BOOT & SANDAL FABRICATION TECHNIQUES

CHAPTER 6

BOOT TECHNIQUES

Shoes are very common in design. Most people accept what the artisan offers.

Boots are more individualistic. Each pair of boots usually evolves with a lot of thoughts and desires expressed by each customer. The artisan usually has a more in depth conversation with the wearer to find out what they would like.

Boots seem to bring out individual desires, needs and opinions. Therefore, the artisan should understand the intended usage of the boots because that will have an influence on the materials and type of fabrication methods to be used.

Sometimes it is necessary to make compromises in materials and methods, because the wearer contemplates a specific usage at one time, and a different usage at another time.

Some wearers are easy to satisfy and other wearers are more challenging.

Some boot designs are very simple and easy to make.

Some boot designs require a lot of intricate work and a lot of labor.

The molding processes and philosophy remain basically the same for all shoes, boots and sandals.

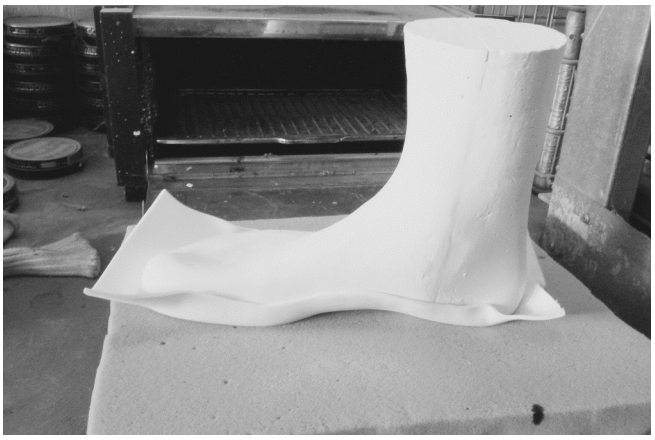
The intended purpose and usage for the boots pictured in this chapter, was to provide adequate space for comfort for the wearer's feet, which were of good size in front, and needed a good fitting arch and heel.

The wearer worked in the Forest Service. He did a lot of hiking and walking surveying timber for harvesting. Therefore, the design requirements were for 8" high boots with durability, water repellency and a substantial base and sole to support the wearer with about 100# of gear on all types of terrain.

1 The completed boot last is compared with the elongation drawing taken at the time of casting.

2 The elongation drawings will be discussed in Books 3 and 4.

3 A layer of 3mm Pe-Lite® firm density is cut to size and an additional layer of 3mm Pe-Lite® medium density (not pictured) is cut to size.



4 Each layer of Pe-Lite® is heated in the oven and formed to the bottom of the last.

5 Both pieces of Pe-Lite® are trimmed, hand tacked to the last and sanded to fit the last.

6 The feather edge of top layer of firm density Pe-Lite® is trimmed off.

7 The boot last with inserts is usually soaked in water for 1 to 2 minutes and then placed onto the lining leather which has been brushed with latex.

8 The lining leather is pulled and pressed to conform to the last. The latex is the binder or sticker. The wetting of the last keeps the latex from bonding so tenaciously to the last.

9 Notice the under lap of leather on the bottom.

10 Front view. Seam will be boot opening.

11 The front lining leather is latexed.

12 The front lining leather is applied to the last.

13 Bottom view.

14 A bottom lining leather is latexed.

15 Bottom lining leather is applied.

16 A view of trimmed bottom lining leather.

17 Design cords are applied to lining leather to mark top of boot and front opening.

18 Back view.

19 The "good" artisan takes time to recheck and adjust the stance of last and position of design cords.

20 Ditto.

21 The lasts have been covered with a double knit (2 cotton threads) or a triple knit (2 cotton threads and 1 polyester thread) sock.

22 The socks are latexed.

23 Ditto and press out the excess latex.

24 After drying, design cords are applied to mark the placement of Monks Cloth.

25 Ditto.

26 Ditto.

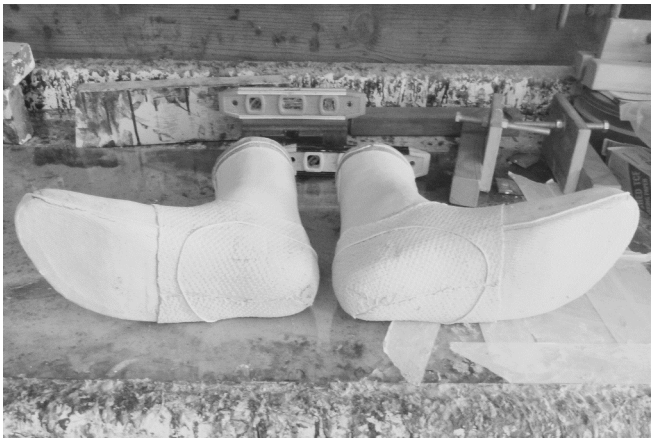
27 Ditto.

28 A heel and vamp Monks Cloth is latexed and applied.

29 Ditto.

30 The Monks Cloth is trimmed to the design cords.

31 The Monks Cloth layer must dry.



32 A design cord is applied to mark a heel counter and an arch to toe box stiffener of Monks Cloth.

33 More views of design cord placement.

34 Ditto.

35 Ditto.

36 The Monks Cloth heel counter is latexed and applied.

37 The Monks Cloth bottom front arch to toe box stiffener is latexed and applied.

38 The Monks Cloth layers have been applied, they have dried, trimmed and outlined with a marking pen. A vertical line has been added to aid your observation and comparison of left and right.

39 Ditto.

40 Ditto.

41 Ditto.

42 Ditto.

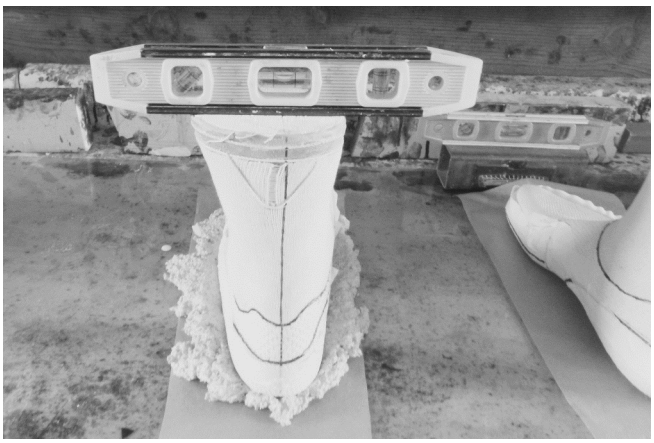
43 Ditto.

44 Latex is applied to the bottom.

45 "Mud" mix is applied.

