Basel

Stichwort: "Vermehrungsgut/
CIBA-GEIGY"

EPÜ Artikel 53 b)

Straßburger Patentübereinkommen
Artikel 2 b)"Pflanzensorten" — "chemisch
behandelte Pflanzen"*Leitsatz*

Ein Patentanspruch, der auf ein mittels chemischer Stoffe behandeltes Vermehrungsgut bestimmter Pflanzengattungen (hier Kulturpflanzen) gerichtet ist, ohne daß dabei bestimmte Sorten in ihrer Individualität beansprucht werden, verstößt nicht gegen das Verbot der Patentierung von Pflanzensorten nach Artikel 53 b) EPÜ.

Sachverhalt und Anträge

I. Die am 27. August 1979 angemeldete und am 14. Mai 1980 veröffentlichte Patentanmeldung 79 103 164.4 mit der Veröffentlichungsnummer 0 010 588, für welche die Priorität der Voranmeldung in der Schweiz vom 28. August 1978 in Anspruch genommen wird, wurde durch die Entscheidung der Prüfungsabteilung des Europäischen Patentamts vom 8. Oktober 1982 zurückgewiesen. In der Entscheidung wurde zwar die Patentfähigkeit des Gegenstandes der Ansprüche 1 bis 12 und 15 bis 23 anerkannt, jedoch wurden die Ansprüche 13 und 14 als nicht patentfähig angesehen. Diese Ansprüche haben folgenden Wortlaut:

"Anspruch 13: Vermehrungsgut von Kulturpflanzen, behandelt mit einem Oximderivat der Formel I des Anspruch 1.

Anspruch 14: Vermehrungsgut gemäß Anspruch 13, dadurch gekennzeichnet, daß es sich um Saatgut handelt".

**Decision of the Technical Board
of Appeal 3.3.1 dated
26 July 1983
T 49/83***

Composition of the Board:

Chairman: D. Cadman

Members: K. Jahn

O. Bossung

Applicant: CIBA-GEIGY AG Basel

Headword: "Propagating material/
CIBA-GEIGY"

EPC Article 53(b)

Strasbourg Patent Convention
Article 2(b)"Plant varieties" — "chemically treated
plants"*Headnote*

A claim directed to a propagating material, treated with chemical agents, for certain genera of plants (in this case cultivated plants) without specific varieties being claimed individually does not contravene the prohibition on the patenting of plant varieties in Article 53(b) EPC.

Summary of Facts and Submissions

I. Patent application No. 79 103 164.4 bearing publication number 0 010 588, which was filed on 27 August 1979, published on 14 May 1980 and for which priority is claimed from a previous application in Switzerland on 28 August 1978, was refused by a decision of the Examining Division of the European Patent Office on 8 October 1982. The decision allowed that the subject-matter of claims 1 to 12 and 15 to 23 was patentable, but claims 13 and 14 were regarded as unpatentable. These claims read as follows:

"Claim 13: Propagating material for cultivated plants, treated with an oxime derivative according to formula I in claim 1.

Claim 14: Propagating material according to claim 13, characterised in that it consists of seed".

**Décision de la Chambre
de recours technique 3.3.1 du
26 juillet 1983
T 49/83***

Composition de la Chambre:

Président: D. Cadman

Membres: K. Jahn

O. Bossung

Demanderesse: CIBA-GEIGY AG Bâle

Référence: "Matériel de reproduction
de végétaux/CIBA-GEIGY"

Article 53 b) de la CBE

Article 2 b) de la Convention de
Strasbourg en matière de brevets"Variétés végétales" — "Végétaux
traités chimiquement"*Sommaire*

Une revendication qui concerne un matériel de reproduction de genres donnés de végétaux (à savoir des plantes cultivées) traité chimiquement, sans pour autant que soient revendiquées dans leur individualité des variétés végétales données, n'enfreint pas l'interdiction de brevet relative aux variétés végétales prévue à l'article 53 b) CBE.

Exposé des faits et conclusions

I. La demande de brevet n° 79 103 164.4 déposée le 27 août 1979 et publiée le 14 mai 1980 sous le numéro 0 010 588, pour laquelle est revendiquée la priorité d'une demande antérieure déposée en Suisse le 28 août 1978, a été rejetée par décision de la Division d'examen de l'Office européen des brevets du 8 octobre 1982. Cette décision a certes reconnu que l'objet des revendications 1 à 12 et 15 à 23 était brevetable, mais non pas celui des revendications 13 et 14. Ces revendications s'énoncent comme suit:

"Revendication 13: Matériel de reproduction de plantes cultivées, traité avec un dérivé d'oxime de formule I de la revendication 1.

