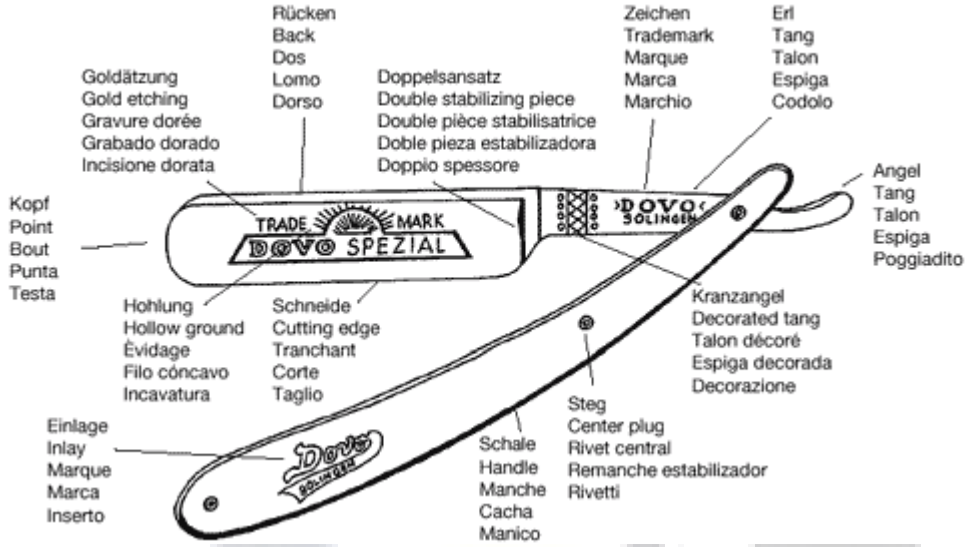
Razor Sharpening And Using Tips

The KnifeCenter is constantly looking for more information to convey to you, and information about razors and stropping has been hard to find. DOVO, the largest manufacturer of straight razors in the world publishes the following information. Please keep in mind that the writers of the materials on this page are European and the English used may be a little hard to understand. We reprint it for you while accepting no responsibility for any injury resulting from these instructions. All razors and knives are sold to be used at the buyer's own risk.



1. How do I look after the straight razor?
The straight razor must be properly looked after in order to ensure the maintenance and long life of this traditional men's accessory. While straight razors made of stainless steel are less demanding, other razors have to be rinsed with clear water and thoroughly dried after each use. When not in use for longer periods, it is recommended that the razor be rubbed with light oil. Likewise, the razor should not be stored in a damp and unaired state. There is no generally valid rule for the whetting (stropping) of straight razors; in many cases, it is sufficient to draw the razor lightly over the ball of the thumb, especially when it has been left unused for several days between shaves. Wet shavers of the old school know that the facet (blade) "grows", i.e. the microscopically discernible and extremely fine "fin" on the cutting edge changes during the shave but returns to its old position afterwards; it stretches and again becomes extremely fine. Nevertheless, this fine "fin" will still wear away at some stage and a suitable strop should then be bought. There is no common rule for sharpening of razors; sometimes it is sufficient to sharpen it at the ball of the thumb, especially if the razor is not used for several days. People, who often use razors, know: the cutting edge is growing, meaning that the very fine burr on the cutting edge (which can be seen under the microscope) changes whenever the razor is used, but it finally goes back to its old position and will become very fine again. Nevertheless the burr will wear out after a certain period of time, and then the suitable razor strop should be bought.

2. How do I whet the razor with the strop?
While flat blades are whetted on a suspended strop (velvet knives), 1/2 or 1/1 concave blades require a hanging strop made of fine cowhide leather or extremely supple Russia leather either with a turning device for hanging up or with hemp hose on the back, which serves to align the "fin" in the direction pointing away from the razor. If required, the leather side can be rubbed with an extremely thin layer of fine abrasive paste (red paste) and - for a final polishing on a separate strop - with polishing paste (black paste), which is worked in with the ball of the thumb. Stropping is performed at a flat angle with the back

of the razor laid on the strop; the razor is drawn in the direction away from the body. The razor is then turned over on its back and drawn in towards the body. Changing directions without turning the razor over makes the blade become round (crowned) so that the cutting properties are lost. In this case, only resharpening can help.

