

BOOTS and SHOES

THEIR MAKING  
MANUFACTURE and SELLING  
VOLUME VI

BALL  
ROLLINSON





## ***COMPILERS NOTES***

The following is a faithful digitalization of volume VI of F.Y. Golding's *BOOTS AND SHOES*.

I have taken the liberty of using this original blank page to comment on the material within. Insofar as I was able, I have endeavoured to preserve the original appearance, formatting, kerning, spacing, etc., of the original work. Sometime, however, this was simply not possible. The typefaces used in the original text are not precisely duplicated in any of the font sets to which I have access. Then too, the spacing between chapter, paragraph, and graphic elements is often inconsistent within the original text. Sometimes a chapter heading will be set an inch and a quarter below the edge of the page, sometime an inch and a half. Sometimes, using a given set of paragraph styles, a page would format almost to the exact word at the bottom margin...and then the next page would run over or come up substantially short. Nevertheless, I have preserved page numbers and the contents of those pages to fairly close extent.

Beyond that, nothing has been added or subtracted from the text as it is contained in the original volumes in my possession. It is my fervent hope that this work will help to preserve the Trade and make this invaluable resource more accessible to those students seeking to learn from the past masters.

DWFII

BOOTS AND SHOES  
THEIR MAKING  
MANUFACTURING AND SELLING

VOLUME VI

---

BESPOKE BOOTMAKING

J. BALL

HANDSEWN BOOTMAKING

H. ROLLINSON, A.B.S.I.

# BOOTS AND SHOES

## THEIR MAKING MANUFACTURE AND SELLING

### A WORK IN EIGHT VOLUMES

DEALING WITH PATTERN CUTTING AND MAKING,  
UPPER LEATHERS AND CLICKING, CLOSING THE UPPER, MATERIALS  
FOR BOTTOMING, CUTTING AND PREPARATION,  
LASTING AND MAKING, ATTACHING, FINISHING, SHOE ROOM  
WORK, FACTORY ORGANIZATION, ANATOMY, MEASURING AND  
OBTAINING DATA FROM THE FOOT, THE  
MAKING OF LASTS, THE FITTING UP OF LASTS,  
BESPOKE BOOKMAKING, HANDSEWN  
BOOTMAKING, RETAILING AND  
SALESMANSHIP

EDITED BY F. Y. GOLDING. F.B.S.I.

FOR OVER THIRTY-EIGHT YEARS PRINCIPAL OF THE  
CORDWAINERS' TECHNICAL COLLEGE, LONDON

*VOLUME VI*

THE NEW ERA PUBLISHING CO., LTD.  
12 & 14 NEWTON STREET, HOLBORN, LONDON, W.C.2

PRINTED IN GREAT BRITAIN  
AT THE PITMAN PRESS, BATH



# CONTENTS

## SECTION XI BESPOKE BOOTMAKING

CHAP.	PAGE
PREFACE . . . . .	3
I. REASONS FOR BESPOKE . . . . .	5
II. VARIOUS METHODS EMPLOYED IN MAKING BESPOKE FOOTWEAR . . . . .	7
III. TYPES OF BESPOKE BUSINESSES . . . . .	14
IV. BUSINESS PREMISES . . . . .	17
V. INTERVIEWING CUSTOMERS . . . . .	25
VI. SELECTION AND ADAPTATION OF LAST . . . . .	37
VII. CUTTING PATTERN FOR THE UPPERS . . . . .	43
VIII. SELECTION OF UPPER MATERIALS . . . . .	48
IX. CLOSING OF UPPERS . . . . .	53
X. SELECTION AND CUTTING OF BOTTOM STUFF	56
XI. TRYING ON BEFORE PUTTING IN WELT . . . . .	62
XII. MAKING OR BOTTOMING . . . . .	64
XIII. FINISHING OFF . . . . .	82
XIV. SURGICAL WORK . . . . .	84
XV. BOOK-KEEPING AND COSTING . . . . .	112
XVI. TAKING IMPRESSIONS AND CASTS. . . . .	116
XVII. TRADE BOARD RATES AND CONDITIONS	118

SECTION XII  
HANDSEWN BOOTMAKING

CHAP.	PAGE
PREFACE . . . . .	127
I. THE PREPARATION OF BOTTOM- STUFF .	129
II. ADHESIVES . . . . .	140
III. INNERSOLE PREPARATION . . . . .	142
IV. LASTING . . . . .	159
V. WELT SEAM CONSTRUCTION . . . . .	178
VI. BOTTOM-FILLING . . . . .	193
VII. FITTING THE SOLES, ROUNDING AND CHAN- NELLING . . . . .	197
VIII. STITCHING . . . . .	205
IX. HEEL BUILDING . . . . .	211
X. FINISHING . . . . .	219
INDEX . . . . .	231

SECTION XI  
**BESPOKE BOOTMAKING**

BY  
J. BALL

*Founder and Life Governing Director of the firm of  
Joseph Ball, Ltd., Bespoke and Surgical Bootmakers'  
Plymouth*



## PREFACE

THE art and craft of bootmaking is a heritage passed to us from very early days. Foot coverings, in the form of sandals in a variety of types, were first worn by our remote ancestors to secure for their feet protection from rocks, thorns, etc. Since the first crude covering for the feet, bootmaking has passed through many stages before the reaching of present day types. The history of the craft makes instructive and interesting reading to the student who makes an intensive study of the subject.

During the last half century or so, bespoke work has largely given place to ready-made footwear. This is found in a large variety of types, shapes, and fittings. Sixty years ago, practically all footwear, even in shoe factories, was hand-made. The bespoke continued to be hand-sewn by the old craftsman, who sometimes travelled about the country with his kit to undertake special work. He was very proud of his kit, too, for he had adapted much of it to his own peculiar needs, based, of course, on his experience in performing the particular class of work he specialized in making. Some also specialized and were clever at kit-cutting, and were proud to do this for their workmates.

The demand for bespoke has also decreased since the days when the bootmaker had his definite clientele, who came to him at almost regular intervals. There is still, however, a demand for the businesses which cater for specially high-grade work, abnormalities, and surgical work. One conducting such a business needs to be keen, intelligent,

observant, and ever ready to learn. In every walk of life it truly may be said that “Trifles make perfection, but perfection is no trifle.” Very especially does this apply to the bespoke bootmaker of to-day.

Opportunity is here taken of acknowledging with thanks the loan of illustrations by Messrs. A.E. Evans & Son and Messrs. George Barnsley & Sons.

1935

J. BALL

## SECTION XI

# BESPOKE BOOTMAKING

### CHAPTER I

#### REASONS FOR BESPOKE

USUALLY, when a person orders to be made or bespeaks a thing—in our case footwear—it is for some specific reason, such as the following—

(a) As foot comfort is particularly required a boot needs to be specially made. This may be because of some abnormality or deformity, such as a very short, thick foot; a long, narrow foot; or other variation from the normal foot which the ordinary retailer cannot provide.

(b) What is generally known as Surgical Footwear may be required. This is a comprehensive term, covering the varying modifications of the ordinary type of footwear, from the boot made with the simple wedge, metatarsal bar, etc., to those made with either an inside or an outside cork so as to compensate for a shortened limb. As surgical footwear also would be classed footwear for the club foot, high instep or equinus, stiff joint, hammer toe, or any other condition of the foot necessitating some special fitting beyond that obtained in average Work.

(c) Riding or hunting footwear may be required, in which complete foot comfort is an absolute necessity, whether for business or pleasure.

(d) The customer wishes to be shod with the very best, and have the right fit; therefore the footwear must be specially made by the bespoke bootmaker who actually measures his foot.

Briefly stated, long work in its varying forms, sports-footwear for skating, golfing, fishing, climbing, bowling, etc., offers a wide field for the bespoke bootmaker, as such footwear needs to be accurately fitted to the individual to give satisfaction.

Although the number of these latter customers is diminishing, there is still, and always will be, a demand for bespoke. This is very evident in the West End of London and other large centres of population, where high-class businesses thrive on the patronage of those who seek perfection of style and finish, but are not necessarily troubled by abnormalities.



## CHAPTER II

### **VARIOUS METHODS EMPLOYED IN MAKING BESPOKE FOOTWEAR**

IN the making of bespoke footwear there are many different methods more or less generally followed, viz.—Hand-sewn welted; hand-sewn pumps (or “Turns” as they are sometimes called); combination; Blake or machine-sewn; riveted; pegged; stuck-up, cemented or solutioned; and veldtschoen.

#### HAND-SEWN WELTED

The hand-sewn method is the oldest and the one most usually employed in making walking, riding, and sports footwear for bespoke. The innersole, which is the foundation of the boot or shoe, after being wetted and scraped, is fixed to the last, then blocked, rounded, feathered, and holed. The uppers, after being lasted, are secured to the innersole, by means of a thread passing through small holes made in it, and then carried through the upper, and to the edge of a strip of specially prepared leather, called the welt. A strong seam is thus formed, compacting into a tight waterproof joint the innersole, the upper, and the welt. This seam may go all around the insole, but, if as is usual, it finishes at the corners of the heel, the seat may be either sewn or braced to secure the upper to the innersole around the heel. The welt thus sewn in forms a solid foundation, to which the outer sole is attached.

(See Fig. 1.)

After sewing in the welt the following operations are performed—

The welt is beaten up and rounded; the seam is trimmed, the waist piece is put in, and the bottom between the welt is filled in.

The materials for the sole and the heel having been previously prepared, the sole is tacked on, rounded, channelled, stitched, and the seats sewn or pegged, and the heel built.

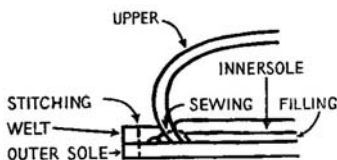


FIG. 1. HAND-SEWN WELTED

The boot is then in a condition for final paring, after which it is put "into rasp." This is the first stage of the finishing, which is completed by hammering down the bottom, filing the top-piece, rasping, scraping,

sandpapering, "putting into colour," and then finally burnishing or finishing.

#### HAND-SEWN PUMPS OR TURNS

The hand-sewn pump method of making footwear is used for ladies' light shoes and gents' dancing shoes. The sole is prepared somewhat as is the innersole for welted work. The stiffening and puff are then fitted; the upper is lasted inside out, the right upper to the left last and *vice versa*, the upper then being attached direct to the sole by a seam, similar to the welt-seam, but without a welt.

The shoe is sewn either all round, or left open from the corners of the heel. The seam is then trimmed. The sewing is sometimes so done that the lining is left loose in order that it may overlap the seam and lie flat on the inner side of the sole after the shoe has been turned. (See Fig. 2.)

It is very important that the leather used for the soles should be firm, yet mellow, because in the turning process the upper must not be overstrained. After the last has been drawn, the heel is first turned, and the entire shoe is then turned right side out. The lining must be made perfectly smooth before the fixing of the sock and filling, which, of course, should be shaped, fleshed, skived, and pasted ready for insertion. A perfect fit of the filling is essential, and especially so in the heel, if it is to be made with a sewn seat.

The other foot last opposite to that the shoe was made upon is now inserted, and the bottom is then rubbed down. The heel

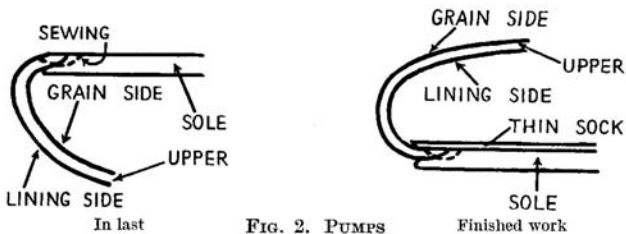


FIG. 2. PUMPS

is made firm and secure, by the method, selected as being the most suitable for the type of shoe being made.

For a French heel, or Louis heel, the sole is brought up in the front of the breast. The heel end of the sole is split allowing the grain side to cover the breast of the heel, and the flesh part to go under the heel.

When the latter is done, the heel is fixed from the inside before the last is put in, and then the grain side of the sole that has been split is fixed to the front of the heel, either by means of Latex solution, or by the use of some other satisfactory adhesive.

## COMBINATION

As the name suggests, this is a method by which the boots or shoes are made partly by hand, and partly by machine. This system was first introduced and used, by manufacturers when the machine sole sticher was perfected. The welts are hand-sown, and the soles were stitched on by machine, the remaining work being done by hand. It is quite common to-day to find bespoke work executed with only the lasting and the welt sewing done by hand, the remaining operations being carried out by machines. This substantially reduces labour costs, but a considerable turnover is necessary for this system to be economically adopted in an individual business.

## MACHINE-SEWN

By the machine-sewn method the upper is lasted and secured by tacks or staples to the innersole or braced instead.

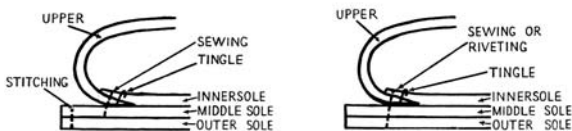


FIG. 3. MACHINE WORK

(Left) Sewn and stitched  
(Right) Sewn (or riveted)

The middle and outer soles, after being put in position, are “sewn direct” to it, the stitches appearing inside the boots. (See Fig. 3.) Alternatively, the middle may be sewn separately to the innersole, thus leaving a projecting edge to form an imitation welt. In both cases the outer sole is channelled and the sewing performed by the Blake machine. (See Fig. 3 (right).)

This latter method is often used in factories, when special adaptations of their regular models are ordered by bespoke

makers. The cost of this process is considerably less than that of making hand-sewn.

#### RIVETED

The riveting method of bootmaking is very rarely employed, in bespoke work, but sometimes finds acceptance in districts where strong, heavy boots are required. These are made on iron or plated wood lasts. After having been lasted, the soles and middles are fastened direct to the innersole by means of rivets, the points of which turn on the innersole. (See Fig. 3.)

#### PEGGED

This method is used mainly for sea boots for fishermen. The upper is usually strongly braced to the innersole, and the bottom is secured direct to it by wooden pegs. When making boots in this manner, it is essential that the peg awl shall be of the right length and size for the gauge of the pegs to be used, as these must get a secure hold on the innersole and fit snugly in the hole made. To ensure this, the innersole must be firm and thick.

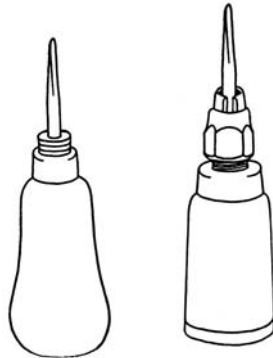


FIG. 4. OLD AND NEW TYPES OF PEG AWL HAFTS

Those who make this class of work adapt the peg awl to the substance of leather that is being used, by means of an adjustable haft, or by adding leather pieces to decrease the effective length of the awl. (See Fig. 4.) Much work of this sort was carried on in seaports years ago, but there is very little of it being done to-day.

## SOLUTIONED OR CEMENTED WORK

In the process of solutioning or cementing work, after securing the uppers to the innersole by any of the means used, namely, adhesive, bracing, tingling, (not recommended), or by sewing in a welt, the soles are attached to the partially-made boot by a reliable adhesive.

When the sole has been cut approximately to the shape and size required) there must follow the important operation of preparing the surfaces that are to be stuck together.

It should be borne in mind that a roughened virgin -surface has to be made) so that the leather will .absorb a good proportion of the adhesive used. If thoroughly done) there should be no difficulty in making a good union of the two surfaces, provided a really good adhesive is used. After the surfaces have been prepared by roughing with. a rasp, or other tool suitable for the purpose, the Latex if used is applied evenly to both surfaces and laid to dry. The adhesive may he applied with the fingers, or better still with a thin flat piece of wood tapered off to resemble a palette knife. The two surfaces are then joined together, particular care being taken not to have any air pockets. The boots or shoes may then either be put into a press, or hammered and rubbed down to fully secure the job. The heel should then be attached or built ready for finishing.

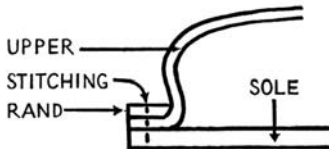


FIG. 5. VELDTSCHOEN

## VELDTSCHOEN

This is a method of bottoming which creates a very flexible boot or shoe. It is often not demanded of some bespoke bootmakers but, since they have to be prepared for all contingencies, it will not be out of place briefly to describe this method of making footwear.

As no innersole is used, there is a distinct difference between this and some other processes of making. In lasting, instead of bringing the upper over the bottom of the last, as is done in other methods here described, the sole is shaped and the upper then brought out from the last over the sole to its edge and then secured to the latter by means of stitches. A strip of leather is sometimes used on the top of the out-turned upper before the stitching is done. The seats may be either lasted in or stitched in. If lasted in, a piece of leather is slipped into the heel before the upper has been pulled over the last, and fastened around on similar lines to those employed in making the seat of a Blake-sewn boot. (See Fig. 5.)

In describing the different methods by which footwear may be made, the repetition of the details of those processes which are common, to all methods has been omitted. (See Sections V, VI, VII, and IX.)

### CHAPTER III

#### TYPES OF BESPOKE BUSINESSES

THERE is a great difference in the organization of the varying types of bespoke establishments. The quantity and varieties of work have a direct effect on the organization required, but however it may vary, some general system must needs be adopted by all.

The firm carrying on an exclusively high-class business would evolve a system different from the one executing general work. There are many establishments in the West End of London and also in the large provincial cities where the execution of bespoke orders is their exclusive work. They cater for a very high-class trade, and some of them send representatives great distances to take orders and measurements. Visits to the Continent and even to America by certain English firms are not unknown.

Another type of business which can be termed a general bespoke trade, is where only bespoke orders and the repairs of such work are carried on. The making of surgical footwear is usually undertaken by these firms. It is in the latter businesses that the proprietor usually comes into *direct* contact with his customers and takes the measurements and other particulars. Then either he himself or a reliable foreman executes or supervises the execution of the orders. This is what might be termed a personal business, the proprietor being usually a practical man in all branches of the trade: he is both salesman and producer.



There is also a type of business in which making is not usually undertaken, but occasional orders are executed with more or less success. The result is not always entirely satisfactory, as may be expected. The experience and resources at the command of the proprietor of such businesses are bound to be restricted, as the demand is small and a big outlay upon equipment and material is not warranted.

Another type of business is where the retailer undertakes to obtain specially made pairs from outside sources. These requirements are often only some modification of the lines he usually stocks. The order is sent to a manufacturer with necessary particulars often based upon stock lines. These particulars should be very explicit and show what variations from the stock model are required. Full particulars must be sent regarding material, such as whether the outside is to be glace kid, box calf, willow calf, zug, suede, or other leather; if the lining is to be of leather or drill ; also if there is to be a toecap or golosh ; and if the style is to be Derby, Balmoral, Oxford, bar, open tab, etc. Very important, too, are the length of foot; size of shoe required; measurements at the joint, instep, heel, ankle, and leg. If the order is for a boot, the height of the leg where the measurement is taken is necessary. An outline of the foot is also advisable, with indications made there on to show where any abnormal fitting is required, such as, for example, an enlarged joint, deformed toes, or any other detail that the person faking the order wishes to emphasize to the manufacturer.

In recent years, some boot and shoe manufacturers have organized a special department for the making of bespoke footwear; while other manufacturers cater exclusively for the bespoke trade and issue their own special forms for showing the particulars required by them. These firms, with the passing of the old-time craftsmen, will no doubt be of real service to establishments catering to bespoke orders who are unable to

secure locally the necessary skilled labour for execution of varied work.

## CHAPTER IV

### BUSINESS PREMISES

#### SHOP

THE arrangement of the premises in which a bespoke business is conducted may be subject to many variations. One may find anything from the tastefully furnished reception rooms, etc., of the very high-class establishments to an ordinary shop where orders and measurements are taken. A smart exterior and attractive display is of real value. The window should contain samples of the work done, and if long work is catered for, some should, of course, be included in the display. A crowded window is not inviting—just something to indicate the type of business catered for should suffice. Satisfaction given to customers automatically brings further orders, and much extra business may be gained by these personal connections.

Whatever the class of business conducted, it is essential that some arrangement should be made so that privacy may be obtained. In some instances when measuring certain oases, one room is used for interviewing and discussion only, while another is used for measurement and selection. In other oases, a cubicle is provided or a section of the shop is screened off. The arrangement, of course, depends on the size of the shop, and the type of business to be conducted.

In all arrangements a good system of lighting is necessary, and this can be made quite an attractive feature in the scheme of decoration. Comfortable seating accommodation and carpets and mats will be appreciated by the customer. A

counter or table and a desk and a fitting stool also are necessary. Samples and illustrations of footwear models and charts of feet are a great help when advising a customer as to style, etc. It is not out of place to display sundries such as polishes, laces, spurs, and foot appliances in the reception and measuring room. A selection of upper leathers, including reptile skins, proves an attraction and creates added interest, as customers like to see the materials before their footwear is made.

### WORKROOMS

Among the workrooms provided should be one for the foreman. Unless the premises are very large, it is here that he will cut the patterns and uppers and fit the lasts, and in all probability also cut out the bottom stuff for the maker. This room should be well lighted, both naturally and artificially. A bench should be installed to carry a sectional cutting board) and be so placed that there is ample room for the manipulation of the skins when cutting the uppers. Shelving for the accommodation of the skins in out is a necessity. Another bench also should be provided for fitting up the lasts. A separate room is to be preferred for dealing with the bottom stuff. In this room a firm strong bench is required. It is a great advantage to have fixed a carpenter's wooden-jawed vice, for use when cutting from large pieces of leather. A rack with divisions is an advantage for holding the rough leather in cut.

It is from this room that the work is given to the maker and to this room it is returned when made, to be prepared for delivery to the customer. A fixture to which an eyeletting machine is fixed is a further requirement, while a metal vice is also handy for many things the craftsman may be called upon to do.

The room or place for bulk-storing of leather should be in close proximity to the foreman's department. For upper leather the storage place must be dry, but for bottom stuff this condition is not so essential.

The general workrooms should be well lighted and ventilated and provide ample room for the worker to manipulate his threads when sewing and stitching. Where a large number of hand-sewn makers (or stitchmen as they are sometimes called), are working in one department, benches to accommodate four workers are usual. These should be secured to the floor, and have divisions on the top so that each man's grindery, tools, and kit may be kept separate from those of his fellow-workers.

A wooden tub or a glazed vessel is recommended for holding water in which the worker can wet his "set of stuff." The water should be kept clean. This tub requires occasional scrubbing. Some arrangement for heating the irons used in finishing is a further necessity. There are many types in existence, but one of proved worth is the Bunsen burner, which, by means of a cut-off, by-pass, and balance weight, only gives the heating flame when the burnishing irons are placed on the part provided for them. Sometimes a concave-convex roller also is provided in this room, but the older craftsman prefers to hammer his leather, and superior work his will be, too. A splitting machine is an adjunct by no means to be despised.

#### STORAGE OF LASTS

In a bespoke business the lasts are perhaps one of the greatest assets. The fitting of the foot depends mainly on the correct selection and adaptation of these. Therefore, once made, or fitted up, they should be carefully preserved. To this

J. Williams & Co., Ltd, Plymouth		Ref. F. 73
Name <i>Franco J. C. Day</i>		
Address <i>7 Bury Park Road, Teddington, Middlesex</i>		
Recommended by <i>Joseph Lawrence</i>		Reference <i>Barclay's Bank</i>
Date	Details of Order	Price
<i>2.3.29</i>	<i>Light plain Derby Boot, 25 each. Leathers being through, available to Feb., full 4 edge, heel 1 1/2" rubber sole</i>	<i>RS/E</i>
<i>3.4.29</i>	<i>Dark brown no-lace boot, heel slightly larger by toe part of Right</i>	<i>CS/E</i>
<i>6.4.29</i>	<i>Dark plain Over, straight cut, longer vamp, leathers. Some type as last pair of boots, but by the sole, 1/2" edge</i>	<i>RA-</i>

FIG. 6. INDEX CARD OR PAGE IN INDEXED LEDGER

end some *method* of storage should be decided upon. This will vary with the type and volume of business being done. In some cases, a place, even a whole room, is reserved entirely for this purpose. Each pair of lasts is given a number and hung on the correspondingly numbered peg on the rack, but better still, kept in boxes. An alphabetical register is kept, showing the name of the customer and the respective last reference number if hung up, or the box number if placed in boxes to keep them from dust and the changes of the atmosphere. (See also Section VIII.)

When boxes are used each pair of lasts can be kept together with the patterns for the uppers. The objection raised to boxes is that greater storage room is required, as it necessitates racks to accommodate the boxes in groups, in order that not more than three or four would have to be moved to reach the desired pair. If this system be followed the boxes may be numbered or arranged in alphabetical order, the number being recorded on a card index, or the letter in an alphabetical register.

In addition to the careful storage of lasts, there should be a reliable means of keeping records, which would show all the particulars of the first and succeeding orders. A card or a page in an indexed ledger as shown in Figs. 6 and 7 should meet this need. The main thing is to have a detailed record of every particular connected with each order so arranged that reference is easy and possible at any time. Whatever the amount of business done, let it be one pair or one hundred pairs a week, special lasts should be kept for each customer. This procedure should prevent some of the complaints so often heard that a subsequent pair is not so comfortable as a former one. The grievance is often entirely imaginary if the maker is the same, but by being acquainted with the fact that individual lasts are kept, the customer will be convinced of his error, and have a fuller assurance that his order is receiving specific attention.

MEASUREMENTS										F. 73
Date	Size	Joint	Instep	Heel	Ankle	Legat 7	Legat	Legat	Legat	
R	6	9 $\frac{1}{4}$	9 $\frac{3}{8}$	13 $\frac{3}{4}$	9	10	—	—	—	—
L	6 $\frac{1}{2}$	9 $\frac{1}{2}$	9 $\frac{1}{2}$	13 $\frac{3}{4}$	9	10 $\frac{1}{8}$	—	—	—	—

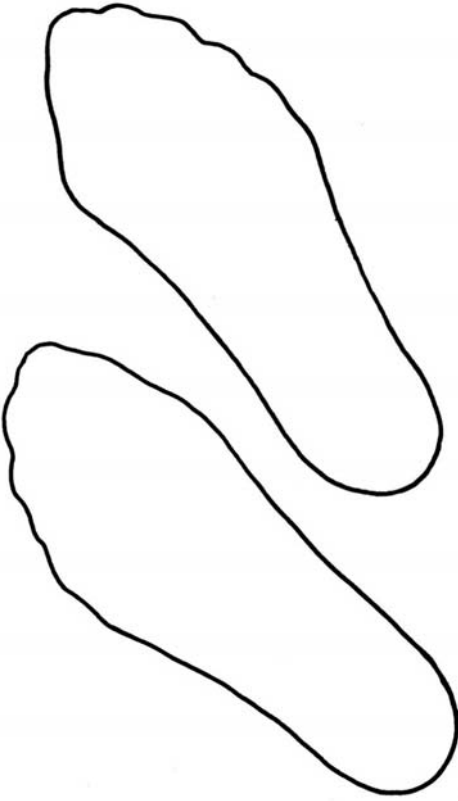
  


FIG. 7. INDEX CARD



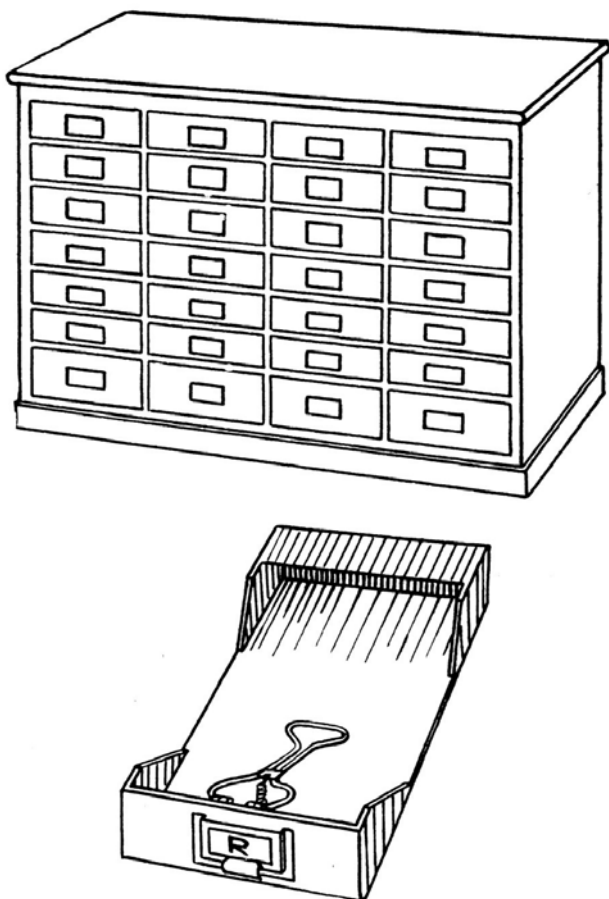


FIG. 8. FILING CABINET FOR PATTERNS, ETC.

Some may contend that this precaution is not necessary in all cases. Perhaps not, but it is undoubtedly the wisest course to adopt, thus ensuring that each pair, as far as size and shape are concerned, is a duplicate of the previous pair, or is merely modified to any special change which may have become necessary.

With regard to the patterns for uppers, there is not that important necessity of keeping all of them as there is in the case of the lasts, though in many of the badly deformed cases, and especially where allowances have to be made for cork to compensate for shortening, it is wise to adopt some means of keeping these patterns for future use.

This, as previously suggested, may be done by keeping them together with the lasts, or, preferably, if the amount of work done warrants it, in a light wood cabinet with drawers. (See Fig. 8.) These drawers should be arranged in rows and indexed, the size of the cabinet being determined by the accommodation required. It is advisable to have separate sections for gents' patterns and ladies' patterns, and a special one for cork work.

## CHAPTER V

### INTERVIEWING CUSTOMERS

THAT a bespoke business is a personal concern must be remembered, in all dealings with customers, prospective or actual. A courteous manner is essential at all times, and when interviewing a customer, one should endeavour to give a pleasant impression at once by the manner of the reception. In all probability, a dozen successive customers will require to be treated in as many different ways. Some may be jovial, others autocratic, while many will confine their remarks strictly to business. The salesman should be able to detect quickly these various characteristics and to adopt the method most likely to gain the customer's confidence.

Suppose that a customer for whom orders have previously been executed enters the establishment, and that his peculiar interests are known: he might well be greeted with some suitable reference to his hobby or daily pursuit. With some customers only the bare formalities of business would be wise. With other customers personal inquiries and remarks on the weather and current affairs will pave the way to the salesman's objective for the interview, namely, the service to the customer and the receipt of an order. A brief illustration may be advantageous.

A genial-looking customer enters the establishment. After a friendly greeting and inquiries as to his personal well-being and a few general remarks on non-controversial subjects, the conversation is directed to business by words such as, "And what may I have the pleasure of doing for you to-day. Sir?"

Then carefully all particulars as to any variation or modification of orders previously executed would be taken. Without allowing conversation to dwell on such matters, it is well to discover any point which did not give full satisfaction in a previous order. Thus its recurrence may be obviated.

By manner and attitude the impression should be given that the customer's order is valued, and that it is keenly desired to give him satisfaction. In concluding the interview, the customer should be conducted to the exit, the door being opened for him while wishing him good day.

Another client may come and say, "I have been recommended to you by Mrs. Jones, because I have such trouble with my feet. Can you guarantee to give me comfort?"

The obvious reply, "There should be no difficulty," is followed by making inquiries as to the trouble. The footwear is removed and the feet examined. By a few tactful questions and kindly comments it is possible to create the confidence so essential with a fresh customer. In some cases it is wise to adopt a firm manner, though, of course, this must not be domineering or autocratic. Often it will be found that the customer comes to ask advice as to the type of footwear necessary to suit the particular case, and is ready to act upon the prescription given. For this purpose a fairly wide knowledge of the anatomy and functioning of the foot, as well as the cause of some of the common sources of foot trouble, is a distinct advantage. (See Section XIII.) A working knowledge of anatomy is essential to the progressive man in the bespoke trade. It should then be reasonably easy to convince the customer intelligently that the particular type of footwear recommended will give the relief and correction desired.

## TAKING MEASUREMENTS AND PARTICULARS

Assuming that the interview has been so convincing that the customer has decided to place the order, and having also decided whether it is to be for boots or shoes, the next step is to ascertain the personal particulars, client's residence, and, if thought necessary, obtain a reference. Then naturally will follow the measuring of each foot. It is best to adopt a regular system in doing this so that everything is carried out in a given sequence. The operator will take the measurements, while a clerk, after clearly repeating the measurements to show he has correctly heard the numbers, hooks the figures and particulars as they are called out.

The length of each foot should be taken, first measuring the right then the left, and following the same procedure with joint, instep, heel, ankle, leg, etc. In taking the length of the foot with the size-stick, the sole of the foot should be placed firmly on the graduated rule, keeping the back of the heel pressed against the fixed perpendicular part and holding the great toe down. The sliding movable vertical portion should be gently brought into contact with the end of the great toe. The length of the foot may then be read on the graduated scale.

The English size-stick is the tool used for determining the length of the foot or the last. It consists of

1. A base,
2. Two uprights.

The base resembles an ordinary inch rule and is graduated on the under side in inches, and on the upper side in thirds and half-thirds of inches, starting zero at 4 in. from the fixed end, and indicating sizes and half sizes therefrom.

The two vertical attachments are each about  $2\frac{1}{2}$  in. in height.

in height. One is fixed, at the beginning of the base, and the other is capable of sliding, when manipulated by the operator, to determine the length of the foot, boot, shoe, or last. (See Fig. 9.)

Size 0 child's is at the 4 in. position, and the sizes run in consecutive numbers to 13. Then the numbers begin again at 1

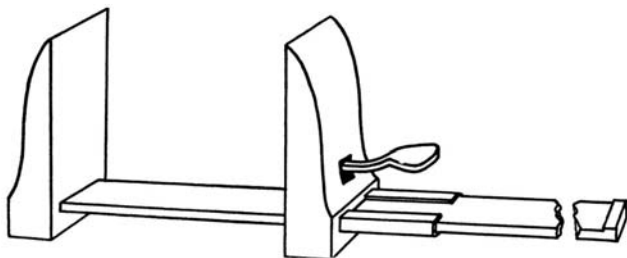


FIG. 9. SIZE-STICK

to complete the range of ladies' and gents' sizes.

With a more or less normal foot, the measurements are then taken as follows—

*Joint.* The tape is passed around the foot at the point of the great toe joint, or metatarsal phalangeal joint, keeping it as nearly as possible in one plane to take the measurement.

*Instep.* The size of the instep is ascertained by measuring the girth at the more or less prominent bone (first cuneiform) on the top of the instep.

*Heel.* The heel measurement is a very important one and is obtained by determining the girth of the foot in a plane through the point of the heel and neck or throat curve.

If boots are being made, further measurements are required, and according to the height of the boot, so one or more

measurements will be required, commencing with that at the ankle, which is the smallest part of the leg. Intermediate measurements, according to the height of the boot, are then made, at the same time noting the height of these from the ground. These measurements are obtained by taking the girth at positions indicated in Fig. 10.

There are other parts of the foot that it may be considered

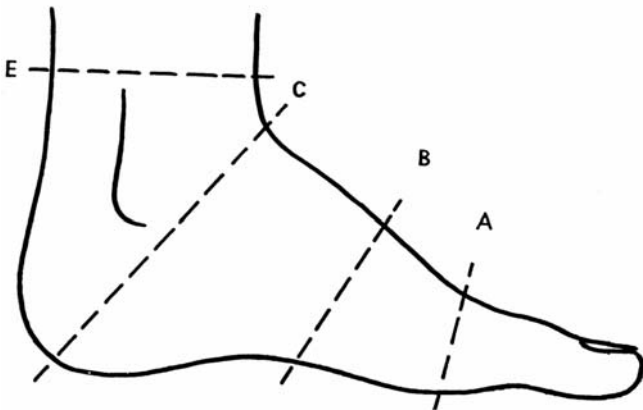


FIG. 10. DIAGRAM OF FOOT SHOWING USUAL PLACES OF MEASUREMENT

necessary to measure in some cases, as for example, the waist measure at a point between *A* and *B*, the high instep between *B* and *C*, and the long heel from *D* to *B*. (See Fig. 10.)

*Outline of Foot.* This must be very carefully taken, as it is an essential among the particulars necessary to ensure a good fit with comfort, and to decide upon the correct class of last to be used. It indicates the type of foot, namely, long narrow, short broad, or any modification of these.