Revendication 14: Matériel de reproduction selon la revendication 13, caractérisé en ce qu'il s'agit d'une semence."

* Amtlicher Text.

* Translation.

* Traduction.

II. Die Zurückweisung wurde damit begründet, daß auf solche Gegenstände gemäß Artikel 53 b) EPÜ kein Patent erteilt werden könne. Wenn nach dieser Bestimmung aber keine neuen Sorten geschützt werden könnten, dann gelte dies erst recht für die bekannten Pflanzensorten nach Anspruch 13 und 14, selbst wenn diese auf vorteilhafte Weise mit Oximderivaten behandelt worden seien.

III. Gegen diese Entscheidung vom 8. Oktober 1982 richtet sich die am 9. Dezember 1982 unter Entrichtung der Beschwerdegebühr erhobene Beschwerde, die am 18. Februar 1983 im wesentlichen wie folgt begründet wurde:

Artikel 53 b) EPÜ schließe die Patentierbarkeit von Pflanzen nicht aus, sondern einzig und allein die Patentierbarkeit von Pflanzensorten. Man dürfe wohl davon ausgehen, daß der Gesetzgeber bewußt die beiden verschiedenen Begriffe "Pflanzensorten" und "Pflanzen" bei der Abfassung von Artikel 53 gewählt habe. Mit den Pflanzensorten würden praktisch die Erzeugnisse züchterischer Tätigkeit von der Patentierbarkeit ausgeschlossen.

Absicht des Gesetzgebers sei es gewesen, auf dem Gebiet derjenigen Erfindungen, welche Pflanzen und Tiere betreffen, zwischen "im wesentlichen biologischen" und "im wesentlichen technischen" Erfindungen zu unterscheiden. Zu der zuletzt genannten Gruppe gehöre auch die vorliegende Erfindung, welche ein im wesentlichen technisches Verfahren sowie hierdurch unmittelbar hergestellte Erzeugnisse betreffe. Der biologisch züchterische Begriff der "Sorte" sei hier ohne jegliche Relevanz; zur Definition einer Pflanzensorte wäre die Definition einer übergeordneten taxonomischen Einheit, wie beispielsweise Gattung, Art und Unterart, nötig.

Die Beschwerdeführerin beantragte die Aufhebung der Zurückweisungsentscheidung und die Erteilung des nachgesuchten Patents — offensichtlich auf der Grundlage der Ansprüche 1 bis 23 vom 19. August 1982.

Entscheidungsgründe

1. Die Beschwerde entspricht den Artikeln 106 bis 108 und der Regel 64 EPÜ; sie ist daher zulässig.

II. The reason given for the refusal was that such subject-matter was debarred by Article 53 (b) EPC from patentability and, if this were the case for new varieties, it applied all the more so to the known plant varieties according to claims 13 and 14, even if these had been advantageously treated with oxime derivatives.

III. On 9 December 1982 an appeal was filed against this decision of 8 October 1982 and the appeal fee was paid. The Statement of Grounds was filed on 18 February 1983, and the main points made were as follows:

Article 53 (b) EPC did not exclude plants from patentability, but merely plant varieties. It could surely be assumed that the legislator had intentionally chosen the two different terms "plant varieties" and "plants" when drawing up Article 53. In effect, excluding plant varieties from patentability meant excluding the products of breeding.

The legislator's intention had been, where inventions involving plants and animals were concerned, to distinguish between "essentially biological" and "essentially technical" inventions. The latter group also included the present invention, which concerned an essentially technical process and its direct products. The term "variety", which related to biological breeding, was totally irrelevant in this case; defining a plant variety would necessitate defining a superordinate taxonomic unit such as a genus, species or sub-species.

The appellant requested that the decision refusing the application be set aside and that the patent applied for be granted — evidently on the basis of claims 1 to 23 dated 19 August 1982.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.

II. La demande a été rejetée au motif qu'en application de l'article 53 b) de la CBE il ne pouvait être délivré de brevet pour les objets revendiqués. En excluant la protection par brevet de variétés nouvelles, cette disposition vaudrait à plus forte raison pour les variétés connues sur lesquelles portent les revendications 13 et 14, même si ces dernières variétés ont subi un traitement à base de dérivés d'oxime qui présente un avantage.

III. Un recours a été formé le 9 décembre 1982 contre la décision du 8 octobre 1982; la taxe de recours a été dûment acquittée. Le mémoire exposant les motifs du recours, en date du 18 février 1983, est pour l'essentiel repris ci-après.