3. How do I shave with the razor?
The beginner starts first with the smooth and unproblematic areas of the face. To do this, the opened razor is held with thumb and three fingers so that the opened holder points away from the face. Lathered with good shaving soap and thus made supple, the skin must be tightened; the razor is moved at an angle of approx. 30° firstly in the direction of growth of the beard and then against the direction of growth. If held too flat, the razor rips the stubble; if held too upright, it cuts the skin. Always move it in the direction of the cutting edge and never horizontally (danger of injury); always draw it through evenly and hold it a little more upright at corners, dimples and at the upper lip. If the razor gets damaged by being dropped or when being put into its holder, it should not be used further. Stropping does not help here; the razor must be resharpened and whetted by a specialist.

4. What sort of steel is most suitable for straight razors?
The basic materials for good straight razors are standard steels with a carbon content of 0.6% and greater and which attain a maximum of hardness, elasticity and resistance to wear in a careful process of tempering and treatment. The advantage of stainless grades of steel is that these require less looking after.

5. The straight razor I bought a short time ago no longer shaves properly. Do I have to whet it, and how often is this necessary?
DOVO straight razors are whetted in the factory for use (whetting on leather by hand). If you own a suitable strop, you should nevertheless take into account that the razor must first "rest" after use. After the razor has been carefully rinsed and dried, it should not be used again for at least 24 - 48 hours because the fine "fin" on the cutting edge straightens up again extremely slowly. If the razor is stropped too soon (or stropped incorrectly by moving it backwards and forwards without turning it over), the "fin" which is necessary for a close shave breaks off. Between six and fifteen shaves are possible without stropping in between.

Arthur Boon agreed to allow us to post his personal observations. They are the opinions of one individual and are posted here to inform you of his conclusions. The KnifeCenter does not intend this information to be used as instructions and all razors and knives are sold to be used at the buyer's own risk. Some information below has been altered by the KnifeCenter of the InterNet

PERSONAL OBSERVATIONS ABOUT STRAIGHT RAZORS AND STROPS

by Arthur Boon

INTRODUCTION

Starting its evolution as a scraping stone a thousand years ago, the straight razor gradually developed into what proved to be one of the most perfect and simple instrument designs of all times. The weight is very well balanced, the blade is easy to clean and thus extremely hygienic, and the blade geometry is designed to conserve an ideal edge with relative little equipment and effort for many decades, even generations, as a well treated straight razor has an almost unlimited life. Also, when the skin has adapted to the change, the superficial peeling effect of the straight razor makes it suitable even for the irregular skin that suffers from the irritations caused by electric or safety razors.

Little practice is needed to switch to the straight razor for the rest of your life, and to discard the alternative messy compromises as just nonfunctioning make-believe products of fast consumerism. Then what caused the decline of straight razor use? One of the factors contributing to that has been the inappropriate knowledge about maintenance among users but also among manufacturers and designers, which coincided with the upcoming market consisting of pseudo-user-friendly gadgets such as autostrops, rotating razors, and safety razors. This unnecessarily caused the straight razor to function far from optimal, and therefore comparable with the new inventions, which of course was the beginning of the end. Also, ghost stories about supposed dangers to damage the vital vessels in the neck made the picture complete, although a highly polished push cutter has far from relatively little slicing capabilities, and a home full of stabbing and dull cutting tools presents a much higher risk to playing children and pets than a clasp razor stored in a box on the upper shelf in a cupboard.

At present a few manufacturers each produce a few thousand straight razors a year, with some emphasize on collectors' items, a number that slightly increased in the nineties. The dedicated user faces the impossible task to collect contradictory information from several more or less reliable sources which all suffer from the fact that almost nothing of the theory which came down with generations has been published for future reference. In fact, the art of straight razor use and care is an example of lost knowledge. The purpose of this document is to present a forum for discussion and conversion of knowledge on this topic, in order to reintroduce this 'non plus ultra inder Hand des Selbstrasierers'.
I owe much to the enthusiasm of Mr. J. Schremml wo gave me a guided tour at DOVO/Bracht Stahlwaren, Solingen, Germany in February 1999, showing me the production, hollow grinding, and honing techniques. Mr Schremml also borrowed me the original and last pre-world war specimen of a study book on this topic, referenced below. Further, I got information form video's and books, indicated in the references below, and from users who shared experiences on rec.knives.