For this purpose, select a stout piece of white paper, sufficient in size to receive the outline of both feet. This paper should be put on a smooth, firm base at floor level. Then the feet should be stood, one at a time, upon it. The outline of each foot is then traced, care being taken to keep the pencil upright. A thin, flat pencil is best, though not essential for this purpose. A device which may be well recommended to ensure that there is no deviation from the perpendicular position consists of a tracer, which is used in taking the outline. This is shown in Figs. 11 and 11A.

The tracer may be made from a piece of wood  $2\frac{1}{2}$  in. x  $1\frac{3}{4}$  in. x  $\frac{3}{4}$  in., with a hole drilled obliquely to take the pencil. The

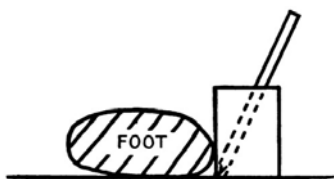


FIG. 11. DEVICE FOR TAKING  
CORRECT OUTLINES

point should come out at the bottom edge nearest the foot. The base of this block slides on the paper with the point of the pencil, the face above it being held close to the foot while moving around it. This gives the correct outline of the foot,

when it is firmly planted on the ground.

On the outline thus obtained should then be indicated such particulars as the position of corns or callouses, the position of the metatarsal arch, a thick and stiff big toe joint, or any other irregularity or special feature it may be considered advisable or necessary to note. The position used for taking the measures should also be indicated before the foot is moved.

For a foot deviating appreciably from the normal, such as, for example, acute club foot, it is wise to take a perpendicular outline of the foot when resting in its most comfortable position. This can be effected by placing a piece of paper on a firm rectangular backboard, and standing it on edge on the



ground by the side of the foot. The outline may then be taken for this elevation as is done for the plan of the foot. In very hard cases, it would be also wise to take a cast of the foot. There are indexed and numbered books to be bought for record purposes, and special forms also are frequently compiled to

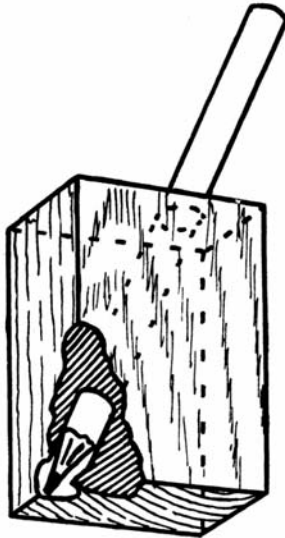


FIG. 11A

suit each business. The method best suited to the ideas of the user should be adopted. As long as a clear indication of all necessary particulars is made, there is no need for one to be tied to any particular set method.

#### TYPES OF FOOTWEAR SUITABLE

Having taken the measurements and examined the feet, the salesman is now able to advise the type and

style of footwear most suitable for the customer. In dealing with this aspect of the subject, there are many factors to be considered.

(a) The kind of wear to be given, e.g. town, country, sports, promenade, general, etc. The suitability of one material over others, e.g. glace kid, box or willow calf for uppers; leather or drill for linings, etc.

(b) The style to be selected, e.g. balmoral, buttoned or Derby boots, Oxford bar, or court pattern shoes, long or short vamp, no seam at joint, with or without toecaps, etc.

(c) The thickness of the sole, the width of the welt, the height of the heel, the shape of the toe, and any other feature that requires to be embodied in the making of the boot or shoe, namely, very long heel, high or long stiffening, special support for waist, metatarsal bars, wedges, etc.

Generally speaking, it is better to advise a fairly light upper with a firm sole. Glace kid is procurable in many substances and meets the requirements for many cases, though, of course, it would be unsuitable for some purposes, especially sports wear. Suede is a material that may be recommended in certain cases only. Although patent leather is not to be recommended for general wear, on account of the closing of the pores of the leather by the enamel, if a customer persists in having this, a fair amount of satisfaction may be had from the very supple patent calf or kid which is obtainable to-day. For sports purposes and hard wear, stout box, or willow calf and Zug or similar skins or hides can be used.

#### LININGS

Drill lining from the hygienic standpoint is better than leather, though if the foot has any pronounced deformity such as enlarged joint, hammer or contracted toe, a light tough

leather lining is sometimes used. The latter can be lasted so as to be moulded to the deformed foot without creases forming, as is sometimes the case with drill linings. For a hot foot, the drill lining is better, as a good drill gives better wear than a light leather, and also allows of freer ventilation. Whatever the lining chosen, whether leather or drill, it should be the best obtainable. How often does one see a good boot spoiled by the use of a poor lining!

#### STYLES OF FOOTWEAR

The styles of footwear vary greatly to-day. Not long ago, there were very few models other than laced boots, Derby, balmoral, and elastic sides with slight modifications or combinations, such as mock-button and mock-lace in both boots and shoes, though the varying heights of ladies' boots added something of change to the limited range.

Although there has not been any very great change in the style of gents' footwear, the variety of ladies' has increased enormously, very especially with the introduction of perforations, out-outs, and insertions of various reptile skins into the strap and court shoes of to-day.

The bespoke bootmaker has to be prepared to supply any of the styles used in the ready-made trade, and adapt them to meet the special requirements of the case with which he is dealing. For a person with a troublesome foot, a plain boot or shoe with as little ornament as possible is best. With regard to toecaps, it is mainly a matter of personal taste for the customer to decide: the comfort of the boot or shoe should not be affected by this addition, if the last is correctly fitted. (See Section VIII.)

## BOTTOMS

Firm bottoms are invariably advisable, though this does not necessarily mean a thick sole, as firmness can be obtained by



FIG. 12. DIAGRAM SHOWING DIFFERENT SLANTS  
AT TIPS OF TOES

using a stout innersole and having the edge of the outer sole bevelled.

In the matter of welts, a close welt is usual for a lady's light shoe, and a close  $\frac{1}{4}$ -in welt for a sports or heavy walking shoe. With gents' footwear the welt

will be in accordance with the type of boot or shoe—wide for heavy boots, and less wide for medium and light wear.

In considering the height of heel to recommend, one is somewhat in the hands of the customer, and whereas there is not usually much difficulty in this respect with gentlemen, most ladies are rather fastidious as to the height of heel, and often choose the heel not suitable for the feet. From an anatomical standpoint, very few people require the heel more than  $1\frac{3}{8}$  in. high, and any heel much beyond this height must disturb the balance of the body. Whatever the height demanded, the last for the making of the footwear must be selected or adapted to carry that height.

The width of the toe, of course, should depend on the type of foot. On some feet the tips of the toes run from the end of the great toe in a gradual slant back to the little toe. Others are fairly straight across. (See Fig. 12.)

It is obvious that a foot of the former type could wear a narrow-toed shoe with comfort, whereas the latter requires a broad toe. If, however, the customer insists on a narrow toe, then extra length is required to prevent the crushing of the foot or the overlapping of the toes. This is a matter where personal wishes must be considered and carried out; but give the length necessary to ensure the toes assuming a natural position in walking, while at the same time gratifying the customer's desire as to the appearance of the shoe.

Other considerations are any deviation from the normal, namely, weaknesses of the arch requiring supports, long heel, wedges, metatarsal bars, etc. For two reasons, a long stiffener for a weak arch is preferable to the arched innersole. Firstly, a firmer support is given when the stiffening is sewn in with the seam to the joint and it is not so likely to give way as are the arched innersoles. Secondly, the possibility of the edge of the blocked innersole hurting the side of the foot is obviated.

Whenever, however, it is necessary to give support to the arch of the foot, a good steel shank spring should be used.

In addition to this support it may be necessary to elongate

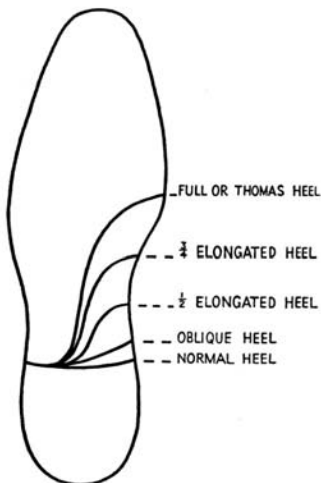


FIG. 13. TYPES OF HEELS

the heel. The degree of support required may be effected by modifying the heel in the manner illustrated in Fig. 13.

Whenever a high stiffening is used, it should be very carefully fitted to obtain the desired effect. It is very important that some of the grain of the material used should be very carefully skived, so that no sharp line of demarcation is observable through the upper when made.

## CHAPTER VI

### SELECTION AND ADAPTATION OF LAST

To obtain a correct and comfortable fit, it is essential that a suitable and accurately shaped last be produced. This may be a specially made last or one may be adapted from a stock last. When deciding upon the last to be used, several features demand consideration, chief among which are—

(*a*) Height of heel to be worn. (*b*) Length from heel to big toe joint, (*c*) Type of footwear to be made, namely, boot, shoe, slipper, or riding boot. (*d*) Width of toe.

If the bespoke bootmaker has in stock no lasts that can be adapted, usually he will send to a last-maker to have them especially made. When sending particulars to the last maker he should be very careful to point out his special requirements, embodying the features mentioned above, and, in addition, to state the length and the size of the lasts required. (See Section II.)

If allowance has to be made for depression of the metatarsal arch, prominent bone on the instep, special fittings of the joint or big toe nail, this should be mentioned, and if cork is to be used the amount both for the heel and the joint should be stated. It would also be essential to send an outline of the feet. Owing to the high cost of making special lasts, this course is not often followed, except in extreme abnormal cases, or with the very high-class trade where cost is more or less immaterial, or the customer is paying for his own lasts.

It is astonishing how a stock last can be adapted to

meet most of the requirements of the bespoke bootmaker. A boot last can be adapted for a shoe by hollowing it behind the instep, so that the quarters fit snugly under the ankle and around the heel, and adding a piece of material, properly shaped, underneath the outside waist. The length may be increased by additions at the toe, heel, or both. If too long, reductions may be made to the last at the toe, heel, or both. By adding pieces of leather, enlarged joints, contracted toes, corns, depressed great toe, stiff toe joint, or callouses on the bottoms can be accommodated. The piece of leather used to increase the length by the heel is called a "heel pin." The origin of the term is somewhat obscure. At the toe it is called a "toe pin." The piece running along the side is sometimes called a "stocking." A "fitting" is the piece of leather used to increase the size of the last, and goes from the instep through to the toe. This fitting can be modified to cover only the front part of the last, and is called a "shove." If over the instep only it is called an "instep piece." (See also Section VIII.)

#### TYPES OF LASTS

These can be classified in two groups, (*a*) boot, (*b*) shoe, with modifications according to the type of boot or shoe to be made.

A boot last is full around the back part and under the ankle. A specially high instep is used for long work.

A shoe last tapers upwards from the seat and is thinner under the ankle and heel and made fuller on the outside waist near the bottom. The purpose of this is to prevent sagging of the quarter of the shoe on the foot.

The last for court shoes would be even thinner around the instep, ankle, and heel, than one used for a laced shoe. The front at the bottom of the instep



where the edge of the vamp comes should be fuller to prevent binding on the foot. (See also Section II.)

#### PITCH AND SPRING

These are terms used in relation to lasts.

Pitch determines the height of heel a last will carry to give correct balance to the boot or shoe when made.

Spring is the amount of *curve* from the joint to the point of the toe, and whereas a light flexible shoe requires very little, the stouter and stiffer the sole the greater the amount of spring.

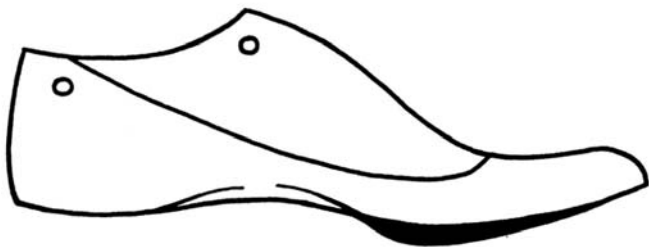


FIG. 14. NORMAL LAST ALTERED TO GIVE EXTRA SPRING

It follows, therefore, that, in the selection and adaptation of the lasts, these features will be determining factors.

Having selected the type of last most suitable to the customer's requirements, the last-fitter would then proceed to adapt it to meet the particular case with which he is dealing. The most vital point in the selection or adaptation of the last is the pitch. The first point to be considered is whether or not the pitch is to be altered. It may be increased by one of two methods: (a) By taking off some of the last at the back of the heel and waist. (b) By adding a piece of leather or some other material to the front of the last from the joint forward. The reverse of these alterations would decrease the pitch.

The spring can be increased by adding a piece of leather or other material to the bottom of the last from the joint and tapering it off at the toe. Fig. 14.

#### ALTERING LASTS

In the making of any alterations to lasts, the material to be used should be moulded and fixed to become really a part of the last. For this purpose, leather of varying substances is used, having first been wetted, so that it can be moulded. It is then attached to the last by means of tangles, rivets, or pegs, but whatever means of fastening are used, they must be driven well into the last, so that there is no possibility of their working out in the process of making the boot.

A piece fastened on to provide accommodation for an enlarged joint must lie, in most cases, on both portions of the last. It is advisable that nails holding this piece should be driven both into the block and into the main portion of the last, but not near the edges of these parts, as it will be necessary to make a cut through this additional piece, coincident with the junction of the last and the block. This cut will provide for part of the piece coming away with the block, which is drawn first so as to render the more easy the drawing of the last with the other part of the fitting. (See Fig. 15.) Through fittings and "shoves" should in all cases be attached to the block, so that they come away with it and allow the remainder of the block to be more easily drawn.

In adapting a last for a stiff big-toe joint, and the consequent dropping of the phalange of the great toe, a piece of leather should be attached to the last for the accommodation of the drop. It is also necessary in order to provide a comfortable bearing for the foot, to work off the last behind the point, where the piece of leather is added underneath the big toe joint.

There would, of course, in these cases, be an addition on the top of the joint, and this would be attached to the block so that it could be removed with the same when unlasting. This method of attaching pieces of leather or other material in adapting a last to secure the desired effect would apply equally to cases of callouses on the bottom, contracted toes, hammer toe, bursa at the back of the heel, etc., or thick big-toe nail.

Whenever there is a decided prominence added to the top or

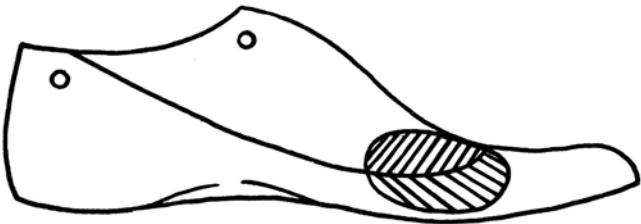


FIG. 15. BUNION PIECE IN TWO SECTIONS

side of the last by means of leather, it is advisable to cover it with a thin piece of lining leather. This can either be pasted on, or secured with any other adhesive.

It serves two purposes: (a) It prevents any possibility of the head of the nails cutting the lining, (b) It allows of the smoother exit of the last when being drawn. (For an alternative method of last fitting, see Section VIII.)

In determining the length of the last to be used, the points to consider are: (a) the type of foot, (b) the shape of the toe, and (c) the height, of the heel.

An allowance of three sizes longer than the length of the foot is necessary to ensure comfort. For the flat foot, an even greater allowance is advisable. There are cases where five sizes have been necessary, even for a medium width of toe.

For a very pointed toe an allowance is also required beyond the normal. It is usual, for the purpose of making a symmetrical-looking boot for a short thick foot to allow more than the additional length given to the normal foot. Whatever the amount of allowance given, it is vital that the length from heel to ball be correct. The additional length, if added, would be at the front of the last. In fitting up a last, the amount of allowances (in excess of the size) will depend largely on the type of foot, viz. : bony, fleshy, or normal. A normal foot should be made tight to size at the joint, and  $\frac{1}{8}$  in. to  $\frac{3}{16}$  in. smaller at the instep. A bony or thin foot should be  $\frac{1}{4}$  in. or more larger at the joint and  $\frac{1}{8}$  in. smaller at the instep. A fleshy foot should be  $\frac{1}{8}$  in. smaller at the joint and  $\frac{3}{16}$  in. to  $\frac{1}{4}$  in. smaller at the instep. For prominent painful joints  $\frac{1}{2}$  in. larger is sometimes advisable.

## CHAPTER VII

### CUTTING PATTERN FOR THE UPPERS

THERE are highly technical methods used. by the boot manufacturers in making patterns, and the student who is pursuing an intensive study should refer to Section I on that subject.

The object of the bespoke bootmaker who is cutting his own uppers, is to draft a pattern to suit the particular last he is going to use. Usually he has a set of patterns which may be called a standard set, and his stock patterns which he keeps for particular customers. For the purpose of cutting a particular pattern he can use either one of his standard set or an adaptation of one of his stock patterns.

Should neither of these be suitable, he would then cut a special pattern to meet the case he has in hand. Selecting a last and having the measurements at hand, he would cut out what may be called a foundation pattern, and then modify it in accordance with the size and style required, making additions or reductions as necessary. With a set of standard patterns, it is possible to meet many of the requirements for the more or less normal cases. Whenever these patterns are used as a guide, a particular pattern for each case should be made to ensure exact repetition for succeeding pairs. Finally, if neither of the above means meets the case, a pattern may be made in the following manner—

First, mark the last with a pencil to show a central line at the front and back. Cut a piece of paper roughly to the shape of the last. Mitre the heel, waist, and front in the manner shown in Fig. 16. Fix this roughly-shaped. paper to the last with drawing

pins or other means, approximating the back or heel part to the line on the back of the last. Mould it to the last by drawing each mitre tightly to the lines on the last, then mark the mitres with a pencil.

A mould or cast is thereby produced from which a pattern can be drafted. In cutting a pattern for a boot or shoe which is to be made with an inside cork, this mitred method is a most satisfactory way of ensuring that the upper fits the last and the

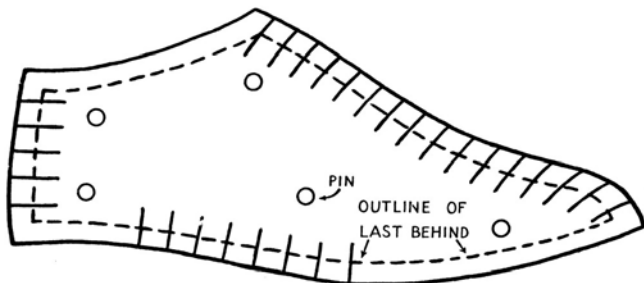


FIG. 13. FORME FOR DRAFTING PATTERN

cork correctly. If the mould has been taken only from the inside of the last, an allowance in drafting the pattern for the fuller outside joint must be made.

#### ALLOWANCES

It should, of course, be understood in drafting the pattern, that it must be larger than the last for which it is being made.

Allowances must be made on each edge for the seams and all heading or turning-in. The extra amount required for lasting will depend on the type of boot to be made, and the kind of material being used, ranging from  $\frac{1}{4}$  in. to  $\frac{1}{2}$  in. for

gentlemen's work according to whether light or heavy leathers are to be used.

The allowance will vary also in accordance with the method to be employed in the making, whether handsewn, hand-sewn pumps, or machine-sewn, etc.

The materials to be used for the uppers will affect the allowances to be made, from three to four sizes longer than the last for ladies' hand-sewn, and from three-and-a-half to five sizes longer than the last for gentlemen's hand-sewn, with an increase of one size in length if they are to be made machine-sewn instead of hand-sewn.

For hand-lasting it is not wise to have the uppers too long, as they must be well drawn over the toe if the correct set on the last and foot is to be obtained. As a matter of fact, some of the older craftsmen made a point of always "back-lasting." This is done by the back of the upper being raised to the top of the last at the heel. The toe is then lasted and the back of the upper drawn down and lasted in around the heel, thus ensuring that all stretch is taken out from toe to heel.

In determining the design of the pattern the bespoke bootmaker must be influenced by the wishes of his customer and the type of foot he is fitting.

#### LENGTH OF FRONT OR VAMP

Most boots and shoes are cut with a vamp the length of which must be made so that the boot may be put on or taken off with ease. This is especially important for a person with a stiff great toe, for which a short vamp is advisable. This should be cut with a narrower throat than the ordinary vamp to prevent the overlapping edge from coming on the top of the joint which is usually very prominent and sensitive. (See Fig. 17.) Whatever the length of the front the aim

should be to give a symmetrical and balanced appearance to the finished boot or shoe.

If a toecap is used, the front is usually longer than it would be, were it to be left plain. Good proportioning for the length of the vamp is secured by making it one-third of the length of the pattern in use. If a straight toecap is used, the length of this may be approximately two-thirds of the length of the vamp.

A design sometimes used for feet with enlarged or

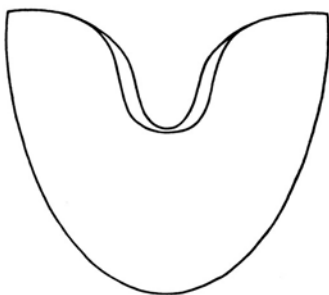


FIG. 17. VAMP, SHOWING NARROW AND NORMAL THROAT

prominent joints has the inside quarter and vamp cut in one piece, with a row of stitching on the inner side to balance the wing of the vamp on the outer side.

For some feet, especially arthritic cases, the front must be very short. This can be obtained either by a very short vamp; or, by a seam over the toe; or, again, by having the quarters cut long enough to open to a toecap which may be either straight or pointed. It must be borne in mind, in cutting any pattern, that the pitch of the last has a decided effect, especially in the case of boots. The greater the pitch, the more the top of the leg will drop back from the top of the heel upwards, and conversely for one with very little pitch such as is used for a flat foot, One might elaborate very much on this subject, but



sufficient has been indicated to meet the requirements of the bespoke bootmaker, who is advised to refer to Section I for further details.

## CHAPTER VIII

### SELECTION OF UPPER MATERIALS

LEATHER in the form of skins and hides is the material most often used in the making of uppers, though various fabrics are occasionally employed in the making of ladies' fancy footwear. All skins, of whatever size, have common features. They are neither regular in shape nor uniform in texture. Hides are skins from the larger animals. When cut down the backbone from tail to neck in the process of manufacture they are termed sides.

For our purpose, we will classify upper leathers as light, medium, and heavy, that is, ranging from the small glace kids to the heavy hides. Those in general use by the bespoke bootmaker for the outsides of uppers are glace kids, suede skins of various colours, reptile skins, box calf, willow calf of varying shades, wax calf, crup, enamelled leathers, and hides in black and brown. There are also various russet calfs, persians, and goat skins used either alone, or in conjunction with drill, for linings.

#### SIZES OF SKINS

Glace kids run from as little as  $1\frac{1}{2}$  to 5 or 6 sq. ft., but the larger ones are usually very coarse. For very fine work a skin from 21 to 3 sq. ft. is good, though this size is not always economical in cutting. If one can get the desired fineness and texture, a skin of about 4 to  $4\frac{1}{2}$  sq. ft. is the most economical.

#### BOX AND WILLOW CALF, ETC.

Box and willow calf skins can be procured in sizes varying from 6 to 18 sq. ft., but the bespoke bootmaker seldom uses any sizes exceeding 14 sq. ft. For ladies' light work requiring

box calf, a skin from 6 to 9 sq. ft. is acceptable, and for gents' from 10 to 14 sq. ft. The larger the area of a skin, the stouter and coarser the texture may be. Wax calf is usually bought by the pound, as distinct from the other skins mentioned, which are bought by the square foot. If the bespoke bootmaker is cutting the boot uppers from crup, he generally uses "butts," though he may buy his vamps and goloshes ready cut.

With the exception of the grain-hide used for fishermen's boots, hides are usually chrome-tanned, and are a very fine leather for shooting boots and other heavy footwear. There are several on the market with particular trade names, two of which have proved their high merit and may be confidently recommended, viz. ; Zug and Beva. Enamelled or patent leather can be procured in kids, calf, and sides, but the bespoke bootmaker seldom uses sides. For suppleness the enamelled leathers of to-day are decidedly more adaptable than those used in days gone by.

Reptile skins, of which there is great variety, from the small lizard to the large snake or crocodile, are skins that the bespoke bootmaker is off-times called upon to adapt and use to-day. These may be used alone for the uppers of footwear, but are sometimes used for trimmings or parts such as goloshes, straps, and insertions. Unless one is making a fair quantity of this work, the smaller reptile skins are not economical in use.

It might be wise at this juncture briefly to define a skin for reference purposes. All skins, with the exception of some reptiles, have a more or less clearly defined mark along the centre. This indicates the position of the backbone and may be taken as a central line of the skin from the tail to the neck of the animal.

It is along this line that large skins are usually cut in the process of manufacture into two, termed, sides, and the latter

are generally sold in pairs. A skin comprises the whole of the covering of the animal while a side is only half of the skin. It should be noted, however, that hides are usually prepared from large animals. Occasionally one may buy, especially for linings, small skins that are divided into sides.

For cutting purpose, a skin may be divided roughly into sections, the butt, the back, the neck, and the belly. Each of these parts of the skin varies in texture, and therefore in cutting a skin this fact must be borne in mind so as to get the vamps of the boot or shoe out of the part of the skin most suitable to take the strain of making and of the wear the boot or shoe will receive during its use. The vamps or goloshes should be cut from the butt of the skin (that part of the boot having most strain in walking), and the quarters, legs, and toecaps from the back, neck, and belly, the toecap being cut from a very fine tight part of the back. The remaining part of the skin, which is usually termed " offal," can be used for tongues, inside facings, back leathers, etc.

Lining skins should be light yet not stiff. There are a large variety of skins, ranging from russet calf to light persians, that can be used for this purpose. When hides are used for the outsides, the lining is not always brought over the ankle, but comprises what is called a counter and a vamp lining.

A word here may not be out of place with regard to the woven material used for linings. This should be the best procurable, though not necessarily thick. Whatever kind is used it must be capable of standing the strain of lasting and give good wear. According to the quantity being purchased, so the price of this material varies.

## CUTTING THE UPPERS

The ideal bench for the worker who is cutting the uppers should be situated so as to allow him ample room to manipulate his skin with ease in any position. The one-piece lime cutting board of the olden days is rarely used by the modern clicker or cutter, the sectional cutting board having entirely superseded this type as being much more satisfactory. The ideal method of keeping this board in condition is to scrape and oil it at regular intervals. Whereas the clicker in the factory pays great attention to this necessary operation, in the majority of instances, the bespoke bootmaker does not give the same attention to his cutting board. Frequently the bench on which this is placed is used for other purposes besides the cutting of leather.

The cutter should have at least two knives, one a little stiffer than the other for the purpose of cutting drill linings and stout material. These must have a keen edge and be fairly pointed. A weight is required for holding the paper patterns on the leather as it is cut. A fine awl for pricking, a size-stick, and a shoemakers' tape measure also are necessary.

Before attempting to place the patterns and cut the uppers the cutter should examine the skin to detect and avoid flaws and flesh cuts. The quality and selection of skins used by the bespoke bootmaker are of the finest, and are usually fairly free from defects. A good clicker or cutter is a valuable asset to a business where much cutting is being done, as the material on which he works is fairly expensive and if he is not highly skilled, great waste may occur.

Having placed the pattern on the part of the skin which he thinks is best suited to the part of the boot he is cutting, with a fairly quick motion he makes a

clean cut around the pattern with his knife, removing thereby the pieces or shape from the skin without any jagged edges.

For economy the bootmaker buys his drill lining in a piece of 40 to 80 yd. It is customary for him to unroll, say, 12 yd. of this, and re-roll it folded in *four* thicknesses, so that four pieces are cut at one time. This is the number required to form a pair of *boot* linings. The bespoke bootmaker should only fold the material *double*, as he frequently uses the same piece for both vamp linings and boot linings. So often does he find a variation between the size of the right and the left boot that it is an advantage not to have the material folded in four. The linings for shoes should be so cut that the heel seam does not coincide with the seam in the outside quarter. This is achieved by having the outside quarter-lining from a quarter to half an inch longer than the inside quarter-lining. This will bring the lining seam slightly on the inner side of the centre line of the shoe instead of having it centrally at the back. The cutting of both patterns and uppers calls for exceptional skill on the part of the clicker, and especially is this so in the case of the complicated cut-outs, which are in vogue to-day. In summing up, the cutter has to be not only an expert manipulator of the tools he uses, but also a competent judge of skins in order to make a wise selection. He must know the use of the different parts of a skin and the suitability of certain sections for particular requirements. It is, therefore, a decided advantage for him to possess a general knowledge of the trade in all its departments. (See also Section III.)

## CHAPTER IX

### CLOSING OF UPPERS

BRIEFLY described, this process consists of the holding together, by seams and overlaps, of the pieces cut out by the clicker. These when joined together form what is generally known as the upper. The cutter will be careful, of course, to indicate the positions where a vamp or quarter or any other portion is to overlap. All edges to be beaded or overlapped will be skived so as to taper off at the edge. This is necessary to allow of easy turning-in in the case of heading, and to prevent any possible chance of ridges where there are underedges or overlaps being placed together. Where seams are to be formed, the edges will also be skived, but not very thinly. One has to bear in mind there will be a certain strain on seams such as are usual in the sides of a golosh.

In the old days, all the skiving was done by hand. To-day, there are very satisfactory machines used for this purpose. In bespoke work, a keen edged flat knife is used for the purpose of skiving, and the material or section to be skived is placed on a perfectly smooth, hard surface, usually a piece of marble. A piece of plate glass embedded in a wooden frame also makes a very satisfactory skiving block. The edges of the material to be skived are tapered away by the drawing of the blade of the knife in an oblique plane towards the operator.

Closing may be divided into two sections, fitting and machining. The fitter assembles the parts ready for the machinist to stitch. There are many ways of

treating the edges of a boot or shoe, three of which are most often adopted by the bespoke bootmaker—

(a) For light and medium work, turning in, in which the edge is skived and turned in and the lining trimmed off after it has been stitched, (b) For very heavy or stout work, heading is put between the lining and the quarter and brought flush to the edges of these, (c) For extra stout work, the parts of the upper are left rawedged. This, as the term indicates, means that the lining and the edge of the upper are flush, with no turnings.

The usual practice followed by the closer is for the machinist to stitch the backs of the linings, and then put in the back leather facing and top bands. The legs are then stitched to the lining, and the front seam of the lining is closed. The golosh, after being seamed at the back and having the toecap stitched on (if one is used), is fitted on to the legs, bringing the edge of golosh or overlapping to the markings made for the purpose. Care must be taken merely to cover the prick marks, otherwise an alteration in the size follows. A part of the closer's tools and equipment consists of what are called blocks of varying sizes, and these are used when fixing the golosh in position. In the old days the fitter used as an adhesive rye flour paste, but to-day various improved adhesives are used. These are more satisfactory and certainly much more hygienic, as no decomposition takes place in them as it did in the rye flour paste.

A number of different types of closing machines, some of a very complicated nature, are used by the boot manufacturer, but a flat machine and a cylinder golosh machine, meet the majority of the requirements of the bespoke bootmaker who is doing his own closing. Any perforation that may be desired is done either by the cutter or by the closer in the making of bespoke uppers.



## TRADE CLOSERS

There must be very few bespoke bootmakers to-day who have a sufficient volume of work passing through the establishment to warrant their setting up and maintaining a closing department in connection with their business. In some provincial towns the absence of labour, essential to the successful working of such a department, presents considerable difficulty. There are, however, "trade closers" whose special work is the closing of all types of uppers for the bespoke bootmaker, and as previously stated unless there is a considerable volume of business passing through, they provide the best way for the bespoke bootmaker to get his uppers closed in a satisfactory manner. Whenever uppers are sent to the trade closer, definite and clear instructions must be given to indicate any special features in the closing of the particular pair, such as turned in, beaded, raw-edged, etc. It should be noted here that, in certain cases, the outer sides of uppers should not be stitched through the lining, in order that the stiffening may be carried forward. This applies especially where there is a vamp, the wing of which is generally stitched through the lining. A boot having a golosh and a high stiffening or a deep cork is another instance where the lining would be left free, that is, the outsides should not be stitched through on to the linings. (See also Section IV.)

## CHAPTER X

### SELECTION AND CUTTING OF BOTTOM STUFF

IN considering the material to use for the bottom stuff, one must be guided to a very great extent by the method by which the boots are to be made.

While certain good mixed tannages may be suitable for the soles when machine methods are used in securing the sole to the welt or middle, a long process oak bark tannage is preferable when the boots are to be made hand-sewn.

In the old days, when each district had its own lanyard, there was no question of the methods by which the leather was produced. In recent years, however, a very large proportion of these small tanneries have ceased to exist. It is, however, possible to get leather that is tanned by the long process if one is prepared to pay the price for it.

In speaking of oak bark-tanned leather, it does not follow that it should be 100 per cent oak bark. In fact, it is an advantage for most work if a small percentage of valonia is used in the finishing of the long process of tanned leather. This imparts to the leather a firmness and water-resisting quality that is an advantage. There is not a great quantity of really pure oak bark sole leather made to-day. With this brief description of different types of leather, it would not be out of place to consider the bottom stuff required for a general trade.

In buying the leather for bottom stuff, it does not follow that the highest priced leather is more expensive than the lower priced material. As a matter of fact, in the costing of the cut stuff it will be the cheaper on

account of its weighing lighter, and, therefore, giving a greater cutting area weight for weight. Also it will be found frequently more profitable to buy the No. I selections, rather than those of lower grades, on account of their freedom from flaws or blemishes.

The bottom stock to meet the requirements of a bespoke bootmaker doing a general trade usually consists of butts and bends of various weights—shoulders, with possibly some good bellies and cheeks and faces. All this should be of good tannage, with the butts and bends mainly bark-tanned, and perhaps some bends of a good mixed tannage to be used for top pieces and clump soles. The weight of butts to meet general purposes would range from 18 lb. to 28 lb. and the bends from 9 lb. to 14 lb., according to the class of trade catered for.

#### OUTER SOLES

If the boots are to be hand-sewn, the leather should be of close texture, firm but not hard, so that it will readily mould to shape. If the leather used for the outer soles is too harsh, it will strip the threads of wax when they are being stitched. If it is to be pumpmade, the leather would not need to be so firm as for a welted boot, but it must be supple in order to allow of easy turning. For machine-sewn and other methods of making boots, good mixed tannages can be used.

#### TOP PIECES

Top piece is the term used for the top layer of a heel and is the part that receives a great amount of friction in wear. The leather used for this purpose should, therefore, be tough and firm, yet not brittle, otherwise it would not hold the nails that are usually driven into the top piece.

## INNERSOLES

The innersole of the shoe is very important, and on the quality of the material used for this purpose will very largely depend the retention of the shape of the shoe in wear. It has to hold the stitches, and in the process of securing the upper there is a considerable amount of strain; therefore, the material used should be tough, mellow, and of good fibre. A bark-tanned shoulder is best for hand-sewn work, but for machinesewn and other methods of making, a firmer material could be used.

## STIFFENINGS

The stiffening is the piece of leather that is inserted between the outside of the upper and the lining, and forms a firm case around the heel. Combined with a good innersole the stiffening makes the essential fundamentals of the boot. While stiffenings should be firm, they should not be too thick or harsh or brittle, but of close texture in order that they may be easily moulded to the shape of the last on which the boot is to be made. These may be cut from shoulders, light fore-ends, firm bellies of good tannage, and even good cheeks and faces.

## PUFFS OR TOE CASING

Leather is the best material for this purpose. It must be firm and mellow and of good quality as the puffs have to be moulded to the shape of the toe. Light firm bellies or the light ends of cheeks are often used.

## WELTS

The substance of the welts would naturally depend on the type of footwear to be made, from light for ladies' work to stouter for gents' in accordance with

the weight and the type of boot. The welts should be cut from mellow, tough, flexible, good fibred leather capable of bearing the strain of the pulling of the stitch in making the seam and of carrying the outer sole to be stitched on to it. For this purpose a good bark-tanned and dressed shoulder is the best material.

#### SHANK OR WAIST PIECES

If leather is used for shank or waist pieces it should be firm and tough. The hand-sewn man frequently uses the piece that comes from between his pair of soles for this purpose, hammering it up to make it very solid, and securing it with wood pegs. To-day, there are a variety of moulded shanks of steel, wood, and fibrous compositions that are used in place of this. If a simple steel shank is used, it should be covered with a piece of leather after having been fastened to the innersole.