46 Ditto.

47 Boot is placed on cooking parchment paper which is laid on a level table top or work bench.



48 Leveling is the important step!

49 The "mud" base is finished.

50 The leveling is checked again.

51 If needed, the boot is weighted to maintain the level. Notice weight placed on left side of left boot.

52 The leveling is checked again.

53 Ditto. A fan is usually used to help the "mud" dry.

54 About 12 to 24 hours later the boot is lifted off of the table top.

55 The parchment paper is peeled away.

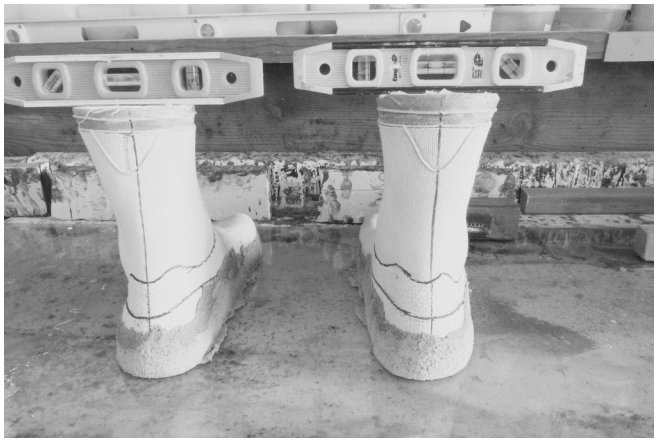
56 The still wet "mud" is pressed and formed as needed.

57 The boots with wet "mud" are allowed to dry 1 to 3 to 5 days with a fan and/or some sunshine.

58 The dry edges of "mud" are sanded daily. Stop sanding as soon as the soft wet "mud" appears.

59 The dry bottom is sanded daily. Stop sanding as soon as the soft wet "mud" appears.

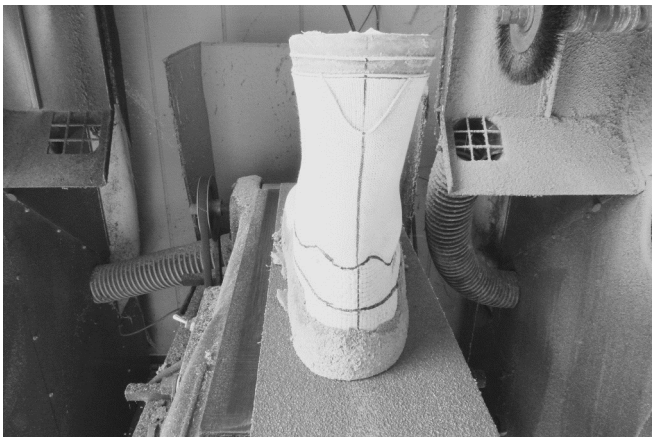
60 Ditto. But, keep doing it carefully!



61 Checking level.

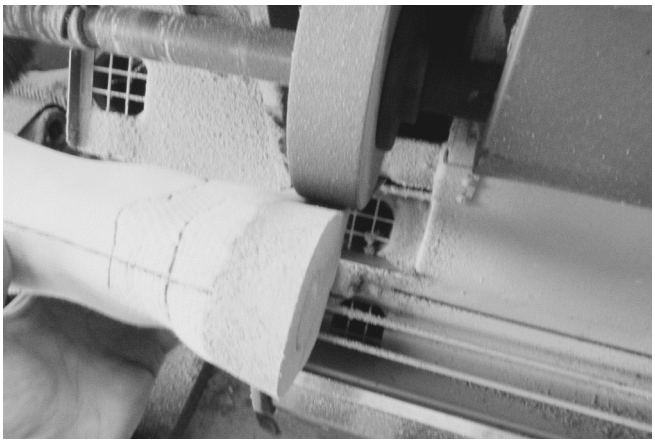
62 Sanding bottom of "mud" carefully!

63 Keep re-checking level!



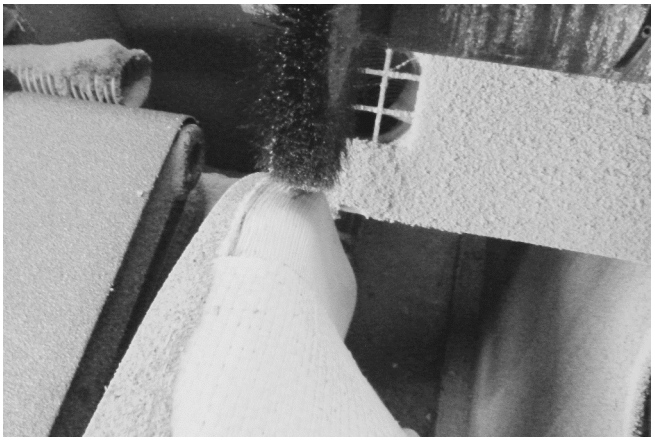
64 More sanding.

65 Looking for the depth of the Monks Cloth under the "mud".

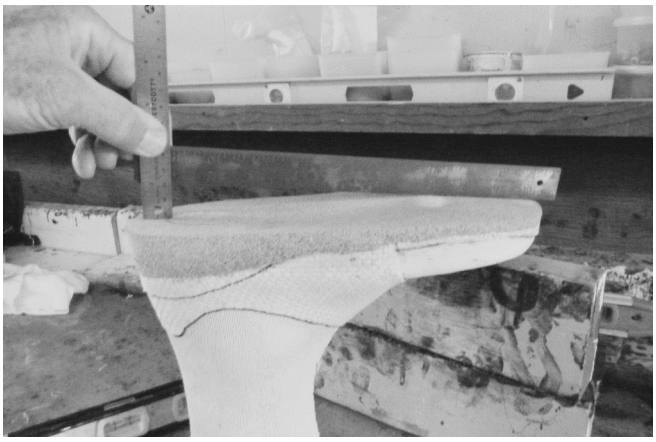


66 Smooth sanding.

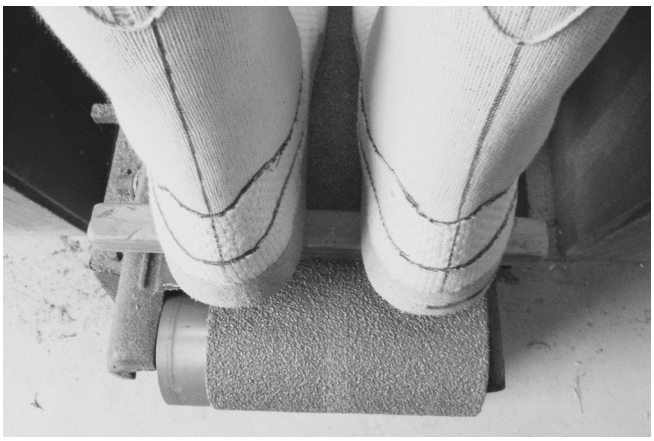
67 Ditto.