La requérante allègue que l'article 53 b) de la CBE n'exclut pas la brevetabilité de végétaux, mais uniquement celle des variétés végétales. C'est certainement à dessein que le législateur a choisi d'utiliser les deux notions différentes de "variétés végétales" et de "végétaux" lors de la rédaction de l'article 53. L'exclusion de la brevetabilité des "variétés végétales" revient en pratique à en exclure les produits issus de procédés d'"obtention" de végétaux.

L'intention du législateur a été de distinguer, dans le domaine des inventions relatives à des végétaux et à des animaux, entre les inventions "essentiellement biologiques" et les inventions "essentiellement techniques". L'invention revendiquée, qui concerne un procédé essentiellement technique et des produits directement obtenus par ce procédé, appartient à la seconde catégorie. La notion de "variété", qui s'applique au domaine des procédés d'obtention biologique, est totalement dénuée de pertinence dans le cas présent; pour définir une variété végétale, il convient de fixer l'unité taxinomique à laquelle elle appartient, par exemple genre, espèce et sous-espèce.

La requérante a demandé l'annulation de la décision de rejet et la délivrance du brevet, de toute évidence sur la base d'un nouveau jeu de revendications 1 à 23 daté du 19.8.1982.

Motifs de la décision

1. Le recours répond aux conditions énoncées aux articles 106, 107 et 108 et à la règle 64 CBE; il est donc recevable.

2. Ein genereller Ausschluß von Erfindungen auf dem Gebiet der belebten Natur ist dem Europäischen Patentübereinkommen nicht zu entnehmen (vgl. Art. 52 (1) i. V. m. Art. 53 b) Halbsatz 2 und R. 28 und 28a EPÜ). Allerdings besteht für einen Ausschnitt aus dem Bereich biologischer Erfindungen ein Patentierungsverbot nach Artikel 53 b) Halbsatz 1 EPÜ. Diese hier näher zu prüfende Bestimmung besagt, daß für Pflanzensorten sowie für im wesentlichen biologische Verfahren zur Züchtung von Pflanzen keine Patente erteilt werden. Unter Pflanzensorten versteht der Fachmann eine Vielzahl von Pflanzen, die in ihren Merkmalen weitgehend gleich sind und nach jeder Vermehrung oder jedem Vermehrungszyklus innerhalb bestimmter Toleranzgrenzen gleichbleiben. Diese Definition hat ihren Niederschlag im Internationalen Übereinkommen zum Schutz von Pflanzenzüchtungen vom 2. Dezember 1961 gefunden, das dem Zweck dient, dem Züchter einer neuen Pflanzensorte ein Schutzrecht zu sichern (Art. 1 (1)), das sich sowohl auf das generative oder vegetative Vermehrungsgut als auch auf die ganze Pflanze erstreckt (Art. 5 (1)). Pflanzensorten in diesem Sinne sind alle Zuchtsorten, Klone, Linien, Stämme und Hybriden, die so angebaut werden können, daß sie von anderen Sorten deutlich unterscheidbar, hinreichend homogen und in ihren wesentlichen Merkmalen beständig sind (Art. 2 (2) i. V. m. Art. 6 (1) a), c) und d)). Für derartige Pflanzensorten, sei es in Form von Vermehrungsmaterial oder der Pflanze selbst, wollte der Gesetzgeber im Rahmen des Europäischen Patentübereinkommens Patentschutz nicht zur Verfügung stellen.

3. Die Ansprüche 13 und 14, deren Aufrechterhaltung zur Zurückweisung der vorliegenden Anmeldung geführt hat, betreffen das Vermehrungsgut, besonders Saatgut von Kulturpflanzen, das mit einem schwefelhaltigen, im Anspruch 1 näher charakterisierten Oximderivat behandelt wurde. Die Definition für Kulturpflanzen in der Beschreibung (vgl. S. 9 Abs. 3) zeigt, daß hierunter alle Pflanzen zu verstehen sind, die in irgendeiner Form Ertragsstoffe produ-

2. No general exclusion of inventions in the sphere of animate nature can be inferred from the European Patent Convention (cf. Art. 52 (1) in conjunction with Art. 53 (b) after the semi-colon, and Rules 28 and 28a EPC). However, Article 53 (b) EPC before the semi-colon prohibits the granting of patents for certain biological inventions. This provision, which needs to be examined more closely in the present case, says that patents shall not be granted in respect of plant varieties or essentially biological processes for the production of plants. The skilled person understands the term "plant varieties" to mean a multiplicity of plants which are largely the same in their characteristics and remain the same within specific tolerances after every propagation or every propagation cycle. This definition is reflected in the International Convention for the Protection of New Varieties of Plants of 2 December 1961, which is intended to give the breeder of a new plant variety a protective right (Art. 1 (1)) extending both to the reproductive or vegetative propagating material and also to the whole plant (Art. 5 (1)). Plant varieties in this sense are all cultivated varieties, clones, lines, strains and hybrids which can be grown in such a way that they are clearly distinguishable from other varieties, sufficiently homogeneous, and stable in their essential characteristics (Art. 2 (2) in conjunction with Art. 6 (1) (a), (c) and (d)). The legislator did not wish to afford patent protection under the European Patent Convention to plant varieties of this kind, whether in the form of propagating material or of the plant itself.