#### HEELS

A heel is built with a number of layers of leather nailed together to form the height of heel required. Naturally the number of layers required would depend on the substance of the leather used. For ladies' light shoes the "lifts," as they are termed, should be cut from a light-weight leather so that the back part of the shoe may not feel too heavy. Many heels to-day are composed mainly of fibre board, and a large number of ladies' shoes have wood heels to ensure their being light.

#### SIDE LININGS

The side linings are inserted between the outside of the upper and the lining and extend from the puff (which they slightly overlap), to the joints or stiffening. They should be of a suitable material in accordance with the type of boot being

made. The bespoke bootmaker frequently uses a piece of the leather from the offal of the skins, from which he has cut the uppers, and so avoids the risk of two differently tanned materials clashing.

#### BOTTOM FILLING

In the old days, the bespoke bootmaker frequently filled the bottom with pieces of leather stuck in with paste, but this

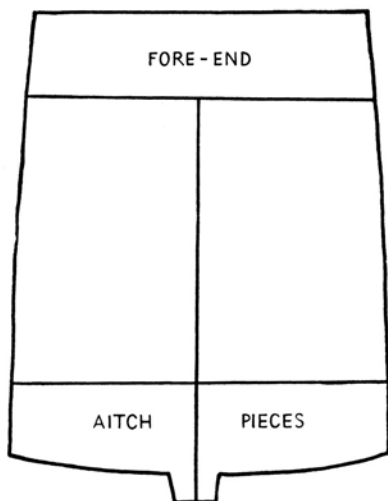


FIG. 18. DIVISION OF BUTT

undoubtedly accounted for the creaking of boots. To-day, specially prepared felt is frequently used for this purpose. Cork line socks have been used with advantage, but whatever is used, it should be firmly fixed to prevent movement during wear. The purpose of bottom filling is to make the bottom of the shoe perfectly level after the welt has been sewn and the seam trimmed. The flatter the welt is sewn in the less the bottom filling required.

## CUTTING MATERIAL

When one is cutting leather of any description, care and judgment are necessary for economy, as the material is expensive. Many in the bootmaking business have not made a proportionate profit because of using wasteful methods in cutting. It is essential for anyone who is cutting leather to have a keen appreciation of the purpose for which he is cutting the particular piece and of the wear and strain to which it will be subjected. It follows, therefore, that he should be well informed as to the different classes of leather he may be called upon to cut up and be able to discriminate in the selection of the parts of the butt or bend for particular purposes.

In the cutting of a butt, it is usual to cut the long soles with the heel part at the belly edge. The forepart would then come into a part of the butt that would give the wear required for this part of the boot. Of course, this is providing that the butt has been fairly closely rounded. Where a quantity of bespoke work is being made sometimes a range is cut from the fore-end for the whole length of the butt, the remaining part being used for top pieces and half soles. By another method, a butt may be divided into sections, firstly by taking off the fore-end and then by cutting down the backbone to the tail. A further division may be made by taking off the aitch pieces. (See Fig. 18.)

## CHAPTER XI

### TRYING ON BEFORE PUTTING IN WELT

IN all cases the object of the bespoke bootmaker is to give comfort combined with perfect fit, and whatever the type of foot he has to fit, his object is to make a boot that will look as nearly as possible like one worn on the normal foot. With this in view, it may be advisable in some cases to have what is termed a “try on/” though this should not be necessary in a general way.

This precaution is sometimes spoken of as “trying on in the welt.” This may be well in theory, but from a practical standpoint the idea is wrong, as an examination of the facts must obviously prove.

If a welt is sewn in it is impossible to make the boot larger. It would follow, therefore, that should this be found necessary the uppers would be rendered useless by the holes made in them in the process of sewing in the welt, and a new pair would have to be cut.

One of the following courses should be adopted if it is decided to have a “try on”—

(a) First fit the last (and cork if one is being used) and then cut a foundation pattern according to the size estimated. Next cut by this pattern from an inexpensive leather, not too thin, the shape to fit the last. Join this shape by a seam at the back and the front, the front being according to the depth of vamp decided upon. Block and round the innersole, which should be fairly firm, and then last the shape and fasten it to the innersole by an adhesive or bracing. Secure a piece of cork on the back to balance the forepart and withdraw the last. The “try on” is



now ready for the customer, and when tested will indicate what alterations, if any, are required.

(*b*) Follow the same method as in (*a*), but use the upper, which has been cut to size, instead of the leather shape, and secure the upper by *bracing* to the innersole, taking as little hold-fast as is possible, so that if it is necessary to increase the size of the last, this would be possible without having to cut a fresh pair of uppers.

Actual practice has proved that method (*a*) meets all the requirements of a “try on,” and is the one to be recommended. It involves extra time and material, but where it is necessary to follow this course, this matter should be taken into consideration when quoting a price to the customer.

The only types of feet for which the bespoke boot-maker would deem a “try on” necessary are the very bad cases of club feet, abnormal contracted heels, some very bad cases of enlarged joints, or other cases of outstanding abnormality.

## CHAPTER XII

### MAKING OR BOTTOMING

BY whatever method the boot is to be made, there are certain essentials to be observed and particular processes to be performed, namely, wetting and preparing the materials that are to be assembled. The bottom stuff, as it is called, having been assembled, is given to the workman, with details as to how the boot is to be made, namely, substance of edge, width of welt, height of heel, etc.

Hand-sewn is the type of boot with which the bespoke bootmaker is chiefly concerned. For this method, the workman, having removed the lasts, uppers, and side linings, puts the remainder of the stuff into the shop tub. After a reasonable time, he will remove from the tub all the stuff with the exception of the soles and top pieces. These being firmer and stouter will not have absorbed the water so readily and consequently will be allowed a longer time, while the other stuff is set aside to drain in order to relieve it of excess moisture. This process, which may be described as conditioning, makes the leather suitable to be blocked or moulded into the shape it is to take in the finished boot. It is a process that cannot be hurried, and for this reason the workman should, if possible, have two pairs in work at the same time, or, alternatively, wet his stuff and block the innersoles overnight.

#### FLESHING

With the leather being in the proper condition, the workman will proceed to flesh it by removing all rough material from

the flesh side of the leather. The amount will vary according to the type of leather being used and the part of the hide from which it is cut. The purpose of this operation is to leave the flesh side smooth, so that in the hammering or tapping, it will come up smooth and solid. If the flesh is not properly removed it acts somewhat as a buffer, and does not permit of the best result from the subsequent hammering. This operation is especially essential for the lifting to ensure a nicely finished heel.

#### SKIVING

Skiving should be very carefully done with a fairly broad, keen-edged knife, the object being to graduate the thickness of the material being inserted or overlapped. Stiffeners and puffs should have a fairly broad skive, and some of this should be taken from the grain side of the leather to avoid the edge showing through a light upper. The upper is sometimes found to be cut through by the edge of the stiffening and the puffs when these have not been skived from the grain side. With a hot foot this is especially likely to happen in wear; therefore, some part, at least, of the skive must be taken from the grain side of the stiffening and the puffs. It is better that side linings also should be skived from the grain side. Stiffenings should be skived all around if the seat is to be pegged; the bottom part, of course, should be less thinly skived than the top, otherwise the seat would be weakened where the stiffener turns over the last. With a sewn seat, however, very little skiving, if any, is necessary.

#### HAMMERING AND ROLLING

The purpose of hammering and rolling is to make the material solid and of even substance and, to some extent, to take the stretch out of the leather. If this be properly done, it will prevent the spreading of the

leather, and the boot will retain its shape better than if the hammering had not received due attention.

For this purpose, a flat-headed hammer and a smooth surfaced flat-iron are used. The days when the craftsman used a large pebble, called the lapstone, have long since passed.

To-day, some use the concavo-convex rollers for the purpose of taking the stretch out of the leather. To make the leather solid there is nothing, however, to beat the old method of hammering. Especially does this apply to the soles and top pieces, which obviously get the friction in walking.

There are two points that must be emphasized in regard to this process—

(a) Whether the leather is to be hammered or rolled, it must be in the right condition to get the best results ; that is, it must not have too little or too great an amount of moisture; in other words, it should be correctly tempered. Experience will teach one how to get the best result.

If the leather is too wet, it is impossible to hammer it up solid, and if too dry, there is the possibility of bruising or cracking the grain, and this would be detrimental to the wear and finish of the boot. In hammering, the leather must not be struck by heavy blows, otherwise it will be bruised. The hammer should be worked from the wrist, rather than from the elbow, and the tapping resulting from the wrist motion will have the desired effect upon the leather.

(b) If the leather is to be rolled, the pressure spring must be correctly adjusted, or the desired result, namely, the consolidation of the leather, will not be achieved.

#### MAKING THE SPLIT LIFTS

The split lifts are pieces of fairly solid leather about  $1\frac{1}{4}$  in. wide and sufficiently long for the size of the heel. They are split

lengthwise at an angle which gives the full substance one side, tapering off to a wafer at the other side for the whole length of the piece. This is afterwards cut to the length required. The two extremes are held together, placed on the flat iron, and hammered down.

The purpose of the split lift is to fit the shape that results after the sole has been fastened down at the seat.

### WELTS

The welts are the connecting links that hold the outer sole to the upper through the innersole. When one realizes that in a comparatively narrow piece of leather, there are two sets of stitches, each of which takes considerable strain, it will

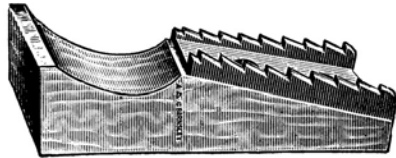


FIG. 19. BRASS WELT MILL

be fully appreciated that the leather used. must be tough and firm, yet flexible, and of fine grain, so that it will take the pull of the thread in the operations of sewing and stitching.

Welts of a width suitable for the type of boot being made are given to the workman and are prepared by him, with a tool called the welt runner or mill. (See Fig. 19.) This is usually made of a hard piece of wood, with a groove of metal on the top, with graduated notches on both sides. He places the welt in the groove, and, holding it firmly down, places the cutting edge of his knife into a pair of the notches, thus forming a bridge. Drawing the welt through this has the effect of reducing the welt to the required substance. Repeating this operation, but reversing both the welt and the knife, he removes any surface grease or dressing from the grain side.

The welt has also to be bevelled on the side that is to take the sewing stitches, so that it lies closely to the lasted upper without making a clumsy seam. This is done by holding the knife in a slanting position and drawing one of the grain edges of the welt against the blade, thus making a skive the whole length of the welt.

#### SHANK OR WAIST PIECES

Shank or waist pieces are used to reinforce the waist of the boot and are usually pieces of butt leather, hammered up very firmly and skived all round. One is put into the waist after the seam has been trimmed and is held in position by wood pegs. To prevent any possible chance of creaking, a very thin piece of felt should be put on the innersole before the shank piece is put in. This, with the filling covering it on the top, will obviate any friction between the innersole on the one hand and the sole on the other.

#### BLOCKING OF INNERSOLE

The innersole should first be lightly scraped on the grain side. The object of this is to remove the grain slightly, in order to give a velvety surface to the leather and to prevent the curling of the leather, as may happen in wear with a hot foot. The leather, being moist and the stretch having been taken out lengthwise, is fastened on to the bottom of the last by nails at the toe, the joint, and the heel. The nailing process is repeated at intervals all round the edge of the last, care being taken that all lateral stretch is taken out of the innersole before being nailed to the last, so that the leather is moulded to the shape of the bottom. When sufficiently dry, the nails on the edges are removed and the innersole closely rounded so as to conform to the shape of the last.

## FEATHERING THE INNERSOLE

It will be appreciated that the feathering of the innersole determines the ultimate shape of the boot. Therefore, great care must be taken in performing this operation. The position for the joints and the corners of the heel should first be marked with the back of the knife. The width of the feather will be determined by the type of boot being made—wide for a stout boot, and narrow for a light boot. If the feather be too wide, the boot will be undersewn, whereas the opposite result will follow if the feather be not wide enough. It is better to sew out full than to undersew. Further, if the feather be too wide, it is liable to curl up on the inner side in wear.

Having determined the width with a compass or a gauge, a mark is made round the innersole and a skive is taken off from the mark to the edge, curving in from the joint to the centre of the waist and out to the corner of the heel, in order to get the desired shape.

The depth of the channel will depend on the substance of the leather being used for the innersole, and great care must be exercised here, as too deep a channel would probably cause a breaking away of the innersole.

## HOLING THE INNERSOLE

Holes must be made in the innersole to prepare it for sewing. A bent awl should be used, the workman commencing on the inner side of the feather and being careful not to pierce the feathered edge or to sink the awl too deep, otherwise a gutter will be formed on the inside of the innersole and give discomfort to the wearer. These holes will go all round if the seat is to be sewn, but only to the corners of the heels if the seat is to be pegged. If the latter method be followed, the upper is braced over at the heel instead of being

sewn, the heel of the sole afterwards being fixed by wood pegs.

#### LASTING

Lasting is the first operation for joining together the pieces already described, to form what will be the finished boot. The stiffening is pasted and inserted between the outside of the upper and the lining, care being taken that the centre of the stiffening is in line with the heel seam of the upper. This may be held in position with a wax thread, passing through the bottom edge of the lining, stiffening, and outside, and tied in a knot. The puff, after being pasted, should be put between the lining and the vamp in all cases, whether the boot has a toecap or not. In cases where it has a cap, the skived edge of the puff should come in line with the stitching on the edge of the toecap.

The upper is now ready for lasting, and if it has been properly cut this operation presents no difficulty to the craftsman. The aim is to take all stretch from the upper and make it lie closely to the last, conforming to the shape without any wrinkles or creases. It is performed as follows.

From the powder dredge sprinkle a little French chalk over the lining of the upper and also a little on the front of the last. The purpose of this is to allow the last to slip out easily when the time comes for it to be withdrawn, and also to allow the upper to slide easily over the last when it is pulled with the pincers.

With the last on the lap, the upper is placed over it, with the heel seam of the upper in the centre at the back, slightly up from the bottom of the last, and the centre of the toe of the upper at the centre of the toe of the last. The toe of the upper is gripped with the pincers and pulled gently over the toe and a tack driven into the last at the centre to hold it in position. Two



more tacks are put in, one on either side of the central one, and then the front is examined and made perfectly straight. The side linings are inserted, the skived edges overlapping the puff, and the lasting is continued by putting in another tack on either side a little further back from those previously driven in near the toe. The upper is then pulled down at the heel and another tack driven into the last at the centre of the back. The lasting is completed by putting in tacks at frequent intervals all round to hold the upper in position on the last, preparatory to sewing.

Before putting in each tack the upper is pulled over, the lining and outside of the upper being pulled separately, and then together, to ensure that all stretch is taken from both lining and outside and to obviate any possibility of creases or folds in the lining when the boot is completed. The tacks must be closer together at the toe as this is the place where the fullness has to be worked out. Small puckers are made, and so many tacks driven in with little fulling between them, that when the lasting and sewing of the toe is completed, this will all have been so gradually worked out that there will be no external indication of puckers.

After the lasting is completed, the toe should be well beaten round so as to consolidate the puff. This process should be applied also round the heel to achieve the same result in the stiffening. After both boots have been lasted, they should be examined to see that the toes are of the same shape, any little deviation being remedied by tapping the toe with a hammer. The surplus upper is then trimmed off in preparation for the sewing in of the welt.

#### MAKING OF THREADS

The foundation of these is either *hemp* or *flax*. The former is generally used for sewing in welts and stitching

heavy work, while the latter is mainly used for stitching, though it is sometimes used for sewing very light work.

*Bristles.* These are very precious to-day and one looks back with envy to the days when good quality bristles could be purchased at about 2s. 6d. per ounce. To-day, it is necessary to pay £1 or more per ounce for bristles of a very ordinary selection.

*Wax.* Wax is used in the making of the thread. It may be purchased ready made, but a craftsman prefers to prepare it for himself. Wax is made by boiling together good pitch and resin to which tallow or oil is added. Boiling ensures that all the ingredients are thoroughly melted and mingled. A sample is taken from the wax pot and immersed in water to see that it is of the right consistency for the prevailing temperature, adding a little more oil if too brittle, or a little more resin if too soft. It is then "pulled" repeatedly to give it sufficient ductility, to render it capable of being drawn out into a long thread without breaking. It is then cut into pieces of a size convenient for use.

The process of making threads is as follows—

A craftsman usually keeps his hemp or flax in a box or tin, in the cover of which there is a hole through which the thread passes. He removes the lid, putting the ball into the tin. From the inside of the ball he gets the end and passes it through the hole in the cover. He then replaces the cover and proceeds with his arms outstretched to draw out a length of hemp or flax. This is termed a hand. He may take a hand and a half, two hands, and so on. When he has the desired length he breaks off the thread by rolling it on his knee and giving it a sharp pull. This gives a frayed end. He repeats the process until he has the number of strands required to make the size thread for sewing or stitching. Both ends now have fairly long, slender points. The thread is consolidated by waxing the strands and then rolling them together on the knee, after

which the whole thread is thoroughly waxed by pulling it through the wax, which is held in the hand. The thread is then placed over a hook and tightly twisted, making it into a strong wax cord. Some improvise a cotton reel to make a roller in place of a hook.

The craftsman next takes his rubbing leather and makes the thread smooth. The ends, or taws as they are called, taper to very fine points. To the ends the bristles are attached, and it is of great importance that these should be firmly secured. First, the taws are given an extra stroke with the wax. The bristle is laid against these, one at a time, of course, and rolled between finger and thumb. The taw forms a spiral on the bristle, combining the two and making a firm join. As an extra precaution a hole is made with the point of the awl a short way up from the end of the bristle, and the point of the bristle is passed through it and drawn tightly, thus giving extra security.

It will be understood that stronger thread is necessary for the sewing in of the welt than for the stitching on of the sole. This is accomplished by having more strands in the sewing thread than in that used for stitching.

#### SEWING OF THE WELT

The sewing of the welt is a vital operation; care and judgment must, therefore, be exercised. Care must be taken to give the correct tension or pull to make a tight waterproof seam, and judgment must be exercised to obviate pulling the stitch through the innersole. With a narrow toe where the stitches are fairly close together on the innersole, it is advisable to put a wax-end as a stay, where the stitches are to be made, and on to which they may be pulled, thus preventing the possibility of breaking the innersole at this point. For the purpose of sewing, the lasted boot is held in position on the knees with the stirrup,

the toe being in front. For a sewn seat, the heel is sewn first all round before commencing to put in the welt; for a braced and pegged seat, the bracing is done after the welt has been sewn in. With a slightly bent awl of a size suitable for the thread being used, commencing at the corner of the heel on the left side, the innersole is pierced, the awl coming out at the feather and through the lasted upper. In order that the point shall not come through too far, the awl is withdrawn after only the point has emerged, and the thread is put through the hole, being so drawn that there is an equal length on each side. The next hole is made and the threads passed through, one from each side forming the first stitch. This and all subsequent stitches should be locked by passing them across each other and pulling them well together with a steady strain, thus making a secure union of the upper and innersole.

This operation is continued all round the heel, leaving a row of stitches through which the heel will eventually be sewn. The same process of sewing is continued with the introduction, at the corner of the heel, of the welt, the bevelled edge of which is held closely to the upper and pierced with the awl. The thread passed through holds and draws the upper and the welt close to the feather. As the sewing proceeds, the lasting tacks are drawn, and the upper is gently beaten in before sewing. The last stitch of the sewing is firmly fastened off on the innersole.

As the sewing is proceeding, it is necessary occasionally to re-wax the thread, as, in drawing it through the hole, some of the wax is removed. The seam, formed by the sewing, is then carefully trimmed of all surplus material, leaving the bottom level. If the welt has been sewn in truly, a steady line all round will result: if the strain on the thread in sewing has been erratic or the angle of the awl varied, a loose seam and an untrue line are likely to result.

The welt is then pushed off from the upper with the bevelled handle of a knife or a bone. It is then beaten up with the welt beater (see Fig. 20), the lip of which is moved along the surface of the welt, the operator at the same time gently tapping the under side. The welt will then stand off from the

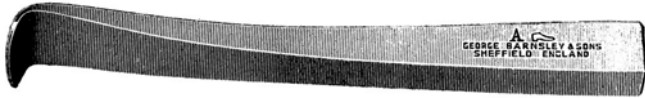


FIG. 20. WELT BEATER

upper at right angles and is finally smoothed on the grain side with a flat piece of hard wood or bone. It is now ready for rounding. This is done with a sharp knife, and, according to the type of boot being made, the welt is wide, close, or intermediate.

#### FILLING THE BOTTOM

The waist pieces having been put in as described in a previous paragraph, the hollow on the innersole, resulting from the sewing of the seam, must be filled up before attaching the sole. A prepared felt is often used for this purpose. This must be cut to the correct size and shape in order to accomplish its purpose. It is then pasted and well hammered down, leaving the bottom level to receive the sole.

#### PREPARING THE SOLES—FIXING AND CHANNELLING

The pair of soles are frequently given to the maker in one piece. Assuming that they have been wetted

and that the leather is in a workable condition, the fleshing is done, and then the boot, which has had the welt sewn in and rounded, is placed on the leather and marked round with the point of an awl or other suitable tool. One sole will be cut to size and shape, and, reversing this, the other will then be cut to match. That is, of course, assuming that both soles are to be of the same size.

If, however, they are to differ, the maker will take the other boot and mark the outline of the sole on the leather. In the old days, this is where the maker obtained what was called "cabbage," for by skilful manipulation he was able to save useful stuff, which he kept for himself. In the case of a close-waisted boot, the sole is slightly thinned down at the waist to enable this part of the sole to be moulded to the curve.

Hammering is the next process. This should be thorough, in order to make the leather solid and produce the uniform substance necessary before the soles are attached to the boot ready for the operations of channelling and stitching. The sole is moulded to the bottom and held temporarily in position with nails. It is then rounded to the size of the welt. In some cases, the sole does not go right through from toe to heel, but ends about halfway from the end of the welt to the back of the heel. In these cases, a sole piece is used, and this is carefully spliced on to the end of the sole, completing the full length to the heel. This method should not often be necessary with bespoke boots, as the full length soles are usually cut from the butt or bend, with the back portion coming in a part of the hide that is suitable for making the seat.

*Channelling* is the next operation. The preliminary step is to make a mark with a gauge or with the point of a blunt awl, using the finger as a guide, all round the sole from corner to corner of the heel, the mark in the waist being farther in from the edge than the mark in the forepart. The cutting of the

channel is a delicate operation, and care is needed in order not to cut it too deeply lest the stitch should be pulled through the sole. This channel, however, should be sufficiently deep for the stitch to be sunk or buried in it and cut at such an angle that it may be closed neatly after the stitching has been performed. The point of the knife is used for this purpose and should be held at an angle of about 30 degrees with the horizontal pointing towards the centre of the sole. Many to-day use a specially constructed tool for this operation. With a channel opener, this lip is turned back and the sole is ready for stitching.

#### STITCHING ON THE SOLE

The manner in which a boot is stitched indicates the skill of the craftsman. The thread used must be in keeping with the type of boot being made and with the number of stitches to the inch. These may vary from 7 to 16 to the inch, accordingly as the boot is heavy or light. What is termed a square awl is used for stitching. It is actually rectangular in section and has a greater longitudinal curve than a sewing awl, which has a more or less oval section. In stitching, it is essential that the tension or pull shall be uniform in order that the stitch on the surface of the welt may be regular all round. The pull in the channel should be sufficient to embed the stitching into the substance of the sole to allow the channel to be closed neatly.

When stitching, the boot is held between the knees with the edge upwards, the sole to the left, the point of the awl being inserted into the welt and emerging from the channel in the sole. It is very important in stitching to see that the point of the awl is at the same

angle each time the welt is pierced. If this is not done, instead of the stitches being regular, they will be irregular and unsightly.

With a close-waisted boot the waists are sewn, the stitches being pulled more tightly on the welt than on the forepart, so that they may sink slightly into the surface.

#### CLOSING THE CHANNEL

The lip of the channel has now to be brought over the stitches and secured. First, a little good paste is put into the channel. This will serve a double purpose; it will slightly moisten the edges of the channel and also hold the lip of the channel in its original place when pressed over. The lip of the channel is carefully closed by pressing it out towards the edge. It is then rubbed down and the edge of the sole is tapped up, so that the cut edges of the channel are approximated, thus making the cut almost invisible. The bottom is then hammered down with a broad-faced hammer, making it level. It is slightly moistened with a damp cloth, being finally rubbed over with a long stick or with the handle of a hammer.

#### HEELING

The bottom of the heel, called the seat, is the part of the sole on which the heel is built. This having been rounded, but left full, is beaten down and the split-lift fastened with a few wood pegs, making a level foundation on which to put the whole lifts. One or more of these, according to the substance required, is then fastened above the split-lift, after which the heel is sewn, by passing the awl through the loops of the stitches that fasten the upper to the innersole, piercing the sole, split-lift, and lifts. The thread is put through the same way and stitched all round, securely fastening the base of the



heel to the upper. The remaining lifts are now nailed on, the number varying according to the height of the heel. If the heel is to be very high the lifts above the seat will be put farther in at the back, so that when the heel comes to the stage for final paring, or shaping, the sewing stitches shall not be cut. The seats of men's boots are frequently pegged the upper being braced to the innersole, which it overlaps for some distance. The sole is beaten down round the heel and a double row of pegs driven in firmly securing it to upper and innersole.

The heel is then put on in the same manner as will a sewn seat, except that there will be no stitches. The top piece is held in position by blinders. These are a few rivets, partially driven in to the top lifts and the heads cut off, leaving sharp points, on to which the top piece is hammered, being finally nailed round in a suitable manner after the final shaping. If rubber tips are used, these must be carefully fitted, so as to have a perfectly shaped top piece, the rubber tip not projecting above the leather. The seat is made by hammering the fullness left on the sole close to the upper, thus covering up the stitches in the sewn seat, and making the foundation of the seat for the pegged heel. The rough edges are then taken off with a welt knife (see Fig. 3, Section VI), after which a seat file is sometimes used, finally setting the seat with the seat breaker (see Fig. 21). The heel is then ready to be knifed or pared to the desired shape.



FIG. 21. SEAT BREAKER

#### FINISHING

The boot is now ready to be "put into rasp," as the first stage of finishing is termed. The rasp has one side

cut as a file. The other side has a more roughly cut surface, part of it being half round so that it can be used on the curves of edges and heels. The heel and all edges are rasped, firstly with the rough surface and then with the file side of the rasp, the top piece afterwards being filed. The scrape or buff knife is



FIG. 22. BALLOON PEG KNIFE

next used to make the heel and edges perfectly smooth, finally finishing off with fine sandpaper. The stitches are then



FIG. 23. HOOP PEG KNIFE

pricked up with the pricker, using an even pressure on the surface of the welt between the stitches so that there is an even



FIG. 24. PEG RASP

mark on the welt from the upper to the edge of the welt. This operation needs care, as the appearance of the welt gives character to the boot. Before "putting the boots into colour" or inking, the edges of the waists and foreparts should be set with a slightly heated iron. The burnishing ink is applied with a brush and is allowed to dry sufficiently, after which it is burnished with irons heated to the right temperature, being finally finished off with a little polish. Heel-ball is sometimes used, but this should not be necessary if the edges and bottoms

have been properly prepared before being put into colour and a good burnishing ink has been used.

This final operation of the craftsman's work and the way it is performed indicates the pride of the operator in his completed task. All that remains to be done is to withdraw the last, unlacing the instep and removing the tack in the back. The block is removed and finally the last is withdrawn with the last hook.

After removing the last, the boots are prepared for "shopping" by cutting off with a peg knife (Figs. 22 and 23) the points of the pegs that have pierced the innersole, finally making this smooth with the peg rasp (Fig. 24).

To give the boot a fresh appearance, the uppers are then cleaned up and a final rub over given to the bottom and edges.

## CHAPTER XIII

### FINISHING OFF

THE actual processes followed in finishing off the boot for the purpose of trying it on are—

(a) Examining the innersole and ensuring that it is perfectly smooth. Sometimes this may not be so, owing to the boot having been made on a last which has become slightly pitted by previous pairs having been lasted upon it. These indentations leave marks on the innersole after blocking. These must be worked off with a peg rasp.

(b) Putting in the socking, either full length or half length, as determined. It is recommended that the maker's name and address be embossed on these.

(c) Gleaning the linings to make them look fresh. The hooks and eyelets should be put in at this stage if this was not done before the uppers were given to the maker. Some prefer not to put these in until after the boot is made, as there is the possibility of them being damaged during making.

(d) Polishing the uppers with a suitable dressing, giving to the leather the original finish. Good laces are then put in. The boots are now ready for the customer and either are dispatched or await the appointment for fitting or trying on.

If dispatched, they should be nicely packed, and on delivery a receipt should be obtained in the parcel book.

It is advisable, with the first pair especially, that arrangements should be made for the customer to call and try on his boots in order that the maker may be sure he has succeeded in his efforts to give satisfaction and also that he

may note any alteration or adjustment which he may consider beneficial in future orders.

The transaction, starting with the interviewing of the customer and following the different phases and stages in the production of bespoke footwear, is now completed, and the result should give satisfaction to the customer and enhance the reputation of the bespoke bootmaker.

## CHAPTER XIV

### SURGICAL WORK

SURGICAL work is a comprehensive term and may be taken to include any adjustment that may be required in the making of a boot or shoe differing from the normal. The term is mostly used in connection with boots or shoes that need compensation to make up for the difference in the length of the limbs. The necessity for this may be the result of (a) accident, or (b) disease, or (c) malformations.

(a) Under the heading of accidents may be included fractures of the *femur, tibia, fibula* and also what is known as *Pott's fracture*, which involves the ankle joint. These are but a few of the accidents to the lower limb that may require compensation.

(b) The diseases are mainly *paralysis, tuberculosis, contracted tendon*, etc., and other disabilities for which the bespoke bootmaker may be called upon to make special footwear.

(c) Malformations needing special attention include *club foot, equino-varus*, etc.

If the bespoke bootmaker has made a reputation as a surgical specialist and has proved his ability to do this work, he may frequently have a prescription sent to him by a member of the medical profession, indicating the amount of compensation required for his patient. More common, however, is the instruction to the patient to go to Mr. So-and-So and get a pair of surgical boots. Under these circumstances, the responsibility of calculating the amount of

shortening and the advising as to the type of footwear rests with the maker. If a prescription has been received, this must be carefully carried out, but if it be left to the bootmaker to calculate the amount of compensation required, care must be exercised in taking particulars of this accurately.

There are different methods employed. It is well if a few blocks of cork of varying thicknesses, some of which should be wedge-shaped, be kept for this purpose and the following procedure adopted. In a straightforward case of one limb being shorter than the other, the best method to follow is to get the customer to balance himself on his sound limb, allowing the one with the disability to hang freely, and gradually, by means of the blocks and wedges of cork, ascertain when he has an equal bearing on each limb, noting carefully the amounts at heel and joint.

At this juncture, it might be advisable to mention that the amount of compensation should always be slightly less than the actual amount required to balance the limb. If the movement of the joints either at the ankle, knee, or hip is involved in the trouble, the deduction should be greater. The reason for this will be obvious, when one considers the normal action of these joints in walking. If this deduction were not made, the foot would come into contact with the ground too soon and would be likely to disturb the balance in walking. The correctly calculated amount of compensation, when introduced into the boot, should allow the wearer to be able to swing the foot, slightly off the ground, when taking the weight of the body on the sound limb.

#### METHODS OF APPLICATION OF CORK OR COMPENSATION

The corks used for compensation are generally known as inside and outside corks. In the case of an inside cork, the upper covers the cork. With an outside

cork, the upper is lasted in the ordinary way, and the outside cork added. There is also another method used in effecting compensation, which is known as extension. Of course, all corks are extensions; but there is a particular form of compensation for shortening, which is known as an extension. By this method, the compensation for shortening is made separately and the boot or shoe is worn on the extension, whereas the inside or outside cork is included in and is part of the footwear.

Before describing in detail the different methods followed in attaching the cork to the boot, there are several points, which apply to all, that need to be emphasized.

#### PITCH, SPRING, AND CURVE OF HEEL

The last having been fitted to suit the foot and adapted to carry the amount of cork that has to be built into the boot, the same remarks on pitch and spring as were made in relation to lasts now apply to the cork. The introduction of the cork interferes with the flexibility of the boot; therefore, the spring should be somewhat accentuated. To obtain the correct pitch to balance the boot, the cork must be worked accordingly and the last must be made or adapted to accommodate the amount of compensation required. Although the amount of compensation in the heel may be the same, the fitting of the cork for these may vary considerably, as the pitch of the heel is different owing to the nature of the disability. In one case, with a 3 in. cork at the heel, it is possible that not more than  $\frac{1}{2}$  in. may be required at the ball of the foot. With another, it may be 2 in. at the ball of the foot with variations between the two. Still another may have no cork at all at the joint, and as a consequence the last will need considerable





FIG. 25. INSIDE CORKS  
 Varying shape of cork for a constant compensation.

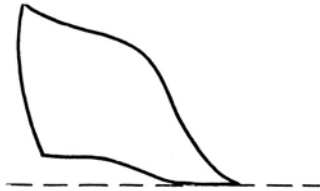


FIG. 26. HEEL CORK FOR EQUINUS



FIG. 27. THROUGH INSIDE CORK  
 Note undercut heel to preserve curve of boot.

pitch to accommodate the compensation and the heel that is to be built on the boot. (See Figs. 25, 26, 27.)

*Spring.* The more the compensation and consequent thickness of cork, the more the spring will have to be increased. Two things will happen if there is not sufficient spring: (a) the toe of the boot will grind away on account of undue friction; (b) the person wearing the boot will not get the normal walk, because of the toe of the boot coming too soon into contact with the ground, thereby causing a strain or jerk when walking. To the person wearing this type of boot, spring is of vital importance. If one looks at a fairly stout boot that has been worn and notices how the toe turns up, indicating the spring required, it will be more fully appreciated how extremely necessary it is that this part of the cork fitting should have very careful attention. The amount of spring will vary (a) according to the amount of cork being used, and (b) according to the flexibility of the waist. In the case of an outside cork where the heel is not fastened to the forepart with a steel bridge plate, there will be a certain amount of flexibility.

*Curve of Heel.* For an inside cork, the amount of curve at the back of the heel will vary according to the amount of compensation required. In all cases, it should be slightly undercut, having a convex surface. The object of this is to give the finished boot a neat appearance. If the cork is worked down straight, or even standing off from the back, as one sometimes sees it, the boot looks very clumsy. The aim, in making a boot with an inside cork, should be to preserve the lines of the normal boot as nearly as possible.

With an outside cork, the same principle will operate as with an inside cork, but with the addition of a concave curve in the heel, so as to give the boot a neat and light appearance, and to allow of the base of the

heel being in the line of thrust. The front part of the outside cork, from the waist to the toe, should also be made slightly concave. The degree will depend on the depth of the cork, being more pronounced as this depth is increased. In the front, the toe would also follow the lines of the sides, to give the boot a symmetrical appearance.

#### SPECIAL CASES REQUIRING THE INTRODUCTION OF CORK

Cases are known, where both limbs need compensation, in order to get an equal bearing. This may be necessary in severe cases of *rheumatism*, where both feet are contracted. Where the heel of one foot only is badly contracted, a certain amount of cork may be introduced to the other foot, so that the balance of the body is correctly maintained. These cases call for the exercise of the very greatest care in determining how and where the cork shall be introduced. The following method is recommended, to obtain the correct balance of the body.

Firstly, the person should stand upright and the position of the knees be noted. If one is flexed, blocks should be built up under the foot of the limb of which the knee is not flexed, until both legs are straight. It will then be seen that the heel of the limb where the knee was flexed is not touching the ground. Then obtain a bearing for this, by putting wedge-shaped blocks under the heel, until an equal bearing on both feet is obtained. The amounts introduced under each foot are carefully noted. This is the amount of cork to be introduced in the making of the footwear.