68 Wire brushing.



69 Checking heel to ball and ball to toe angle.



70 Comparing right and left boot. Checking roundness and uniformity of "mud" around outside edge of heels.

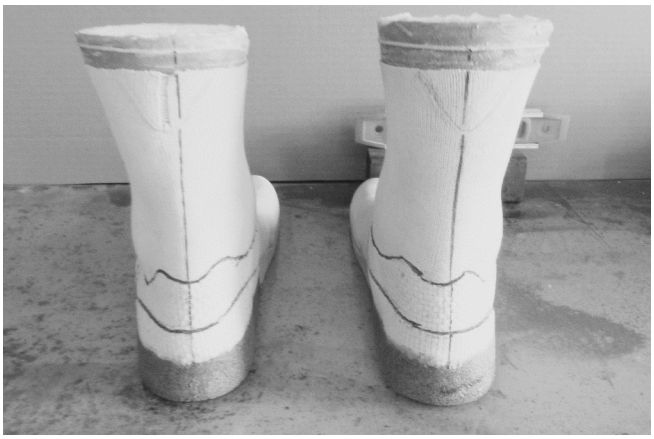
71 Marked areas need improvement.

72 Applying more "mud" which will be sanded when dry.

73 Applying fiberglass resin to heel counter base in order to strengthen the outside walls of the dried "mud".

74 View of finished boots before leathering.

75 Ditto.



76 Ditto.

77 Ditto.

78 Ditto.

79 Leathering back of boot using adhesive as a bonding agent. Glues or latex are both acceptable but have different properties and attributes. This pair of boots was done with Ortex®.

80 Ditto.

81 Ditto. Notice the leather is applied inside out or rough side out as requested by customer.

82 Ditto.

83 The bottom leather underlap is cut to size.

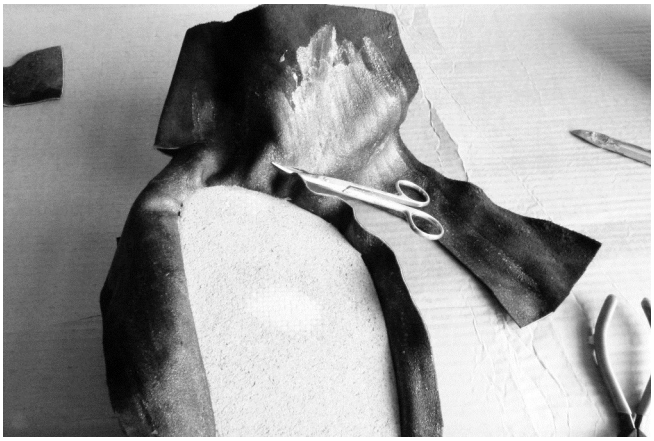
84 The leather underlap is glued to the bottom.

85 The front leather is applied.

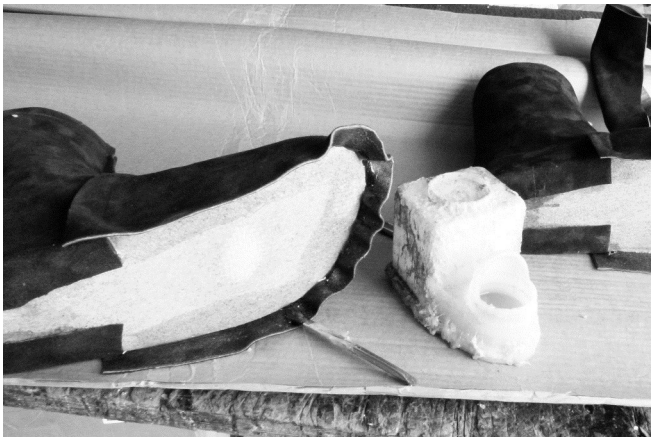
86 Ditto.

87 The leather is pressed in at side seam.

88 The side seam is cut to size.



89 The under lap is cut to size.



90 Adhesive is applied to the underlap and bottom.

91 The folding darts are cut.

92 Adhesive is applied to the side seam areas.

93 Front view of boots after leathering.

94 The underlap is sanded carefully!

95 Ditto.

96 Inspecting the right boot underlap. Notice a little too much sanding at the heel.

97 Inspecting the sanding of the underlap of both boots. Notice the width of boots across the ball and toe box areas. This customer needs custom made footwear for comfort and to prevent foot distortion by improperly sized footwear.

98 Applying two coats of glue to the bottom underlap and one coat to the mid sole.

99 The mid sole is attached and pressed.

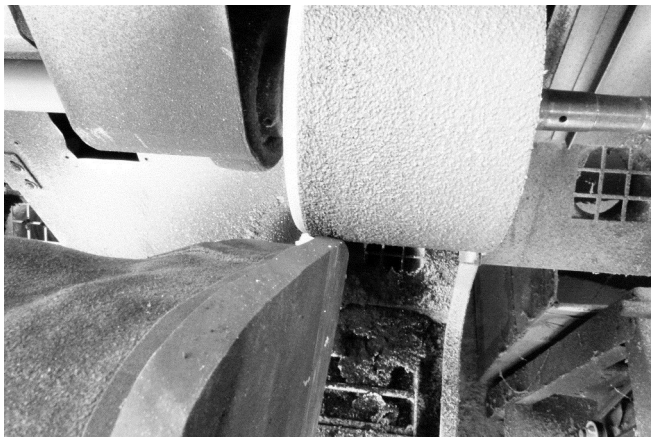
100 Adhesive is applied to mid sole and outer sole.

101 The outer sole is attached and pressed onto the mid sole.

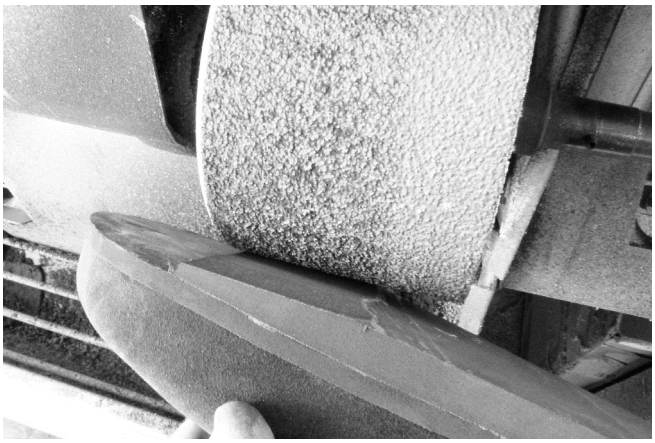
102 The outer edge of outer sole is rough sanded.

103 The edge of sole is smooth sanded.

104 The craftsperson didn't read the instruction on the work order! Not pictured is the removal of the outer sole by the use of thinner. A 5/8" or 30 iron heel wedge has been glued and pressed to mid sole.



