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FINISHED LEATHER USED IN THE MANUFACTURE
OF FOOTWEAR AND LEATHER GOODS

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Introduction

First I should like to deal with the questions concerning the upper material, and then to discuss the lining, insole and bottom materials and proceed in the same manner with the examination of the characteristics of wear and hygiene in wearing.

I. Behaviour of Upper Leather in the Manufacture of Footwear

I should like to outline for you briefly what effects the fundamental characteristics of leather and the specific characteristics of the various kinds of leather have in the individual stages of the process of shoe-making, and analyze with you the stages through which the upper material passes in the manufacture of footwear.

A. Footwear Fashion and Shoe Models

The stylish design and fashion-oriented change of colour and shape of shoes have doubtlessly contributed a great deal to the use of shoes and, therefore, the production of footwear having increased as compared with earlier years.

In spite of this, both the leather manufacturer and the leather processor keep complaining that the fashionwise requirements are exaggerated and that they cause ever new difficulties.

However, fashion is not a natural phenomenon which comes on us without our being able to prevent it, for fashion is created and directed. The fashion designers and with them the shoe designers first start from esthetical aspects. The footwear technicians must then make sure that the fashion ideas are put into practice. Here, unfortunately, value is mainly attached to the appearance, that is, to the selling chances.

Regretably, not enough consideration is given to the technical questions; if the leather and shoe model which corresponds to the designer's idea will also meet the use and wear requirements.

Many difficulties, annoyance and costs can surely be avoided if the decisions of the fashion committees in respect of the future season were to include not only the corresponding colour shades and kinds of leather, but if such decisions were governed also by the advice of technical consultants in respect of the natural limits of stress and the characteristics which have to be taken into account with the respective kinds of leather which is used for the various types of shoes.

A few examples shall give a stimulus to attach value to the characteristics of the leather when creating footwear fashion and shoe models.

Here only the fundamental behaviour of the leather can be emphasized. It appears quite feasible that close and good cooperation between leather and footwear technicians will succeed in fashioning a kind of leather in such a manner that it meets the requirements necessary for a certain shoe and its mode of manufacture.

In the creation of the leather colour it must be taken into account that all colour formations gradually change their colour shade, some only so gradually that one does not notice it for the duration of the footwear's life, and some faster.

The sensitivity to light is particularly critical. Its effect is such that the colour fades, that is, the colour becomes lighter or that the colour becomes darker and more clouded. Pigments are faster to light and soluble colour. The more colour substance there is on the leather, the less sensitive will be the colour shade. In mixed colour shades which are composed of various pigments, the colour component whose percentage is lowest is the most sensitive.

Therefore, although brilliant colour shades, deep and dark shades, pure white or cream to slightly brown shaded white are more suitable for summer footwear than delicate pastel shades. In respect of the fastness to light, winter footwear can be given also pastel shades without hesitation provided that the leather will not be affected by dirt and that the shoe can be cleaned readily. Aniline dyed leather is sufficiently fast to light when the colours are dark and deep.

Aniline leather is often sensitive to water, especially if it was not dyed in the vat, but has been given only a coating of dyestuff on the surface. The water resistance of aniline leather decreases if the leather is very soft and elastic, because the loose fibre structure which is necessary for this will render the leather more water absorbing.

In many cases, a less delicate and ready-to-clean normal semi-aniline leather will meet the requirements of the footwear buyer just as well if the model is designed accordingly.

A prerequisite to designing is that the cut leather can be worked well on the last and that it can be pulled over and nipped without crases.

Moreover, it is required that the crucial points of stress are not exceeded during walking. The seams should be made so that they run in the direction of the main tensile stress of the leather. This applies all the more when the upper leather is scuffed or split to a higher degree. Perforations and stitched embellishing seams enliven the shoe model. However, they also cut through or pierce the leather and thus weaken its durability.

A skilful designer who is familiar with the characteristics of the leather will have no difficulty in arranging such embellishments so that they will not be along the line

which is subject to the highest tensile stress during the manufacture and wearing, while they still appeal to the shoe salesman's sense of beauty. The more pointed the shoe is designed and made and the flatter the point of the shoe is designed, the higher will be the tensile stress on the toe cap with both nipping and wearing. With very pointed toe caps there is not sufficient room for the nip fold so that gussets have to be cut out. With naturally thin upper leathers a few cut out will generally be sufficient, whereas several and larger gussets have to be cut out with stronger leathers.