There is another condition of the foot that demands the introduction of cork, viz.: *club foot*. It is not so necessary to give compensation for shortening as to make a level foundation, on which to build the boot

and accommodate the unusual bearing. In this case, the foot is so badly deformed that the bearing is taken on the ankle bone and along the side of the foot, with the side of the great toe at

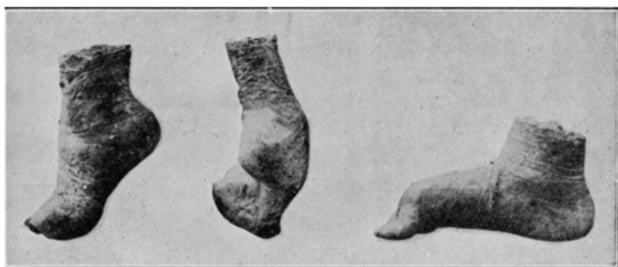


FIG. 29. ILLUSTRATIONS OF DEFORMED FEET WHICH HAVE BEEN FITTED WITH BOOTS AND PROVED EFFECTIVE  
(By courtesy of Messrs. A. E. Evans & Son)

the top, and the usual bearing of the heel at right angles to the ground, giving a very wide heel part and a very narrow deep

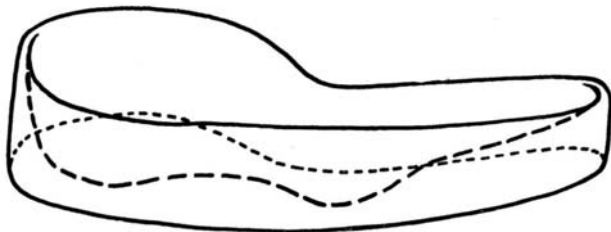


FIG. 30. INSIDE CORK CRADLE FOR CLUB FOOT

forepart, with prominences along the bearing surface and sides. These have to be accommodated in the cork, which is made in the form of a cradle (see Fig. 30) to take the foot and made level on the bottom, on which the boot

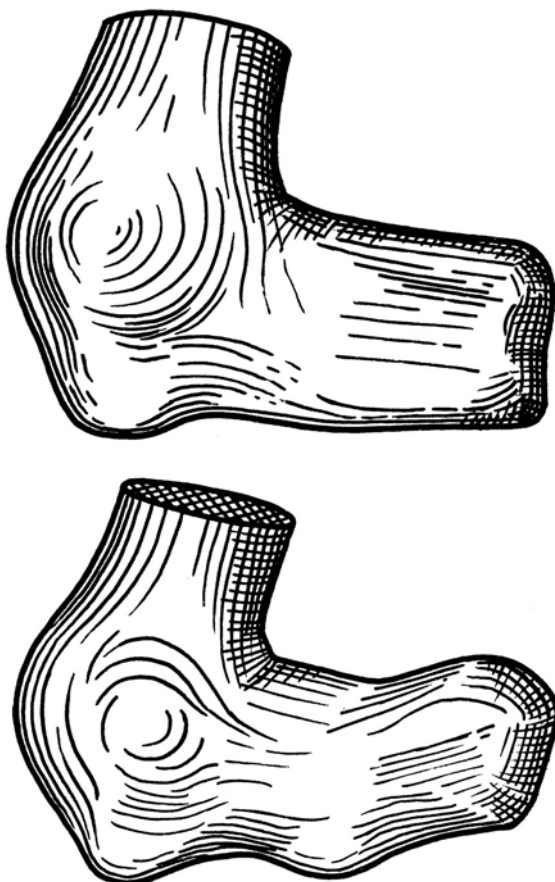


FIG. 28. RIGHT AND LEFT LASTS FOR BAD CASES  
OF CLUB FEET

Note the ankle bone taking bearing at back.

is built. As one may imagine, the resulting shape is not very beautiful, but comfort in walking is the chief concern and the introduction of symmetrical lines is left to the skill and artistry of the maker. (See Figs. 28 and 29.)

For cases of contracted heel with a tendency to turn over on the outside (*equino-varus*), the cork is continued forward on the outside, from the joint to the toe. This corrects the *varus* tendency and balances the foot.

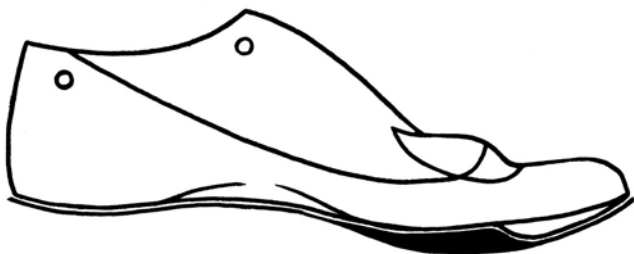


FIG. 31. LAST AND INNERSOLE FITTED FOR STIFF BIG TOE JOINT

Another abnormal condition of the foot in which cork may be used is the stiff great-toe joint with the dropping of the great toe, for which a deep depression has to be made. The part, under the joint behind this depression, must be made level, to give a bearing and a surface, on which to last the upper. If cork is not used, a bearing may be obtained by the introduction of a double innersole, cut away under the big toe and secured to the first innersole by a reliable adhesive. (See Fig. 31.)

#### CORKS

Cork is the outer sponge bark of the cork tree, which grows in the South of France and Spain. It is periodically stripped off

the tree and soaked for a time in water, the surface being subsequently charred to close the pores. This material can be procured by the bootmaker either in bulk by the bale, or in the form of blocks of varying sizes and thicknesses up to about  $2\frac{1}{2}$  in. Bulk can be purchased from cork merchants, while the compressed blocks of cork are usually purchased from wholesale grindery houses and leather merchants.

*Examination of Cork.* In selecting a piece of cork for a particular case it should be thoroughly examined to see that it is as free as possible from flaws. It sometimes happens that, after a craftsman has spent considerable time in working on a piece of cork for a fitment, a flaw develops and he has to make a repair or a fresh start. This loss of a skilled man's time might have been obviated by a proper examination of the cork before starting work.

A flaw is more likely to develop while being worked if the cork be very thick.

*Joining Pieces of Cork.* According to the amount of compensation to be made, so one or more layers of cork will be used. If two or more layers are to be joined together the pieces to be united must first have their faces worked smooth with a rasp and file so that a good union can be made. The parts to be joined are then treated with a coat of good rubber solution; when this is dry, the surfaces will be approximated, making a secure and firm join. Wax or elastic glue was used at one time, but rubber is more satisfactory, as it is not affected in wear by the heat of the foot, and does not clog the rasp while it is being worked.

It is not usual to make a boot with an outside cork, unless the amount of compensation is more than 3 in. to 4 in. at the heel, and more than 2 in. to  $2\frac{1}{2}$  in. under the joint.

Inside corks can be successfully made, carrying as much as 4 in. to 5 in. at heel with 2 in. to 3 in. at the joint. Most people requiring this type of footwear seem to prefer an inside to an outside cork, and one can understand this, when one sees some of the monstrosities of outside corks that are made: but a nicely-made well-shaped outside cork gives graceful lines that call for commendation.

*Fitting Inside Corks.* A light innersole is blocked and rounded to the last that is being used. In rounding the innersole, the inside waist should be left a little wider than if it were being prepared for sewing. A block of cork a little longer and wider than the last is selected or is cut from bulk. This extra size is to allow for working. If possible, it should be thick enough to meet the depth required at the joint. Usually corks are needed much higher at the heel than at the joint, owing to the increased pitch; therefore, a second piece would be joined to the upper surface of the first, from the heel to the joint. When this is done, the cork must be worked away so that the last, with the innersole attached, fits perfectly to the cork. This having been done, it is wise to roughly shape the cork to the outline of the last, taking the measurements at heel, joint, and toe, and adding to or working off from the under part of the cork, as may be necessary. When the correct depth at these points has been reached, the cork should be finished off with a rasp and file, making it perfectly smooth all over, and shaping it in conformity with the last.

A rasp that has a small curved end, will be found very useful to work away the cork for bedding the bottom of the last and for the curves in the waist. A saw, a rough rasp, a sharp broad knife, as well as the rasp mentioned, are tools necessary for working cork.



## METHODS OF ATTACHMENT FOR INSIDE CORKS

The various methods employed in the attachment of an inside cork to the boot or shoe are here briefly described, with their advantages and disadvantages.

(a) *Cork Loose, with Innersole on Top.* With the innersole on top, as the term implies, it is not fixed to the boot, but covers the fitted cork, allowing it and the cork to be removed. This is an advantage, for when the boot needs repair, a firm bearing can be obtained on the repairing foot or last, which could not be obtained if the cork were fixed in the boot. The disadvantage is that the cork may shrink from the upper, with the possibility of the edge of the innersole hurting the foot. Especially is this so when the cork is very deep.

(b) *Loose Cork, Covered all over with Leather.* The cork is fitted in this case to the last without an innersole. After the cork has been fitted it is covered with a piece of light, tough, firm leather, which is fastened to it by a suitable adhesive. The same advantages and disadvantages apply as in (a).

(c) *Fixed Cork, Covered, and the Cover Sewn in with the Upper.* The cork is fitted as in (a) and (b), but instead of a loose innersole, as in (a), it is lasted and sewn in with the upper, being permanently fixed in the boot. It is doubtful whether or not there is an advantage in this method. Not being able to take out the cork for repair purposes is most certainly a disadvantage.

(d) *Cork with Lining Secured over First Innersole.* When a cork, with the lining secured over the first innersole, is used, the first innersole is prepared as in (a). The lining of the upper is lasted separately and firmly secured to this innersole. The cork is then placed in position, and the outside of the upper lasted

in the ordinary way over the innersole covering the cork.

The advantage of this method is that it prevents any possibility of the upper sagging away from the cork or of the edge of the innersole hurting the foot. The disadvantage is the same as with all fixed inside corks, namely, that it cannot be removed when the boot has to be repaired. It is claimed by

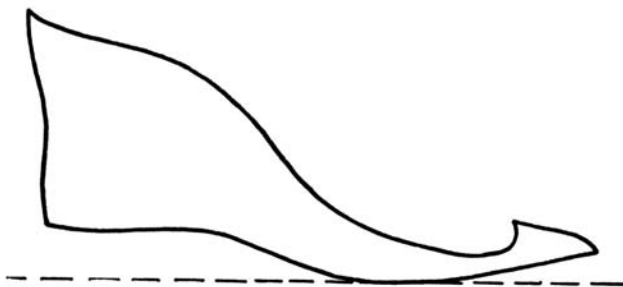


FIG. 32. INSIDE CORK WITH EXTENSION

some that this is the correct way to attach all inside corks; certainly with a deep inside cork it is an advantage as stated, but experience has proved that, if the first innersole be prepared as advised and the upper be well lasted, there should not be the necessity of the double lasting and consequent extra expenditure of time that is involved in this method.

(e) *Inside Extension Corks*, These are built into the boot to give the necessary compensation. The cork is extended beyond the toe of the last to add length, so that, when made, the boot will have the same appearance as the fellow boot. (See Fig. 32.) It may be required in either of the following cases—

(i) Where the foot is sloped from the heel to the joint at such an angle that the length of the foot is foreshortened.

(ii) Where in addition to the shortening of the limb, the foot is much shorter than the other. The extension is carried out as follows: The cork is fitted longer than the last at the toe and is worked away so as to allow it slightly to overlap the last at the toe. The cork is then worked off at the toe, to make it look the same shape at the toe as the last on which the fellow boot is to be made. To strengthen this extension, it is advisable to put in a piece of thin flexible steel from toe to joint. This may either be embedded in the cork or fixed to the innersole after the sewing in of the welt. The latter method is to be preferred from the structural point of view.

It will be understood that an innersole for sewing will be added in all cases. The feather on this innersole should not be so wide as is usual with an ordinary boot in order that the sewing may be fuller and thus prevent the upper spreading over the welt. This may happen if the boot is undersewn and particularly applies to the forepart where the weight of the body is thrown in walking.

In order to make the terms first and second innersole perfectly clear, it may be pointed out that the first innersole is usually much thinner than the second, and is the one which covers the top of the cork and on which the foot rests. The second innersole is blocked, rounded, and prepared on the cork. These are all firmly fixed on the last with long nails, ready for lasting the upper; the other operations then follow as with an ordinary boot.

The difficulties in repairing this type of boot will be appreciated, it being very difficult to repair the heel, or nail across the waist of a boot, unless there is

a firm bearing. That cannot be obtained with the cork in the boot. The only alternative is to repair the boots on the last on which they were made. This, however is not always possible or advisable.

#### EXTENSION BOOT

All extension boot is a speciality that is rarely undertaken by the bespoke bootmaker, being generally supplied, by the



**FIG. 33. EXTENSION BOOT**  
*(By courtesy of Messrs. A. E. Evans & Son)*

makers of surgical appliances. It differs from an inside cork extension by being made of light wood, such as willow, shaped in the manner described in connection with an inside cork, and is reinforced at the back with aluminium, the toe being rendered flexible by means of a joint in the forepart. To the extension is attached a leather upper, by which it is laced on to the limb before the outer shoe is put on. (See Fig. 33.)

## OUTSIDE CORKS

Outside corks (see Fig. 34) are not often used if it is practicable to effect the compensation with an inside cork. There are exceptional cases, however, where this method is used, when less than 4 in. compensation is needed in the heel with a proportionate decrease at the joint and the toe. As a

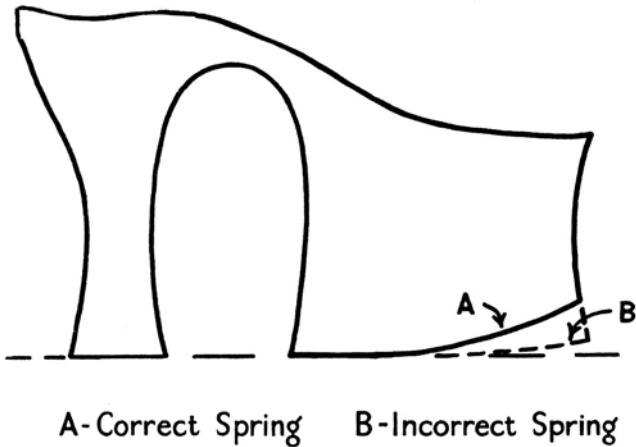


FIG. 34. OUTSIDE CORK

general guide, this amount of 4 in. may be taken as the minimum for an outside cork.

It is attached to the boot either by a box rand or by a turned rand, which forms a case or cover for the cork. The rands are fastened to the boot by the same process as is employed in attaching a welt, namely by sewing through the innersole, upper, and rand, in place of the welt used in an ordinary boot. The preliminary to either method is to block and round the innersole. When this has been done, the cork is fitted

for the depth required, working it to the desired shape by fitting the base as for an inside cork, and then making it to the correct height by the addition of pieces for the forepart and heel. The lines and curves that are introduced into this operation reflect the skill and experience of the worker. According to the amount of compensation to be made, so these lines will vary. The guiding principle should be to give the required compensation and yet preserve a graceful and symmetrical appearance. The heel should be nicely shaped and the waist or arch given a graceful curve. It will be found necessary in making an outside cork to have it slightly smaller than the innersole, in order that it may properly fit into the sewn rand.

It is quite apparent that, for a slender cork heel, some vertical reinforcement is necessary. To a certain extent, this is provided by the casing, but some internal strengthening is needed as well. This may be effected by the introduction of a wooden skewer driven down centrally through the layers of cork before the final shaping is done. The next operation is to last the upper in the ordinary way.

#### BOX RANDS

Box rands are cut in two pieces, being joined by a *flat* seam at the heel and the toe to permit them to be shaped to the curves at these points. They are cut from a light supple piece of butt leather. A light foreend is suitable for this purpose.

*Preparing and Shaping the Rand.* After being fleshed and hammered, the two pieces of leather are cut to the shape of the fitted cork, special attention being paid to the curve of the inside and of the outside waist, and also to the pitch and the spring, in order that, when sewn, they will follow the line of the rounded innersole, to which they are to be sewn. It is

advisable to have them sufficiently long to allow for shaping at the front and the back. A narrow skive is then taken from the flesh side to allow the rand to fit closely to the upper. A channel is then cut to receive the sewing stitch, care being taken not to cut these very deeply, but merely of sufficient depth to take the stitch and to allow this to be covered by the lip of the channel.

*Sewing the Rand.* The next operation is the sewing, commencing at the back of the heel and in line with the heel seam of the upper. One half of the rand is sewn up to the centre of the toe ; here the other half of the rand is introduced, both edges being closely approximated. The next stitch joins the two halves together, and the sewing is continued to the heel, where again the two parts are joined together in the same manner as was done at the toe. The rand now stands vertically from the upper and forms the case. A thin piece of felt is then put in (a) for filling the bottom, and (b) for preventing that creaking in wear which might occur owing to the cork chafing against the innersole. The inside of the rand is well pasted and the cork put in, filling the case. The channel having been closed, the rand is then pressed tightly to the cork, firmly consolidating these two. The heel and toe joins are finally shaped, after which they are held together by a fairly fine thread, forming a neat flat seam. The measurement for depth having been checked, a thin piece of felt or cloth is then put on the visible surfaces of the cork, to prevent the leather covering it from chafing and thereby causing a creak.

It is usual to have the welt only from joint to joint. Therefore, the next thing to do is to fit and hole the innersole to which the rand and welt will be sewn. The sewing of the welt then follows somewhat as in an ordinary boot, but in this case the rand is secured

to the innersole instead of the upper. A piece of firm leather is then fitted from the joint, following the arch of the waist to the back of the heel, and is firmly and neatly secured by stitching. Another thin piece of felt is put in for filling where the welt has been sewn. The sole is then attached and stitched on to the welt. Before fixing the sole at the heel, the back of the forepart is secured to the piece covering the arch of the waist at the joint by means of stitches sunk in a channel. Next the sole is fixed at the heel, forming a bridge or arch, and secured by neat stitches to the rand, after which a lift and a top piece are added. The boot is now ready to be put into rasp, in preparation for the final finishing, which will follow the normal course.

#### TURNED RANDS

Turned rands are not often used for very deep outside corks, as the material used for the rand does not give the necessary support for a high narrow heel. When, however, this method is used, the attachment of the rand is as follows. The innersole is rounded and the cork fitted, as described for a box rand. After the seam has been trimmed and the filling put in, the rand is turned up to form the outer covering for the cork. The cork, with the innersole, is then temporarily fixed to the bottom with long nails. The flesh side of the rand is well pasted and lasted very tightly over the cork to the innersole. The welt is then sewn to the heel as in an ordinary boot.

The rand is cut into two pieces with the joints overlapping at the inside and outside waists. It is sewn to the lasted upper in the same manner as a welt. The material used for the rand is of a substance and texture suitable for the purpose. Calf skin is frequently used, the front and heel portions being cut with sufficient draft, so that they will fit the cork without creases.



Sometimes, when & turned rand is used, the cork is put only in the front part of the boot. In these cases a nicely shaped leather heel is built to balance the forepart. When this method is employed, it is very important that the waist be made very firm.

#### TYPES OF PATTERNS FOR UPPERS OF SURGICAL BOOTS

The types of patterns most suitable for the uppers of inside corks are either a Derby or the balmoral cut with a vamp and quarter and sometimes termed an “ankle bal.” With these there is no definite line at the back of the uppers, such as one gets when a golosh is used. If, however, the golosh boot is required the pattern should be cut so as to have the same depth of golosh at the back on each boot. This looks much neater and is much more symmetrical than if one golosh is so much deeper than the other. Sometimes an inside cork is made slightly less than the amount of compensation required, the difference being made up by increasing the height of the heel to the required amount. This is preferable, especially if shoes are being made, as there is not such a marked difference in the depth of the quarters at the back as when full compensation is given on the inside.

Other items that may be included under the heading of surgical work are high stiffenings; long stiffenings: wedges, outside and concealed; meta bars, outside and concealed; and the various degrees of elongation of heels.

#### HIGH STIFFENINGS

High stiffenings may be required either on the inside or on the outside, or on both sides of the foot. They

are used for supporting the weakness of the ankle joint and need to be very carefully fitted between the lining and the outside of the uppers. They should be cut from a light, firm shoulder and after being fleshed and well hammered, the edges should be broadly skived to a wafer. This skiving should be done both from the flesh and the grain sides of the leather, the larger portion being taken from the grain side. The upper part above the ankle should be made slightly thinner than the remainder.

When finally prepared, the stiffening is pasted on the grain side and inserted between the lining and the outside. This is smoothed to the stiffening, then the flesh side of the stiffening is pasted and the lining pulled to it, so that it lies close to the stiffening without any folds or creases. In the making of the boot, care is necessary to avoid bending or buckling the stiffening.

#### LONG STIFFENINGS

Long stiffenings are extended forward longer than the normal. They may be so extended either on one or on both sides of the boot, and their purpose is to support the foot and to prevent it turning over. They are most often extended on the inner side to correct flat foot. There are cases, however, where it is an advantage to extend them on the outer side only, and still other cases that require their being extended on both sides.

The extension is carried over to the end of the waist, terminating at the inside or the outside joint. The skived end should be overlapped by the side lining to make a continuous substance in the sewing seam. They should have a broad skive on the front, taken off the grain. These and all stiffenings are cut from a light, firm shoulder, and should be well hammered

to make them solid and firm, that they may fulfil the purpose for which they are intended, namely, to support the foot. They should be pasted on both the grain and the flesh sides, so that the outside of the upper and the lining adhere to them, forming a compact whole.

#### WEDGES

Wedges are pieces of leather shaped and skived to form an inclined plane. They may be concealed by being inserted between the welt and the sole before these are stitched together. The outside wedge is attached to the top of the sole. If either method of applying wedges is used, it is advisable to introduce a thin piece of felt, or to sprinkle them with French chalk, to (avoid creaking occurring owing to friction between the two surfaces. The heels are usually wedged to balance the forepart, but occasionally one may get a doctor's prescription for the wedge to be put on the soles only, or on the heels only.

These wedges may be put on the inner side or the outer side of the boot, as prescribed by the doctor, or as deemed advisable by the bootmaker himself. The thickness of wedges may vary from  $\frac{1}{16}$  in. to  $\frac{1}{2}$  in., and they should be so skived and shaped that they gradually diminish from the full substance at the edge of the sole to a wafer edge within and toward the toe. The width of a wedge should be from one-third to two-thirds the width of the sole or heel. A wedge for the sole is usually put in at the joint tapering off gradually to the toe. Wedges are also sometimes put in from the breast of the heel to the toe, in order to give extra support for the waist of the foot. While respecting the opinion of the medical profession, it is thought that it might be more efficacious if the wedges were introduced on the innersole, thereby getting a direct effect on the foot.

## META BARS

Meta bars are frequently prescribed for cases of enlarged and stiff big-toe joints. They are pieces of leather varying in width from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. which are fixed in position under the metatarsal arch and may either be concealed or attached to the outer sole. Their correct position is closely behind the line of the metatarsal joints.

If the bar is to be concealed, it will be prepared by taking a piece of firm leather about  $1\frac{1}{4}$  in. wide and from  $\frac{1}{4}$  in. to  $\frac{3}{8}$  in. thick and making an acute skive for the back edge, with a fairly long skive in the front, leaving about  $\frac{1}{2}$  in. of full substance to take the bearing. If the bar is to be external, it is usually nailed on, and, according to the size of the boot, should be from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. wide, and from  $\frac{1}{4}$  in. to  $\frac{3}{8}$  in. thick. According to the drop of the waist of the boot, it might be necessary to insert at the back edge of the bar a wedge shaped piece of leather in order to get a balanced bearing. The heel, in all cases, must be so pitched that the balance of the boot is maintained.

The effect of the introduction of a *meta* bar is to give more spring to the boot and avoid straining the big-toe joint. The considered opinion for these cases is that it is better to support the metatarsal arch from the inside of the shoe than to introduce the meta bar.

## ELONGATED HEELS

Elongation of heels may vary from being just a shade longer than the normal to the full amount, which extends to the joints. (See Fig. 13.) This elongation of heel is mostly used for the inner side of the boots, and is prescribed for cases of varying degrees of flat foot. The purpose is to give support to the internal lateral arch. It is frequently used in conjunction with a long stiffening. If it be more than  $\frac{1}{2}$  in. longer than the normal,

it should be curved from the furthestmost point on the inner side to the outer corner of the heel, which is the normal length

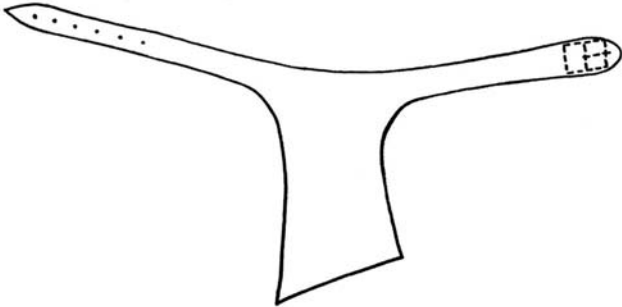


FIG. 35. VALGUS T-STRAP

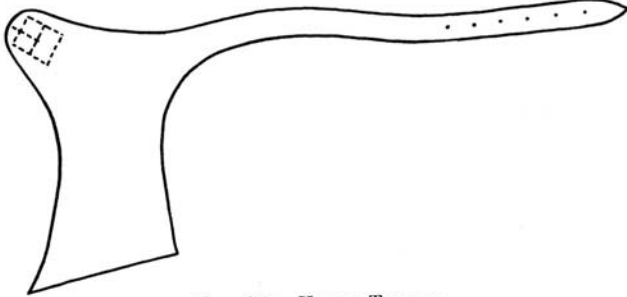


FIG. 35A. VARUS T-STRAP

on the outer side. In some very severe cases, the heel is extended to the joints on one side, and in extreme cases the heel is extended to the joints on both sides. For this the heel is built first and the sole is then fixed from the toe throughout the full length of the boot.

## T-STRAPS

T-straps are put on the inner, the outer, or both sides of the boot. The medical terms for these are: (a) Inner side *valgus* T-strap; (b) outer side *varus* T-strap; and, if both are required, (c) double T-strap. They are most often used in conjunction with single or double leg appliances or with walking calipers, the *valgus* strap being used for an outside appliance, the *varus* strap for an inside appliance, and the double strap being sometimes prescribed where a double appliance is worn.

They should be of a very firm material, and usually a hide is used. They are shaped as in Figs. 35 and 35A, having a buckle on one end, and, on the other, holes to engage the buckle. It is recommended that they be cut so that the buckles are on the outside in all cases in order to avoid the possibility of the buckle catching in the other limb. They are fixed to the boot in such a position that they give support both to the waist and to the front part of the heel.

## LEG APPLIANCES

Leg appliances concern the surgical bootmaker in that he has to fix them or the fitments that carry them. There are numerous methods used for connecting these appliances to the boots. They may be fitted directly or connected by sockets, boxes, or a fitment that carries the upper part of an appliance from the point of the ankle joint. For the purpose of connecting these fitments, what is termed a shoe piece is used. This is a metal plate to which the tube, box, or other fitment is attached; it has holes drilled in it, to allow for riveting it to the boot. These fitments may be required on one side or both sides of the boot, according to whether a single or double appliance is prescribed. The method of fixing this attachment to the boot

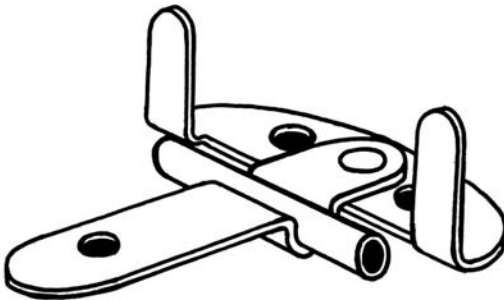


FIG. 36. SHOE PIECE WITH TUBE AND RIGHT-ANGLE STOP (FOR DROP-FOOT)

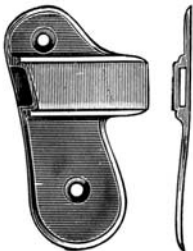


FIG. 37. FLAT STEEL SOCKET FOR ANKLE JOINT SECTION



FIG. 38. ROUND STEEL SOCKET

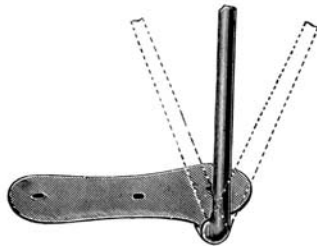


FIG. 39. CIRCULAR STEEL SOCKET ATTACHMENT ACTING AS ANKLE JOINT

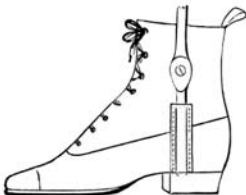


FIG. 40. VERTICAL SOCKET RECOMMENDED FOR ADULT CASES



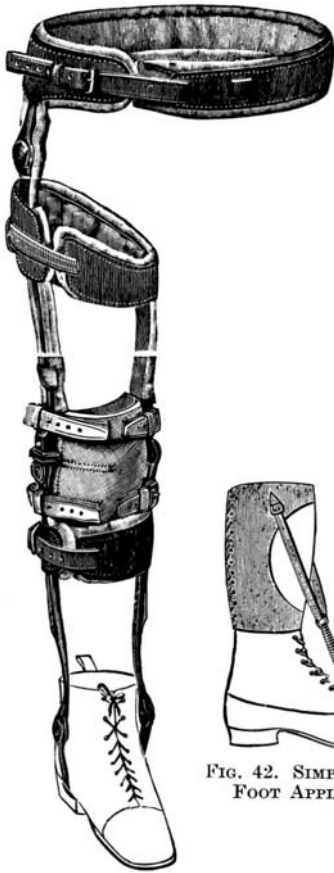


FIG. 43. DOUBLE  
STEEL LEG INSTRU-  
MENT TO PELVIS

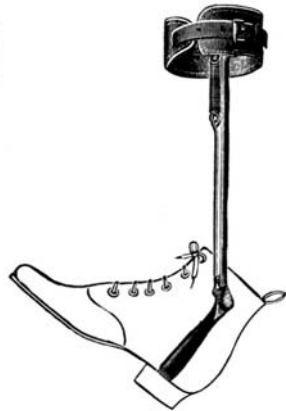


FIG. 41. SINGLE DROP FOOT  
APPLIANCE



FIG. 42. SIMPLE DROP  
FOOT APPLIANCE

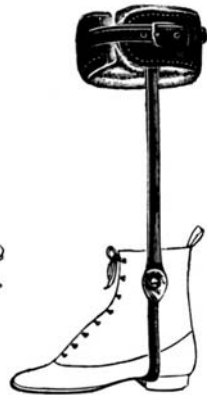


FIG. 44. SINGLE  
LEG INSTRUMENT TO  
BELOW KNEE



is the same in all cases. The position and angle at which they are fixed, is very important, so as to carry the appliance in correct alignment with the joints of the limb. The fitments are fixed slightly forward on the outer side, and are usually fixed to the innersole after a firm seat lift has been attached to the heel. They are, however, sometimes attached by the rivets passing through the innersole and outer sole. Whichever method is used, the means of attachment to the boot is the same.

A fitment for cases of drop foot is sometimes prescribed for use either with single or with double lateral irons or walking calipers. They are tubes with right angle stops. (See Fig. 36.) When these fitments are used, it is recommended that they be fixed through the innersole and outer sole to give them a firm foundation, as there is considerable strain on the stops. Experience has proved that this method of correcting drop foot is not entirely satisfactory, as the right angle position is not long maintained owing to the great strain on the stop and friction in the tube. The appliance with an accumulator spring is considered more efficacious for the correction of drop foot.

Figs. 37 to 44 show various attachments, and illustrations of leg appliances (by courtesy of Messrs. A. E. Evans and Sons).

CHAPTER XV  
**BOOK-KEEPING AND COSTING**

BOOK-KEEPING

WHETHER the business be large or small, the financial side is of prime importance. For the average bespoke bootmaker, the keeping of the following books will meet his requirements—

(a) The day book, in which are entered particulars of all goods dispatched or delivered to customers for credit.

(b) An index ledger for entering particulars of goods sold on credit, the entries in this being transferred from the day book periodically.

(c) Another index ledger, for recording all purchases of goods.

(d) A cash till or cash register, to record all cash transactions, whether the sale of small sundries or the payment of accounts, any account paid being duly credited, either in the ledger or in the day book.

(e) A simple analysis book, in which all financial transactions are summarized. This, if properly kept, reveals not only the financial side of the business, but also records progress or otherwise.

(f) A receipt book with counterfoils.

Even with the smallest of businesses, it is wise to open a banking account into which all money received should be paid. It is recommended that all payments for stock, wages, personal drawings, and cash for petty expenses should be made by cheque. This method has the advantage that the pass

book reveals at any time the cash transactions connected with the business. If, as may happen at any time, the payment of an account is disputed, it can easily be verified by an examination of the pass book.

#### COSTING

It is necessary for the bespoke bootmaker to have some system of costing that will enable him (a) to form some idea of the gross cost of the goods he is making, (b) to give a quotation to a customer. To do this he must ascertain under several headings what is the cost of production of the boots or shoes being made. He might well take the three headings (a) materials, (b) labour, (c) profit, which in the aggregate would show the prices that should be charged to the customer.

(a) *Materials*, In arriving at the cost under this heading, it must not be overlooked that in cutting the leather for either uppers or bottoms, there is a certain amount of waste that cannot be avoided. This waste must be taken into consideration in arriving at the correct cost, either by increasing the actual price of the material being used or by making an allowance for the waste.

The various items that must be included under the heading of materials are: Leather for outsides of uppers, materials for linings of uppers, leather for bottoming, eyelets, hooks, laces, polishes for finishing, grindery, hemp, flax, rivets, wax, paste, and filling. Some of these items may appear small and petty, but they all have to be bought, and are a charge on the finance of the business. They must, therefore, be taken into consideration to effect correct costing.

(b) *Labour*. Under the heading of labour all costs connected with work involved in making the boots must be included. If the proprietor or foreman is performing any of the operations necessary to produce

the finished boots, he is surely worth at least the same remuneration as would have to be paid to a worker. Therefore, to arrive at a correct costing, this item must not be omitted.

If we take as an example a pair of gents' box calf boots of a medium size the approximate cost would work out as follows—

	s.	d.
Outsides of uppers $3\frac{1}{4}'$ at 2s. 4d. per ft . . . . .	7	7
Linings " $3'$ at 1s. per ft. . . . .	3	0
Soles and top pieces 1 lb. 3 oz at 3s. per lb., say . . . . .	3	6
Innersoles and stiffenings and welts 12 oz. at 1s. 10d. per lb. . . . .	1	$4\frac{1}{2}$
Linings, puffs shank pieces, filling, etc., say.	1	0
Grindery, eyelets, hooks, laces, polish, say . . . . .	1	$0\frac{1}{2}$
	<hr/>	
Total cost of materials	17	6
	<hr/> <hr/>	

	s.	d.
Labour for making T.B. Rate . . . . .	13	3
" " closing uppers "Trade Closer" . . . . .	2	6
" " cutting pattern uppers, and bottom stuff, for fitting lasts, say, two hours at 1s. 6d. per hour . . . . .	3	—
	<hr/>	
Total labour costs . . . . .	18	9
	<hr/> <hr/>	

making a total for materials and labour £1 16s. 3d.

It must be fully appreciated that this total is the bare cost of material and labour in connection with making the pair of boots. There are other expenses entailed in conducting a business that must be proportionately allocated. They are

spoken of collectively as overheads, and include such items as rent, rates, taxes, lighting, heating, insurance, health, unemployment, employer's liability, stationery, wrapping paper, bags, boxes, etc. In addition, there is non-productive labour, such as clerical assistance and messenger service.

(c) *Profit*. Profit is either gross or net. Gross includes all non-productive expenses. Net is the amount of profit after all expenses necessary in conducting a business have been met. It should be borne in mind that the overhead expenses may remain the same, although there may be considerable variation of the turnover.

A true relation of profit can only be obtained if calculated on turnover. To work within a safe margin, this should *not* be less than  $33\frac{1}{3}$  per cent gross. Some authorities consider that the bespoke bootmaker ought to work on a 50 per cent gross basis in order to make allowances for bad debts and other contingencies. It follows, therefore, that to add the correct amount to produce  $33\frac{1}{3}$  per cent gross profit on turnover for the example mentioned, it will be necessary to add 50 per cent of the cost, which equals 18s.  $1\frac{1}{2}$ d. This added to £1 16s. 3d. makes the selling price of the pair of boots, say, £2 15s., which is considered very reasonable for a pair of hand-made boots at to-day's values.

It is unfortunate that in some parts of the country quotations are given, and the work more or less satisfactorily executed, at such very keenly competitive prices, that a reasonable margin of profit cannot possibly be obtained. The great fault in this cut-throat competition is that it gives a false standard of values to the consumer. There is an old saying that the labourer is worthy of his hire, and there is not a better example of its application than that of the bespoke bootmaker, who certainly deserves a reasonable return for his services and skill.