105 Sanding of heel wedge for 5/8″ lift at heel and 0″ at ball of foot.



106 Ditto.

107 Ditto.

108 Ditto.

109 Ditto.

110 Finishing heel wedge on flat belt sander.

111 Finished heel wedge of right boot.

112 Gluing of outer sole.

113 Outer soles have been attached and pressed.

114 Sanding of outer edge of sole.

115 Ditto.

116 Ditto.

117 Ditto.

118 The bottom of center opening is punched.

119 Center opening has been cut down to punched hole.

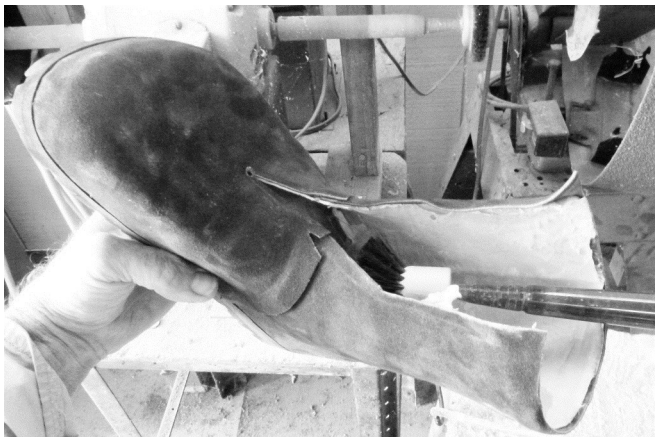
120 The last is being broken and pried out.

121 The last is coming out.

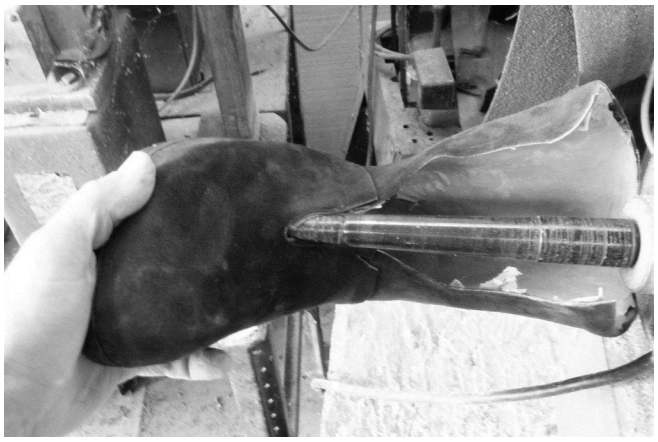
122 Ditto.

123 Trying to get the front of last out of boot.

124 Taking the inserts out.



125 Using a toe brush to clean out inside of boot.



126 Ditto.

127 Ditto.

128 Trimming the top of leather.

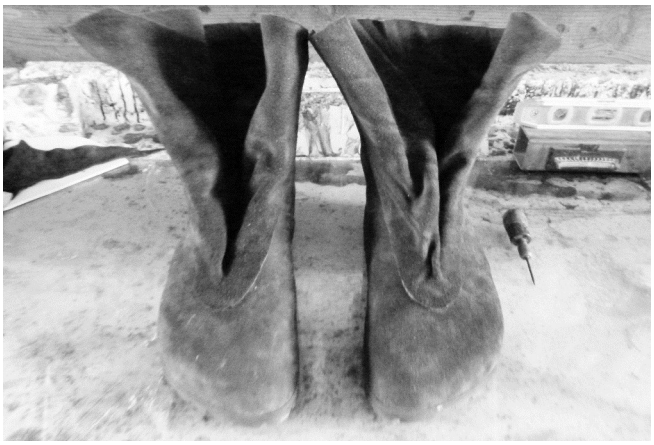
129 Trimming the lace opening.

130 Measuring the uniformity of lace openings and eyelet holes.

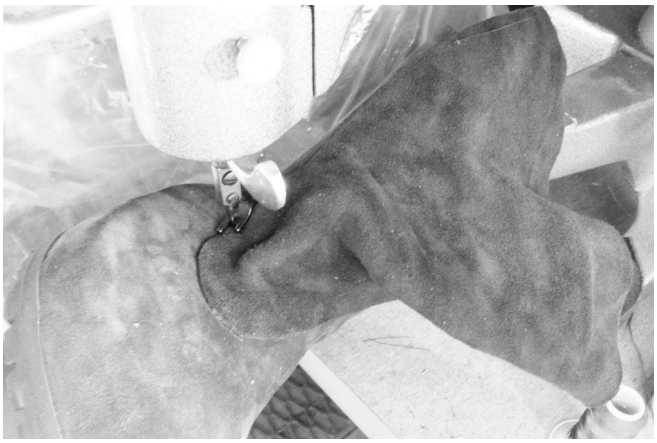
131 Punching the bottom eyelet holes.

132 Measuring distance between eyelet holes.

133 Gluing the tongues to boots.



134 Ditto.



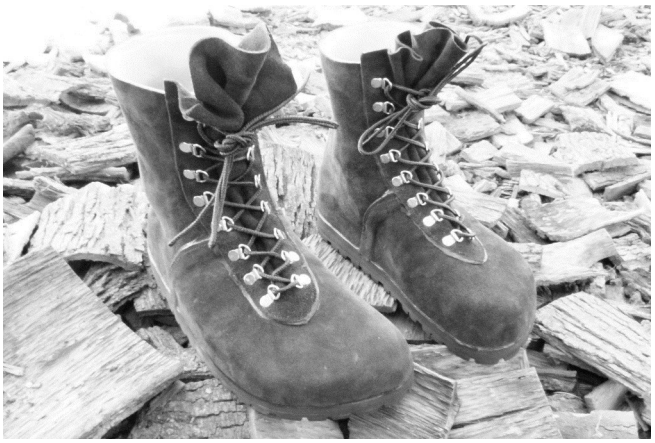
135 Sewing the tongues to boots.

136 Sewing the side seam.

137 The eyelet holes are re-punched and/or poked open thru the tongues.

138 The rivets and speed lace rings are installed.

139 The boots have been finished!



140 This is functional art! These boots can be experienced by the wearer and are useful. They will help to make the wearers life more comfortable and enjoyable.

141 Lucky are those who can afford to have their molded footwear custom made for them.

142 Lucky are those who can make their own custom molded footwear.

This pair of boots is heavy duty construction. Most boots for regular usage do not warrant this much material and reinforcement. The artisan must choose the materials and methods of fabrication to suit the wearer. The weight of the person and how they walk is of consideration. The shape and size of the physical body, temperament and personality of the wearer, may also influence material selection.

Outer soling is a very important consideration for boots. It is mainly influenced by the wearer's opinion and the intended usage. But, often other factors as age and physical condition should be included in all considerations.

Vibram® offers a lot of suitable outdoor soling alternatives. But, you will have to source the products thru a "shoe finder" who is a distributor. If you want to find a good "shoe finder" simply call Vibram® USA.

Sometimes, pre-made soles will fit very nicely, but they don't always fit everyone's foot size. Sometimes the craftsperson will have to use sheets of soling material.