DESCRIPTION OF STRAIGHT RAZOR ANATOMY

Orientation used in the description: the handle to the right, blade to the left, cutting edge pointing downwards. Kopf/Point/Bout/Punta: the left end of the blade. Blade, with a Ruecken/Back/Dos/Lomo, the part of the blade opposite the cutting edge, and a Schneide/Cutting edge/Tranchant/Corte (pointing downwards). Erl/Tang/talon/Espiga: the complete non-cutting metal part fixed to the blade, serving as a grip for the index, middle, ring, and little finger. Doppelansatz/Double stabilizing piece/Double piece stabilisatrice/Doble pieza estabilizadora: two close parallel vertical rims situated where the tang continues to the cutting part on the knife. Sometimes there is only one stabilizing piece. Kranzangel/Decorated tang/Talon decore/Espiga decorada: some sort of art where the blade stops and the tang begin. Schale/Handle/Manche/Cacha: the the part of the razor that contains the blade when closed. Sometimes it has an Einlage/Inlay/Marque/Marca (text, mark on the handle). Steg/Center plug/Rivet central/Remanche estabilizador: the middle plug on the handle; Hohlung/Hollow ground/Evidage/Filo Concavo: the biconcave form of the blade in transection view. Goldaetzung/Gold etching/Gravure doree/Grabado dorado: the mark or text on the blade. Zeichen/Trade mark/Marque/Marca, the mark/text graved on the tang. The Ridge/Der Wall: parallel to the back and the edge, running from point to the stabilizing piece, is a thickening of the blade, the purpose of which is to stabilize against torsion in the

horizontal plane, and to give the edge elasticity. The stabilizing piece gives the blade torsion resistance in the vertical plane. If the ridge is close to the edge, it is called =BC hollow ground, the lowest grade of hollow ground; if it is close to the back, it is called 1/1 or full hollow ground; =BD and =BE are in-between. More on grind types below.

TYPES
Flat and hollow-ground: Derbes Messer/Flat ground/Le rasoir plein: the cross section of the blade is a triangular shape; Hohl/Full hollow ground/Creux/Concavo: biconcave cross-section; Something in between (1/2 or =BE hollow).

BLADES
Round point/Rundkopf: the point is rounded. Square point/Gradkopf: the point is square, forming a spike at the transition between point and cutting edge. Something in-between: Franzkopf Blade sizes (width) are: 3/8", 4/8", 5/8", 6/8", 7/8".

PRINCIPLES OF STRAIGHT RAZOR GEOMETRY
In the beginning straight razor blades were wedge shaped, the sides of the blade were straight lines, not concave (hollow). These blades shaved as perfect as the later hollow ground blades, if sharp, but had some disadvantages. First, they were heavy, compromising balance. Second, due to the wedge shape, the sides of the blade above the cutting edge instead of the edge itself, primarily touched the hone surface while honing. Third, after years of daily use, the regular honing caused rapid thickening of the edge width, thus making sharpening increasingly difficult and time consuming. Therefore, the next step was to clear the blade sides from the hone surface, in order to reduce weight, and to use the back as a guide for keeping the correct angle of the cutting edge, with which it forms one plane. This was done by grinding away metal between the cutting edge and the back with a wheel, resulting in a biconcave, hollow ground blade (at first without a ridge), combining an extremely thin blade with a very small cutting angle under 15 degrees. The disadvantage of this second step without a ridge was, that the ultra thin biconcave blades were unstable in the direction perpendicular to the plane of the blade. Therefore the third step was to create a ridge parallel to the cutting edge, dividing the blade in two parts: an upper part between back and ridge, and a lower part between ridge and cutting edge. The ridge is created by grinding the raw triangular basic form with successive different wheel diameters: the greater wheel for the part between ridge and back; the smaller wheel for the part between ridge and cutting edge.

The result consists of two hollow grind blade divisions separated by a thicker ridge, with hardly visible smooth transitions. The closer the ridge is to the back, the more the type goes from =BC to 1/1 hollow grind. The ridge presents stability and vibrations which add to cutting performance, which can be identified by transversely rubbing the thumb carefully over the edge, causing a ringing sound. The ridge is not that thick that it touches the hone, of course, and you can hardly see or feel it. The three parts (two concave parts separated by the ridge) are identified under a sharp light: the ridge diverges the light and is therefore identified as a linear shadow, parallel to the edge. The full hollow grind blades have the ridge at about a little below halfway between back and edge; lower grades of hollow ground just behind the edge, or somewhat further to the middle of the blade. A full (1/1) hollow ground blade keeps a very thin edge even after a lifetime of honing and stropping; a =BC ground blade edge rapidly thickens after years of honing, because of the proximity of the ridge to the edge.