## CHAPTER XVI

### TAKING IMPRESSIONS AND CASTS

OWING to exceptional abnormalities, it is sometimes advisable to take an impression of the foot. The majority of cases requiring this measure are met by taking the impression of the sole or plantar surface only. In severe cases, however, it may be necessary to have a cast of the whole foot in order that the last on which the boot is to be made may conform to the abnormalities. In either instance, a mould is first taken and the cast is made from it. When an impression of the sole of the foot is taken the last is fitted in accordance with the bearing indicated by the impression.

#### MATERIALS USED

Various materials are used for this purpose, amongst which are plaster of paris, plaster bandages, plastic clay, plastic felt, etc.

If plaster of paris is used, it is necessary to have a box to hold it in a semi-liquid condition. This may be made of strong cardboard or light wood, and should be of a size that will contain the foot for which the impression is required. If a cast of the whole foot is required, the mould would have to be taken in three sections using either plaster of paris or a plaster bandage.

If the plaster bandage is used a thin strip of lead or zinc is laid on the foot before the bandage is put on. The strips are placed in a position suitable for dividing the mould, and this dividing is done on the strips to avoid cutting the foot. The mould is then removed from the foot in sections.

If plaster of paris is used, the mould, is taken in three sections. The first section is built up so that the foot can be easily removed without disturbing the plaster. The second and third sections are then built on to the first, so that the whole can be removed in three parts.

The essentials for taking the mould or impression are—

(a) The foot must be well oiled or greased with vaseline to prevent the plaster adhering to the foot. If the foot or part of the limb for which the cast is desired is hairy, it is necessary to shave it before putting on the grease or thicken the grease with tallow to hold the hairs down.

(b) When building up the second and third sections, all edges of the first and second sections as well as the foot must be well greased in order that, when the plaster is sufficiently set, the sections may be separated for removal from the foot without difficulty.

(c) When the plaster mould is set sufficiently for taking the cast, the edges and surfaces of each section are well greased before being fastened together, preparatory to pouring in the liquid plaster which will form the cast. When the plaster, forming the cast, is set, the mould can be removed in sections.

## CHAPTER XVII

### TRADE BOARD RATES AND CONDITIONS

RATES of wages and conditions of labour for the bespoke bootmaker are issued and enforced by the Ministry of Labour through the Boot and Shoe Repairing Trade Board. These regulations do not affect the employer until he employs someone to perform any of the operations that come within the scope of the Trade Board.

It is incumbent upon any employer or a prospective employer of labour to make himself acquainted with the different schedules that are effective for the time being. They are designated at present as D47 and D48, and may be obtained in pamphlet form from H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2. Employers in the trade may obtain them from the Secretary, Boot and Shoe Repairing Trade Board, 1 Whitehall Gardens, London, S.W.1.

D47 indicates various classifications of labour with the minimum time rates which must be paid to the worker while engaged in any particular section of the trade. These rates for adult male workers range between 57s. and 72s. per week of forty-eight hours. For adult female workers, they range from 41s. to 72s. per week of forty-eight hours. The minimum rate for adult workers engaged in any of the different sections of bespoke making is 62s. per week, except in the case of adult female workers engaged in closing uppers, for whom the rate is 42s. 6d. per week.

#### WORKERS UNDER 21 YEARS OF AGE

There are special rates for learners and apprentices. In respect of other juvenile workers, who are neither learners nor



apprentices, the rates range, according to age, from 15s. to 45s. for all workers, except for female workers engaged on certain operations, for whom the rates range from 6s. to 36s. per week. These rates only apply when the worker is engaged on operations coming within the scope of the Trade Board.

All the foregoing rates under this and the previous headings are based on a week of forty-eight hours, and are subject to a proportionate reduction if the number of hours worked is less than forty-eight.

#### APPRENTICES AND LEARNERS

There are many tables of rates for apprentices and learners, to which specific conditions are attached.

In the case of apprentices, a model form of indenture is suggested, a copy of which is included in the schedule.

After allowing for a short probationary period, this indenture must be completed and sent to the Trade Board Offices for certification. The employment can be then continued at the appropriate rate of remuneration for the class, providing the conditions applicable are observed. The classes or branches of the trade are, broadly speaking, divided as follows—

(a) Bespoke handsewn making) including clicking and closing.

(b) All other branches of the trade.

The principal conditions applicable to apprentices are—

(a) That the apprentice is employed under a duly executed indenture.

(b) That a clause in the indenture provides for effective instruction throughout the period of apprenticeship in the particular branch of the trade specified.

(c) That if required by the Trade Board, the Employer will submit for examination a sample of work done by the

apprentice.

(d) That the apprentice is the holder of a certificate issued by the Trade Board.

(e) That the number of apprentices is not more than one to every two journeymen in the particular branch of the trade.

( *Note.* For this purpose, the employer working at the trade counts as a journeyman.)

#### LEARNERS

The great difference between learners and apprentices is that the latter are engaged for a definite term of years in accordance with the indenture, whereas the learners are employed as time workers and are subject to a proportionate reduction if not employed for the full forty-eight hours.

Other conditions applicable to the learner are—

(a) That he is instructed in a progressive manner in the particular class or branch of the trade for which he is certified by the Trade Board.

(b) That he is paid the appropriate rate for his age and the class of work he is being taught.

(c) That the proportion rule of not more than one learner to any two journeymen is observed.

(d) That he is the holder of a certificate issued by the Trade Board.

#### EXEMPTIONS

Exemption from any of the rates and conditions in the schedule may be obtained for any time worker suffering from a disability that affects his earning capacity. To obtain this, it is necessary to apply to the Secretary of the Trade Board, stating fully the grounds on which the exemption is sought. These exemptions are only granted when it is proved that the earning capacity is reduced by some physical infirmity.

## PIECE RATES

General minimum piece rates are to be found in D48, and contain various tables of rates for workers employed on piece rates, both ground work and extras. There are also tables of rates for practically all operations of repairing.

## GROUND WORK

Here will be found rates for different sections of work, as well as for the completed work. For the making of bespoke footwear, including surgical work, rates have been determined for all classes and types of work, from the smallest children's to the many varieties of ladies' and gents' work, including all types of long work.

They are arranged in columns so that it is possible to see the rate for any specific operation. There is also a column showing the rate for the completed work.

## EXTRAS

There is also a long and comprehensive list of extras. These are items considered as additions to the normal boot or shoe, and whether one agrees or not that they constitute an extra, the rate is there, and it has to be paid to the worker. There is another paragraph of extras exclusive to handsewn surgical work.

## OVERTIME

Rates ranging from time and a quarter to double time according to the amount of overtime worked, are payable if the worker is employed more than nine hours on any day, except the weekly short day, or for more than five hours on the weekly short day. In any case, overtime rates operate after forty-eight hours have been worked in the ordinary working week.

There is, however, an exception where a five-day week is customary. In this case, overtime rates do not operate until nine and a half hours on four days, and ten hours on the fifth day, have been worked. In all cases work on Sundays and customary public and statutory holidays is subject to double time rates.

An employer is bound under the orders issued by the Trade Board to pay not less than the minimum rates applicable. He also has to provide all grindery (other than tools) necessary to perform the work. If he employs outworkers, there are other obligations he may be called upon to fulfil.

It must be recognized that the Trade Board is a statutory body and its orders are enforceable. A worker must be paid not less than the minimum rates applicable for any time during which he is employed in any branch of the trade specified in the Trade Boards (Boot and Shoe Repairing) Order, 1919, namely the repairing of boots, shoes, slippers, and all kinds of leather footwear, *including* the making of bespoke handsewn, riveted, or pegged leather footwear, but *excluding* the manufacture of leather footwear on a large scale, the repairing of saddlery and leather goods other than leather footwear, and the retailing of leather footwear.

An employer is subject to penalties on conviction if he fails to pay wages of at least the minimum rate or to exhibit notices issued from time to time by the Trade Board. It is also incumbent upon him to keep a record of the wages paid to piece workers and other employees, when their work comes within the scope of the Trade Board. It is also an offence not to furnish an Inspector, appointed under the Trade Board Acts, with the information necessary for him to exercise his powers.

This is but a brief summary of the orders issued, by the Trade Board. Full particulars can be gathered by a perusal of the orders referred to.

From the foregoing, it will be recognized how essential it is for employers of labour to be in possession of) and make themselves acquainted with, the rates and particulars contained in the orders issued from time to time by the Trade Board.



SECTION XII  
HANDSEWN BOOTMAKING

BY

H. ROLLINSON, A.B.S.I.

*Twenty years Instructor at the Cordwainers' Technical College  
Six years Manager Messrs. Peal & Co., Shepherd's Bush  
Two years Assistant Master, Cordwainers' Technical College  
Original Instructor for Cordwainers Company's scheme for training  
Disabled Sailors and Soldiers in Handsewn Bootmaking; after-  
wards Chief Instructor under Ministries of Pensions and Labour*





## PREFACE

IT is interesting to write about a craft so rich in history and familiar to everyone as a wearer of boots and shoes (though of recent years many are not so familiar with shoes made handsewn). Those fortunate enough to wear handsewn shoes know the quality and comfort derived from the “perfect shoe,” which is made on a method so complete and satisfactory that it gives, flexibility to the movements of the foot yet resistance to wear in the sole, the welt being the adjuster of the difference between the flexing of the inner and outer soles. Careful preparation of the bottom stuff and the putting of each section in its allotted place so that it *fits* make the construction of the shoe light in weight and pliable to wear, owing to the minimum amount of attachment being used.

The effect of the indirect attachment is that (a) the welt-seam being horizontal in direction with small holdfast on the innersole gives flexibility; (b) the stitching of sole to welt in a vertical direction gives stability; and (c) the welt acting as a hinge between allows the shoe more readily to follow the movements of the foot.

It is the craftsmanship applied that gives the handsewn shoe its standard of perfection, and though there are still many shoes about made by the “dons” (who prided themselves rightly on their skill) it can be safely stated that handsewn shoes are being made of a higher standard than has ever been reached before.

The handsewn shoe sets the standard in the trade. Modern mass production copies it in a vague sort of way, trying by various methods and with the aid of

machinery to produce something which looks like handmade shoes.

In this section the process of making handsewn shoes is described. I have confined myself to the making of a man's brown Oxford walking shoe, and have endeavoured to describe the method in general use to-day. Keeping to one kind of shoe has enabled each process to be dealt with in sequence, and so give the reader the clearest description of the making of the shoe. A brown shoe has been chosen because it does not appear to have been done in any previous book, and since a large proportion of the men's shoes made to-day are brown it is more in keeping with the work most common at the present time.

The photographs were taken by Mr. Brandebourg, 182 Upper Richmond Road, S.W.15, to whom I am obliged.

H. ROLLINSON

## SECTION XII

# HANDSEWN BOOTMAKING

### CHAPTER I

#### THE PREPARATION OF BOTTOM-STUFF

THE bottom-stuff consists of innersoles, stiffeners, toe stiffeners, side linings, welts, felt, shanks, soles, split-lifts, lifts, top-pieces, and in some cases middle soles. The material for each section must have been selected for its purpose, and may be summarized as materials for the foundation—the inner soles; materials for support—the stiffeners, toe-stiffeners, side linings, shanks, middle-soles, split-lifts, and lifts; and materials for wear—the soles and top-pieces.

Bearing in mind that the bottom-stuff (with the exception of the side linings and felt) are of vegetable tannage, the first thing the shoemaker does is to examine his bottom-stuff and ascertain if it is suitable for the work in hand.

#### MELLOWING

Throughout the ages vegetable-tanned leather has been tempered by wetting to make it amenable to the process of making, and for this purpose it is necessary to have a “shop-kit.” An earthenware bowl is best. Iron vessels should be avoided owing to the fact that water coming into contact with iron produces iron salts, which cause indelible stains on the leather. Clean water is essential for many reasons. Tap water

in most cases is the only kind available, but it is not ideal on account of its hardness, due to the presence of bicarbonate of lime. It may be made more suitable by softening with borax (one teaspoonful to every gallon of water). First dissolve the borax in warm water and then pour into the "shop-kit." The borax solution combines with the carbonic acid present, forming carbonate of lime, which, being insoluble in water, forms a sediment, leaving the water softer and with greater penetrating qualities. In addition, the borax has a cleansing effect on the grain of the leather.

The leather is immersed in the water. The actual time necessary for wetting is governed by the part of the hide, its substance, and its tannage; but the leather is in all cases allowed to remain immersed until it is wet through. Innersoles, stiffeners, etc., which are out from a shoulder, will not require as much time for wetting as the soles and top-pieces, which are cut from the butt. The most important point to bear in mind is to see that the various sections of the bottom-stuff are quite wet through to facilitate easy working and good results. Material insufficiently wetted is difficult to work, and produces stains and does not mould to the shape of the bottom of the last. On the other hand it must *not* be over-wetted, as this dissolves the free tannin and impoverishes the material.

The changes that have taken place in the character of the bottom-stuff during the last twenty years render it all the more necessary for the maker to be able to determine the time required for the wetting of each section, whether it be two, four, or six hours, so that he can get the best results during making and preserve the maximum wearing qualities. At present we use the wetting process, without any scientific knowledge, just to our own advantage and to facilitate the making, but as knowledge increases we may know whether we use the wetting to get the maximum benefit or not. With

the aid of the tempering fluids now on the market better results may be obtained, to the advantage of the maker and the finished shoe.

When each section has been immersed its allotted time, it is taken out and stood aside for the surplus water to drain off. This is important, as wrapping up *wet* leather tends to produce water stains and, in some cases, mildew. Do not bend the leather about when wet, as it has a tendency to buckle the grain.

After draining it is ready for the *mellowing*, that is it may be wrapped up in newspaper. The leather should be laid grain to grain, and laid aside free from heat, air, or dust. The time required for mellowing is governed by the section, substance, and tannage.

What actually happens to the sections wrapped up is that the moisture present penetrates the leather thoroughly, soaking and softening the fibres and gelatinous substance, and causing them to swell to their fullest dimensions. Mellowing changes the leather from the rigid to a mellow and mouldable state, the first essential for good shoemaking. A condition the maker aims for is to have his leather in a proper condition for working at the time required, and thus avoid the necessity of re-wetting or, worse still, of working wet leather.

#### SIDE LININGS

While the mellowing is taking place, the maker proceeds to fit the side linings, which are of upper leather and are placed between the vamp and the vamp lining. The side linings extend from the stiffener to the toe-cap, and follow the sides of the last. The object of using them is to support the upper and produce a blend between the flexible upper and the more rigid bottom. Unlike the stiffeners and toe-stiffeners

they must be pliable, because they cover those parts of the foot which require freedom of movement.

Side linings should fulfil the following conditions. Their substance should be comparable with that of the vamp and cap, so as to maintain the shape of the shoe, and the set of four should be of equal substance. Their quality should be nearly as good as that of the vamp, with such exceptions as patent leathers where a more flexible material gives better results. Greasy material must not be used with a dry vamp, or

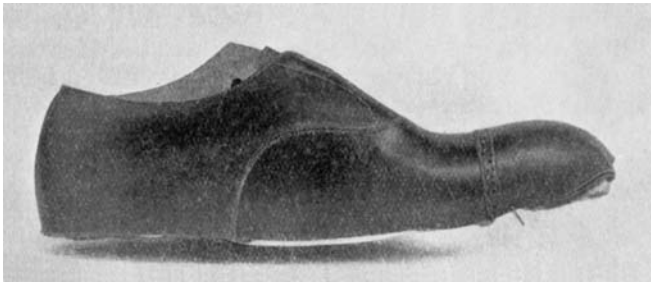


FIG. 1. UPPER PULLED OVER LAST TO OBTAIN LENGTH OF STIFFENER, ECT.

discolouring takes place. The tannage of the side lining is of importance, as, when vegetable-tanned uppers are used, the same material should be used for side linings. The same rule applies to chrome-tanned uppers, as when vegetable-tanned side linings are used with chrome-tanned uppers there appears a dullness on the vamp, one tannage having a tendency to de-tan the other.

To obtain the length of the stiffener, the length of the side linings, and the size of the stiff toe, pull the upper over the last, as shown in Fig. 1.

The length of the side lining is obtained by measuring

from the stiffener to the toe-cap, plus an amount for skiving and forming a blend at each end. In cases where the vamps are stitched through, then it must fit to the underlay of the quarter. The height is governed by the shape of the last. If the latter is high at the sides, then it needs high side linings.

The top of the side lining is shaped concave, and half an inch lasting-over allowance is given (see Fig. 2). Under no circumstances must the side lining be convex along the top (as Fig. 3) or, in wear, that portion will pleat during walking and tend to cause breaks in both lining and vamp. The top of the side lining is skived to form a blend. The width of the skive will be governed by its substance—the



FIG. 2. DIAGRAM SHOWING SIDE LINING SHAPED



FIG. 3. DIAGRAM SHOWING SIDE LINING CURVES ON TOP



FIG. 4. DIAGRAM SHOWING SIDE LINING SKIVED

thicker the material the wider the skive. The end edges are skived to meet the stiffener (or underlay of quarter) and the skive on the toe-cap, overlapping each other to maintain the range. The bottom of the side lining is not skived (see Fig. 4).

#### STIFFENERS

The stiffeners are next fitted, their purpose being to strengthen the upper at the rear portion and so prevent it from being forced backward during walking. They keep the foot in its correct position in relation to the

shoe—the elongation taking place towards the toe where allowance has been made for it. They also prevent the upper being forced backwards as the foot enters, and, by supporting the back of the shoe during walking, they avoid “treading over.”

The quality of the stiffener should be such that it may have sufficient strength to endure the strain that will be put upon it during wear, and help the shoe to retain its original shape. The strain the stiffener is subjected to will vary in degree according to the character of the upper and the class of shoe.

A stiffener should be pliable, resilient, and springy; having



FIG. 5. DIAGRAM SHOWING LENGTH OF STIFFENER, AND HEIGHT AT BACK

a gripping property along the top to ensure a well-fitting shoe, as much depends, in such cases as Oxfords, courts, and other low-cut designs, on the stiffener for a good fit at the heel region. It should be cut from material that is of good pliable fibre and of even substance, preferably from the shoulder so as to serve its purpose without unduly increasing the weight of the shoe. It should be lightly hammered so as to form and fix its dimensions, and so prevent any alteration in shape during wear.

To obtain the length of the stiffener with the upper still drafted to the last, measure from the centre of the waist, round the heel to the centre of the opposite waist. When the vamps are stitched through, take the length of the quarters.

The height of the stiffener is taken as one-fifth the



length of the foot, plus lasting-over allowance. In this case the shoe is size 8, and the length of the foot would be size 5, which equals 10 in. One-fifth of 10 in. is 2 in., and the lasting-over allowance is  $\frac{1}{2}$  in. Therefore the height of the stiffener would be  $2\frac{1}{2}$  in. (see Fig. 5).

The stiffener is shaped along the bottom to suit the last, and afterwards shaped along the top. Usually, men's Oxfords are

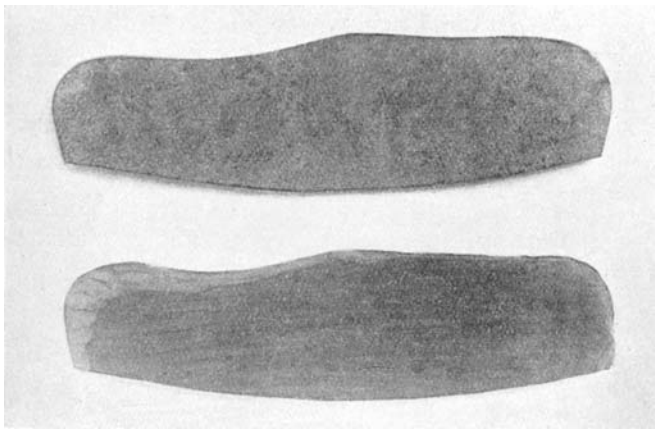


FIG. 6. STIFFENER SHAPED AND SKIVED

cut to be, when finished,  $2\frac{5}{8}$  in. at the back,  $2\frac{1}{4}$  in. at the inside quarter, and 2 in. at the outside quarter. The stiffener must be shaped to suit the design of the upper as follows : back, 2 in. ; inside,  $1\frac{3}{4}$  in. ; outside,  $1\frac{1}{2}$  in. plus the  $\frac{1}{2}$  in. for lasting-over. Fig. 6 shows the stiffener shaped and skived.

Lay the shaped stiffener on its fellow, grain to grain, and cut out, thus obtaining a pair. The stiffeners are now ready for skiving, and their character will govern the method adopted—whether on the grain side, flesh side, or both. The latter method is generally adopted,

the major portion being taken from the flesh side while the grain side is skived about  $\frac{1}{2}$  in. in width to prevent curling edges. The strongest part should be at the back (see Fig. 7), the ends being tapered off to blend in shape. The top is skived to form a blend, and enable the stiffener to be hidden in the shoe. The ends are skived to meet the vamp or side lining. The



FIG. 7. DIAGRAM SHOWING STIFFENER WITH STRONGEST PART

bottom is not skived for a sewn seat. The flesh must be skived, and the grain side scraped to remove any dirt and to allow the adhesive to adhere without running.

#### TOE STIFFENER

The purpose of a stiff toe is to make the toe-cap portion retain the shape of the last on which it was made. The material most

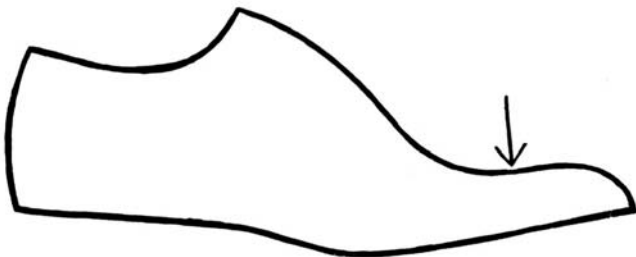


FIG. 8. DIAGRAM SHOWING LENGTH OF CAP TRANSFERRED TO LAST

suitable is shoulder. The toe-stiffener must be inserted either

between the cap and vamp or between the vamp and lining, but the latter method is mostly adopted.

To ascertain its shape, with the upper still on the last, take the length of the cap either by tape-measure or compass. Remove the upper from the last, transfer the length of the cap to the last and mark thereon as shown in Fig. 8. Cut a paper pattern, along its front, the same shape as the cap, press round for the last to mark the paper round the feather of the toe, add  $\frac{5}{16}$  in. lasting-over allowance; i.e. just sufficient for lasting into the feather and to be caught with the sewing during welting.



FIG. 9. DIAGRAM SHOWING STIFF-TOE SHAPED



FIG. 10. DIAGRAM SHOWING STIFF-TOE SKIVED

Then cut out as shown in Fig. 9. Now lay the pattern on the material and cut out rights and lefts.

The toe-stiffener is then skived to enable it to be hidden in the upper to maintain the shape of the last, but it must be of sufficient substance in the centre to cause the toe portion to retain its original shape during wear. Along the front it must be skived rather deep to form a blend between the soft vamp and the stiff toe-end, both grain and flesh being removed to prevent curling downwards during wear. It is graduated to give the required support at the bottom edge, by reducing it to give just sufficient strength and yet not interfere with the shape (see Fig. 10). Most of the skiving is done on the flesh side, but particular care must be taken to skive the front at least  $\frac{1}{2}$  in. on the grain side to prevent curling during wear. For the

same reason many prefer the toe-stiffener inserted between the vamp and cap.

#### HEEL-STUFF

By this time the heel-stuff is ready for fitting, and the lifts are fleshed and levelled and the grain removed. If on the loose

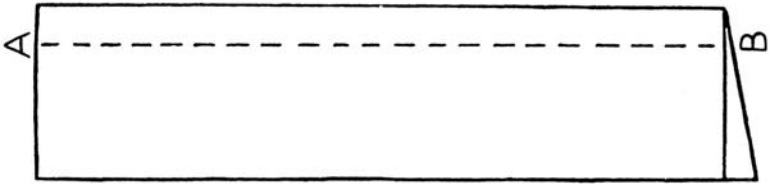


FIG. 11. DIAGRAM SHOWING SPLIT LIFTS, GRAIN SIDE UP, AND DIRECTION OF CUTTING ALONG LINE A TO B TO SPLIT

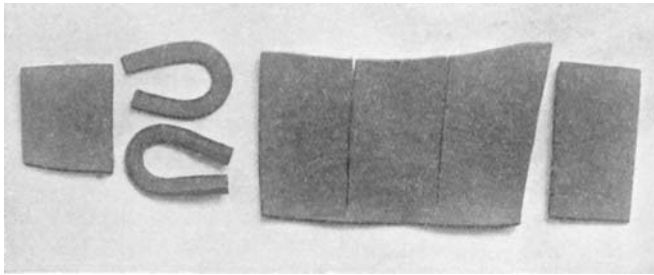


Fig. 12. SOLE PIECES, SPLIT LIFTS, LIFTS, AND TOP PIECES

side they may be lightly hammered to firm them.

The split-lifts are shaped to 9 in. by 1 in., fleshed, levelled in substance, and the grain removed. To split them they are laid on the cutting board lengthways and by cutting  $\frac{1}{4}$  in. from the edge with a slanting cut  $\frac{1}{2}$  in. wide, the pieces are divided into two sections  $\frac{3}{4}$  in. wide, with a skived edge as shown in Fig. II. They are

then turned on the lap-iron into a “horseshoe” shape, with the skived edge in the centre, and tapped down gently to fix in shape (see Fig. 12).

The top-pieces are then fleshed and levelled and afterwards hammered to make them firm and solid for wear. Hammer from the centre outwards. Fig. 12 shows the sole-pieces, split-lifts, lifts and top-pieces fitted ready for use.

## CHAPTER II

### ADHESIVES

THE adhesives used in handsewn work are for three purposes: support—as with stiffeners and toe-stiffeners; convenience—for fixing bottom-filling, middle soles, and soles; and appearance—for closing the channels and combining the sections of heels. The adhesives generally used are rye paste, glue paste, and acetic acid and gelatine.

*Rye paste* is made with rye flour (which is rich in gluten) and boiling water, the boiling water being poured on to the rye flour and well beaten up to get it smooth and free from lumps.

*Glue paste* is made with white flour in the same way as rye flour, dissolved glue being added to get the required strength and body.

Flour pastes have one disadvantage when used in shoes, seeing that they are mostly used on mellow leather, for in the presence of a little moisture in the leather they are liable to fermentation and the development of an unpleasant odour in the shoes. To prevent or minimize this a little carbolic should be added.

*Acetic acid and gelatine* are mixed by first breaking up the gelatine into small pieces and then putting them into a jar. Pour in the acetic acid and allow a few hours for the gelatine to dissolve. The consistency required is determined by the proportion of acid to gelatine.

*Rubber solution* is sometimes used.

Adhesives are a combination of material possessing the property of sticking and a solvent. They are solutions, and the combination of the two constituents governs the characteristics of the adhesive. The solvent usually governs

the power of sticking, the time taken for setting, and the manner in which the adhesive sets. Water used as a solvent is slowly evaporated and produces a slow-setting adhesive. A quickly drying solvent, such as acetic acid, is quickly evaporated and hence sets quickly, and is usually more rigid. The tenacity of adhesives depends quite as much on the method of using as on the adhesive itself, the amount used being important. The success of an adhesive depends upon its suitability and the substances being stuck together, the intimate contact of the surfaces being united, and the elimination of air and dirt, which are the chief obstacles to adhesion.

Slowly evaporating adhesives such as pastes are applied by the finger and need well rubbing in to be effective. Rubber solutions are applied with a brush, acetic acid and gelatine with the roughened end of a piece of cane.

Since the adhesive dries by evaporation a certain amount of time must be allowed for it to get tacky before the surfaces are placed together. This avoids spreading and ensures perfect adhesion. Slightly hammering the sections as affixed is often resorted to, to ensure the air bubbles being forced out and the sections knitting close together.

The chief considerations when selecting an adhesive are (1) cost; (2) time taken to set; (3) effect of heat and moisture; (4) degree of flexibility; (5) staining effect; (6) contraction; (7) liability to germinate.

Such leathers as glaze kid, willow and chrome patent require a slow-setting adhesive such as rye paste, while such leathers as buck skin and doe skin require a still milder one, such as glue paste which is not too rigid.

The adhesive should be used sparingly, as excess may result in blistering, nor should it be used on *wet* leather.

### CHAPTER III

#### INNERSOLE PREPARATION

IT is essential that the following principles be adhered to during the process of blocking the innersoles to the last—

The innersoles must be in a mellow state.

They must be strained at certain points of application, and in a heel-to-toe direction with a slight transverse tendency.

The tension set up should cause the innersoles to fit close to the bottom of the last, and impart to them the property of “draft.”

They must be allowed to dry naturally so that the shape of the last is permanently fixed and causes them to retain that shape during wear.

Assuming that the innersoles are in a suitable condition (under no circumstances must they be used *wet* as they would work up rough and stain and get discoloured) they are examined and a decision made as to the best way to cut them, i.e. both toes one way or heel to toe. Select the best part for the toe if there is any variation in quality. See that the bottom of the last is clean and free from any broken rivets, etc.

Lay the lasts on the innersoles in the positions decided, and mark round with the sewing awl. An allowance of  $\frac{1}{4}$  in. all round should be made for blocking. Cut out a right and a left foot. Remove the loose flesh and dirt with the bent Swedish knife. If they are of uneven substance they are levelled by removing the surplus from the flesh side. It is much better if they are of uniform substance, so that nothing but the loose



flesh has to be removed, since cutting deep into the leather injures the fibres from a welt-seam-producing point of view.

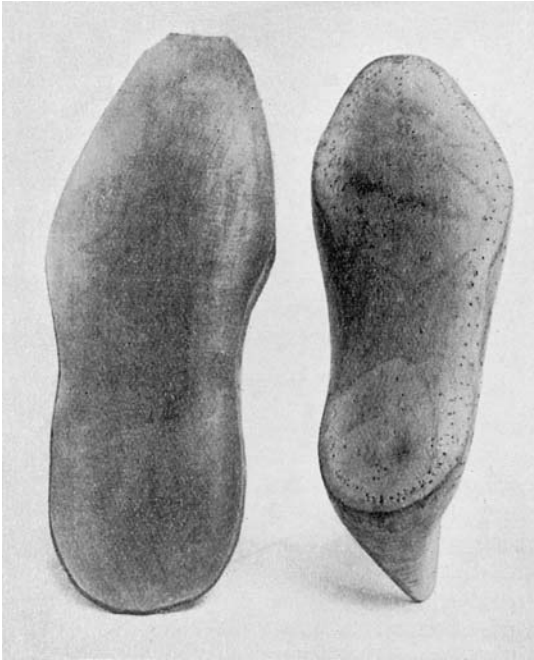


Fig. 13. INNERSOLE AND BOTTOM OF THE LAST

They are next lightly hammered to firm them, and here caution is necessary. If the material is of a soft nature a little hammering assists in fixing them, while a hard innersole needs very little or no hammering at all. They should be hammered grain-side up with light quick taps, commencing in the middle and working outwards, without bruising the grain, and only with

the object of firming them to avoid spreading during wear. Care must be taken, not to produce a hardness that will cause discomfort during wear, remembering that the foot comes in close contact with the innersole. The insole has to serve two purposes : first, to be a good foundation, and, secondly, to allow the foot to make its impression thereon, one of the essentials of a comfortable shoe.

After hammering they are scraped on the grain side to remove all dirt and the light surface of the grain, and so minimize the cracking tendency during wear. French chalk is next applied to the grain side to assist in keeping it clean, and to avoid its sticking to the bottom of the last.

In Fig. 13 is shown the right foot innersole and the bottom of the left foot last ready for blocking.

#### BLOCKING

The innersole is now ready for blocking, but we must first determine the points of application at which we intend to strain it (see Fig. 14). Having located the positions, our next point must be the order in which the necessary “pulls” must be taken, so as to ensure uniformity in the pair, as well as bulk (see Fig. 15). The direction of the “pulls” must be from heel to toe, with a slight transverse tendency (see Fig. 16).

Lay the last on the innersole, with the bottom to the grain side, and allowing the innersole to be an equal amount over the edge of the last all round. When in this position secure at the back of the heel with three rivets, as *A, B, C* (Fig. 16). (The figures *outside* the leather outline of the last denote that the rivets are placed on the *sides* of the last to secure the innersole, after taking the pull; No. 9 is *inside* and is placed on the bottom of the last to avoid injury at the toe.) The innersole is strained at No. 1 with the pincers, and secured with a fine

gauge rivet. No 2 is next taken and secured, and so on in the order indicated in Fig. 16. Care must be taken to prevent the hammer of the pincers making indents in the sides of the last.

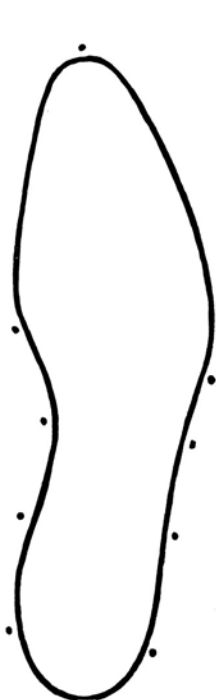


FIG. 14. DIAGRAM SHOWING POSITIONS OF APPLICATION

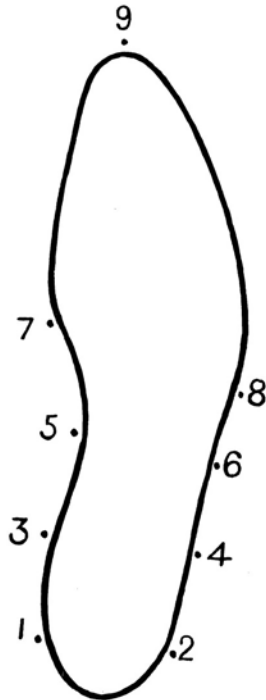


FIG. 15. DIAGRAM SHOWING ORDER OF TAKING "PULLS"

The magnitude of each strain taken is modified according to the point of application—small at first at Nos. 1 and 2 and gradually increasing as one gets from the reaction point, the object being to produce a blended tension from heel to toe. No. 9 pull being the

greater, it is secured with a rivet on the bottom of the last, at  $\frac{1}{4}$  in. from the toe, and bent or knocked down over the toe-end.

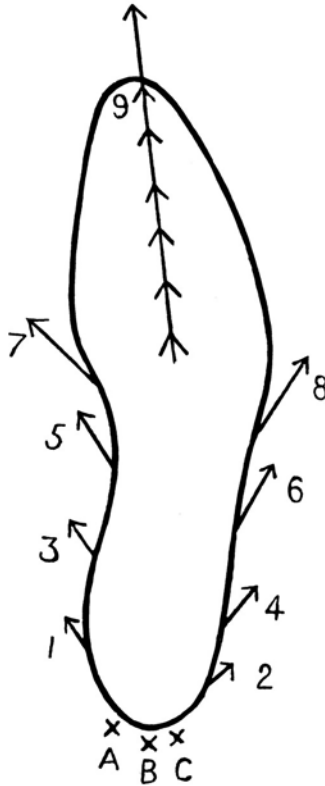


FIG. 16. DIAGRAM SHOWING DIRECTION OF "PULLS"

The innersole is then rubbed down with the longstick to smooth the surface. Hammering should be avoided at this stage, as it would only make indents, and upset the tension set up in the drafting. In Fig. 17 is shown the insole completely blocked.

After blocking, the innersole is laid aside to dry naturally, allowing sufficient time for the leather to dry slowly and retain its pliable character. Just as time was necessary for the wetting and mellowing to change from dry to mellow, so must



Fig. 17. INNERSOLE BLOCKED TO THE LAST

time be allowed for the leather to dry and thus retain the characteristics so essential for a sound and comfortable foundation. One of the chief complaints against welted innersoles is their liability to crack on the grain during wear.

This is without doubt largely caused by artificial drying in

front of the fire or in the sun. Artificial drying of vegetable-tanned innersoles is dangerous, since the heat first strikes the flesh side, with the result that the grain is made brittle.