I like the following products for outer soling:

148W Kletterlift,

1330W Newporter,

1374 Baltimore Wide,

2070 Scooter,

and sheets

8102 Morflex Pyramid,

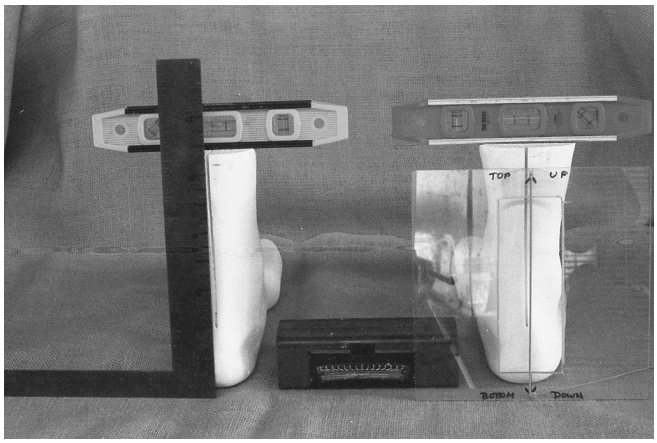
8868 Super Newflex,

7106 Eco-crepe.

This pair of boots was ordered by a big young man who was a martial arts instructor, and worked as a framing and finish carpenter. He wanted to experience a step up in foot comfort. After some time, he expressed a high level of satisfaction. He said that after the long hard days of work, his feet were not tired.

Look for differences in technique between this pair and the previous example. Notice the use of aids in the set up. You must learn to use tools which help you to set up your work. You need the ability to measure what you are doing if you want to achieve a high level of success and consistency. Levels, squares, rulers, marking pens, indelible pencils and self-made gadgets are all important tools for measurement and comparison. The tools of a machinist, a carpenter or a cabinet maker will all be helpful.

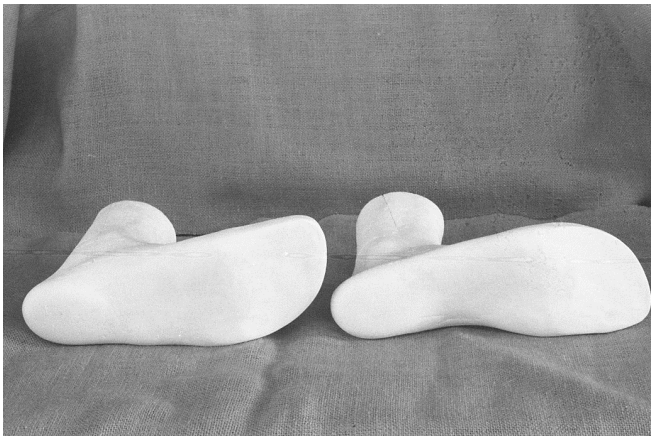
But, even more important is the ability of the eyes of the observer, the thinking of the artisan and the talent of the craftsperson to bring everything together.



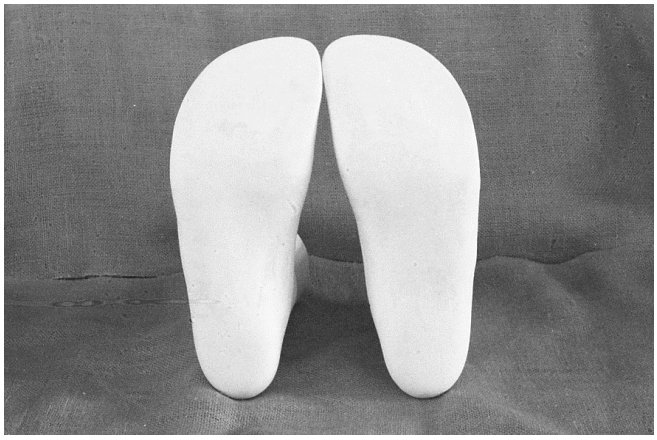
143 "Good" custom molded footwear starts with the cast and the last. Everything counts: the shape, the size, the contours, the balance and the assessment of all physical materials before they are used.

144 This picture is to help you to consider the heel and toe box lifts before the shoe or boot is made. If the angles are good, they will have a positive contribution to the comfort of the wearer.

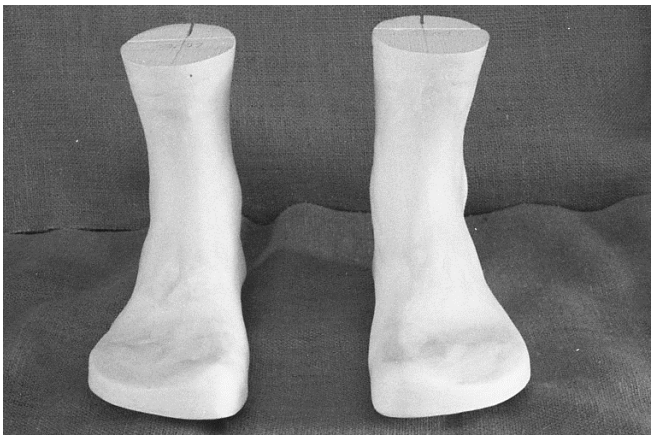
145 Ditto.



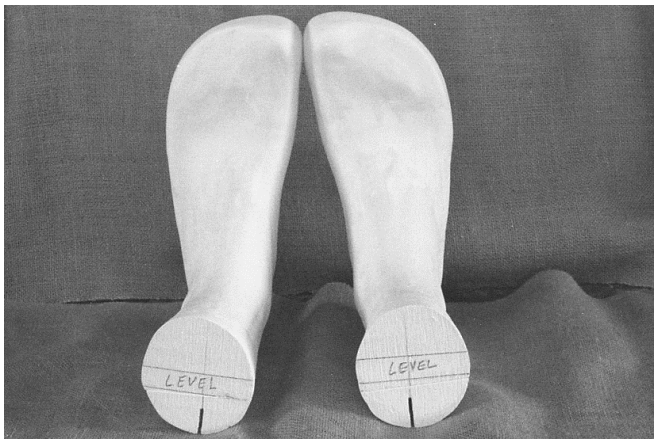
146 Observe the bottom of the last before beginning the footwear making processes.



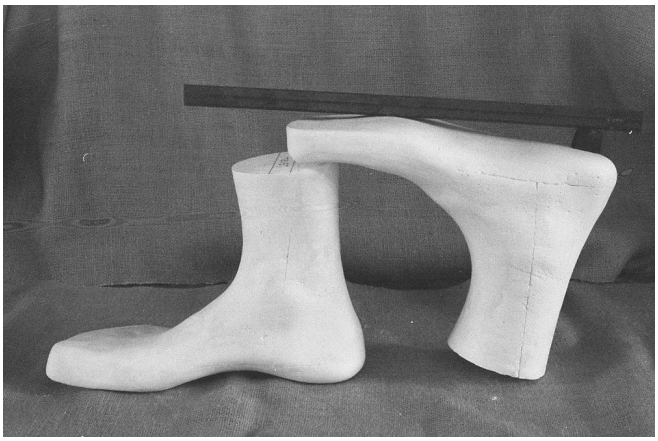
147 Ditto.