All of these measures impair the durability of the upper leather and the shoe.

B. Purchase of Upper Leather

The purchase of upper leather doubtlessly is a commercial matter, but not solely because quite a number of technical questions have to be taken into account. The manufacturer of shoes knows the general fundamental characteristics of the various makes of his suppliers and he also knows what stresses these kinds of leather can be expected to take. With a new kind of leather he does not know this from the beginning and he also does not know in what respect this kind differs from the former kinds of his suppliers - with exception of the appearance. The leather manufacturer knows the general requirements of his buyers and he also knows what points have to be observed particularly with one or another buyer as long as the manufacturing process of the shoes remains unchanged. If the purchase is preceded by a discussion between the footwear and leather technician during which the requirements concerning the leather and the possibilities of meeting them and the limits of stress are considered, then there is a good chance of the leather being adapted to the type of shoe in the best possible manner. However, the requirements must be outlined clearly

to make sure that not one desired characteristic opposes another. The footwear and leather manufacturers depend on one another. They can solve the largely technical problems - caused through the styles of fashion - only by close technical cooperation.

C. Storage of Leather

Before stating further requirements of the footwear maker in respect of the leather, I want to deal briefly with the storage of leather.

The leather supplied by the leather factory to the shoe factory is dry, but it is not completely dried. It has a certain moisture content which is essential to the elasticity, softness and flexural properties of leather. With the upper and lining leather which is generally greased only slightly the natural moisture content is about 12 to 15 % (see Table), and with more greased upper leather (waterproof, etc.) it is about 10 to 12 %.

In the interest of a good leather quality, this moisture content must be maintained because the moisture absorbed by the leather fibres is the best softener. If the moisture drops significantly the leather may become hard and brittle and if it increases there may be an occurrence of mould stains and fatty spew. With completely or largely chrome tanned leather also the square measure can change very much with the moisture content. With velours leather, for instance, excessively dry storage may cause an area shrinkage of 5 to 7 %. The leather adjusts its moisture content according to the ambient air. In order to obtain the best characteristics of the leather fibre structure it is necessary to store and air-condition the leather properly. An expensive air-conditioning system is not absolutely necessary for this purpose, it is sufficient to control the temperature and relative humidity of the storage room regularly by means of a thermometer and

hydrometer. The storage room should be cool and well aired. A fan should be provided to ensure a sufficient exchange of air in order to avoid sticky air which will favour the formation of mould. The room temperature shall not be below 10° and not very much above 15°C .

The most favourable humidity is at 65 to 70 %. It can be regulated in a relatively simple manner in that water vessels are placed into the storage room if the air is too dry, or that the floor is sprinkled with water from time to time.

The leather should not be exposed to direct sunlight which comes through the windows; this applies particularly to natural, vegetable tanned leather and leather of light pastel shades. Upper leather and lining leather is to be stored on top of one another so that it lies flat and without creases and folds.

It can be placed on storage trestles in packs which are not too thick or it can be rolled up in lots of 12 pieces of upper leather or 20 to 30 pieces of lining leather. The leather must not be deposited on a cement floor, but must be stacked on shelves or wooden gratings having a floor clearance of at least 10 to 15 centimeters. The individual stacks should not be higher than 60 to 80 centimeters. The stacks may be higher in exceptional cases and for short periods, but then wooden battens have to be placed between the leather to provide a certain amount of air circulation.

The same applies to the cutting shop. The workrooms should be air-conditioned or suitable measures have to be used to ensure that the relative humidity is at least 65 %. This will ensure that the individual parts can be cut in the natural square measure of the leather and that the pieces will neither expand excessively during steaming nor shrink too much during drying, thus causing any undesirable strains.

Now we want to discuss the special requirements which the footwear manufacturer has in respect of the leather. With the upper leather the questions concerning finish and structure, strength and elongation behaviour should be discussed.

To both the footwear manufacturer and the user dressing is one of the most important processes concerning the shoe, because it gives the leather the final appearance. When the leather leaves the leather factory important points have to be observed regarding dressing which itself must meet multifarious requirements.

The dressing must satisfy both the requirements involved with the shoe manufacture and the requirements of wear.

The ideas of fashion and of designers often bring about requirements which are practically impossible or only very difficult to meet.