When the innersoles are dry they are secured temporarily to the last with fine gauge rivets down the centre. The blocking

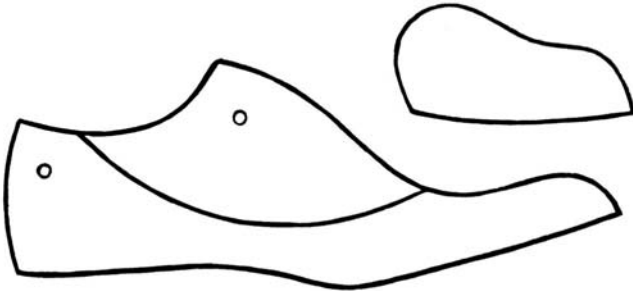


FIG. 18. DIAGRAM SHOWING LAST AND JOINT SECTION

rivets are then withdrawn, without distorting the innersole or damaging the last.

#### ROUNDING INNERSOLES

The object of rounding is to design a shape on the innersole that will produce a shoe to follow the shape of the last, according to instructions, with the heel, forepart, and waist blending in length and width with each other. The innersole must be rounded to continue the profile of the last, realizing that to all intents and purposes the edge of the innersole reproduces a part of the last, and therefore the edge should harmonize with the curves of the last (see Fig. 18).

It is advisable to adopt a methodical process by rounding the heel first, then the forepart, and finally the waist. Hold the last in the left hand, with the innersole downwards, and, commencing at the side of

the heel, cut upwards on to the last with clean cuts producing a well-defined edge. In the same manner round the forepart, noticing the shape of the last, and following its profile, the receding toe, roundness of inside, and squareness of outside



Fig. 19. INNERSOLE WITH THE HEEL AND FOREPART ROUNDED

joints. Fig. 19 shows the innersole on the last with the heel and forepart rounded.

The next process is to decide the proportions for the heel, forepart, and waist. These are governed by the class of shoe being made. The higher the heel the shorter will be the seat, the shorter the foreparts, and the longer the waist. Conversely, the lower the heel,

the longer the foreparts and the shorter the waists. High heels also have small top-pieces, and have narrow waists to blend, while low heels have large top-pieces and wider waists.

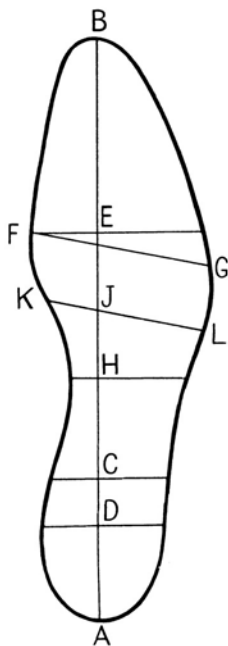


FIG. 20. DIAGRAM SHOWING LOCATION OF POSITIONS

When locating the positions given, work from the back of the last, as shown in Fig. 20. In this case we are making a man's walking shoe.

Let the length of the last be  $A$  to  $B$ , and the heel-line one-quarter of  $AB$  from  $A = C$ . The seat-line is found by taking one-sixth of  $AB$  from  $A = D$ , and the tread-line is two-thirds of  $AB$  from  $A = E$ . The inside joint is  $F$ , and the outside joint is taken at an angle of 10 degrees from  $F$  as  $G$ . The waist-line is midway between  $D$  and  $E$  as  $H$ . The length of the 'forepart is shown between  $E$  and  $H$  as  $J$ .  $K$  is the junction of waist and forepart at the inside, and  $L$  is the junction of the waist and forepart at the outside. The line  $KL$  is drawn parallel to line  $FG$ .

The outside waist is then shaped, and as the present demand is for straight outsides, the innersole must be rounded straight from heel-line to the joints on the outside (see Fig. 21).

The inside waist is next shaped by blending from the heel corner to the joint at the inside, the centre of the



curve being at the waist-line, thus giving the narrowest part along the waist-line.

The curves should blend and prominent corners must be avoided, the edges being cleanly cut to define the shape and



Fig. 21. INNERSOLE ROUNDED

for accurate working when marking the width of the feather, etc. Fig. 21 shows the innersole rounded.

#### FEATHERING INSOLES

Feathering the innersole is one of the most important processes in handsewn making, since it governs the

life and comfort of the shoe. The object of feathering is to provide a rebate or recess for the upper and welt to bed into, thus enabling a horizontal seam to be made, and by reducing the substance of the edge of the innersole to produce a blend between the rigid bottom and the more flexible upper.

The width of the feather is determined by the substance of the upper, plus the substance of the welt, and the width of the welt to be seen all round when made. It is essential that the width be kept at its minimum, only allowing sufficient for each particular case. Wide feathers have a tendency to cause curling, as well as the discomfort of the welt seam coming in contact with the weight-bearing portions of the foot. It should be of such a width as to allow a uniform width of welt to be seen all round, assuming that there must be a certain amount of welt *between* the welt-seam and the sole stitches, as any overlapping defeats the objects of both seams.

Before deciding the actual width of the feather another important point has to be considered: that is, as the substance of the upper (with its insertions) varies, i.e. at the heel, sides, and toe, so must the width be adapted to accommodate these varying substances. This enables the range to be maintained and provides for a level surface for the welt to lie on. It therefore follows that at the toe, with the extra substance of the upper, including the cap, vamp, stiff toe, and the lining, we must provide extra width over the width at the sides where only vamp, side linings, and lining are used. It is usual on this class of shoe to make the welt a little more prominent at the outside joint position, which is obtained by slightly reducing the width of the feather at that part. The sewn seat, having a quarter, stiffener, and lining, must be made of such a width that the link-stitches on the upper side can be placed just under the edge of the upper, tapering to meet the waist at the heel

corner, according to the substance and the length of the stiffener, and made to blend with the side linings so as to maintain the "range."

Having determined the width required, the compasses are set and the innersole is marked from the edge. From the line so marked the extra allowances are made for the varying substances of the upper (see Fig. 22).

The depth of the feather must next be determined, for it is this depth which enables the upper and welt to be laid side by side with the holdfast, and thus enables the attachment to be horizontal in direction so as to produce a flexible and watertight seam. It is also necessary to allow a sufficient substance and strength at the edge to resist the tendency to curl during wear. It must be admitted that curling does take place during wear. In walking the strain on the upper is in an upward direction, while the more rigid bottom resists such strain, and, therefore, unless the edge of the innersole is of sufficient strength to keep the upper *to* the welt, the upper draws the edge of the innersole away from its original position, causing the edge to curl as well as exposing the seam, and thus reducing the waterproofness of the seam.

The depth of feather should generally be one-third



FIG. 22. DIAGRAM  
SHOWING WIDTH OF  
FEATHER

the substance of the innersole. It should be cut with a sharp-pointed knife held in the right hand in pen-like manner, slightly slanting outwards. On the right shoe, commencing at

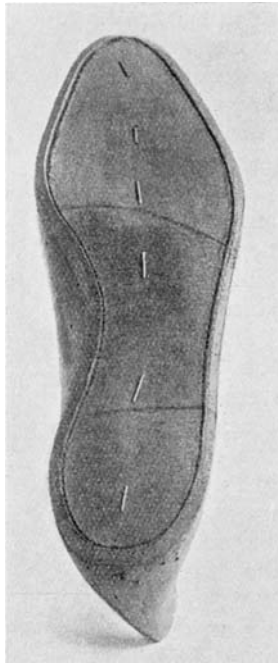


Fig. 23. FEATHER CUT AND OPENED

the inside heel corner, cut a long line with as nearly as possible one continuous cut all round the inside. Take the last in the left hand and a channel opener in the right, and open up the cut made in an outward direction, using the same order as the incision was made. Fig. 23 shows the feather cut and opened.

The edge section is next cut off, and when doing this an allowance must be made for the varying substance of the upper, so as to produce a level bed for the welt, and thus maintain the range. The inner section is cut out with the feather plough. It is important here to note that the feather edge of the innersole must blend with the substance of the upper with its insertions—a stout feather edge with a light substance upper would during wear show a pronounced feather edge and defeat the objects of the blend, and might cause the upper to break at the junction of the upper and the feather edge of the innersole, as well as increasing the size of the shoe in appearance.

A feather edge too light to blend with the upper tends to cause the upper during wear to more easily draw the feather edge upwards, thus opening the seam and spoiling the appearance of the shoe, and reducing its waterproofness.

It is now necessary to decide the width of the holdfast (sometimes called the (“between substance”)), that is, the amount of the innersole to which we are going to sew the upper and welt. Since the amount used will govern the width of the welt-seam, as well as the flexibility of the shoe, we must keep it at a minimum, only allowing sufficient to enable a seam to be made, strong enough to bear the strain during wear, and thus keep the sections in their original position. It is governed by the substance of the shoe and seam, as well as the character of the innersole. Where the innersoles are inclined to be soft or loose, then a little extra width is necessary to get a sufficient holdfast.

#### PIERCING

After the width of the holdfast has been marked from the innersole feather, the piercing of the holes is done; that is, the positions of the stitches to be used

when sewing the welt-seam are decided. The same awl *is* used as for sewing, the awl entering the innersole on the line and coming out at the bottom of the feather. It is essential that the holes made be uniform in line, or irregular sewing will result; if taken too deep they will cause the sewing to be down, and if too high the sewing will be up. By allowing the awl to come



FIG. 24. DIAGRAM SHOWING  
PIERCING TOO DEEP

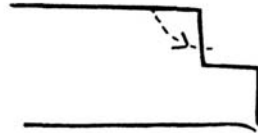


FIG. 25. DIAGRAM SHOWING  
PIERCING NOT DEEP ENOUGH

out *below* the bottom of the feather it will take up some of the feather edge and cause it to buckle up and thus show an impression of the sewing on the inside of the insole and produce discomfort to the wearer, as well as giving a greater width of in seam. Fig. 24 shows piercing too deep and Fig. 25 not deep enough. If the holing is not of correct depth some of the strength will be lost and will result in sewing under and out of line, thus upsetting the range, particular care being taken that during piercing the awl comes through, the holdfast at the bottom of the feather in perfect alignment to enable the sewing to follow the feather made.

The heel is pierced first. The length of stitch on the upper side should be three per inch. This means that during piercing they must be graduated to produce a uniform length of link-stitch on the upper, as the curves alter in degree from the line of the holdfast to the upper, the link-stitch at the back overlapping the back seam.

The length of the stitch in the waist and forepart of this shoe should be four per inch on the welt side.

Hence, the stitches are graduated according to the concave and convex curves of the innersole so that an equal length of

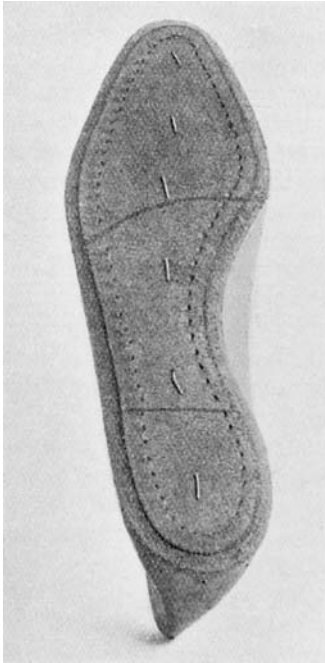


Fig. 26. INNERSOLE PIERCED



Fig. 27. INNER SOLE  
FEATHERED AND GROOVED

stitch is obtained on the welt, any variation being made on the innersole side. Fig. 26 shows the innersole after piercing.

*Alternative to Piercing.* Another method is often adopted, that is, by cutting a groove to decide the width of the holdfast and to provide a space for the stitches to lay in. If this is adopted, it must only be

a very shallow groove or, during sewing, the innersole may be buckled on the grain side. It is obviously not recommended for the lighter insoles, and when this groove is adopted piercing

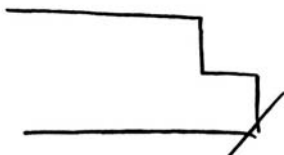


FIG. 28. DIAGRAM SHOWING BURRED GRAIN  
EDGE OF INNERSOLE REMOVED

need not be done. Fig. 27 shows the innersole feathered and grooved.

The grain on the edge of the innersole is now removed by running the knife between the last and the innersole. The removal of the burred edge prevents it curling inwards during wear and maybe cutting the linings and causing discomfort (see Fig. 28).



## CHAPTER IV

### LASTING

BEFORE we commence this operation it will be to our advantage to consider the *object* of lasting, which may be defined as "the art of compelling a flat, yielding or unyielding material of various textures to fit to the varying curves of the last" in such a way that when the last is withdrawn it retains the shape of the last, and during wear it always returns to the shape of the last upon which it was made. In order that this object may be successfully achieved, the upper must be strained in such a way that it will fit tightly and closely to the last, and thus while taking these strains we set up a tension, which will give that degree of tightness necessary for a clean fit.

The following principles must be applied: (a) the upper must be placed on the last in a "central" position to enable the strains being taken to suit the form of the last; (b) the draft-strains must be taken at certain points of application to enable the tension being set up to be along the lower curves of the last; (c) each strain must be taken in a certain order with the object of supporting the other strains; (d) the strains must be taken both longitudinally and transversely in direction, producing a heel-to-toe tension in blend; and (e) the degree of strength of each strain must be regulated according to (i) the position of its application, (ii) the shape of the last, (iii) the texture of the upper materials, and (iv) the design of the upper.

If it is essential for the upper to be strained during lasting, it becomes necessary to have a system for

deciding the positions at which the strains are to be taken. Such positions must be the most favourable for getting the upper to fit to the varying curves of the last, so as to ensure uniformity being obtained in the pair, as well as in the bulk, and to ensure the design of the upper being maintained.

A common idea of lasting appears to be that with the aid of a pair of pincers, the upper is drawn to the wood, but here two points must be considered. The questions that arise are, firstly, what happens to the materials when strains are applied to them in the direction of length; and, secondly, what happens to the same materials when strains are afterwards applied in a transverse direction?

It is the strains set up in a longitudinal direction that decide the length of the vamp, cap, etc., and decide the amount of heel-to-toe tension. The transverse strains bring the upper to the lower curves of the last and at the same time support the longitudinal strains. The resultant effect of the two, when correctly adjusted, is to change the stretch into a tension, and so convert the upper to the shape of the last: with a blended tension. This will give a clean fitting shoe, and, moreover, the tension set up causes the upper to retain the shape of the last on which it was made. The pulls in the longitudinal direction alone cannot do that, for only by all the strains being taken correctly can the conversion take place.

Further, the upper is strained over convex and concave parts of the last, and with that operation another factor makes itself manifest, an opposing force, which renders it necessary so to adjust the pulls that overstraining does not happen. The difficulty is that the pulls must be so adjusted that the upper will fit the concave parts without overstraining at the convex parts.

The effects of overstraining may be summarized as follows: (a) it removes the nature from the leather; (b) it upsets the previously applied strains; (c) it makes the shape of the shoe when the last is withdrawn different from the shape of the last; (d) it unduly presses upon certain parts of the anatomy of the foot, the non-correlated strain conveying the impression of tightness in comparison with the less strained parts.

The effect of a strain is often considerably modified by the form of the last. For instance, protuberances have the effect of retarding and diverting the amount of strain intended to be conveyed in a given direction. The seams also are diverted according to their lines and the direction of the pull. Certain parts of the upper are supported by stiffeners, reinforced with adhesives, and the other parts, being relatively weaker, are affected more during straining.

Lasting may be divided into three separate processes—

- (a) Positioning the upper on the last.
- (b) Drafting.
- (c) Lasting.

It is first necessary to decide the points of application at which the drafting pulls are to be taken, and these are illustrated in Fig. 29.

It is necessary to realize that a pull cannot be exerted unless we pull against something which resists



FIG. 29. DIAGRAM  
SHOWING POINTS OF  
APPLICATION LOCATED

the action. No agent can exert force unless it meets with resistance, and to every action there is always an equal and opposite reaction. The mutual action of the two factors is always equal and in an opposite direction.

The order of taking the pulls is the next question to be decided.

The first pull is at the toe, then the inside, and afterwards the outside, at Nos. 2 and 3, 4 and 5, and 7 and 8. Note that they are taken exactly opposite each other, as grouped. Pulls 4 and 5 are always in front of the joints, inside and outside, in order to ensure the effect of the hoist spreading to its maximum length and also to avoid giving a binding tendency across the joints. No. 6 is taken at the back (see Fig. 30).

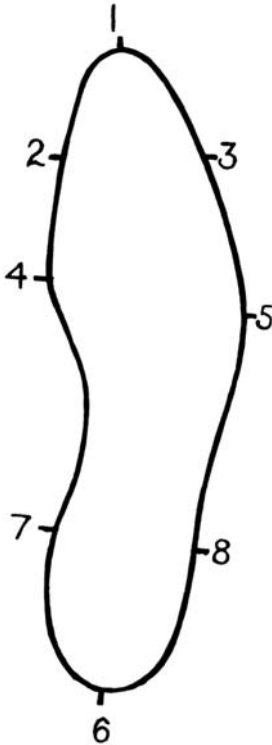


FIG. 30. DIAGRAM ORDER IN WHICH "PULLS" ARE TAKEN

The *direction* in which the pulls are taken is next decided. No. 1 is longitudinal, from heel to toe. Nos. 2, 3, 4, and 5 are first longitudinal and then transverse. No. 6 is straight up the back. Nos. 7 and 8 are first longitudinal then slightly transverse.

Fig. 31 illustrates the positions at which the draft pulls are taken *inside* of the last, whilst Fig. 32 shows the positions at which they are taken *outside* the last.

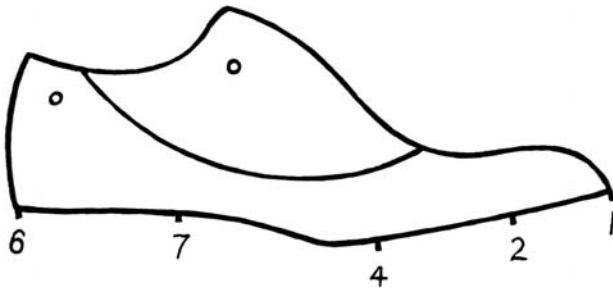


FIG. 31. DIAGRAM SHOWING POSITIONS AT WHICH DRAFT PULLS ARE TAKEN ON INSIDE

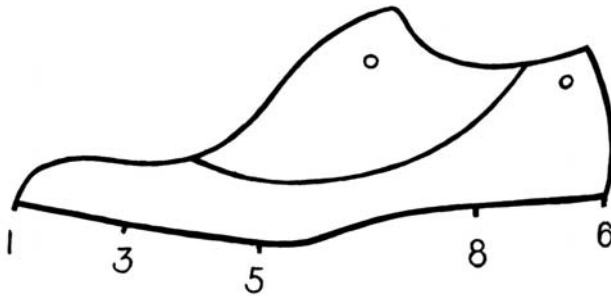


FIG. 32. DIAGRAM SHOWING POSITIONS AT WHICH DRAFT PULLS ARE TAKEN ON OUTSIDE

#### OPERATION OF DRAFTING

Prepare the upper by inserting the stiffener, which must be nearly dry and with the adhesive applied on both sides to the unskived parts only. Allow the adhesive to get tacky, so that it will not run or slide from its intended position. Avoid any excessive moisture either on the stiffener or in the adhesive, otherwise when pressure is applied during drafting it may give rise to a stain on the quarters.

Apply the adhesive to the flesh side of the toe-stiffener, and to the underneath part of the vamp from the cap seam toe-wards, place the toe-stiffener in position grain side next the lining, and tap down lightly on a flat-iron (with an apron next to the upper) to fix and remove air bubbles. Do not put any adhesive between the toe-stiffener and the linen vamp lining.

Fig. 33 shows an upper, with the stiffener, side linings; and toe-stiffener fitted into their respective positions. In many

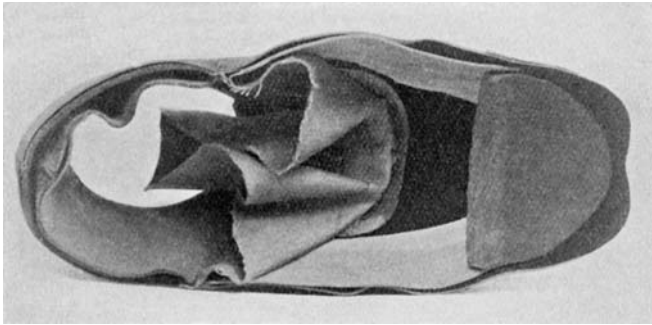


Fig. 33. UPPER FITTED WITH STIFFENER, ETC.

cases the linen vamp linings are damped previous to drafting to prevent tearing, and to assist in “setting up” and avoiding wrinkling during wear. This practice will be governed by the quality of the lining, and whether cut “tight-to-toe,” “tight-across,” or “on the bias.”

#### POSITIONING ON THE LAST

Having taken note of the form of the last, its symmetry, and the relation of the inside to outside, apply a little French chalk to the lining, and position the upper on the last in a central position so that when drafted it will be straight. According to the symmetry

of the last so must allowance be made in positioning. It may happen that the last is thinner and smaller on the inside than on the outside, in which case the upper must be placed with the cap slightly to the inside, to allow for the greater strain applied at the lower parts to get the upper down to the last. Since the strains are being taken in a forward direction it will enable the cap to be straight when drafted.

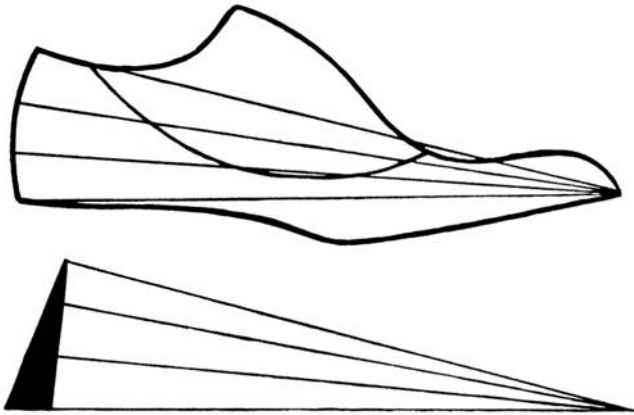


FIG. 34. DIAGRAM SHOWING MECHANICAL PRINCIPLE OF THE WEDGE APPLIED TO "HOIST"

### HOIST

It is now necessary to take into consideration the amount of "hoist." This is a term used to describe the raising of the upper at the heel, previous to drafting, the object being to enable a greater longitudinal tension to be set up especially at the back region. It is an application of the mechanical principle of the wedge. It is clear that the last differs in length if measured from the extreme end of the toe to the centre of the

back at the seat, and the top of the last. The amount of variation can be obtained by marking the last at certain points and then measuring. Having done this, it will be understood that the more we raise the upper at the back the more we are raising it to a shorter length line (see Fig. 34). When hoisting

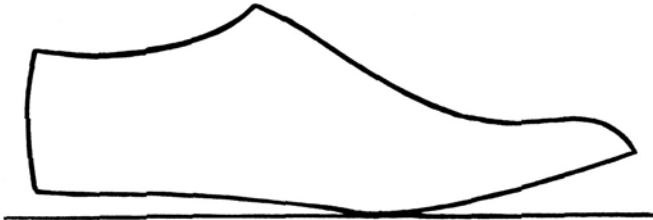


FIG. 35. DIAGRAM SHOWING DEAD LAST



FIG. 36. DIAGRAM SHOWING LAST WITH DROP WAIST

the upper the amount must be governed by: (a) the shape of the last, its pitch, spring, etc.; (b) the design of the upper; and (c) the texture of the upper materials. Lasts of little pitch (Fig. 35) take more hoist than lasts with drop waists, and a pronounced curve at the top of the joint (see Fig. 36).

In the case of a man's shoe, such as we are making,



a 1 in. hoist is ample, and allowing for the  $\frac{1}{2}$  in. lasting-over allowance, we raise the upper  $\frac{1}{2}$  in. above the innersole at the back.

Hoist can be used to advantage, but it can also be abused by giving an excessive amount, causing the design of upper to be altered, the seams thrown out of line, and overstraining at certain parts.

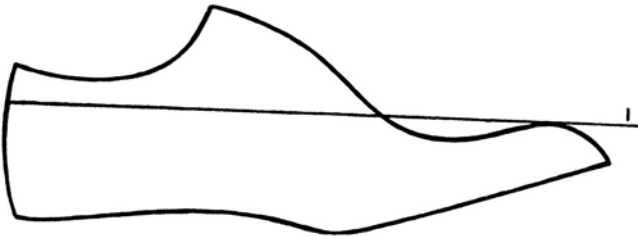


FIG. 37. DIAGRAM SHOWING FIRST "PULL"



FIG. 38. DIAGRAM SHOWING LAST WITH RESISTANCE POINT AT X

### PULLS

With the upper hoisted the *first pull* is taken. Its direction must be as straight as possible (Fig. 37) so as to enable the strain to be effective to the maximum length. Its magnitude must be such that it causes the

upper to grip the last along the lower curves, and brings it over the last to the required vamp and cap measurements. It is the predominant pull, and the magnitude of strain must be such that, while allowing the following pulls to be taken, it does not lose its predominance. The importance of its being taken as straight as possible is to minimize the effect of resistance at  $X$

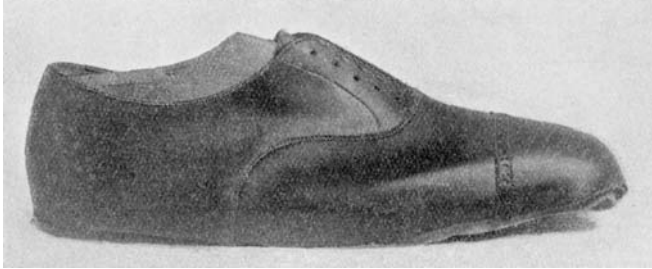


Fig. 39. UPPER WITH FIRST PULL TAKEN

(Fig. 38) and so avoid the danger of cracked toes, especially on patent or leathers highly finished on the grain side.

When taking this first pull make due allowance for the leather changing its shape and form, and avoid jerking. A gentle pull should first be taken, and the upper secured at the toe with a rivet, then laid aside while the fellow upper is pulled over. The rivet should next be withdrawn and the upper restrained with a greater strength. It will be found that the upper will more readily adapt itself to the shape of the last, and if not to the required measurement should be pulled again, and it will respond to the gentle treatment. The mistake is often made of pulling stretchy flexible material too hard, and too suddenly, when taking the predominant pull, and if the subsequent strains are

adjusted to this the results are often, disastrous. Fig. 39 shows the upper with the first longitudinal pull taken.

The side linings are next inserted, and these must fit to the skiving on the cap, the end of the vamp, and along the sides of the last.

The *second pull* is taken at the inside, straining first in a longitudinal direction and then in a transverse direction, at the same time drawing the upper to the last. Bear in mind that the opposite side of the upper is *free*, and any excessive straining

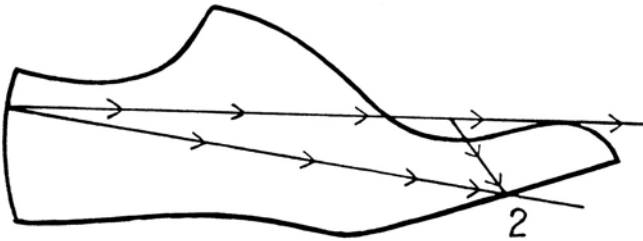


FIG. 40. DIAGRAM SHOWING NO. 2 "PULL"

at this point of application will twist the upper from its original position. Fig. 40 shows the directions of the second pull.

The *third pull* is taken at the outside, first longitudinally and then transversely, bearing in mind that the last is usually thicker at this part, and hence the magnitude of the pull must be less owing to the upper more readily striking the last at this point. The difference in the height of the last at point 3 compared with that at point 2 will govern the difference in the magnitude of pulls Nos. 2 and 3 respectively (see Fig. 41). It usually follows that the higher the last the less the pull, the lower the last the greater the pull. Excessive strain at No. 3 will cause the upper to stand away from the last in the line of points 3 and 4, producing a

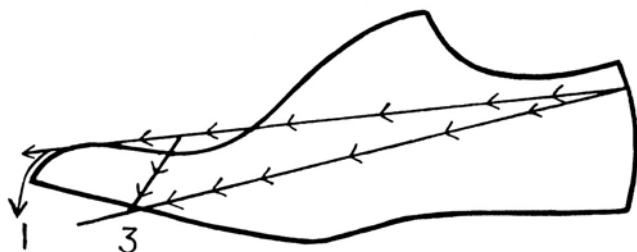


FIG. 41. DIAGRAM SHOWING NO. 3 "PULL"

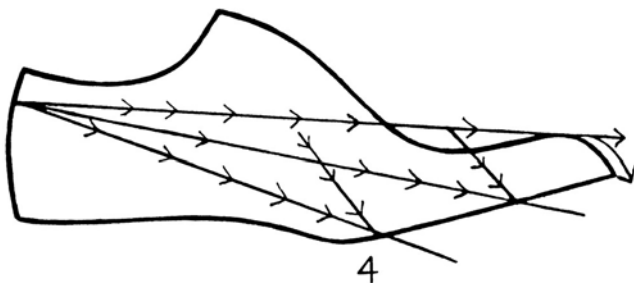


FIG. 42. DIAGRAM SHOWING NO. 4 "PULL"



FIG. 43. DIAGRAM SHOWING NO. 5 "PULL"

“drummy” effect, and the resultant effect of overstraining to get the upper down tight along the dip of last.

The *fourth pull* is taken at the inside, first longitudinally and then transversely, and in front of the joints to avoid producing a binding effect, which would happen if taken behind the joints. The upper should be drawn gently to the last without distorting the cue of the vamp (see Fig. 42).

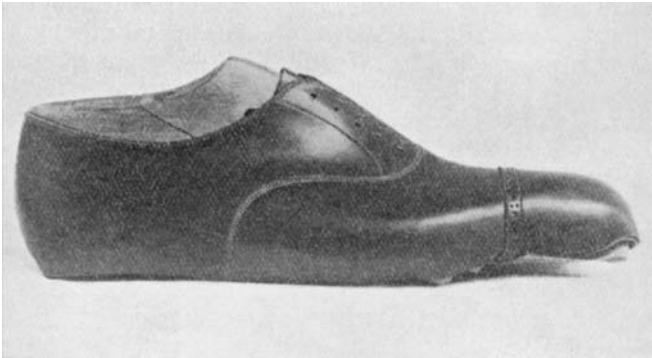


Fig. 44. UPPER DRAFTED

The *fifth pull* is taken at the outside, first in a longitudinal direction and then in a transverse direction, in front of the joints, gently drawing the upper to the last without altering the position of the lacing or the cue of the vamp.

Now examine and check if the measurements of the vamp and cap are correct, and see if the cap, vamp, lacing, side seams and back seams are straight. If not the upper must be taken off and the fault corrected by re-positioning. Fig. 44 shows the upper drafted up to No. 5 “pull.”

The *sixth draft pull* is taken at the centre of the back,

gently drawing the upper to its correct position and the height at the back. As a rule, a gent's shoe has a height of  $2\frac{5}{8}$  in. at the back, unless otherwise ordered, the quarter-lining is first pulled to clear and causes the top of the quarters to turn inwards. The stiffener is then cleared to fit into the feather, and lastly the quarter is gently laid in (see Fig. 45).

This last pull up the back of the last must be taken *slowly*, allowing the upper material time to change its form and shape) and the effect of the strain and the effect of the hoist to spread to its maximum length. It is a safe policy to take this pull by degrees, three or four times with a period of time between each, so humouring the leather and allowing a greater stress to be applied to the quarter lining to get better fitting quarters. To hammer the last into the upper is usually asking for trouble, the quarters stretching irregularly, and thus throwing the back seam out of line, as well as putting undue strain on the seams.

The *seventh pull* is taken at the inside, in an almost longitudinal direction; the quarter lining first, then the stiffener, and finally the quarter laid in (see Fig. 46).

The *eighth pull* is taken at the outside in an almost longitudinal direction, in the same way as the No. 7 pull (see Fig. 47).

When taking pulls Nos. 7 and 8, most of the strain must be on the quarter-lining, less on the stiffener, and the least on the quarter. The aim is to turn the top of the quarters inwards and give the grip desired for good fitting shoe. On no account must they be taken transversely, since that would tend to upset the longitudinal strain, and for the tightness along the top of the quarters the clipping inwards can only be obtained by the predominance of the longitudinal strain maintaining the heel-to-toe tension in the upper.

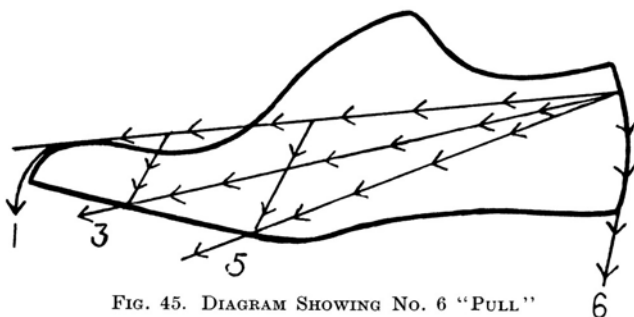


FIG. 45. DIAGRAM SHOWING No. 6 "PULL"

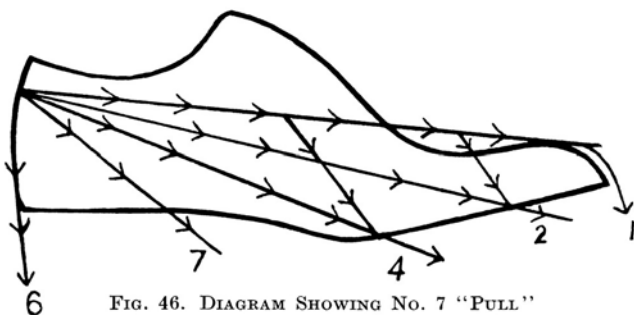


FIG. 46. DIAGRAM SHOWING No. 7 "PULL"

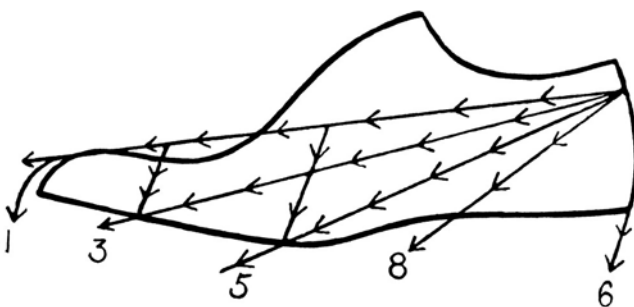


FIG. 47. DIAGRAM SHOWING No. 8 "PULL"

Fig. 48 shows an upper drafted.

The upper is drafted by using one inch No. 18 G.S.H. iron rivets and all the eight put in the feather of the innersole.

#### LASTING

The next process is lasting proper, i.e. blending the strains already taken during drafting and working away all the

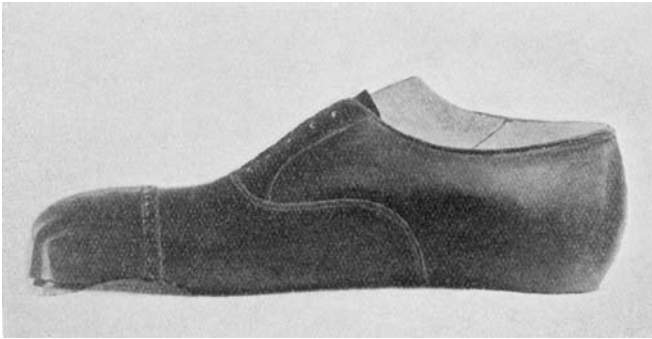


Fig. 48. UPPER DRAFTED

surplus stuff in a forward direction, but not upsetting the strains already applied. Commencing at the back of the heel at No. 6, clear the upper with its insertions clean and tight into the feather, first the lining, then the stiffener, and finally the quarter, one pull on the inside, the next pull on the outside, and so on. Secure with fine gauge rivets into the feather. The number of pulls necessary to effect a clearance will be governed by the texture of the upper materials. Light and stretchy materials may necessitate a pull each quarter of an inch, and rivets at that distance apart to secure a clean and tight fit into the feather.



Proceed along, first the inside then the outside, removing the drafting rivets as they are approached, clearing the lining first, then the stiffener, and finally the quarter in a heel-to-toe



Fig. 49. UPPER LASTED

direction proceeding towards, clearing the lining, side lining, and vamp, placing the rivets in the feather in perfect alignment until the cap is reached. Fig. 49 shows an upper lasted except the toe-cap.