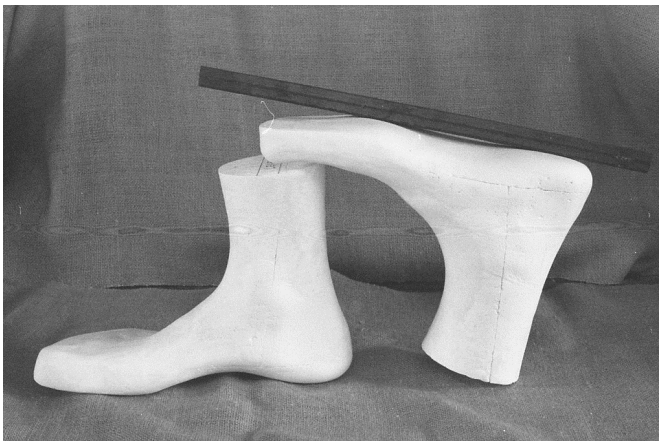
148 Observe the lasts from the frontal perspective.



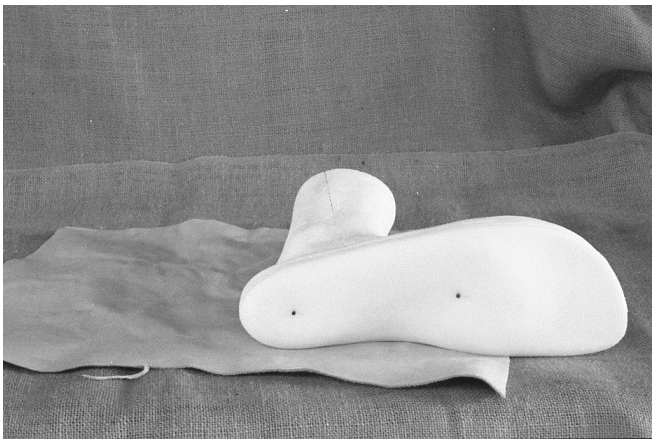
149 Observe the lasts from the top perspective.



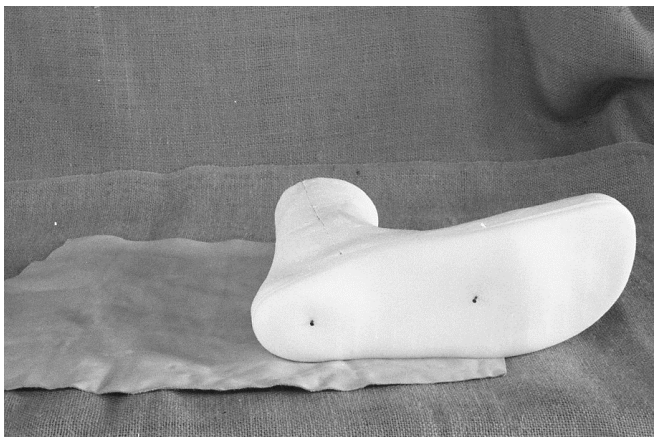
150 Look at the heel to ball and ball to toe angles.



151 Ditto.



152 The leather lining is applied to last.



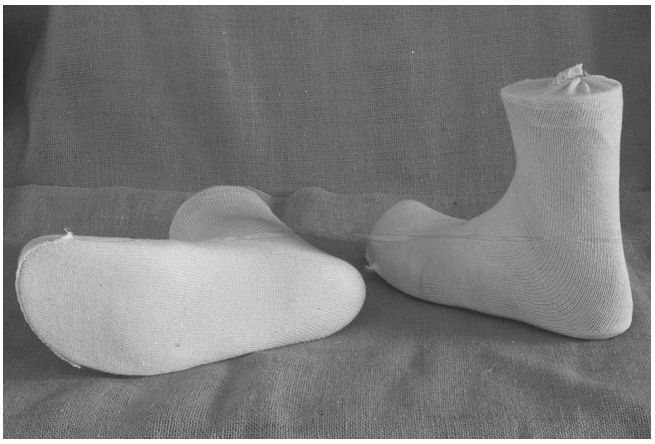
153 Ditto.

154 The boot top has been designed. Notice double design at top. The left to right balancing is once again observed in rechecking the levelness of top design.

155 The lace opening has been designed.

156 Side view.

157 The socks have been added.

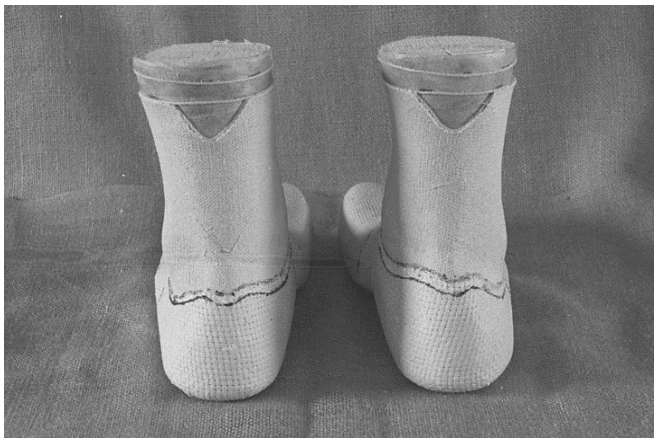


158 Observe location of sock seams.

159 Views after socks and Monks Cloth have been latexed, excess material has been removed and edges have been marked to help in your observation of the different layers of materials.

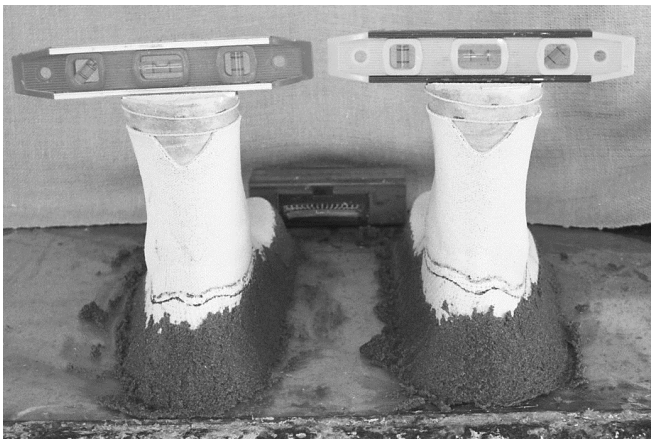
160 Ditto.

161 Ditto.



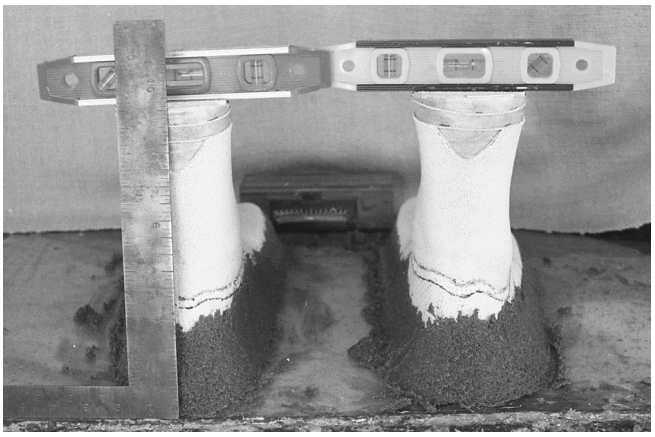
162 Ditto.