3. Claims 13 and 14, whose maintenance resulted in the refusal of the present application, concern propagating material, in particular seeds of cultivated plants, treated with a sulphurous oxime derivative which is characterised in greater detail in claim 1. A definition of cultivated plants in the description (cf. page 9, paragraph 3) shows that this includes all plants which yield substances in any form. Examples of known plants are listed. Propagating material

2. La Convention sur le brevet européen ne prévoit pas d'exclusion générale de la brevetabilité des inventions ayant trait à la nature vivante (cf. art. 52 (1) ensemble l'art. 53 b), deuxième membre de phrase et les règles 28 et 28 bis de la CBE). Toutefois, une interdiction de brevet existe effectivement en ce qui concerne toute une partie du domaine des inventions biologiques, en vertu de l'article 53 b), premier membre de phrase de la CBE. Cette disposition, sur laquelle on s'arrêtera ci-après, prévoit qu'aucun brevet ne peut être délivré pour les variétés végétales et les procédés essentiellement biologiques d'obtention de végétaux. Par "variétés végétales", l'homme du métier comprend un grand nombre de végétaux qui sont, dans une large mesure, similaires de par leurs caractères et qui, dans une certaine marge de tolérance, ne sont pas modifiés à la fin de chacune de leurs reproductions ou multiplications successives ou de chaque cycle de reproduction ou de multiplication spécialement défini. Cette notion se reflète dans la Convention internationale pour la protection des obtentions végétales du 2 décembre 1961, qui vise à assurer à l'obteneur d'une variété végétale nouvelle un droit de protection (art. 1^{er}(1)) s'étendant à la fois au matériel de reproduction ou de multiplication végétative et à la plante entière (art. 5 (1)). En ce sens, les variétés végétales comprennent tous les cultivars, clones, lignées, souches et hybrides, susceptibles d'être cultivés, satisfaisant à la condition de pouvoir être nettement distingués de toute autre variété, d'être suffisamment homogènes et d'être stables dans leurs caractères essentiels (cf. art. 2 (2) ensemble l'art. 6 (1) a), c) et d)). Pour ces variétés végétales, qu'elles se présentent sous la forme d'un matériel de reproduction ou de multiplication ou sous la forme de la plante elle-même, le législateur n'a pas voulu accorder de protection par brevet dans le cadre de la Convention sur le brevet européen.

3. Les revendications 13 et 14, dont le maintien a conduit au rejet de la demande, concernent le matériel de reproduction, et plus particulièrement la semence de plantes cultivées, traité avec un dérivé d'oxime contenant du soufre, dérivé qui est caractérisé dans la revendication 1. La définition des plantes cultivées, telle que donnée dans la description (cf. page 9, 3^e alinéa), montre qu'il faut entendre par là toutes les plantes qui fournissent une quel-

zieren. Beispiele für bekannte Pflanzen werden dabei aufgezählt. Das Vermehrungsgut solcher Kulturpflanzen umfaßt alle generativen Pflanzenteile einschließlich angekeimter Pflanzen und Jungpflanzen, besonders aber Saatgut (vgl. S. 10 Abs. 2 der Beschreibung).

Wenngleich in den Beispielen bestimmte bekannte Weizen-, Hirse- und Gerstensorten im Zusammenhang mit der Oximbehandlung erwähnt werden (vgl. S. 35 und 36 der Beschreibung), so ist doch Gegenstand der Ansprüche 13 und 14 keine von jeder anderen Sorte unterscheidbare individuelle Pflanzensorte, sondern es sind beliebige, chemisch in bestimmter Weise behandelte Kulturpflanzen in Form ihres Vermehrungsguts beansprucht. Artikel 53 b) EPÜ schließt aber nur die Patentierung von Pflanzen oder deren Vermehrungsgut in der genetisch fixierten Form der Pflanzensorte aus.