RECOGNIZING
A double stabilizing piece (two vertical rims between tang and blade) implies 1/1 (full-) hollow ground, but some full hollow ground blades have no stabilizing pieces at all, but instead a smooth transition between blade and tang. Theoretically, you might confuse a single stabilization piece (which indicates less than 1/1 hollow ground) with these types of full hollow ground blades but there is a difference which can be seen with the full hollow ground Bismarck or Renaissance (DOVO) types of blades. The Bismarck shows a smooth transition between blade and tang, lacking any rim, and therefore is easily identified as full hollow ground. The Renaissance has one rim, which might indicate either less than 1/1 hollow ground

(cheaper) or full hollow; the fact that the rim is ot confined to the blade, but runs through into the tang, identifies this type as full hollow ground. If the transition from tang to blade shows one vertical rim that is confined to the blade and exactly vertical, it must be a flat ground or =BD-3/4 hollow.

PURPOSE OF TYPES
In general: the higher the grade of hollow grinding, the easier it is for the customer to keep the blade in perfect condition with relative ease (stropping and sometimes honing). Flat ground: in general for heavy and less perfect shave, for contour shaving, hospitals, etc. Full hollow ground for thorough and precise shaving. 3/8", 4/8": hospitals, eyebrows, and a very soft beard. 3/8" and 4/8" are mostly flat or half-hollow- ground. 4/8", 5/8": preferred for daily shaving, especially 5/8" which has more torsion resistance. For persons with very large hands and/or handicap the 6/8" and 7/8" were originally designed, but they also have very good torsion resistance and shaving characteristics.

BLADES MATERIALS
Blades are made of normal steel with a carbon-content of 0.6% or more, and of rust-resistant chromium-steel. Carbon steel is easier to sharpen but more brittle, liable to chipping off and staining. Stain-resistant steel takes longer honing, but the results hold longer, and the edge is less vulnerable.

HANDLES MATERIALS
Ambonia, Celluloid, Bone, Pakkawood, Mother of pearl, Ebony, Buffalo horn, Plastic. Celluloid is flammable and spontaneous inflammation has been described at higher natural temperatures. Even now, celluloid production is associated with extreme safety measures. Buffalo Horn can deform after some time, increasing the risk of edge damage when closing the knife: it has form memory, but for the wrong form. Mother of pearl is brittle, which might result in cracks soon. Plastic is very thin and easy to deform, causing increased risk that the edge touches the handle while closing it. The hardwood handles do not rot because they are highly impregnated with resins; the weight gives ideal balance. Bone is stable as well. Both pakkawood, snakewood, and bone are have the best material properties for intensive use.

HONING AND GRINDING
You can learn to sharpen any knife on a stone, and if you have experience, or use the right sharpening system you will get very good results. The principle of grinding any knife is restoring the gross shape of a blade according to it's grind-type (hollow, flat, or transitions); this is mostly done with machines such as grinding wheels. Grinding does not sharpen a knife.

The principle of honing is to create a good cutting edge angle and the blade part directly adjacent to it, the relief. The relief is created by honing with a secondary angle on a stone until a burr appears, and subsequently create the primary angle (this is the cutting angle, which is somewhat greater than the secondary angle, but both under 25 degrees) to remove the burr. The relief/secondary/primary angle principle makes the blade more resistant for less than delicate use.

The primary/secondary angle/relief principle does not hold for straight razors. The cutting edge of about 15 degrees (primary angle) is followed by a biconcave (hollow) part, and a ridge, respectively. This unity keeps the edge ultra thin during its life despite honing and stropping, and on the other hand supplies the blade with enough rigidity because of the ridge. Also, the absence of a relief with a secondary angle, clears the cutting edge while honing with the back resting on the hone surface. The back serves as a guide which conserves the primary cutting angle under all circumstances and the same applies to the strop. This implies that the primary/secondary angle story is not valid for =BC, 1/2, =BE and 1/1 hollow ground straight razors. In fact, the ridge and the hollow grind part between ridge and edge, are some kind of relief-substitute, which is not a compromise at all, because it's function is delicate without requiring any force.