In respect of both the user and the footwear industry the most important requirement dressing has to meet is the satisfactory flexural fatigue strength and the elasticity of the colour coating. If the dressing meets these requirements, then an important prerequisite to satisfactory passage through the manufacturing process and, above all, wearing is fulfilled. I do not want to discuss in detail that these requirements are not easy to meet and that numerous other things are still connected with them.

It has been shown that an important improvement of the leather qualities has taken place during the past few years, and I consider it most important to make further efforts in this field also in future.

When examining the causes of complaint regarding leather it becomes evident that the dressing plays a part in most cases. Besides the questions concerning the special

characteristics of leather, such as structural strength and behaviour to water are so important. These characteristics have to be examined and observed particularly thoroughly with leathers which are used for shoes that are subject to rough wear, that is, children's shoes, ladies' and gent's sports shoes and mainly winter boots. Here it must be pointed out that the examination of such characteristics can be carried out by means of the "Flexometer" and that also the "Flexometer" wet test can provide a good idea of the character of dressing especially in respect of winter footwear.

The "Flexometer" of the firm Bally is a testing device by means of which the flexural fatigue strength of the top layer of upper leather, artificial leather and also textile materials is tested (see Table "Flexometer").

I should like to point out that a more intensive testing of the leathers by the leather industry is advisable before the leathers are supplied to the footwear factories in order to avoid serious complaints.

With the present rational manufacturing methods it is possible to manufacture many shoes very quickly from a kind of material which may be found to be unsuitable or seriously deficient at a later date. At the same time, such a test provides the leather factory with a means of control in respect of the regularity and the uniform quality.

A second important prerequisite to good dressing is the adhesion of the dressing to the leather.

The importance of this characteristic has been emphasized more and more during the past years. The reason for this are the numerous complaints which have been made after detecting poor adhesion by an adhesion test so that very many complaints could be cleared up on account of such examinations (see Table "Adhesion").

It has been found that numerous complaints regarding the manufacture and also the wear are connected with this characteristic of the leather. Experience has shown that this characteristic must not be considered on its own, but that it should be seen in connection with the flexural fatigue strength ("Flexometer") of the upper leather. For example, a leather having a reasonable flexural fatigue strength will not cause any problems if the adhesion is satisfactory. However, there will certainly be difficulties if the adhesion is not satisfactory in this case.

The difficulties which occur in manufacture on account of this may become very unpleasant. A separation of the dressing may occur. Damage to the dressing is also easily caused during pulling over of the uppers and while passing through other machines.

D. Dressing

Contaminations in dressing - especially in connection with glueing of soles - may also give reason for complaints due to the fact that the dressing can be pulled or peeled off in very severe cases. Things may become even more unpleasant if no difficulties arise or just minor difficulties arise during the manufacture, but that adhesion is so poor that a lifting of the dressing will occur in wear, as in these cases the stress will be much higher than in the footwear factory where the finish is applied. As far as the leather side is concerned one must expect that finishing is carried out in the footwear factory, for there are very few leathers which are the same on the shoe as what they were when they left the leather factory, that is, the cleaned, washed and repaired shoe is finally treated with a finishing agent. Thus it is given the finish of the ready-for-sale shoe, namely highly polished, satin or dull finish as is required.

The used finishing agent should do both fill and smoothen the pores of the upper leather. It should give the shoe a good feel and improve the brilliance of the leather colour if possible. The selection of the finishing agent depends on the desired finish, on the behaviour of the leather surface after cleaning and washing, the applied repair dye and on the kind of leather.

A direct impairment of the adhesion due to an applied finish cannot be noted in any case. The stress on the dressing will be increased by an additional coating and, therefore, complaints are more likely to occur with a leather which has been finished in the footwear factory.

E. Adhesion

Particular attention must be paid to the adhesion mainly in those cases where little corrected or full grain leathers are concerned. Especially with full grain leathers the achievement of a satisfactory adhesion naturally is extremely difficult, but on the other hand these leathers are also partly used for shoes which are subject to hard wear. In such cases it should be demanded that a faultless predyeing is carried out whose colour matches well with the actual colour of the dressing.

For example, the dressing is stressed particularly hard in this respect with children's shoes or sports shoes, and as I have pointed out before, these characteristics are very important also in those cases where leather for winter boots or apres-ski boots is concerned, and I shall deal with this when I deal with the wear characteristics.