4. Schon seinem Wortlaut nach läßt Artikel 53 b) Halbsatz 1 EPÜ die Gleichstellung von Pflanzen und Pflanzensorten nicht zu. Dies würde auch dem Sinn der Vorschrift widersprechen. Pflanzensorten wurden vom europäischen Patentschutz vor allem deshalb ausgenommen, weil mehrere Unterzeichnerstaaten des Europäischen Patentübereinkommens einen Sonderschutz für Pflanzenzüchtungen national und international entwickelt haben (R. Singer, *Das neue europäische Patentsystem*, Nomos Verlagsgesellschaft, Baden-Baden, S. 34, Abs. 4).

In Artikel 53 b) Halbsatz 1 EPU ist der Gesetzgeber wörtlich Artikel 2 b) des Straßburger Patentübereinkommens vom 27. November 1963 gefolgt, wo den Vertragsstaaten dieses Übereinkommens die Möglichkeit gegeben wurde, u. a. Pflanzensorten vom Patentschutz auszuschließen. Schon damals war die Mehrheit der Vertragsstaaten des Europarats der Auffassung, daß der Schutz von Pflanzenzüchtungen nicht durch Patent, sondern durch ein besonderes Schutzrecht gewährt werden soll (Pfanner, *Vereinheitlichung des materiellen Patentrechts im Rahmen des Europarats*, GRUR Int. 1962, 545, 547).

from such cultivated plants comprises all reproductive plant components, including plants and plantlings which have begun to be germinated, but particularly seeds (cf. page 10, paragraph 2, of the description).

Even if certain known varieties of wheat, millet and barley are mentioned in the examples in connection with oxime treatment (cf. pages 35 and 36 of the description), the subject-matter of claims 13 and 14 is not an individual variety of plant distinguishable from any other variety, but the claims relate to any cultivated plants in the form of their propagating material which have been chemically treated in a certain way. However, Article 53 (b) EPC prohibits only the patenting of plants or their propagating material in the genetically fixed form of the plant variety.

4. The very wording of Article 53 (b) EPC before the semi-colon precludes the equation of plants and plant varieties, which would also be at variance with the general sense of the provision. Plant varieties were excluded from European patent protection mainly because several of the signatory States to the European Patent Convention have developed special protection for plant breeding at national and international level (R. Singer, *The New European Patent System*, Seminar Services International, page 22, paragraph 6).

In Article 53 (b) EPC before the semi-colon the authors adhered strictly to the wording of Article 2 (b) of the Strasbourg Patent Convention of 27 November 1963, in which the Contracting States to that Convention were given the opportunity to exclude plant varieties, amongst other things, from patent protection. Even at that time the majority of the States represented on the Council of Europe were already of the opinion that plant varieties should be protected not by patents but by a special industrial property right (Pfanner, *Vereinheitlichung des materiellen Patentrechts im Rahmen des Europarats*, GRUR Int. 1962, 545, 547).

conque forme de produit utile. Un certain nombre d'entre elles, connues, sont énumérées à titre d'exemple. Le matériel de reproduction de ces plantes cultivées comprend toutes les parties des plantes à reproduction sexuée, y compris les plantes germées et les plants, mais surtout la semence (cf. page 10, 2^e alinéa de la description).

Même si certaines variétés connues de blé, de millet et d'orge sont évoquées dans les exemples à propos du traitement à l'oxime (cf. pages 35 et 36 de la description), les revendications 13 et 14 n'ont nullement pour objet une variété individuelle différenciable de toute autre variété, mais concernent par contre, sous la forme de son matériel de reproduction, n'importe quelle plante cultivée à laquelle est appliqué un traitement chimique particulier. Or, l'article 53 b) CBE exclut seulement la délivrance de brevet pour les plantes ou leurs matériels de reproduction ou de multiplication sous la forme génétiquement fixée de la variété végétale.

4. La lettre même de l'article 53 b), premier membre de phrase de la CBE ne permet pas d'assimiler les végétaux à des variétés végétales. Une telle assimilation s'opposerait de plus à l'esprit de cette disposition. Les variétés végétales ont été exclues de la protection du brevet européen, en raison principalement du fait que plusieurs Etats signataires de la Convention sur le brevet européen ont institué tant au niveau national qu'international une protection particulière pour les obtentions végétales (R. Singer, *Das neue europäische Patentsystem*, Nomos Verlagsgesellschaft, Baden-Baden, p. 34, 4^e alinéa).

Dans l'article 53 b), premier membre de phrase de la CBE, le législateur a strictement repris les termes de l'article 2 b) de la Convention de Strasbourg en matière de brevets du 27 novembre 1963, article par lequel la possibilité d'exclure notamment les variétés végétales de la protection par brevet a été laissée aux Etats contractants de ladite convention. Déjà à cette époque, la majorité des Etats membres du Conseil de l'Europe étaient d'avis que la protection des obtentions végétales ne devait pas être assurée par brevet, mais par un droit de protection particulier (Pfanner, *Vereinheitlichung des materiellen Patentrechts im Rahmen des Europarats*, GRUR Int. 1962, 545, 547).