163 Ditto.

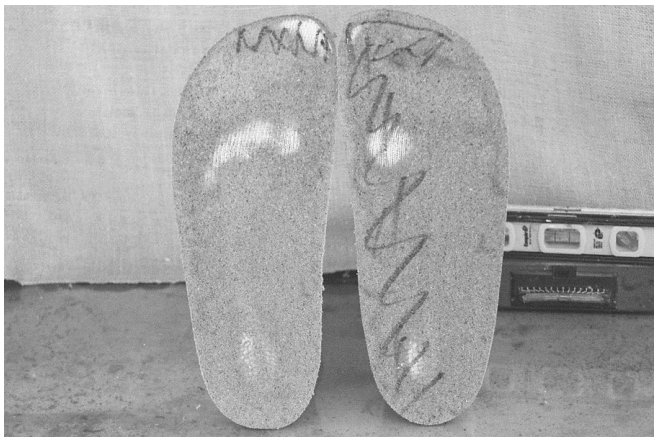


164 The boots have been "mudded" and leveled.

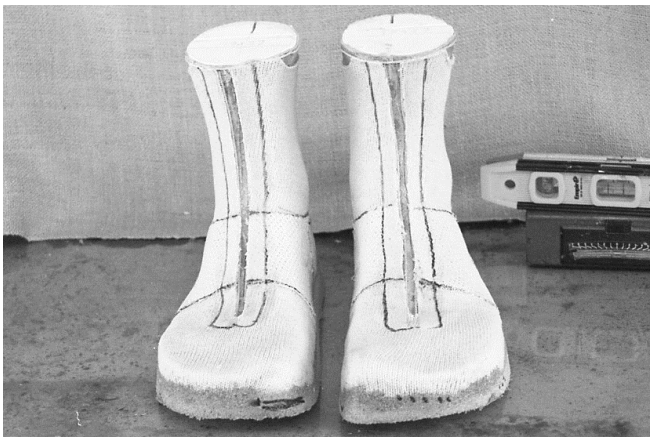
165 Always keep re-checking the levels until the "mud" has taken a good semi-solid set.



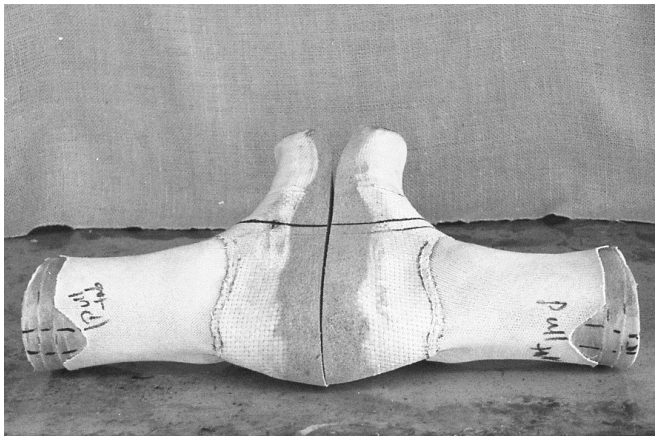
166 Ditto.



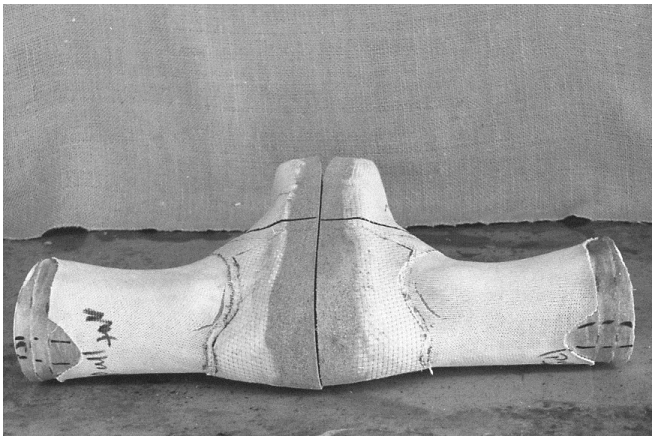
167 Bottom view after sanding. Markings indicate areas needing to be "re-mudded" and re-sanded.



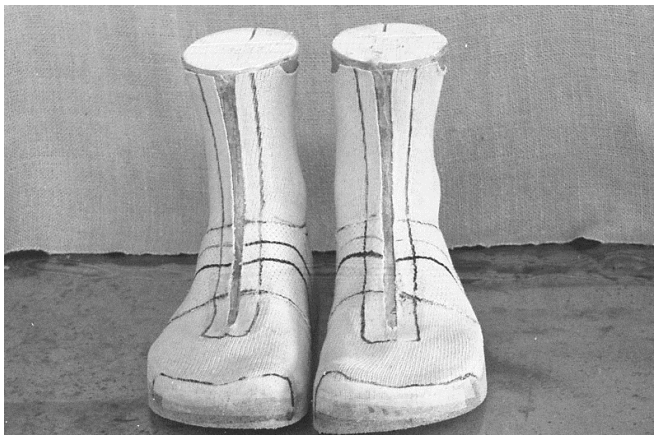
168 Ditto.



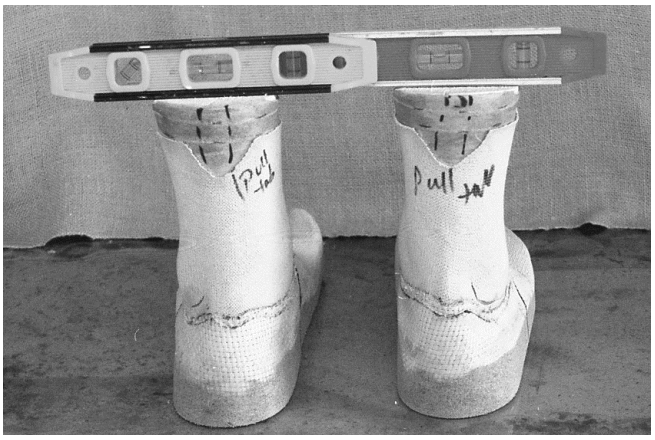
169 Marking of side seams and location of pull tabs.