It has been unclear why and when a blade should be re-hollow ground. The German book referenced below, however, states that only extreme abuse is a reason to restore the architecture with a grinder. As

this results in blade reduction, the back must be reduced accordingly to preserve the correct cutting angle. If you care for the blade as a 'good house-father' self-honing and stropping is enough. If the damage is nothing more than just touching the edge with your nail, causing a little local flattening of the edge, then honing will be sufficient. On the other hand, when dropping causes a defect in the edge you won't get rid of it with honing, and this needs repare with a hollow grinder.

At DOVO, the grinding is done by moving the blade between two wheels. After the grinding, they machine-hone on the side of a moving wheel, in the direction (!) of the edge and not towards it, untill a burr appears. This is done with the cutting angle, so with the back just not (to prevent damage to the back) touching the wheel. On a second, finer, honing wheel the burr is removed, again with the same cutting angle determined by the back. Water is used on both wheels. Then the honing starts, on a very fine Belgian Old Rock and succesively on a even finer one, called Escher waterstone, type Rasierstube. The Old Rock is also called Belgian oil stone, but Dovo uses water. Razor Edge Systems suggests that any liquid, whether oil or water, creates a sludge with the metal and stone particles, rounding off the edge, thus causing blunting. This contradicts with the observation of German smiths, that a hone performs best when you create that sludge before starting, by rubbing the hone with a small stone and water. They state that ' especially when the sludge is present, the edge will be extremely polished and sharp'.

The last hone in the process, the Escher waterstone, even comes with a separate rubbing stone, and a manual how to create the sludge. At DOVO, honing is done with circular movements, manually, with impressive speed. First on one side, and then the other, so not alternating. The result is obvious: the hones wear off irregularly, causing a concave surface. Then they need a new hone. The reason for doing so is time-efficiency. For the consumer who wants the hone to serve for an unlimited period of time, the following alternating linear method is better. Lay the blade completely flat on the stone and push it forward into the direction of the cutting edge, and slightly diagonally in the horizontal plane over the stone (the reason for that is to hone the complete cutting edge). Then turn the knife over the back without lifting it from the stone. Never turn over the edge, this will blunt the blade. Then repeat into the other direction; repeat this process about 10 or 20 times.

Some things are critical in order to get a sharp edge: the first is to ensure that the razor lays completely flat, so that the edge and the back touch the stone surface. This is to keep the exact required angle of the edge. The second is, that the razor remains flat on the stone during the movement. If you don't have experience, you will only succeed doing so if you hone extremely slow, and study the process carefully. Only then you will be able to observe that during the stroke, the edge or the back will tend to lift from the stone a millimeter on one side which you must correct, which is only possible when honing extremely slowly. Here, speed does not add up to better results, not even in experienced hands.This will give excellent results even for beginners (I tried it that way, with already immediate perfect results).
The third is, that you don't press on the blade while honing: the weight of the blade is enough. Pressing will deform the angle. Hones should be large, because the surface is then completely in contact with the cutting edge; any damage or irregularities to the sides of the stone are then less critical because you will not reach them.

You notice that when you carefully make a cutting movement over your thumbnail; any knick feels like a sudden obstacle. It also gets damaged when you strop the wrong way, with the wrong paste, or when the razor gets into contact with aggressive agents (see below). The honing should be done only about once in one or two months in the following way: you probably preferrably should have a large Belgian oil stone, completely smooth. Put some drops of oil (Buck's, or sewing machine oil, but no alimentary oil - no reason specified) on it. Cleaning the stone: Advises vary from cleaning with a cloth to cleaning with steel wool, or not cleaning at all. The ratio of cleaning is in removing metal particles out of the stone's pores, according to razor Edge Systems. Uncleaned stones kept their quality in their experiments, however. This still has to be cleared.