Demgegenüber liegt die hier beanspruchte Neuerung nicht auf dem Gebiet der Pflanzenzüchtung, die sich mit der genetischen Veränderung von Pflanzen befaßt. Sie wirkt vielmehr mit chemischen Mitteln auf das Vermehrungsgut ein, um es gegen Agrarchemikalien widerstandsfähig zu machen. Der neue Parameter für das Vermehrungsgut, die Behandlung mit einem Oximderivat, ist kein Kriterium, das nach dem Sortenschutzbegriff für eine Pflanzensorte kennzeichnend sein kann. Ein Konflikt zwischen den verschiedenen Schutzformen Sortenschutz oder Patent für in solcher Weise behandeltes Vermehrungsgut liegt daher nicht vor. Vielmehr kommt allein der Patentschutz in Betracht.

Technologisch handelt es sich bei der Oximderivatbehandlung um eine Maßnahme des Pflanzenschutzes, die abweichend von anderen Fällen an einem verkehrsfähigen Objekt, dem Vermehrungsgut, vorgenommen wird. Dabei ist es nicht notwendig, daß das Objekt der Behandlung stets eine Pflanzensorte ist, da die Behandlung auch an Vermehrungsgut vorgenommen werden kann, das den Anforderungen an den Begriff der Pflanzensorte im Hinblick auf Homogenität oder Beständigkeit nicht genügt. Umgekehrt ist es für die Frage der Patentierbarkeit unerheblich, daß das behandelte Vermehrungsgut auch oder vorwiegend eine Pflanzensorte sein kann. Wenn durch den Ausschluß der Pflanzensorten vom Patentschutz gerade die züchterische Leistung einem Sonderschutz zugewiesen werden sollte, ist es völlig ausreichend, den Ausschlußtatbestand entsprechend seinem Wortlaut auf die Fälle beschränkt zu lassen, in denen Pflanzen gerade durch ihre genetisch bedingten Eigenarten ihres natürlichen Erscheinungsbildes gekennzeichnet sind. Ein Konflikt zwischen dem nationalen Sortenschutz vorbehaltenen Bereichen und dem Anwendungsbereich des EPU tritt dabei nicht auf. Andererseits bleiben Neuerungen, die dem Sortenschutz nicht zugänglich sind, unter den allgemeinen Voraussetzungen patentierbar.

By contrast, the innovation claimed here does not lie within the sphere of plant breeding, which is concerned with the genetic modification of plants. Rather, it acts on the propagating material by means of chemical agents in order to make it resistant to agricultural chemicals. The new parameter for the propagating material, namely treatment with an oxime derivative, is not a criterion which can be characteristic of a plant variety as far as the protection of varieties is concerned. There is therefore no conflict between the protection of varieties or the patent as different forms of protection for propagating material treated in this way. In fact, patent protection is the only possibility.

Technologically, the treatment with an oxime derivative is a plant protection measure which, in contrast to other cases, is carried out on a marketable object, namely the propagating material. It is not necessary for the object of the treatment always to be a plant variety, since the treatment can also be carried out on propagating material which does not meet the essential criteria of homogeneity or stability characteristic of a plant variety. Conversely, it is immaterial to the question of patentability that the propagating material which is treated can also be, or is primarily, a plant variety. If plant varieties have been excluded from patent protection because specifically the achievement involved in breeding a new variety is to have its own form of protection, it is perfectly sufficient for the exclusion to be left restricted, in conformity with its wording, to cases in which plants are characterised precisely by the genetically determined peculiarities of their natural phenotype. In this respect there is no conflict between areas reserved for national protection of varieties and the field of application of the EPC. On the other hand, innovations which cannot be given the protection afforded to varieties are still patentable if the general prerequisites are met.

Or, l'invention revendiquée dans le cas présent n'appartient pas au domaine des obtentions végétales, qui relève de la modification génétique des végétaux. Elle consiste en revanche à influencer par des moyens chimiques le matériel de reproduction, afin de le rendre résistant à l'action phytotoxique des produits chimiques utilisés en agriculture. Le nouveau paramètre de ce matériel de reproduction, c'est-à-dire son traitement à base d'un dérivé d'oxime, n'est pas de nature à caractériser une variété végétale au sens où on l'entend pour la protection des variétés végétales. Par conséquent, on se trouve pas confronté à une situation conflictuelle entre les différentes formes de protection, à savoir protection particulière de la variété végétale ou bien brevet pour un matériel de reproduction traité de la sorte car seul le brevet entre en ligne de compte.