It is now usual to last in the lining, the toe-stiffener, and the vamp first, allowing the cap to go free. This lasting of the lining, toe-stiffener, and vamp must be done gradually, first the inside then the outside,

working towards No. 1 pull, and not withdrawing No. 1 pull rivet until it is reached, or the upper may slip back. Beat well into the feather. The vamp that has been lasted into the feather may now be rasped perfectly free from ridges, and a level bed



Fig. 50. UPPER LASTED

will thus be made for the cap which will maintain the range.

Gently roll the cap back, and apply the adhesive to the vamp under the cap and in the feather. Roll the cap back gently, without cracking or wrinkling the grain, and last in, commencing at No. 1, then at  $\frac{1}{2}$  in. on the inside from the centre, and the same amount

from the outside. Return to the cap edge at the inside, last the cap into the feather, and then at the outside. As each  $\frac{1}{4}$  in. is worked, withdraw the rivet at the inside and outside in turn, until the No. I at the centre of the toe is finally withdrawn and clear.

Remove the inner row of rivets round the toe, leaving the outer row intact, and trim off the surplus of the upper and its insertions level with the centre of the holdfast. Avoid cutting or damaging the latter. The upper is then beaten up gently along the sides with the double-faced hammer, the stiffener and toe-cap being given particular attention. Then with the pincers finally flatten the upper into the feather thus levelling and making a good surface for the welt to lay on, giving a clean range all round. Turn the rivets inwards, and flatten them down to be out of the way for welt sewing. Fig. 50 shows the upper lasted.

## CHAPTER V

### WELT SEAM CONSTRUCTION

THE cordwainer's seam dates back to time immemorial. Though there have been changes in the materials, such as rolled shoulders instead of unrolled, and varieties of new upper materials and shapes of lasts have been introduced, and improvements have been made in the welting, the actual attachment by threads has remained the same, and to-day we are making welt-seams in the same manner as our forefathers did. Year by year improvements in craftsmanship have been made until it appears that hand-made welt seams are now being made almost to a state of perfection.

The aim of the *shoemaker* is to produce a seam that will stand the strain it will be called on to bear, and at the same time to give the maximum amount of flexibility, an essential feature of handsewn footwear. He aims at getting the sections forming the seam laid side by side, and firmly attached by the waxed thread in a horizontal direction. Particular attention is paid at this stage to the preparation, because he knows that a waterproof seam is demanded, and the materials forming the seam are not in themselves waterproof. For instance, innersoles have little or no power of resistance to water penetration, in fact one of the good qualities of insoling is its ability to absorb perspiration as well as being of a texture that will allow the foot to make its impression. The uppers in ordinary cases are not waterproof, while the welt is absorbent, the well-waxed thread being the only waterproof section of the boot.

The welt is the "hinge" of the shoe. It is, with the upper, attached to the innersole, and has to bear the strain during

wear in an upward direction as the foot flexed. The resistance of the bottom against the more flexible upper is thrown on to the welt. The bottom, being more rigid, is slow to change its shape, and on that account throws a greater degree of strain on the welt. The welt then must be of sufficient strength to carry the load, and keep the shoe in shape, with that balance of strength necessary to stand the strain of the two opposing forces, without its being drawn from its original position or losing its flexibility.

In ordinary cases the proportion of the welt to the substance of the edge is one-third, with exceptions for dress and middle sole work. A pair of welts for a shoe of the class we are making are usually 20 in. by  $\frac{7}{8}$  in.

#### FITTING THE WELT

The substance being determined, the welts are fleshed and levelled from the flesh side. Under no circumstances must they be used wet, as they are liable to stain the upper, to curl during sewing, to shrink when dry, and to show a division between the upper and the welt. After levelling they are divided down the centre, providing a welt for each shoe.

They are next bevelled from the grain to the flesh side, the object being to cause the edge of the welt to fit to the upper lasted into the feather. The principle that "the angle of the bevel on the welt must correspond with the angle of the upper lasted into the feather" must be followed to enable a perfect fit and a watertight seam to be obtained. Here it must be noted that the angle of the bevel on the welt must vary according to the class of shoe being made. Since a wide feather will produce a different angle of upper lasted into the feather, compared with a shoe with a narrow feather, it follows that the welt must be

bevelled accordingly, to make sure that it can be sewn in so as to stand out square from the upper and maintain the range of the shoe. Moreover, it is important that the welt fits the upper and takes its correct position in order to avoid having to be strained by using the welt-beater to hammer it into its desired position.

The angle of the welt bevel having been decided, take one of the welts and lay it on the cutting board placed straight across the knees, putting the grain side up. Hold the end of the welt between the left finger and thumb. Take the knife in the right hand and place it within an inch of the left hand, the first finger being doubled to the first joint on the board, close to the near side of the welt. Then slant the knife from the perpendicular to cut at the desired angle. With the left hand, draw the welt straight across the knees, allowing the knife to cut at the desired angle as it passes and at the same time giving a uniform width throughout the welt. Treat the fellow welt in the same manner, taking care to cut at the same angle. A sharp knife is essential, and the welts must be drawn straight to allow a clean cut to be made. Jerking the welt or pulling the welt out of line tends to produce an irregular bevel.

Fig. 51 is from a photograph showing the angle of the upper lasted into the feather, and the welt bevelled at a corresponding angle to fit.

#### THREADS FOR WELT SEWING

The welting thread may now be made, and is cast off from the ball in use, which in our case is white hemp, either 15 or 22. The hemp should be kept in a box or tin, about the size of the ball, to prevent it getting crushed out of shape, and to keep it free from air or dirt, as it is affected by atmospheric conditions.

The substance of thread, i.e. the number of strands,

must next be decided, and this is governed by the shoe being made. The principles to observe are (1) that the thread must be of sufficient strength to hold together firmly the sections forming the seam; (2) that it must be of sufficient substance



Fig. 51. ANGLE OF WELT LEVEL TO UPPER

completely to fill the hole made by the awl to ensure a watertight seam being made.

In our case of a man's shoe with a  $\frac{5}{16}$  in. edge, the thread should consist of eight strands of No. 15 or ten strands of No. 22 hemp. If No. 22 is used the thread

is cast off as follows. Lay the hemp-box on the floor on the right (if a new ball is being used commence from the middle), and as it is necessary to obtain a tapering point, take the end of the hemp in the left hand and 6 in. along with the right hand, and roll with the right hand along the right knee, away from the body; gently, allowing 6 in. of hemp between the two hands. As the hemp is rolled in that direction the section between the two hands become untwisted, and being kept taut it will appear to get looser. When just sufficiently rolled under the stress given it will break, giving two tapering points. Avoid jerking the hemp to break it, as this only produces short points.

Having made the first point, cast off from the ball 3 yards by drawing with the left hand and letting it slide through the right hand. Hold the thread securely with left hand, and 6 in. away pick it up with right finger and thumb and roll gently on the right knee, as already described, until the hemp thread breaks.

To add to the number of strands place the tapering point  $\frac{1}{2}$  in. longer than number one. Proceed in this manner until the ten strands have been cast off, thus giving two ends with long tapering points. The cast-off thread is *not* twisted at this stage.

The next process is to apply the wax. Either brown or black may be used for welting, according to choice, since the wax is made from pitch, resin, and tallow. The proportions used will govern the hardness or softness of the wax, and as it is subject to atmospheric conditions it follows that the same wax is not suitable for *all* seasons. The amount of "pulling" given during the making determines its value for working.

Wax is used for two purposes, viz., to bind the strands together, and as a lubricant to minimize friction during sewing.

Good wax is essential, for the best quality increases



the strength of the thread considerably. The thread gets warm during its passage through the leather and the sections are able to be pulled tightly together, because the wax sets quickly and does not allow any slipping back. It sets hard in the cold leather, and gives a peg-like action to the thread deposited in the leather.

Thread used with inferior wax, which does not bind the strands together, acts as a “wick” and a conveyor of moisture. If the wax is too hard and will not bind the strands, apply a coating of wax, then a coating of bees-wax, and then a second coating of wax. The bees-wax blends with the ordinary wax and assists working.

In order to apply the wax, first take the cast-off thread made, and I yard from the end roll round the left hand to get a good grip and avoid slipping. Then with the ball of wax in the right hand, apply the wax to the thread close up to the left hand, pulling along the thread to the end. Each strand should have its coating of wax, and several applications may be necessary. It should be applied as evenly as possible. The thread which was held in the left-hand is then waxed in the same manner.

The next process is twisting and rubbing down, the object being to get the wax inside the thread around each strand. This is done by placing the centre of the thread on a nail in the wall, with a shoulder in each hand. One section is twisted to get an even twist along the first half of the thread, and then the other section is twisted an equal amount. The amount of twist applied is governed by the substance of thread, in this case about three twists per inch. A welting thread has a great strain put upon it, and must not be “cord-like,” to have any cutting effect. It must lie flat, and be adaptable to fill the perforation made by the awl, if a watertight seam is to be made.

Holding the two shoulders between the left finger and the thumb, with a piece of calf upper leather folded so that the thread goes between the two sections, rub down lightly from the left hand to the nail. About three rubs up and down are enough to distribute the wax evenly, and smooth the thread, which ensures a smooth passage during sewing.

Remove the thread from the nail and wax and twist the shoulders. Select a good round bristle, hold the bulbous end between the left finger and thumb, and apply the wax to the bristle with the right hand, about 2 in. from the bulbous end to the end of the bristle.

Pick up one shoulder of thread between the left finger and thumb, and place the bristle in the right. Place the fluffy end of the thread to touch the bristle  $\frac{1}{8}$  in. below the waxed part, and roll the bristle outwards, picking up the thread and rolling it round the bristle. Roll gently not to make it thick, until within  $\frac{1}{2}$  in. of the end of the bristle, then with the stabbing awl pierce the shoulder of the thread and thread the bristle through, to prevent untwisting. Put the bristle on the other shoulder, then cut off the bulbous ends of the bristles in a slanting direction, and smooth with sandpaper to ensure an easy passage during sewing.

#### SEWING IN THE WELT

Select a welting awl of a size to correspond with the seam and the thread being used, that is, one that will make a perforation that can be well filled with the thread. This is important if a watertight seam is to be made, for since there must be sufficient room for the threads to pass with the minimum of friction, the seam, awl and thread, and the length of stitch must be in correct relation to each other, to produce a well-balanced seam. Moreover, the reach or curvature of the awl must be large enough to enable it to pass

through the innersole (holdfast), upper and welt with  $\frac{1}{8}$  in. through on the welt side, without having to lever the awl and weaken the holdfast. A curved awl enables a flat, narrow seam to be made with the attachment horizontal, while a straighter awl tends to give wide seams.

The welting awl should be sharpened at the point but not at the sides, because during use it is wriggled, and if the sides are sharp there is a danger of cutting the upper and welt from one hole to the next.

Place the right shoe between the knees, with the toe outwards, and place the stirrup across the waist and under the left foot, with the hand-leather on the left hand, and the awl in the right. Pick up one bristle on the thread with the left finger and thumb. The seat is sewn first. Put the awl in the piercing at the heel line corner and plunge through the holdfast and upper no more than  $\frac{1}{8}$  in. Let the left-hand bristle follow the returning awl to be picked up by the right finger and thumb, placing both bristles together, and pulling up to equalize the lengths of the threads.

Remove the lasting rivet to allow for the next stitch, drawing in an upward direction to avoid pulling the upper away from the feather. Take the next piercing (always sew towards the body), plunge the awl through, let the left hand bristle follow the returning awl, put in the right bristle, and pick up with the left finger and thumb. Overcast the thread on the upper side, by bringing the thread from the last stitch over the bristle, pick up the two shoulders, pull up the thread at a uniform pace and pull tight together in a line straight across the knees, in the same direction as the awl to avoid friction on the thread.

Pull the threads right home tightly and set the stitch, turning the left-hand thread round the hand-leather, and still holding bristle between left finger and

thumb. The second and the third finger rest on the thigh, holding firm the thread, and the right-hand thread is twisted round the top of the awl haft to get more purchase.



Fig. 52. SEWN SEAT

The object of overcasting on the upper side is to prevent the stitch sinking into the upper, that is, to make it stand up a little, to allow it to be more easily picked up, when sewing down the heel, without injury or marking the upper.

Continue sewing round the seat, following the

piercing. This should enable a uniform length of stitch to be maintained on the upper side all round the seat at three stitches per inch (see Fig. 52).

When the inside heel corner is reached, we commence to sew in the welt. Take the welt and lay the bevelled edge along the feather (or upper lasted into the feather), with the first end at the inside heel corner along to the inside joint. Mark the corresponding position of the inside joint on the upper to the welt, which will give the length of welt for the inside waist. As bevelled waists are being made, reduce the welt to one half its substance from the flesh side. Then taper off the end of the welt and lay it to the upper flat. Plunge the welting awl through the piercing and upper passing through the bevelled edge of welt. Hold the welt close to the upper with the left finger and thumb while the awl is passed through. Then pass the bristles through, and pull up the thread, pulling most with the right hand and drawing the upper and welt right home into the feather.

Continue sewing the waist. For a bevelled waist keep the welt laid flat to the upper, while pushing through the awl and sewing following the piercing, and keep a uniform length of stitch on the welt side. Fig. 53 shows the welt sewn in at the inside waist.

When the end of the inside joint is reached, we come to the forepart using the full substance of the welt, which must stand out square. Hold the welt taut between the thumb and the first finger of the left hand, with the first finger of the left hand doubled to the first joint under the welt, and close to the upper, and the thumb pressing the welt on to the upper. The awl passes through the holdfast and upper, enters the welt at the inner edge of the bevel, and comes out  $\frac{1}{8}$  in., while being held firmly to the upper. It is at this stage that the welting awl must *not* be wriggled excessively,

as a semi-circular cut would be made. It would be greater on the welt side and may reach almost iron stitch to stitch.

Continue sewing, withdrawing the lasting rivets as they are

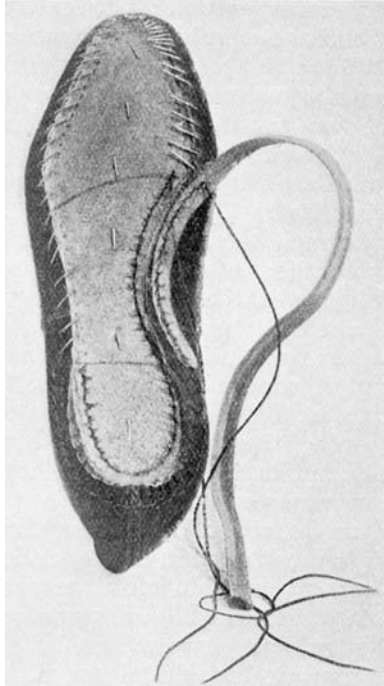


Fig. 53. WELT SECURING

approached, to within  $\frac{1}{4}$  in. Keep the welt taut, and pull the stitches well in, so drawing the upper and welt into the feather. Keep the stitches on the welt side a uniform length of four per inch.

At the toe the lasting rivets will be closer together

and must be withdrawn to facilitate the sewing, though not letting the upper loose. The welt will not require to be so taut, as allowance must be made for the outer edge to stand out square. The pleats near the bevelled edge of the welt are well tapped down with pincers previous to pushing the awl through.

A common trouble in getting the welt to stand out square at the toe is, without doubt, due to the pulling of the welt at that part during the sewing, and not making sufficient allowance for the greater length of the welt at the outer edge in relation to the bevelled edge, as well as the curvature of the toe. If the welt round the toe is sewn in that way, the welt will lie on the upper, and the only way to get it square is by wetting and beating it out with a hammer and weltbeater, usually producing a stained welt and the welt stitches grinning at the toe. It is much better to hold the welt in its correct position during sewing.

Continue along the outside of the shoe until the outside joint is reached, keeping the welt taut, and removing the lasting rivets as required. Transfer the outside joint position to the welt, and reduce the welt from the flesh side to half its substance if for a bevelled waist. Press the welt close to the upper and continue the sewing until the heel corner is reached, finishing by skiving the end of the welt to the first stitch taken when starting to sew the heel. Cut off the threads. Fig. 54 shows the welt sewn in.

During sewing, the threads will need refreshing with wax, which should be applied frequently so as to keep the threads running easily, and to enable the stitch to be set tightly. Usually one thread is re-waxed about every four stitches. This enables the thread to keep the wax and prevents it flying off and sticking to the upper or the apron.

Here it may be noted that the innersole has not been

re-wetted before sewing in the welt, for the reason that an innersole that is allowed to dry naturally after being blocked does not present any difficulty, for there is no danger of

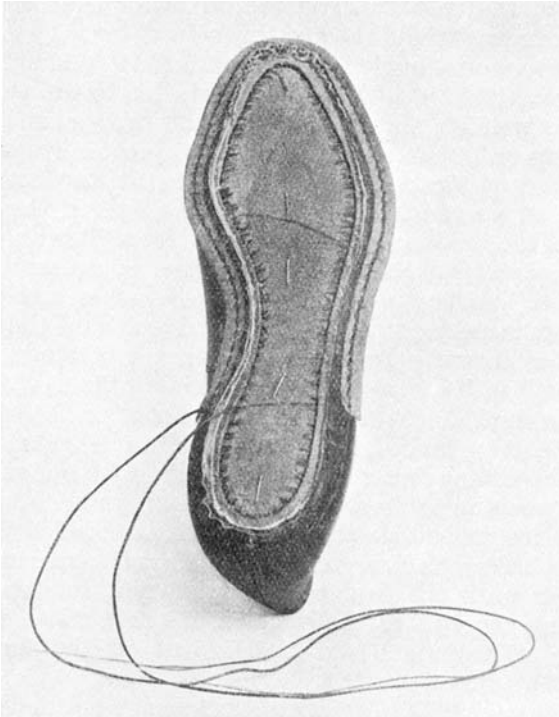


Fig. 54. WELT SEWN IN

breaking the fibres. The welt has also been sewn in dry. applying water to the innersole before sewing tends to soften and weaken the holdfast, with the result that during sewing (and that is the section the upper and welt are sewn to) the strain put



on it tends to make it weaker, and produce a buckling effect on the grain side of the innersole along that part.



Fig. 55. SEAM TRIMMED AND WELT ROUNDED

The rivets used to hold the innersole temporarily in position are now removed from its centre, and the seam is trimmed by cutting off the surplus upper and insertions from the inner edge of the welt to the holdfast. Avoid bruising the stitches. Straighten out the welt with the bone and beat out the forepart square to the upper, with the hammer and the welt-beater,

but without marking the upper or making indents on the grain side of the welt. Tap the waists down to the upper and make the inside and outside joints distinct. Round up the welt in the forepart to the required width, making clean cuts and square edges.

With the aid of the paring horn, cut off the surplus welt in the waists, beyond that required for making a bevelled waist,  $\frac{1}{8}$  in. being enough, and in trimming blend in the shape of the welt waist with the inside and outside joints. Fig. 55 shows the seam trimmed, the welt beaten up, and the welt rounded.

## CHAPTER VI

### BOTTOM-FILLING

THE shoe is now ready for bottom-filling, the object being to fill up the cavity on the innersole between the seams ready to receive the sole. The material used must be light in weight, and pliable to maintain flexibility, and to prevent creaking. It should be fitted with an adhesive that is not rigid but that yet will keep it in its original position, and preferably it should be damp-resisting.

Felt is generally used in handsewn work, since it is fairly cheap, light in weight, pliable, easy to fit, retains its original position during wear, prevents creaking, and is damp-proof. The welt seam is chalked round, and the felt laid on, which when tapped down transfers the chalk-line to the felt. Fig. 56 shows the seam chalked for size and the shape of the felt, the latter being marked to the required shape.

The felt is then cut out on a board, and the adhesive is applied to the bottom. A cereal paste is best, and it must be well rubbed in, and then allowed to get tacky. The felt is warmed over the spirit lamp, and when soft it is laid on the bottom and rubbed down into the cavity with the face of a London pattern hammer. Fig. 57 shows the felt stuck in with an adhesive. The felt should not be hammered, as it has a tendency to cause breaking up during wear. Being warmed and softened it can easily be moulded to its place, and hammering at this stage only weakens the foundation of the shoe.

With the bent Swedish knife, the surplus felt is pared off the forepart so as to produce a flat level

foundation for the sole to lay on. Pare off level to the edge of the welt.

In the shoe described and illustrated, the filling is kept on the round side in the waist. This is obtained by skiving along the sides, leaving its full substance in the centre and skiving it flat towards the front of the heel. In some cases an additional

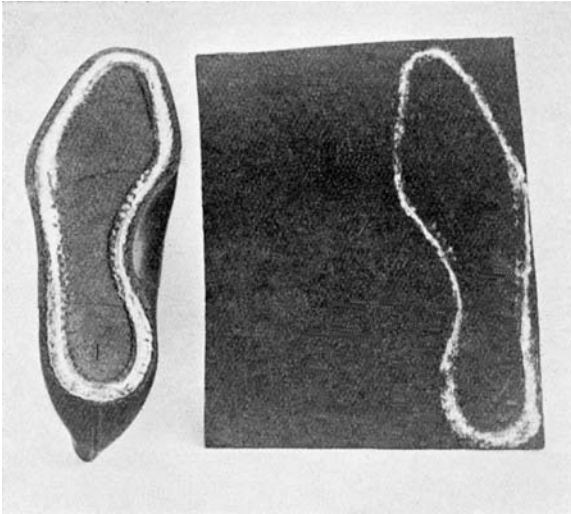


Fig. 56. FITTING THE BOTTOM-FILLING

piece of felt is required to get the required roundness in the waist, as well as at the toe to fill up the greater cavity, the extra piece being put in first and covered by the through piece. The heel section must be pared quite flat to facilitate the heel building. Fig. 58 shows the shoe with the bottom-filling in ready to receive the sole.

Leather shanks are sometimes ordered. In such cases a butt shank is fitted to the width of the waist, from

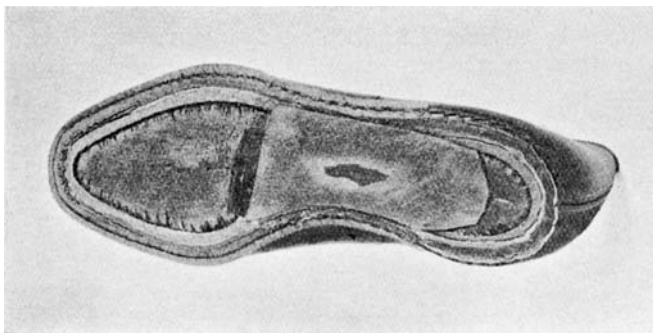


Fig. 59. FITTED WITH A SHANK

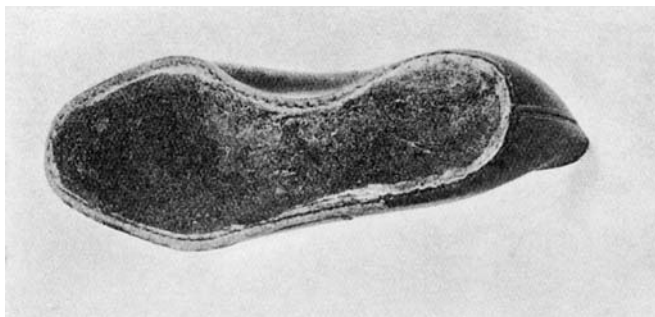


Fig. 58. BOTTOM-FILLING READY TO RECEIVE THE SOLE

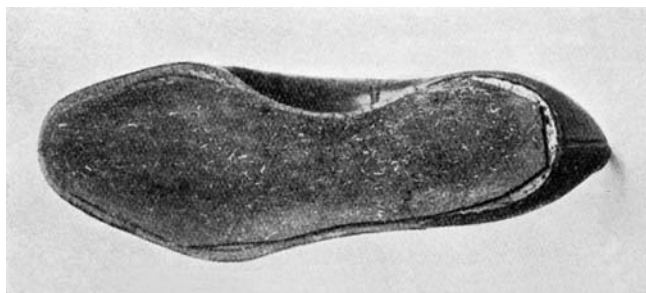


Fig. 57. FELT AFFIXED

the welt each side,  $\frac{1}{2}$  in. behind the joints and 1 in. under the breast of the heel. Two or three coats of rubber solution are applied to the shank and waist, and when "tacky" the shank is fitted into position and tapped down. It is then pared off to give the required roundness of the waist and covered with felt to prevent creaking. Fig. 59 shows the bottom of the shoe with the shank solutioned in and knifed up.

CHAPTER VII  
**FITTING THE SOLES, ROUNDING AND  
CHANNELLING**

To facilitate the fitting of the soles, it is essential that the maker should understand the character of the sole leather he is using and, according to the time available, use it to the best advantage, and so ensure that when required they are in a mellow, adaptable condition. Under no circumstances must the leather be used when *wet*, for it will retain the moisture a long time, and with the adhesive between the sole and the bottom-filling produce a mould and often an unsavoury smell. It will also increase the weight of the shoe, and cause the finish to become dull, and, in colour work, discoloured and stained. On the other hand, if used too dry it is difficult to work and often finishes up roughly.

The soles are examined as to their best method of cutting. Sometimes they are given out in “squares,” and the stamp is put on in the shop in the waists, which is the guide as to how they are to be cut—whether heel to toe, or both toes one way. Gut soles are frequently given out, paired up for substance and quality, and of a width suitable for the work in hand.

Mark out the soles for each shoe, laying the right shoe on the flesh side of the right sole, and trace round with the sewing awl. When cutting out allow  $\frac{1}{16}$  in. round the forepart, and  $\frac{1}{8}$  in. in the waists, cutting off the surplus.

The substance of the finished edge of the shoe requires consideration, taking into account the substance of the welt. Allowance must be made for the reduction in the sole due to hammering, and if the sole requires

reduction to bring it to the desired thickness it must be done by fleshing. A lap iron covered with brown leather to prevent any iron stains on the grain is used upon which the sole is to be hammered.

Take a double-faced hammer and proceed to hammer in a methodical manner, using short, quick taps, commencing at the centre and working outwards. Hammer out or spread the sole to its fullest dimensions. This fixes it in substance and size, and prevents spreading during wear, and so assists it to keep its original shape. Hammering also solidifies the leather and makes it more damp-resisting, thus giving increased wear.

Each sole is then fitted to its respective shoe, placing it level with the welt all round, and securing it at the toe with a fine gauge rivet. In some cases no perforations are allowed on the forepart; and then the rivet must be placed so near the toe-end that it can be hidden by the channel. The more general method is to allow one rivet at the toe. Having secured the sole at the toe, the stirrup is put across the waist, and the sole moulded down and secured with two rivets under the heel, then levelled out all round the welt and the sole. Rounding is commenced at the forepart, allowing  $\frac{1}{16}$  in. all round. The waists are rounded, leaving  $\frac{1}{8}$  in. over the welt each side. This amount will be found necessary for the reducing on the flesh side and moulding. Then the heel is rounded, leaving  $\frac{1}{4}$  in. each side. Fig. 60 shows the sole fixed on, ready for rounding.

Transfer the joint positions of the inside and outside joints to the sole and indicate the heel corners on the grain edge of the sole. Then withdraw the rivet at the toe and the rivets under the heel. When the sole is removed, skive the edge of the welt in the waists to a feather edge, and apply adhesive to the bottom, on the felt, but not on the welt.



The positions of the inside and outside joints, and the inside and outside heel corners, are transferred from the grain to the flesh side, thus indicating the waist-covering portion of the sole. To make bevelled waists the sole is reduced on the flesh



Fig. 60. SOLE FITTED FOR ROUNDING

side to half its substance, making a skive 1 in. wide, tapering to the edge, thus leaving the centre of the waist of full substance. The skiving should end abruptly at the heel corners, and taper for  $\frac{1}{4}$  in. at the joints. Fig. 61

shows sole reduced in the waist on the flesh side for bevel waists.

The sole is then moulded in the waist, using the large 501 Swedish pincers, and turning over from the grain to the flesh,



Fig. 61. REDUCED FOR BEVEL WAIST

thus giving the sole in the waist a greater curvature than the shoe so as to enable the edges to come down well over the welt. Fig. 62 shows the sole moulded in the waist for bevel waists.

After moulding the waist, replace the sole, securing it at the toe by using the same hole for the rivet as before. Place the stirrup across the waist, bed the sole well

down, and secure under the heel with two rivets turned over flat. Straighten out the welt and the sole with the bone, and round up the forepart close to the welt, making clean-cut square edges. Round the waists allowing a millimetre over the



Fig. 62. THE WAIST MOULDED

welt. The bevel waist is made on the sole only, and not on the welt and the sole.

To ensure accuracy, a paper pattern is taken from the first rounded shoe, and this reversed is an aid to obtaining the fellow shoe of the same width and shape,

as well as making the positions correspond to each other. Fig. 63 shows the sole rounded and the position of the channel marked.



Fig. 63. SOLE ROUNDED AND CHANNEL MARKED

#### CHANNELLING

The object of channelling is to bury the stitch in the sole, and it therefore follows that the depth of the channel must be governed by the substance of the thread to be deposited therein as well as the character of the sole. For instance, a hard sole will require a

channel of full amount to hide the stitch, while a soft sole which allows the stitch to sink further in during stitching will not require so deep a channel. The channel must not be cut a



Fig. 64. CHANNEL OPENED

fraction deeper than required or the edge as a result is weakened, and may fray during wear.

The distance of the channel from the edge is governed by the substance of the sole, and is usually determined by running the forepart iron round the forepart, using the lip of the iron to define its position.

In the waist the channel is marked just far enough in to allow the outer edge of the bevel waist iron to reach the channel and blend with the forepart at the joints.

To cut the channel for the right shoe commence at the outside heel corner, holding the shoe on the knee securely with the left hand, and the knife in the right hand pen-fashion, with the thumb on the left of the knife, the first finger on the top, and the second finger sliding along the edge of the sole to avoid slipping and to act as a guide. Hold the knife at 70 degrees to the bottom of the shoe, and press the point so as to enter one-third of the substance of the sole. Cut along the waist on the line marked, applying uniform pressure so as to cut at an even depth. On reaching the outside joint, alter the angle of the knife to 50 degrees, and make a continuous cut on the line previously marked round the forepart. When the inside joint is reached change the angle of the knife back to 70 degrees.

With the aid of the channel opener the channel is opened in the same order as it was cut. Turn the lip of the channel inwards, and avoid pushing the edge of the sole outwards. The purpose of opening the channel is to turn the lip out of the way for stitching, thus allowing the stitches to be deposited at the bottom of the channel. Afterwards the lip is pushed back to cover the stitches. Fig. 64 shows the channel opened ready for stitching.

## CHAPTER VIII

### STITCHING

THE object of stitching is to attach the sole to the welt, a vertical seam being used. The sections forming the seam are laid one over the other, and held together by means of a thread.

The length of the stitch must be governed by the substance of the edge and the class of shoe being made. The number of stitches per inch, in conjunction with the awl being used, must allow of sufficient material between each stitch to enable the thread to obtain a grip. In the shoe illustrated we are stitching to the fudge of eleven per inch, and the stitching awl must be of sufficient strength to pierce the edge and make a perforation large enough for the threads. The awl must have sufficient curvature to enable it to come out at the bottom of the channel, and must be sharpened with a fine file to a long tapering point, equal on each side.

In filing set with the bottom edge the longer. The rough sides produced with the file will assist in controlling during the plunge, and in keeping a uniform amount of the awl coming through on the channel on the sole side, the first essential of uniform perforations.

#### MAKING A STITCHING THREAD

The thread used must be of sufficient strength to stand the strain during wear, and keep the sole firmly attached to the welt, though unnecessary thread must be avoided on account of the rigidity it produces. The thread must be large enough to fill the hole made by the awl and to show up on the welt as an embellishment in harmony with the edge and the upper.

Cast off a thread of 6 cord of 22 red hemp, and apply red wax before twisting. Then apply a coating of ordinary brown wax. Twist well and rub down. Next attach fine bristles, and after cutting off the bulbous ends of the bristles, smooth the points with fine sandpaper.

It may be argued that the stitching threads ought to be twisted and then given a coating of gum tragacanth, rubbed down while wet, and hung up to dry. Just before using them they are given a coating of wax and bristled. This is a method suitable for light work, but certainly it is not so serviceable for stout work. Strength is required during wear for a watertight seam, and unless the thread is well waxed, twisted, and rubbed down, we cannot expect to get that result. Our aim during stitching is to deposit the thread in the hole made by the awl, completely filling the hole and with that degree of tension which sets each stitch firm. In this way the material between each stitch is bound tightly and a peg-like action is given to the thread, which will keep its place and maintain its strength even after the sole has been nearly worn through. Threads that are devoid of good waxing soon become bare and act as a wick in conveying moisture and so are unsatisfactory, while during wear the stitches are likely to rise on the welt.

Warm the number 11 fudge and run it round the welt in the forepart to give marks for stitching, but avoid the fudge marking the upper. Take the right shoe and lay it on the left knee with the inside downwards and the toe nearest to the body. Put the stirrup across the waist ready for commencing stitching at the outside joint. Dab some French chalk on the right knee ready to lubricate the awl in passing through without sticking or jumping. (Avoid the use of soap for this purpose, as soap and wax do not merge.)



Place the point of the awl on the first fudge mark, and, slanting the awl slightly forward, plunge it through the welt and sole at the required distance from the edge. It must come out at the bottom of the channel. The perforation is then made in a forward, slanting direction, enabling a more pronounced stitch to be made. Withdraw the awl without any wriggling, the left-hand bristle following the returning awl and the right-hand bristle being placed on top, or over the left bristle. Pull up the threads in the same direction as the perforation and at as uniform a pace as possible, thus keeping the threads at an even temperature, and with the minimum amount of friction, so enabling the stitch to be set while the wax is warm. As the stitch is being set raise the right hand, taking the thread to the right. This will give the stitch a more pronounced pearl-like appearance, an advantage on coloured work when a V-cut fudge is being used. Greater tension must be applied to the right-hand thread, thus pulling the stitch firmly into the bottom of the channel.

Proceed along each of the fudge marks in turn, keeping an even length at an equal distance from the edge on the welt side, and apply a uniform amount of tension to keep an equal size of stitch. Keep the thread well refreshed with wax to ensure easy running, and avoid marking the upper with the awl or thread. Fig. 65 shows the welt after being stitched.

The waists are next sewn, a waist awl with a good curvature being used to enable the channel to be reached without marking the upper. A light thread of 5 cord of 22 hemp is used.

Start sewing the waist at the outside heel corner, pushing the awl through the welt and making it come out at the bottom of the channel. Avoid pushing the sole away from the welt; it should be kept firmly down to the upper with the left thumb pressing on the channel

of the sole. Let the left-hand bristle follow the return ing awl and place the right-hand bristle underneath the left, and pull up the threads, throwing the stitch down close to the upper. Sew along the outside waist with short stitches to meet the forepart stitches, cut off the threads, and then sew the inside



Fig. 65. WELT AFTER STITCHING

waist. Fig. 66 shows the bottom view of the shoe stitched in the forepart and with the waist sewn.

With the channel opener clean out the channel, removing any loose wax or dirt, straighten up the lip, and apply adhesive in the channel with the long finger

of the right hand. Remove any surplus adhesive with the channel opener and a rag. The channel is now closed by pushing the lip outwards and downwards with an old file so as to get it close and tight, thus completely covering the stitches.

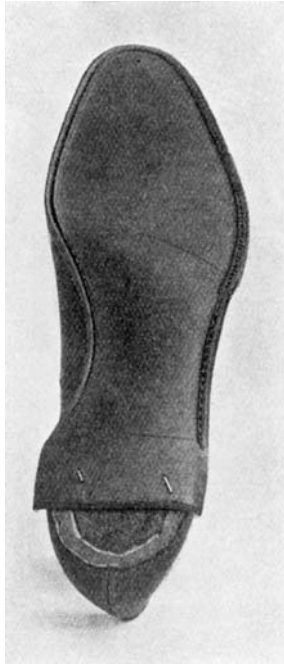


Fig. 66. SOLE STITCHED, SOLE VIEW

With a London pattern hammer pane the sole edge in the waist close to the upper. Then hammer down the edge of the waist close to the upper, and lightly tap down the forepart with a double-faced hammer, getting it level and flat. Rub down the waist and forepart with



Fig. 67. CHANNEL CLOSED

the long-stick, and run the channel closer round the edge, pressing the channel and the edge of the sole tightly together. Fig. 67 shows the bottom with the channel closed and rubbed down.

## CHAPTER IX

### HEEL BUILDING

TRIM the end of the sole to fit it level with the end of a link-stitch at each side, in order that when sewing down the heel a stitch will be close to the edge of the sole with the next stitch close to the edge of the sole-piece, thus enabling the two sections to be drawn tightly together and make a good join.