STROPPING, GENERAL
When you shave, the cutting edge gets somewhat misaligned microscopically. It looks like microserrations, bending aside irregularly. If you put the knife away, the cutting edge stretches ('grows') spontaneously within 24 hours. After 3 or 4 shaves it should be aligned a little bit again and therefore you must strop. If you do that correctly, and treat the blade well, you only need to hone once every month or even year, and never send it in fro grinding. You need the right strop and the right paste. The game is, to postpone honing as long as possible, and to use the strop almost exclusively. Any other reports are due to wrong care. Stropping occurs at the exact same angle as with honing. Stropping serves to polish the edge and to align any remaining mislalignment of the microserrations. This implies that a hanging strop should be kept under tension to keep the angle correct. The former reports that the hanging-through would be beneficial for the edge, is incorrect, but may be this belief comes from experiences with plain blades (not hollow), as this will create a situation comparable with the primary/secondary angle/ relief story that applies to most knives. The hollow ground razor blade has only one single angle that should be conserved during all succesive procedures, ranging from grinding to stropping. Hanging thorugh will just round off the edge you carefully created before.

STROP TYPES
Leather only Leather on one side and canvas on the other side: this is preferred above leather only because you first pre-sharpen on the canvas. Leather glued on wood and adjustable strops: for the un-experienced and for flat-ground blades. If you let a hanging strop hang through while stropping, you will blunt the knife. This may be a reason for the unexperienced to buy this latter type of strop. Juchten-leather: is more durable, and of better quality than Rind-leather. Pre-pasted strops, either with red, or with green paste. The strop should be reserved exclusively for the paste it has been treated with. Hanging strops with leather handles are more expensive but more comfortable than those with metal clamps.

PASTE TYPES
White: chalk-containing paste for on the canvas-side of the strop ('Hanfseite') It is difficult to find it, it is in no catalog but it is available for ordering. Yellow: paste for on the leather side to make it sticky and souple, it is just fat. Red and Green: coarse and very coarse abrasives. They have never been designed for use with straight razors originally and should and need NOT be used. They will spoil the edge and are illogical, because any razor hone will be finer. When stropping is not enough effective, just hone. Black: a polishing paste almost without cutting effect, just as the white and yellow ones. You don't need this for sharpening results, but might want it to get a shine. However, the silicate in the leather strop will have an even better polishing effect, when used with the yellow inert paste, so black paste has no place here as well.

WHICH STROP WITH WHICH PASTE
Probably the best combination is a hanging strop with a leather handle, Juchten-Leder on one side and canvas ('Hanf') on the opposite side, 450 mm long and 50 mm broad, with yellow paste on the leather side, and white paste on the canvas side. My personal experience with the leather-on-wood and adjustable strops is, that they don't give contact with the knife over their complete surface because it is somewaht convex, and that the hanging strops permit more control in that respect. Pasting the strop is only necessary two or three times a year with 3 cm of paste. You need only a few drops, and then spread with the palm of your hand. It makes the strop somewhat sticky ('Zug'), which is better for the alignment of the cutting edge. You will need a little tube for some years. Some manufacturers say that you can use either yellow or white both on leather and on canvas, but as the manuals differ from that opinion, I do not yet rely on that information, as chalk is more coarse than fat alone. I would advise not to use the white paste on the leather, only on the canvas.

STROPPING TECHNIQUE

Strop only before shaving, after the edge could 'grow' for at least 24 hours, but preferably 48 hours. If you strop the edge immediately after shaving, the misaligned microserrations behave as a burr, which will break off and penetrate the leather, which will turn into sandpaper. If you honed just before stropping, clean the blade with water and soap and dry with a cloth without touching the edge; this too is to prevent small metal parts to get stuck into the strop, which can damage the edge while stropping. Keep the tang between index finger and thumb and keep those fingers stretched. Place the blade flat on the strop. In case of a hanging strop, keep it under tension continuously, because if you let it hang through, you will create a round and therefore blunt cutting edge. Pull the blade over the strop away from the cutting edge and in the direction of the back. If you strop the other way in the direction of the edge (which is the case during honing), you will cut through the strop, or you will cause knicks which will damage the razor. In the course of this stroke, take care that the complete cutting edge has touched the strop. The pressure of the knife on the strop should not exceed the weight of the knife, to prevent rounding and thus blunting the cutting edge. At the end of the stroke, keep the blade in contact with the strop, and swing the blade 180 degrees, causing it to rotate around the back; the back should keep in contact with the strop. Then do a stroke in the other direction. Repeat this about 10-60 times. Do this procedure first on the canvas (about 10 times) next on the leather.

This communication reflects some personal conclusions of a private person; I have no commercial or private binding with any of the above mentioned firms.

-- Arthur Boon