A further point, concerning especially the dressing of the leather, is the resistance to water and polishing agents. When looking at the modern manufacturing methods of the shoe or footwear industry, that is, especially the various treatment methods which involve the use of steam and

and moisture prior to pulling over of the uppers, it is necessary that the dressing of the uppers features a good resistance to water and steam. This shall not imply that special requirements are set regarding the dressing, for it has been clearly found that any normal dressing will withstand all of these processes provided it has a good resistance to water whereas deficiencies in this respect may occur with a leather whose dressing is not resistant to water and rubbing. Exactly the same deficiencies may occur later on during finishing or washing prior to the finishing. Here, too, the dressing must not show insufficient resistance to water.

The dressing's resistance to other agents, such as polish, will be discussed in detail later on. One more point is to be noted here, and it is connected with the finish that is applied in the footwear factory. The tanner must inform the respective footwear manufacturer about the resistance and the kind of the dressing so that the maker can adjust his finishes or washing agents accordingly.

I know that this demand has been made to the leather industry very often, but this has always been like talking to the wind, although there is actually no good reason for such behaviour. Here it must be pointed out very clearly that there is no more to do than to inform the footwear manufacturer, who processes the leather, about the character of the final finish of the leathers. It is not even necessary to tell him accurately what has been applied, all he needs to know is: type of collodion, type of plastic bonding agent, type of casein, so that he can adjust his washing agent accordingly, for it is known that it is not the type of finish which is decisive for the adhesion on the dressing, but that the type of washing agent is much more essential. If the washing agent cannot be used to wash out the dressing and to make it a little more absorbing, then one will not attain a satisfactory

adhesion of the dressing either. It is a fact that very many shoes have to be repaired or at least finished, and therefore it is necessary to know these things.

I am sure that ways and means can be found in order to facilitate work for each other. If the information is restricted to such special things it will be ensured that no confidential manufacturing information will leak out. I believe that open-mindedness in respect of this will considerably further the cooperation between the footwear and leather industry.

The further characteristics of dressing will be dealt with when discussing the wear characteristics; the same applies to the characteristics of discolouration and resistance to cold.

The leather factory should provide information on the dressing's behaviour under temperature. It should be stated whether corresponding leathers can be ironed or hot-air dried during the manufacture.

F. Greasing of the Upper Leathers.

Now I want to deal with the special characteristics of the leather proper, but before this I want to talk briefly about the greasing of the upper leathers.

Many investigations have shown that the greasing of the leather may exercise considerable influence on the glueing of the leathers. This is mainly the case where more or less highly greased leathers are concerned. In general it may be said use should be made only of greases which adhere strongly to leather and which can be extracted only to a little extent afterwards, because the extractable grease substances are a hindrance in the footwear manufacture, and mainly during glueing, because they migrate into the adhesives.

G. Cracking of the Grain

A point which concerns the leather characteristics is the cracking of the grain which always causes considerable difficulties with slipping of the uppers especially during the months of autumn and winter, although this is not a fault of the footwear factories. In principle, such examinations are carried out by institutes in that air-conditioned and non-air-conditioned leathers are examined, and in most cases it is found that there are no material differences between air-conditioned and non-air-conditioned leathers when a genuine complaint comes up. So it is a matter concerning the tanner.

Particular value should be attached to these things, for with the present highly rationalized manufacture it is extremely annoying when one finds that cracking of the grain occurs after the leathers have been supplied and when the uppers have already been prepared for nipping and have passed through the stitching shop.

A similarly important point is the strength of the leathers and above all the tensile strength or ripping strength. I should like to point out that certain standard strengths must be demanded in a shoe, especially when one does not know for what parts of the shoe the material is to be used. Moreover, it is important that the ripping strength of the leathers is satisfactory, because serious difficulties can occur in the various stages of manufacture of summer shoes in particular, as these have more perforations and cut out parts. Difficulties due to insufficient strength of the structure are frequently found with velours leather and especially with split velours leathers which are more delicate in this respect.

The absolute value of the (continuous) ripping strength should never drop below 2.0 or better still below 2.5 kg/sq.cm. for lined shoes, and the values should be still higher for nonlined shoes. For such a determination it is

not important how high the converted value is per centimeter of thickness, because with thinner leathers it is only the absolute value which is important to the assessment.

Especially in this connection I should like to point out that a leather may be very beautiful and wonderful in appearance, but that one should always be aware that shoes are made of such leather and that the wearer does not always handle it carefully.