Take the sole-piece, which must be of equal substance and quality with the sole end, and cut to the size required to cover the remaining portion of the heel, plus a working allowance of  $\frac{1}{8}$  in. all round. Cut the front slightly concave to ensure the edges meeting at the join.

Secure the sole end with two "rotten brads" ( $\frac{7}{16}$  in. med.), which should not go through the innersole so as to show on the inside. Place the sole-piece with the centre level with the sole-end and secure it with inch rivets, driven in far enough to get a good hold. Then turn over the rivets on to the sole-end, and secure the sole-piece with five rotten brads, at about  $\frac{1}{2}$  in. from the edge.

Lay down the overlapping ends of the sole-piece to jam them tightly to the sole-end. Put the apron over the seat, and tap down all round, bedding the sole-end and sole-piece down close to the upper. Withdraw the rivets in the centre, and round up the seat, allowing sufficient material all round the seat to cover the link-stitches, and make the seat.

A bed is next made for the split-lift,  $\frac{1}{2}$  in. in width and 1 in. from the edge, leaving the outer edge full substance. The object of cutting a bed is to allow the

split-lift to lay in, and so produce a flat surface for the first lift. Since the split-lift is only a wedge, unless a bed is made, only a small section can be left for attachment, and during wear it has



Fig. 68. SOLE-PIECE FITTED

a tendency to work outwards, and thus spoil the appearance of the heel. Fig. 68 shows the sole-piece fitted.

Now apply a thin coating of adhesive to the bed, and fit the split-lift square with the sole round the seat. Secure with five brads, and trim the edge of the split-lift square with the sole. Fill up the cavity at the

rear with felt, and let the felt cover the join of the sole-end and the sole-piece. Rasp the top of the split-lift level, apply adhesive, and fit the first lift, slightly longer than the heel corners, and round the sides square to the split-lift.

After having secured with five rotten brads, mark round  $\frac{3}{8}$  in. from the edge of the lift, and cut a channel for the heel stitches to lie in, and ensure a level surface for next lift. If the stitches are laid on the top they cause the two joining lifts to crack. Open up the channel inwards. It is advisable to use a channel for this purpose because if a groove is cut it may show at the breast of the heel and spoil the appearance of the finished shoe. With the bone open the seat, easing the sole so that the link-stitches can be seen, and be picked up with the awl during sewing. Take the right shoe, and commence at the inside heel corner with a flat-backed awl and a 10 cord thread of 22 hemp. Put the hand-leather on the left hand and the awl in the right hand, and pick up the first link-stitch, pushing the awl through the sole, split-lift and lift coming out into the channel on the lift. Put the first bristle through, and divide the thread. The left-hand thumb should press on the lift to keep the heel from being pushed away from the upper.

Dip the awl into some bees-wax to prevent it sticking to the link-stitches, and thus causing them to strand, and pick up the second link-stitch. Do not let the awl divide the thread—it must pass *between* the link-stitch and the upper. Let the left-hand bristle follow the returning awl. Then put the right-hand bristle in on the left, pull up the threads, taking care to avoid marking the upper. Apply a greater tension with the right hand, thus pulling the heel close to the upper. Continue sewing until the end of the sole is reached, and arrange for the next stitch to get a good hold of the sole-piece,

drawing the two sections tightly together. When the outside heel corner is reached, cut off the threads.

The chief points to observe when sewing down the heel are to keep the link-stitches intact, avoid stranding or splitting when picking them up with the awl, and avoid levering the link-stitches with the awl or making indents in the upper with the back of the awl. Remember that the heel is being sewn to the innersole and the upper.

Pane the seat close to the upper, getting the seat well in, tap down on the lift, close the channel, and hammer in the seat with the face of the London pattern hammer. Take particular care to get the seat right home, and round up the edges of the heel square, leaving the breast for the meantime. Fig. 69 shows the heel sewn down.

Next rasp the top of the lift level, and if necessary skive the breast down flat. Apply the adhesive, and a fine layer of felt in centre, fit the lift with three brads, and round it square to the heel.

It may here be wise to consider the principles of heel building—

(a) The material must be of good quality and of uniform substance. Soft lifts and hard lifts do not blend together, and thick and thin look odd. If possible they should be of the same tannage as the sole and the top-piece, and of light substance, in particular for coloured work.

(b) The material must be properly prepared, fleshed and grained, and be quite dry ready for use to maintain the lightness and a good finish.

(c) The threads and rivets must be an equal distance from the edge all round, the stitches must be of an equal length, and the rivets an equal distance apart, to produce a well-finished heel. The effect of irregular



attachment is a wavy edge. The minimum amount of metallic attachment must be used, consistent with security, as all the surplus grindery used only adds to the weight of the heel.

(d) The heel must be secured in sections to ensure



Fig.69. HEEL SEWN DOWN

resiliency, and the rivets used must be punched below the surface.

(e) Adhesive must be applied between each section to cause the sections to knit together. A clean adhesive is essential, that is, one that will not spew during finishing, or impart a different colour to the heel-stuff.

(f) The top-piece must stand level with the points at the joints and the ground-line.

We now proceed to build the heel by putting on another lift, and secure the two lifts to the heel with a row of  $\frac{5}{8}$  in. iron rivets of 18 G.S.H. These should be placed  $\frac{1}{4}$  in. from the edge and  $\frac{1}{4}$  in. apart. The breast is then secured to the sole  $\frac{1}{4}$  in. from the extreme front of the heel with a row of  $\frac{7}{16}$  in. "builders." Punch the rivets and brads below the surface of the lift, rasp level, and add more lifts until with the top-piece the heel is  $1\frac{1}{8}$  in., and stands level with the ground line. Then secure as before.

The blinders are next put in the top-lift, usually  $\frac{3}{4}$  in. iron 18 G.S.H. Generally four are put along the breast, and eight round the heel  $\frac{1}{2}$  in. from the edge. The top of each rivet is cut off so that the points do not show on the grain side of the top-piece. Apply the adhesive, and fix the top-piece in position, tapping it down firm.

The top-piece is then rounded up square to the heel, and the seat marked out by running the point of the stitching awl all round with the thumb sliding on the top-piece. This gives an equal height of heel all round, and denotes the line on which to cut to get a level seat and keep the range.

Cut out the seat with the seat-cutter to the mark made from the top-piece, and trim round the edge of the heel to the required shape, with the heel corners pointing along the channels in the waist. With the back of the knife indicate the shape of the curvature of the front of the heel so as to blend with the curves in the waist, and cut down square. Avoid cutting into the sole when breasting, as this shows up during wear and is a source of weakness.

Having got the first heel shaped, take a paper pattern of the top-piece to assist in getting a fellow heel, and

build up the second heel to the reversed pattern, frequently placing the two shoes bottom to bottom to get the positions in correct relation and the two shoes with the same length heel.



Fig. 70. HEEL BUILT

The top-pieces must now be bradded. Usually two rows of  $\frac{7}{16}$  in. mid-stout brads are used with pin points or 19 gauge rivets to meet. Mark round the top-piece  $\frac{1}{8}$  in. from the edge, and mark with the brad-marker the positions for the brads and rivets. Then with the aid of a driver put in the rivets, keeping the face of the

brads in alignment with the top-piece. Mark with a brad marker the positions for the inner row of brads, as close to the outer row as possible, and drive in to the same alignment as the outer row. Fig. 70 shows the heel built, with the top-piece bradded. It is usual when driving brads to knock them first within  $\frac{1}{2}$  in. from the face of the top-piece, then with the nippers to set them with their face in correct alignment, and finally to knock them home with the driver.

Put a peg or a piece of matchstick in the tack hole in the toe of the sole, and file it level with the sole.

## CHAPTER X

### FINISHING

DURING this process the final “touch” to the making of the shoe is added, and by the maker’s skill and craftsmanship an attractive, pleasing, and saleable article is produced. In a well-made shoe the bottom-stuff shows to the best advantage, but to obtain a good finish a good kit is essential, and all the tools must be skilfully used. For each section of the shoe to be well developed and set up, the irons must be effectively used, all forming a blend in the completed and finished shoe. The finish must be clean and harmonize in colour, and be capable of being handled without showing any finger marks. Moreover, the colour should not fade or stain. It must be a permanent finish that is not affected by heat or damp. When the shoes are used there must be no tendency to stain the carpets, etc., and they must retain their shape during wear without fraying at the edges.

The bottom-stuff must be dry to produce an even colour and a permanent finish, and for this reason rewetting must be avoided.

The top-piece is first filed to show up the face of the brads and rivets. Avoid excessive filing as this causes the top-piece to work up rough, and of an uneven colour.

### KNIFING

Next the edge of the heel is finally knifed up square, with the seat of sufficient width to allow for a No. 2 seat wheel being used. The forepart is also knifed up with square edges, producing the required shape to

follow the character of the last. This is usually fairly straight along the inside and close round the toe, with a little fullness at the outside in the region of the joint. The stitches must be of equal distance from the edge, and the sole made to blend at the corners at the inside and outside joints.

The waists are next knifed to the shape of the bevel waist iron, allowing the lip to fit closely to the upper, and at the outer edge reaching the channel so as to fit right close to the heel corner, and make a short tapering joint at the inside and outside joints. Where the seat wheel ends the waist-iron commences, and where the waist-iron ends the forepart-iron commences. The corners at the joints must be worked in to avoid any prominence and produce a blend in the shape of the waist and the forepart. Fig. 71 is an illustration showing the heel, the waist, and the fore-part knifed.

#### RASPING

After knifing rasping follows, a fine cut rasp of the Swedish pattern being used. The object in rasping is to get level edges, and to knit the sections together. First rasp the breast of the heel, keeping it square, and setting the front edges square with the rest of heel. Take the right shoe and commence at the outside heel corner, laying the left four fingers on the upper close to the seat, as a guard, to prevent the rasp damaging the upper. Place the rasp (held in the right hand) flat on the edge of the heel, and rasp from the upper to the top-piece, maintaining a uniform pressure to produce a square edge. This method of approach removes any possibility of one section overlapping another. Continue rasping backwards as each part is finished, until the heel is rasped square from the seat to the edge of the top-piece all round.

The forepart edge is next rasped, the rasp being held with the thumb on top, and the first finger underneath and sliding along the sole as a guard. Take long sweeps keeping the edge square, and with continuous curves in the direction of its length. This will cause the welt and the sole to knit together, with the grain edge of the sole the more prominent.

With a small half-round fine-cut rasp, rasp the waists to

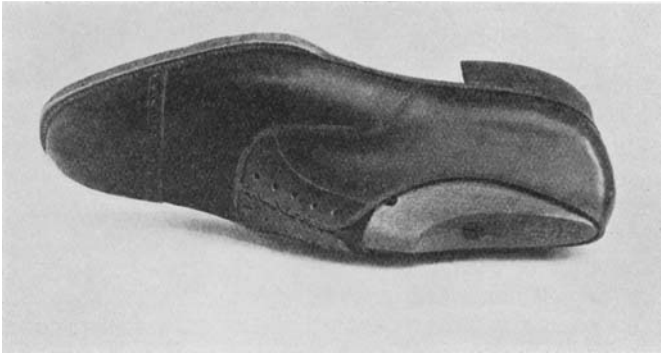


Fig. 71. KNIFING

obtain the shape of the waist iron.

File the sole outwards along the channel and remove the burr, thus levelling it for the easy running of the iron.

With a bit knife remove the burred edge from the welt between the stitches and the edge so that the impression of the jigger wire on the iron will be produced. The forepart iron should now be tried on the edge to test its fit. If the fit is not correct, or the edge is too stout in some places, this must be corrected by filing down the sole along the channel. File away the burred edge of the top-piece and the front edges of

the heel corners, and then file the waists, and make blending junctions at the heel corners and the joints.

At this stage the seat wheel is put on. Apply a little soap to the seat, and have seat-wheel below “fizzling” heat. Set up the seat, keeping a straight line, and holding the face of wheel flat on the heel all round, to get even roller marks.

The edge of the top-pieces is next soaped, and set up square with a warm top-piece iron.

The waists are also soaped, and set them up with the bevel waist iron, taking care that it is below “fizzling” heat to avoid burning. Press the waists down, and right close to the upper.

#### SCRAPING EDGES

The next process is scraping, and here one word of caution is necessary. To facilitate the scraping, wetting the edges is often unfortunately resorted to. This practice is the forerunner of trouble later on, since it interferes with the stain, and generally results in the edges being of uneven colours. The moisture cannot be applied so that all the edges take an equal amount, and hence when the warm irons are applied the parts with the greatest moisture work up darker in colour than the drier parts.

First the breast of the heel is scraped with the bottom scraper (usually a knife converted into a scraper), thus smoothing the sections and taking out the rasp marks. It further cleans out the breast, right down to the sole. The edge of the heel is next scraped, commencing on the right shoe at the inside heel corner, and scraping square and flat. Fig. 72 is a diagram of the heel scraper. The rasp marks are removed, making the face of the edges glossy and smooth, and showing clearly each section of the heel. Straight long sweeps should be used along the heel's edges, carefully avoiding the



roller marks of the seat-wheel, and the extreme edge of the top-piece.

The forepart edge is next scraped with the edge scraper (see Fig. 73) held firmly in the right hand. Commence at the outside joint, making the scraper produce a hollow edge with

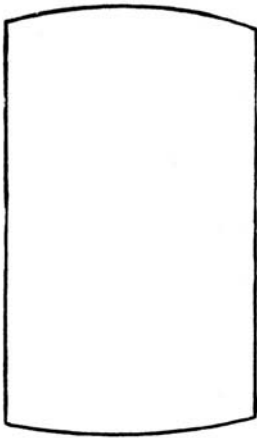


Fig. 72. DIAGRAM  
SHOWING HEEL SCRAPER

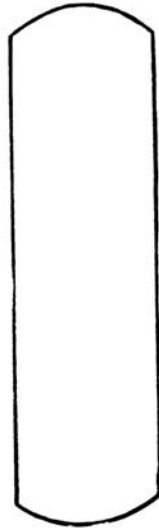


Fig. 73. DIAGRAM  
SHOWING EDGE SCRAPER

the grain edge of the sole the more prominent. Remove the burr on the edge of the welt, for the jigger wire on the iron to fit correctly. Scrape the waists to remove the soap ironed in, and thus give a clean edge for the stain.

#### SANDPAPERING

The next process is sandpapering to smooth the edges. A coarse grade sandpaper should be avoided,

as better results can be obtained with a fine grade, say not more than No.  $1\frac{1}{2}$  grade.

For the heel the sandpaper is usually rolled round a piece of cork. This enables greater pressure to be evenly exerted, so keeping the edge quite square. Apply the sandpaper to the heel until it is quite smooth and glossy. It is now that any dampness in the heel can be noticed, as the damp parts will come up darker in colour during sandpapering.

For the forepart edge, a small piece of sandpaper is folded up so as to cover the edge, and with the thumb pressing it, it is passed along the edge in long sweeps, thus maintaining the shape of the edge until it is smooth and glossy.

Sandpaper the waists smooth and clean. Then with a fine file smooth the channel on the forepart, turning the extreme edge of the sole outwards ready to receive, and be picked up by, the forepart iron. Brush away all dust and particles of leather.

#### STAINING

We now come to the staining of the edges, and a colour that harmonizes with the upper must be used. In our case, which is of a medium brown upper, the edges must be slightly darker than the upper, and to obtain that result the leather must be understood. Here it will be realized what was laid down at the commencement, namely, that the heel-stuff should be all of the same tannage. Leathers vary in how they take the stain, and to obtain a uniform colour as much depends on the stain as on the leather used, and the method of application.

Bismarck brown is dissolved in cold water in a bottle with an air-tight cork. Only a few grains of the colouring matter are necessary to fill a gill bottle. Under no circumstances must it be used too strong. This

fact can soon be tested, for if it is too strong the stain will appear to sear the edges, making them rough, very dark in colour, and lifeless for setting up. If Bismarck brown is too dark in colour it can be toned to a lighter shade by adding a little burnt sienna; or if a reddish brown is wanted a little chrysoidine should be added.

Pour out the stain into a clean saucer, and, with a small camel-hair brush, paint the welt and the edges, applying the

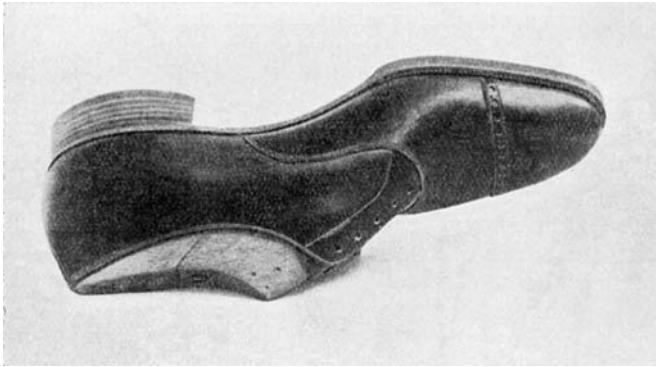


Fig. 74. SHOE IN COLOUR

stain as uniformly as possible. It should be very lightly applied, and brushed all one way, not backwards and forwards. Since the stain is being applied to sandpapered edges, it strikes quickly and therefore any unevenness in application will easily show. Of course care must be taken to avoid the stain getting on to the upper or bottoms. Fig. 74 shows the shoe in colour with the edges stained.

Lay aside the shoes and allow the stain to dry to a uniform colour. When dry brush off the edges with a clean brush. The heel is burnished first, with the heel-glazer just below "fizzling" heat. Hold the shoe

firmly in the left hand, and the heel glazer in the right, and commence at the inside heel corner. Burnish onwards, keeping the glazer moving backward and forward quickly. Apply an even pressure, setting up the edge of the heel level and square, and with a good gloss. Continue all round the heel, and then apply a little brown heel ball and iron up again with the glazer, just fizzling hot, applying uniform pressure and ironing the heel ball well in.

Get the seat-wheel just below fizzling heat, apply it to the seat, using uniform pressure, with the face of the wheel on the heel. Follow the straight line of the seat, and thus produce a clean set-up seat, with the roller marks quite distinctly showing.

The top-piece iron, again just below fizzling heat, is put all round the edge of the top-piece, keeping its face on the edge of the heel and producing a clean edge with the crease on the iron. It is well to guard against putting the seat-wheel and the top-piece iron on *too* hot, as this is likely to produce a darker colour than on the other parts.

The forepart is next set up, but in this case the edge iron must only be semi-hot since greater pressure is applied on a smaller area and too hot an iron will give a darker colour. Commence at the outside joint, and, holding the shoe firmly on the knees with the left hand, apply the iron to the edge, moving quickly backwards and forwards with uniform pressure, and pressing the iron to the edge so as to make the crease show up distinctly and the jigger wire leave its impression. The shape of the edge must be maintained and the shape of the iron produced with a clean outline, free from lumps and bumps. Set up the waists with the iron, semi-hot, pressing in close to the upper.

The fudge, in a semi-hot state, is then run round the welt to set up the stitches, and being V-cut it will

bring them up to a pyramid shape. Run the fudge quickly, applying uniform pressure, backwards and forwards, and avoid marking the upper. Take care not to have the fudge more than semi-hot, or with the pressure applied it may burn the upper and cause troubles during wear.

The bottoms are next scraped with the bottom scraper, that is, the forepart, waist, breast, and top-piece, lightly removing the grain, and clearing to the channel in the forepart and waist, and to the edge of the top-piece. Though they must be scraped level and clean, it is an advantage to remove just a uniform amount to get a good bottom. If too much scraping is done the fibres of the leather are reached and the bottoms come up rough, and the bottom-stuff is not shown at its best.

The bottoms and top-pieces are then finely sandpapered all over, using a round or circular motion to produce a smooth nap on the leather. Brush off the dust, and with a piece of clean flannel apply dissolved gum tragacanth lightly all over. In some cases a little oxalic acid is mixed with the gum tragacanth to remove any water stains on the bottoms, and so assist in getting a more uniform colour.

Allow sufficient time for the bottoms to dry, and then wipe the edges clean. Apply a little brown heel ball to the forepart edge, and a little along the channel. Take the warmed forepart iron and set up the edge, ironing the heel bail well into the edge. Use a fair amount of pressure to make the iron imprint itself on the face of the edge, and show the jigger wire and a pronounced crease on the sole edge. The lip of the iron will then show on the channel, setting it firm and hard all round.

Run the warm fudge round the welt to define the stitches clearly, but without touching the jigger wire mark on the welt, or marking the upper.

Apply a little brown heel ball to the waists, and finally set up from the last roller mark on the heel to the beginning of the forepart. Run the dull knife along the waists and round the heel, just warm enough to clear the line and. remove any



Fig. 75. SHOE FINISHED

irregularities. The jim crow is next run down the channels in the waists, only just warm enough to show the impression of the roller. Then with a clean ball of woollen rag, rub off the heel ball from the edges of the heel, forepart, and waists.

Apply a little white or brown polish, or fake, to the

bottoms and edges. Allow this to dry, then brush it off, and finally rub over lightly with a polishing rag.

Cut the tacking stitches down the facing, unscrew the block, insert the last-hook in the block-hole of the block, and gently withdraw. Insert the last-hook in the block-hole in the last (usually an 18 in, last-hook with a screw top is used), and place the top of the last-hook under both feet, the heel of shoe being turned outward. Take hold of the shoe with both hands at the rear end, and with the forearms resting on the knees press with both feet. Raise the knees and then lift up the heel end of the shoe gradually to avoid damaging the upper or breaking the waist. As the shoe rises at the heel, pull it forward until the upper is high enough to pass over the back of last, then wrench forward and slip out.

The innersole is next rasped with the peg rasp along the feather inside the shoe, to remove any ridges caused by the lasting rivets. Then with the peg scraper it is scraped clean and smooth so as to be comfortable for the foot during wear.

The shoe is finally brushed all over with a clean brush and polished ready for shopping. Fig. 75 shows the shoe finished.





# INDEX

## SECTION XI

### BESPOKE BOOTMAKING

- ADAPTATION of last, 37 *et seq*  
Adapting boot last for shoe, 38  
Allowances, 44–45  
— for length of uppers, 45  
— on lasts, 42  
Altering lasts, 40  
Anatomy, 26  
Appliances, leg, 108  
Apprentices, 119  
Attaching corks, 95  
Awl, peg, 11  
BACK lasting, 45  
Backbone, 49  
Bars, meta, 106  
Beater, welt, 75  
Bellies, 57  
Bench for cutting, 51  
Bends, 57  
Bespoke business, types of, 14, 16  
—, general trade, 14  
—, high class, 14  
—, making footwear, 5, 13  
—, manufacturers, 15, 16  
—, methods employed, 7  
—, occasional, 15  
—, pattern storage, 21  
—, reasons for, 5–6  
—, retailers, 15  
Beva, 49  
Blake, 7  
Blocking innersoles, 68  
Book-keeping, 112 *et seq.*  
Boot, extension, 98  
— last, 38  
Bottom-filling, 60, 75  
— stock, selection, 57 *et seq.*  
Bottoming, 64  
Bottoms, 34  
Box calf, 48  
— rands, 100  
Breaker, seat, 79  
Bristles, 72  
Bunion piece, 41  
Bunsen burner, 19  
Business premises, 17–24  
Butts, 49, 57  
CALF, box, 48  
—, patent, 49  
—, russet, 50  
—, wax, 48  
— willow, 48  
Cap, length of, 46  
Cash, register for, 112  
Cemented, 7  
— work, 11–12  
Channel closing, 78  
Channelling, 75, 76  
Cheeks, 57  
Cleaning linings, 82  
Clicker, 51  
—, bench, 51  
Closers, trade, 55  
Closing, 53  
—, channel, 78  
—, machine, 54  
— uppers, 53 *et seq.*  
Club foot, 84 *et seq.*, 89  
Combination, 7, 9, 10  
Corks, 92  
—, attaching, 95  
—, compensation, 85  
—, cradle, 90  
—, examination of, 93  
—, fitting inside, 94  
— for special cases, 89  
—, inside extension, 96

- Corks, joining, 93  
 —, loose, 95  
 —, outside, 85, 99  
 —, shaping, 94  
 Costing, 112 *et seq.*  
 — labour, 113  
 — materials, 113  
 Cradle, cork, 90  
 Curve of heel, 86, 88  
 Customer, conversation with, 26  
 —, interviewing, 25, 36  
 —, new, 25  
 —, previous, 25  
 Cutting-material, 61  
 — patterns for specials, 44  
 — —, uppers, 43, *et seq.*  
 — skins, 51  
 — uppers, 51  
 DAY book, 112  
 Deformed feet, 90  
 Division of butt, 60  
 Drill lining, 52  
 ELASTIC glue, 93  
 Elongated heels, 106  
 Enamelled leather, 49  
 Equino-varus, 84, 92  
 Examination of cork, 93  
 Exemptions, 120  
 Extension boot, 98  
 Extras, 121  
 FACES, 57  
 Feathering, 69  
 Feet, deformed, 90  
 Femur, 84  
 Fibula, 84  
 Filing cabinets, 23  
 Filling the bottom, 75  
 Finishing, 79  
 — off, 82, 83  
 Fitments, 107, 109  
 Fitting, 38, 53  
 Fixed corks, 95  
 Fixing soles, 75  
 Flax, 71  
 Fleshing, 64  
 Footwear, styles of, 33  
*Formes*, 44  
 Fracture, Pott's, 84  
 Front length, 45  
 GRAIN hide, 49  
 Ground work, 121  
 HAFTS, peg-awl, 11  
 Hammer, 66  
 Hammering, 76  
 Hand-sewn pumps, 7, 8, 9  
 —, welted, 7, 8  
 Heel, 28, 59  
 — curve, 86  
 —, elongated, 106  
 —, height of, 35  
 —, pin, 38  
 —, types, of, 36  
 Heeling, 78  
 Height of heel, 35  
 Hemp, 71  
 Hides, 48  
 —, grain, 49  
 High stifnings, 103  
 Holing, 69  
 INDEX card, 20, 22  
 — ledger, 112  
 Indexed books, 31  
 Individual lasts, 21  
 Innersole, 58  
 —, blocking, 68  
 —, feathering, 69  
 —, holing, 69  
 Inside corks, 85  
 — extension corks, 96  
 — —, fitting, 94  
 Instep, 28  
 — piece, 38  
 Interviewing customers, 24, 36  
 JOINING cork, 93  
 Joint, 28  
 LABOUR, costing of, 113  
 Lasting, 70  
 Lasts, allowances in measurement, 42  
 —, altering, 40  
 —, boot, 38

- Lasts, court, 38  
   — for enlarged joint, 30  
   — for stiff toe, 40  
   —, length over foot, 41  
   —, numbering, 21  
   —, selection, 19, 37 *et seq.*  
   —, shoe, 38  
   —, stock, 37  
   —, storage, 19, 21  
   —, types of, 38  
 Learners, 119, 120  
 Leather, Beva, 49  
   —, box, 48  
   —, buying, 56  
   —, enamelled, 49  
   —, grain hide, 49  
   —, patent, 49  
   —, reptile, 49  
   —, wax calf, 48  
   —, willow, 48  
   —, Zug, 49  
 Ledger, index, 112  
 Leg appliances, 108  
 Length of cap, 46  
   — of front, 45  
   — of last over foot, 41  
   — of vamp, 46  
 Lifts, 59  
   —, split, 66  
 Lighting, shop, 17  
   — workshop, 19  
 Lining, 32, 33  
   —, cleaning, 82  
   —, drill, 52  
   — skins, 50  
 Long stiffenings, 104  
 MACHINE-SEWN, 7, 10  
 Machining, 53  
 Making, 64  
   — split lifts, 66  
   — threads, 71  
 Material, cutting, 61  
   — for uppers, 48 *et seq.*  
   — Used for casts, 116  
 Measurements, positions to take,  
   27, 29  
   —, taking, 27  
 Meta bars, 106  
 Mixed tannages, 56  
 NARROW toe, 35  
 OAK bark tanned leathers, 56  
 Order card, 20  
 Outer soles, 57  
 Outline of foot, 29  
   — — — — —, perpendicular,  
   30, 31  
 Outside corks, 85, 99  
 Overtime, 121  
 PATENT, 49  
 Pattern storage, 21, 23  
 Patterns for uppers, 24  
 Peg-awl hafts, 11  
 Peg knife, 80  
   — rasp, 80  
 Pegged, 7-11  
 Piece rates, 121  
 Pitch, 86  
   — and spring, 39  
 Potts fracture, 84  
 Preface, 3  
 Premises, business, 17-24  
 Preparing rands, 100  
   — soles, 75  
 Profit, 115  
 Puffs, 58  
 RANDS, box, 100  
   —, preparing, 100  
   —, sewing, 101  
   —, shaping, 100  
   —, turned, 102  
 Rates, trade board, 118 *et seq.*  
 Reasons for bespoke, 5, 6  
 Receipt book, 112  
 Register, cash, 112  
 Reptiles, 49  
 Riveted, 7-11  
 Rollers, 61  
 Russet calf, 50  
 SEAT breaker, 79  
 Selection of bottom stock, 57  
   *et seq.*  
   — of upper material, 48 *et*  
   *seq.*  
 Sewing rands, 101  
   — welt, 73

- Shank, 59, 68  
 Shaping rands, 100  
 Shop, 17-18  
 — equipment, 17  
 — lighting, 17  
 Shopping, 81  
 Shove, 38  
 Side-lining, 59  
 Sides, 48  
 Size stick, 27, 28  
 Sizes of skins, 48  
 Skins, 48  
 —, lining, 50  
 —, reptile, 49  
 —, sizes of, 48  
 Skiving, 53  
 Slant of toes, 34  
 Sock, 82  
 Sole, stitching, 77  
 Soles, outer, 75  
 —, preparing, 75  
 Solutioned, 7, 11, 12  
 Special cases, 89  
 Split lifts, making, 66  
 Spring, 86, 88  
 — and pitch, 39  
 Stiffenings, 58  
 —, high, 103  
 —, long, 104  
 Stitching, sole, 77  
 Stitchmen, 19  
 Stock lasts, 37  
 Stocking, 38  
 Storage of lasts, 19  
 Straps, T, 107  
 Stuck-up, 7  
 Styles of footwear, 33  
 Suitable types of footwear, 31, 32  
 Surgical Boot uppers, 103  
 — work, 84 *et seq.*
- TAKING casts, 116, *et seq.*  
 — impressions, 116 *et seq.*  
 — measurements, 27  
 Tannages, mixed, 56  
 Thread making, 71  
 Threads, 71  
 Tibia, 84
- Toe casing, 58  
 —, narrow, 35  
 —, pin, 38  
 —, width of, 35  
 Top-pieces, 57  
 Tracer, 30  
 Trade board, 118 *et seq.*  
 — closers, 55  
 Trying-on, 62  
 — in the welt, 62  
 T-straps, 107  
 Turned rands, 102  
 "Turns," 7  
 Types of bespoke businesses,  
 14-16  
 — of footwear, suitable, 31-  
 32  
 — of heels, 36  
 — of lasts, 38
- UPPER materials, selection of,  
 48 *et seq.*  
 Uppers, closing, 53 *et seq.*  
 —, cutting, 51  
 — for surgical boots, 103
- VALGUS T-strap, 107  
 Valonia, 56  
 Vamp length, 45, 46  
 Varus T-strap, 107  
 Veldtschoen, 7, 12, 13
- WAIST-PIECE, 59, 62  
 Wax, 48, 72, 93  
 — calf, 49  
 Wedges, 105  
 Welt beater, 75  
 — mill, 67  
 — sewing, 73  
 Welts, 58, 67  
 Width of toe, 35  
 Willow, 48  
 Work, surgical, 84 *et seq.*  
 Worker under 21, 118  
 Workroom, 18, 19  
 — equipment, 18
- ZUG, 49

SECTION XII  
HANDSEWN BOOTMAKING

- ACETIC acid, 140  
 Adhesives, 140 *et seq.*  
 Alternative to piercing, 157  
 Amount of hoist, 165  
 Angle of welt, 180  
 Awl, welting, 185
- BETWEEN substance, 155  
 Bevelling the welt, 179  
 Bismark brown, 224  
 Blocking, 144  
 Borax, 130  
 Bottom filling, 193 *et seq.*  
 ——— stuff preparation, 129 *et seq.*  
 ——— ———, set of, 129  
 Bradded top piece, 217  
 Bristles, 184  
 Brown heel ball, 228  
 Building heels, 211 *et seq.*  
 Burnt sienna, 225
- CASTING-OFF, 182  
 Channeling, 197 *et seq.*  
 ———, Object of, 202  
 Construction, welt seam 178  
*et seq.*
- DEPTH of feather, 153  
 Direction of pulls, 162  
 Drafting of operation, 163  
 Drying innersoles, 147
- FAKE, 228  
 Feather depth, 153  
 ——— width, 152  
 Feathering insoles, 151  
 Felt, 193  
 Filling, bottom, 193 *et seq.*  
 Finishing, 219 *et seq.*  
 Fitting the soles, 197 *et seq.*  
 ——— the welt, 179  
 Fixing on sole, 198  
 Fudge marks, 206, 226
- GELATINE, 140  
 Glue paste, 140
- HAMMERING leather, 198  
 Heel ball, brown, 228  
 ——— building, 211 *et seq.*  
 ——— stuff, 138  
 Hoist, 165  
 ———, amount of, 165  
 Holdfast, 155  
 ——— width, 155
- INNERSOLE, drying, 147  
 ——— preparation, 142 *et seq.*  
 ——— proportions, 150  
 ——— rounding, 148  
 Insoles, feathering, 151  
 ———, length of stitch, 156
- KNIFING, 219  
 ——— waists, 220
- LAST, positioning on, 164  
 ———, removing, 229  
 Lasting, 159 *et seq.*, 174  
 ———, its object, 159  
 Leather shanks, 194  
 Length of stitch for insole, 156  
 Lifts, split, 138
- MAKING a stitching thread, 181  
 205  
 ——— a welt thread, 181  
 Mellowing, 129  
 Moulding soles, 200
- OBJECT of channeling, 202  
 ——— ——— lasting, 159  
 ——— ——— stiffener, 133  
 Operation of drafting, 163  
 Overcasting, 186  
 Overstraining, 161
- PASTE, glue, 140  
 ———, rye, 140  
 Piercing, 155  
 Positioning on the last, 164  
 Preface, 127  
 Preparation, insole, 142 *et seq.*

- Preparation of bottom stuff,  
129 *et seq.*
- Proportions of innersoles, 150
- Pull, fifth, 171  
—, first, 167  
—, fourth, 171  
—, light, 172  
—, second, 169  
—, seventh, 172  
—, sixth, 171  
—, third, 169
- Pulls, 167  
—, direction of, 162
- QUALITY of stiffener, 134
- RANGE, 153
- Rasping, 220
- Removing the last, 229
- Re-waxing, 189
- Rounding, 197 *et seq.*  
— innersoles, 148
- Rye paste, 140
- SAND-PAPERING, 223, 224
- Scraping, 222  
— innersoles, 144
- Seat wheeling, 222
- Sewing foreparts, 187  
— in welt, 184 185  
— lifts, 213  
— waists, 187
- Shape of side lining, 133  
— of stiffeners, 135
- Shop kit, 129, 130
- Side lining, 131, 132  
— —, shape of, 133
- Size of stiffener, 135
- Skiving side linings 133
- Skiving stiffeners, 135, 137  
— waists, 199
- Sole, fitting the, 197 *et seq.*  
— piece, 211
- Split lifts, 138
- Stiffeners, 133  
—, object of, 133  
—, quality of, 134  
—, shape of 135  
—, size of, 135
- Stitching, 205 *et seq.*, 207
- Staining, 224
- Substance, between, 155  
— of edge, 197
- THREADS for welt sewing, 180  
—, making stitching, 205  
—, making welt, 181
- Toe stiffener, purpose of, 136  
— —, shape of, 137  
— —, skiving, 137
- Top piece iron, 226  
— pieces, 139, 216
- Trimming welt in waist, 192
- Twisting, 183
- WAISTS, sewing, 207
- Wax, 182
- Waxing, 182, 183
- Welt, fitting the, 179  
— seam construction, 178 *et seq.*  
—, sewing in, 184  
— —, threads for, 180  
—, thread for sewing, 181
- Welting awl, 185  
— thread, 183
- Width of feather, 182  
— of holdfast, 155

END OF VOLUME VI