D'un point de vue technologique, le traitement au dérivé d'oxime constitue une mesure de protection de la plante qui, à la différence des autres cas, est appliquée à un objet pouvant être mis dans le commerce, c'est-à-dire le matériel de reproduction. L'objet du traitement ne doit pas toujours être nécessairement une variété végétale, puisque le traitement peut être également appliqué à un matériel de reproduction qui ne répond pas à la notion de variété végétale en ce qui concerne les critères d'homogénéité ou de stabilité. Inversement, le fait que le matériel de reproduction traité puisse également ou principalement être une variété végétale est sans incidence pour la question de la brevetabilité. Si l'exclusion de la protection par brevet des variétés végétales doit être destinée à ménager précisément pour les accomplissements de l'obtenteur une protection particulière, il suffit amplement de restreindre l'objet de l'exclusion, conformément à son énoncé, aux cas où les végétaux sont précisément caractérisés par les particularités génétiquement déterminées de leur aspect naturel. Il ne se produit en l'occurrence aucun conflit entre les domaines réservés à la protection nationale des variétés végétales et le domaine d'application de la CBE. Par contre, les inventions qui ne sont pas accessibles à la protection des variétés végétales demeurent brevetables dans les conditions générales.

5. Das beanspruchte Vermehrungsgut ist auch nicht das Ergebnis eines — vom Patentschutz auszuschließenden — im wesentlichen biologischen Verfahrens zur Züchtung von Pflanzen, sondern das Resultat einer Behandlung mit chemischen Mitteln (z. B. Saatbeize, Samenbeizung, Tauchen der Jungpflanze in Oximlösung, vgl. S. 6, Zeile 23, S. 9, Zeile 8 und S. 10, Zeilen 17 — 20). Zusammenfassend ergibt sich somit, daß Artikel 53 b) EPU der Patentierung des hier beanspruchten Vermehrungsguts nicht im Wege steht.

6. Um patentfähig zu sein, muß der Gegenstand der selbständigen Ansprüche 13 und 14 selbst neu und erfinderisch sein. Eine Passage des angefochtenen Beschlusses könnte so verstanden werden, daß die Prüfungsabteilung das Vermehrungsgut, wie beansprucht, als "bekannte Pflanzensorte" angesehen hat. Abgesehen davon, daß anmeldungsgemäß keine Pflanzensorten in ihrer Individualität beansprucht werden, wie unter 3 bereits ausgeführt, kann ein Vermehrungsgut nicht schon deshalb als bekannt bezeichnet werden, weil es ausschließlich die Fähigkeit besitzt, eine bereits bekannte Pflanze hervorzubringen. Vielmehr ist ein Erzeugnis dann als neu zu beurteilen, wenn es anhand zuverlässig feststellbarer Parameter von bekannten Erzeugnissen unterscheidbar ist. Im vorliegenden Fall dürfte für den Neuheitstest die Schutzwirkung der Oxime auf das Vermehrungsgut gegenüber der schädigenden Wirkung von aggressiven Agrarchemikalien, besonders Herbiziden (vgl. S. 1, Abs. 1 i. V. m. S. 6, Abs. 2 bis S. 7, Abs. 1 und S. 33), zusammen mit üblichen chemisch-analytischen Methoden zur Identifizierung des Oxims (vgl. z. B. Beispiel 7) heranzuziehen sein. Die anmeldungsgemäßen Erzeugnisse nach Anspruch 13 und 14 sind neue Erzeugnisse. Das kennzeichnende Merkmal, durch das sie sich von dem als solches bekannten Vermehrungsgut unterscheiden, besteht darin, daß sie nach dem von der Vorinstanz als neu bewerteten Verwendungsverfahren nach Anspruch 1 behandelt sind.

**Aus diesen Gründen
wird wie folgt entschieden:**

1. Die Entscheidung der Prüfungsabteilung des Europäischen Patentamts vom 8. Oktober 1982 wird aufgehoben.
2. Die Sache wird zur anderweitigen Entscheidung an die Vorinstanz zurückverwiesen.

* Amtlicher Text.

5. Moreover, the propagating material claimed is not the result of an essentially biological process for the breeding of plants — which would be excluded from patent protection — but the result of treatment with chemical agents (e.g. dressing agents, seed-dressing processes, immersion of the plantling in an oxime solution, cf. page 6, line 23, page 9, line 8 and page 10, lines 17—20). To summarise, therefore, Article 53 (b) EPC is not an obstacle to the patenting of the propagating material claimed in the present case.