The fibre structure of the leather represents a net or grid-like connection of the fibres which have grown together three dimensionally in length, width and depth. The structure makes the leather elastic and allows it to be pulled and stretched in various directions. The durability of the leather in processing and use does not only depend on the strength of the individual fibres, but to a considerable extent on the fibre structure being maintained uninjured. Any cut edge, any bevelling and splitting destroys the naturally grown structure and reduces the durability. Therefore, load bearing seams should not be too short in placing, that is, they must not be placed too closely along open cut edges to make sure that they will not tear.

When thin and light leather is to be processed naturally thin leather from the skins of small animals, e.g. box calf, glazed kid is more durable than highly split leather from the skins of large animals, such as cattle.

Moreover, it must be taken into account that nowadays shoes are manufactured with use of leather which was formerly used only for dress shoes and that the aforementioned shoes are commercially available and are subject to higher stresses (e.g. glazed kid).

ii. Lining Leather

The requirements of the footwear technician are a satisfactory dyeing and fixing of the dressing. Faults that occur when these are not met are complaints which occur particularly after steaming when the uppers are placed on one another so that the lining leather will have direct contact with the light upper leather. The difficulty in footwear manufacture can be avoided by corresponding treatment of the leathers in the leather factory. Sometimes the discolourations occur already with normal contact. They become particularly intense when effects of moisture occur, as it is the case with the aforementioned steaming. With various kinds of leather one cannot dispense with steaming during the course of footwear manufacture, and therefore it is most important that the lining leathers have sufficient colour fastness in order to avoid such complaints. The cause of the discolouration is an insufficient binding of the pigments in these lining leathers. The footwear manufacturers must refuse lining leathers which cause discolourations.

With lining leathers the colour fastness must be capable of resisting water aqueous solutions and perspiration in particular.

The results of insufficient binding of the pigments are unpleasant complaints on part of the wearers of the shoes who find that lining leathers which are not of fast colour cause colour stains on stockings or the occurrence of stains in the upper leather when the shoes get wet through rain or snow and which are very difficult to remove.

With lining leathers it is also important to make sure that the fastness to light is good.

With regard to the insole materials it can be said that the leather insole does not present any special problems in respect of processing.

The wearing characteristics will be dealt with later. The same applies to the bottom materials.

Also these materials do not involve any particular difficulties or problems as far as processing is concerned.

II. The Shoe Wearers

On account of complaints which are repeatedly made to footwear factories by shoe wearers I should like to comment on the extent to which the upper material satisfies the requirements that are set. As before, the representations will be made in the same order so that upper leather will be discussed first and that lining leather, insole leather and bottom leather will follow.

A. Upper Leather

When dealing with the upper leather the dressing is again the most important point. Here it must be pointed out particularly that the resistance of the dressing to polishing agents and water should be as good as possible, that is, the dressing should be easy to clean and as resistant as possible towards water and moist rubbing. High-grade leathers such as anilin are very delicate. The leather manufacturers should also pay more attention to this fact because the wearer will not be very pleased about poor possibilities of cleaning and care of the shoes and the considerable delicate character will also involve trouble for the shoe manufacturer.

It is important, however, that the leathers can be cleaned satisfactorily with an agent for fine shoes or with an agent which does not contain turpentine.

With leathers for sports and children's shoes, as long as they are full grain leathers, it is essential to make sure of pre-dyeing in order to avoid complaints if the dressing has possibly come off. Moreover, it is important to note that the light and white leathers should be resistant to discolouration; this complaint is not so frequent anymore, but it is still made.

An important point regarding all leathers is the dressing's resistance to cold. Here I am especially thinking of patent leathers which crack and even break when exposed to certain low temperatures.

Among the other characteristics of leather the strength of the structure is just as important because here it must be ensured that perforations cannot tear and that the leathers capability of keeping the shape are satisfactory. Consequently, there must not be any excessive and lasting stretching of the leather in order to prevent a treading out of the shoes.

A characteristic of the leather which leads to complaints especially with sports shoes and apres-ski boots is the permeability to water. The permeability to water is particularly high with velours leathers and split leathers. Here it should be noted that the buyer sees the shoes displayed in a sporty manner so that he generally sees a thick crepe sole with a shell rim and this can give the layman the impression that he will get also an upper material which is relatively waterproof. When he wears the shoes he will then suddenly find that there is water in them after a few minutes, especially if snow or water has come in touch with the upper leather. One finds again and again that a large part of the split velours leathers is deficient in this respect and that the "Penetrometer" tests reveal permeability values of below 20 minutes.