6. In order to be patentable, the subject-matter of the independent claims 13 and 14 must itself be new and inventive. A passage in the decision being contested could be understood to mean that the Examining Division considered the propagating material, as claimed, to be a "known plant variety". Apart from the fact that, as already stated under 3., no individual plant varieties are claimed in the application, a propagating material cannot be said to be known merely because it only has the ability to produce a plant which is already known. What is more, a product is to be considered new if it is distinguishable from known products by reference to reliably ascertainable parameters. In the present case, the protective effect of the oximes on the propagating material vis-à-vis the harmful effect of aggressive agricultural chemicals, particularly herbicides (cf. page 1, paragraph 1 in conjunction with page 6, paragraph 2 to page 7, paragraph 1 and page 33), together with customary chemico-analytical methods of identifying the oxime (cf., for instance, example 7) should normally be taken into consideration for novelty testing purposes. The products according to claim 13 and 14 in the application are new products. The characterising feature which distinguishes them from the propagating material, which is known as such, consists in the fact that they are treated by the process according to claim 1, which is judged to be new by the department of first instance.

**For these reasons,
it is decided that:**

1. The decision of the Examining Division of the European Patent Office dated 8 October 1982 is set aside.
2. The case is remitted to the first instance for further prosecution.

* Translation.

5. Le matériel de reproduction revendiqué n'est pas davantage le produit d'un procédé essentiellement biologique d'obtention de végétaux, qu'il y a lieu d'exclure de la protection par brevet, mais le résultat d'un traitement à l'aide de moyens chimiques (par exemple, mordançage des semences et graines, trempage des plants dans une solution d'oxime (cf. page 6, ligne 23; page 9, ligne 8; page 10, lignes 17 à 20). En bref, il en découle que l'article 53 b) de la CBE ne fait pas obstacle à la délivrance d'un brevet pour le matériel de reproduction revendiqué.

6. Pour être brevetable, l'objet des revendications indépendantes 13 et 14 doit lui-même être nouveau et impliquer une activité inventive. Dans la décision attaquée, la Division d'examen aurait considéré le matériel de reproduction, tel que revendiqué, comme une "variété végétale connue". Abstraction faite de ce que, conformément à la demande, aucune variété végétale n'est revendiquée dans son individualité, comme cela a déjà été exposé au point 3, un matériel de reproduction ne saurait être qualifié de connu pour la simple et unique raison qu'il est capable de fournir un végétal déjà connu. Au contraire, il y a lieu de considérer un produit comme nouveau, lorsqu'au moyen de paramètres rigoureusement mesurables on peut le différencier des produits connus. Dans le cas présent, pour apprécier la question de la nouveauté, on peut s'en rapporter à l'effet de protection offert par l'oxime sur le matériel de reproduction en comparaison de l'action néfaste des produits chimiques agressifs employés en agriculture, notamment les herbicides (cf. page 1, 1^{er} alinéa, en liaison avec page 6, 2^e alinéa à page 7, 1^{er} alinéa ainsi que page 33) en même temps qu'aux méthodes courantes d'analyse chimique pour l'identification de l'oxime (cf. notamment l'exemple 7). Les produits conformes à la demande selon les revendications 13 et 14 sont nouveaux. La caractéristique qui les distingue du matériel de reproduction connu en tant que tel réside dans le fait qu'ils sont traités selon le procédé d'utilisation conformément à la revendication 1, qui a été considéré comme nouveau par la première instance.

**Par ces motifs,
il est statué comme suit:**

1. La décision de la Division d'examen de l'Office européen des brevets en date du 8 octobre 1982 est annulée.
2. L'affaire est renvoyée à la première instance pour une nouvelle décision.

* Traduction.

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CALENDAR

UPOV Meetings

July 9 to 12 Cambridge (United Kingdom)	Technical Working Party for Vegetables (Subgroup on July 8)
October 14	Consultative Committee
October 15 and 16	Meeting with International Organisations
October 17 and 18	Council
November 12 and 13	Technical Committee
November 14 and 15	Administrative and Legal Committee

Symposia

August 12 to 16 Wageningen (Netherlands)	International Symposium on the Taxonomy of Cultivated Plants
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1986

February 17 to 20 Lincoln (New Zealand)	Department of Scientific and Industrial Research (DISR) Plant Breeding Symposium
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The International Union for the Protection of New Varieties of Plants (UPOV)--an international organization established by the International Convention for the Protection of New Varieties of Plants--is the international forum for States interested in plant variety protection. Its main objective is to promote the protection of the interests of plant breeders--for their benefit and for the benefit of agriculture and thus also of the community at large--in accordance with uniform and clearly defined principles.

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