Such leathers are, of course, unsuitable for winter boots unless they have been given an appropriate impregnation or post treatment. Especially in this respect I should like to point out to the leather industry that it can impart to the leather used for uppers - and for which it is highly suitable - considerably better characteristics if it uses the possibilities the chemical industry offers to the full extent. The same deficiencies are found when examining the many different waterproof leathers in this respect. In some cases one finds that there has been a distinct penetration of water after half an hour to one hour. This is, of course, poor publicity for such a material because waterproof means impermeability to water and with such leather there should be no penetration of water within three hours under such testing conditions.

On account of the observations it appears correct to me that much more value is attached to the waterproof characteristics of the upper leathers, especially when one knows that they are used for winter footwear.

Also the leather manufacturers should give serious consideration to the problem of impregnation, because faultless characteristics are the best arguments in favour of leather

B.

Lining Leathers

There is very little to be said about the lining leathers. What is important is that the dyeing and above all the resistance of the leathers to water and perspiration are absolutely satisfactory. It is essential that a dark lining leather which is used in a light shoe shows absolute fastness of colour and that also the resistance of the dressing to perspiration satisfies the requirements.

If fastness of colour cannot be attained, the leather manufacturer should state that such a requirement cannot be met. With regard to the dressing a collodion finish on the dressing has still proved best, because casein finishing is not carried out in such a manner in most cases that the necessary resistance, especially to perspiration, is attained.

C.

Insole Materials

In respect of the insole materials - which are still to be dealt with - it must be noted that no special requirements are made on part of the wearers, but attention should be paid to the substances of these materials which can be washed out in order to avoid difficulties in connection with the upper leathers on account of the salt content and tanning materials.

When looking at the various replacement materials which are offered as insole materials, then the question of price is, of course, very important just as is the case with the bottom materials.

Moreover, wear and resistance play an important part. The leather insole still is the best material when the points stated are observed.

It must be noted, however, that the kind of insole materials which are offered in place of leather have reached a very high quality standard.

With the bottom materials the wearer enquires about the wear and waterproofness of the leather soles. The question of waterproofness is much more important than the question of wear in my opinion. The main efforts of the bottom leather industry should be especially concentrated on producing a relatively flexible, but also relatively waterproof leather sole.

There are definitely many arguments in favour of and against the various methods of testing of wear. One can be sure that the rubber sole comes off better in respect of wear than the leather sole (See Table "Wearing Test").

I do not want to deal with the question of the better insulating effect and aeration through the sole because I feel that it will not stand up to a serious discussion. In addition it must be noted that the flexible sole is favourable in respect of the permeability to steam, but that it also has a higher permeability to water. Here on advantage is eliminated by a far greater disadvantage. An impregnation would be particularly favourable also for this reason. *

III. Summary

A concluding review of the entire problems of the processing of upper leather in the footwear industry shows that many factors are combined and must be taken into account. Apart from the characteristics of the skin material in tanning, dyeing and dressing of the upper leather there are the effects of the individual processes in footwear manufacture and the effects of the materials that are used besides the upper leather.

The following points have to be observed:

Footwear Fashion

Care with use of dyes because of fastness to light and resistance to water.

Leather Purchase

Close cooperation with the leather factory to make it possible to get to know the individual kinds of leather in respect of the make-up of dressing and finish.

Storage

Degree of humidity, ideal storage (12 degrees)

Upper Leather

Flexometer (state values)

Dressing and Adhesion: In order to attain a good adhesion good pre-dyeing is absolutely necessary.

Good strength and resistance of the dressing is necessary in respect of water and steam.

Dressing methods of finished upper leathers must be made known to the footwear manufacturer.

Finish (selection must be adjusted to the preliminary work in the footwear factory, e.g. washing, cleaning, repairing dye and - very important - kind of leather.

Cracking of the grain.

Lining Leather

Satisfactory dyeing and fixing of dressing (staining of ladies' stockings)

Customer

The customer wants easy cleaning of shoes with use of suitable polishing agents (protection against water).

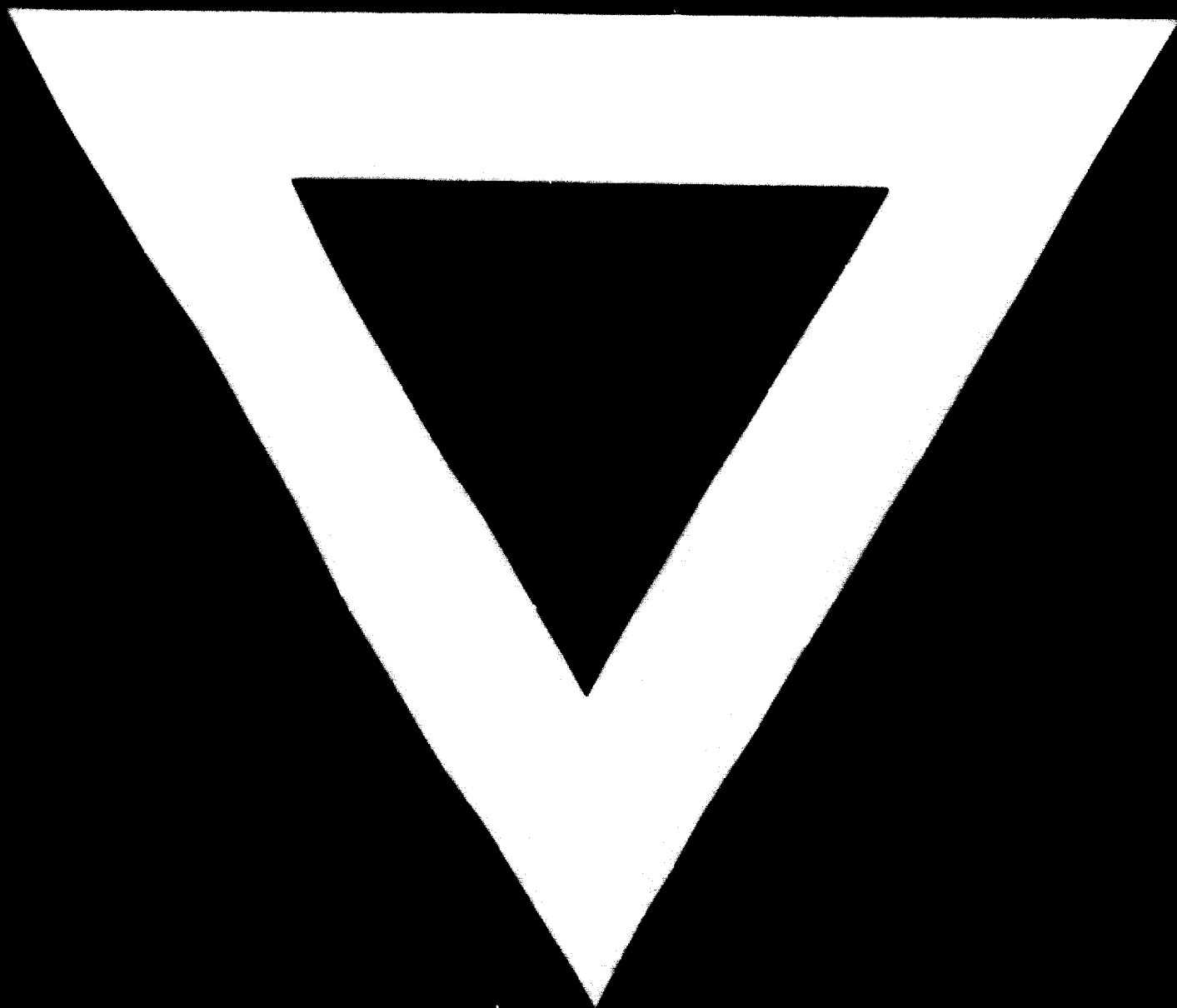
Impregnation of velours leathers which are used for winter shoes and boots.

The change of fashion to which the footwear manufacture is subjected to an ever higher extent will always bring about new problems. To solve them there must be a close technical cooperation between the footwear industry, the leather industry and the suppliers of the remaining products used for shoes. A fruitful cooperation necessitates an intensive dealing with the characteristics of the materials to be processed and that one considers the reciprocal effects to realize from this the limits of the stress to which the footwear can be subjected. Moreover such cooperation must make use of every opportunity to discuss technical questions between footwear manufacturer and leather manufacturer and also to evaluate the results.

Ladies and Gentlemen, I hope I have succeeded in pointing out to you various factors concerning the different kinds of leather materials which are to be considered as most important on part of both the footwear manufacturer and the wearer.

The position of leathers in the range of footwear manufacture can be maintained only by retaining the good qualities and the natural character of leather.





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