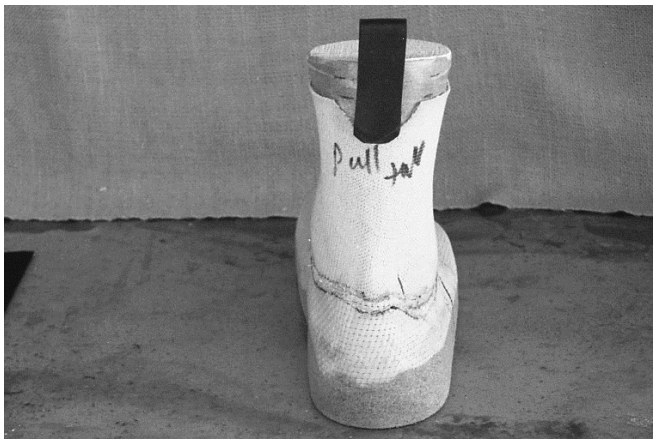
170 Ditto.



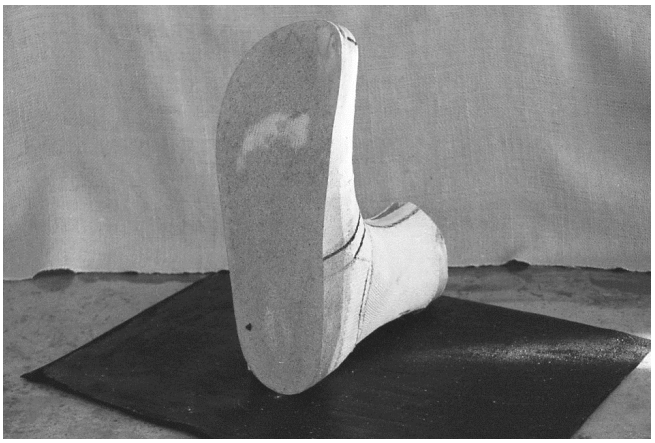
171 Location of toe box bumper protection area such as extra layer of Monks Cloth, shoe goo®, polyurethane treatment, or fiberglass resin.



172 Final re-checking of level before leathering.

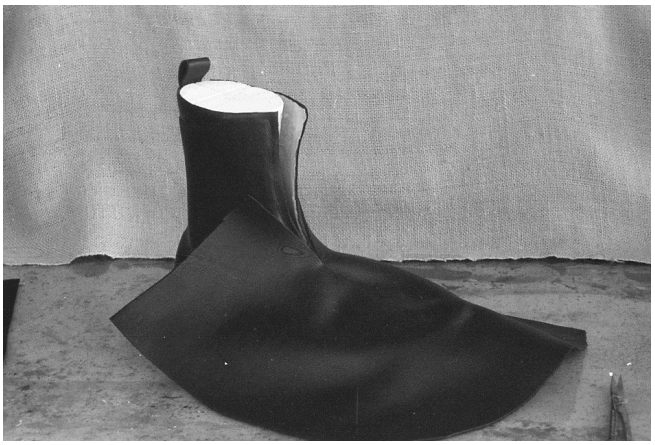


173 Attaching of the pull tab.

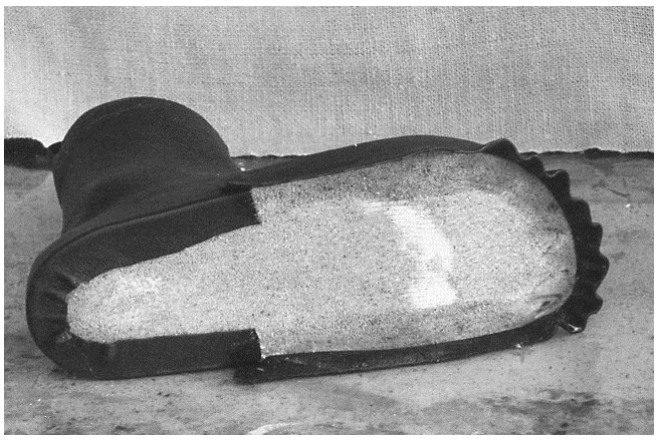


174 Leathering of back of boot.

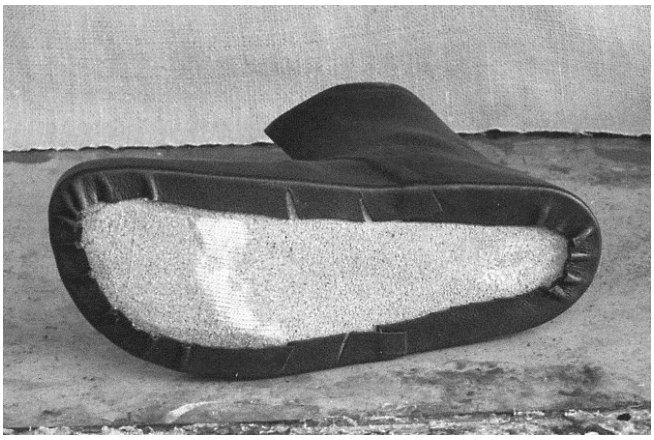
175 Ditto.



176 Leathering of front of boot.

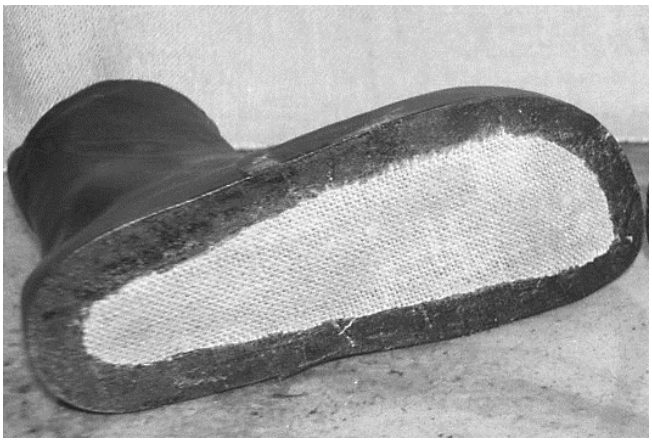


177 Gluing the underlap before folding.

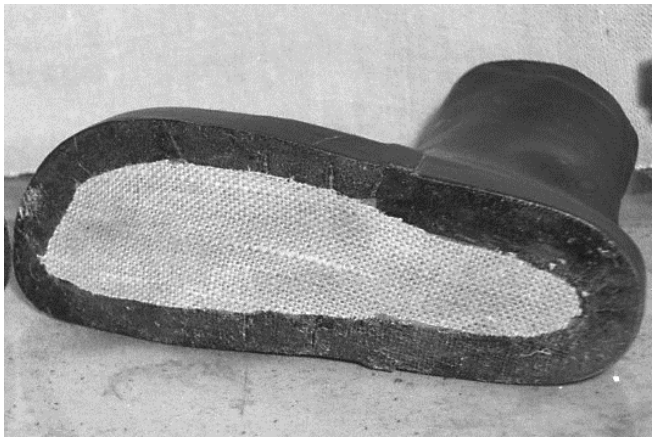


178 The underlap has been folded and pressed.

179 The leathering has been completed.



180 A layer of burlap has been glued over the "mud" before the underlap is sanded.



181 Glue has been applied to bottom before soling is attached.

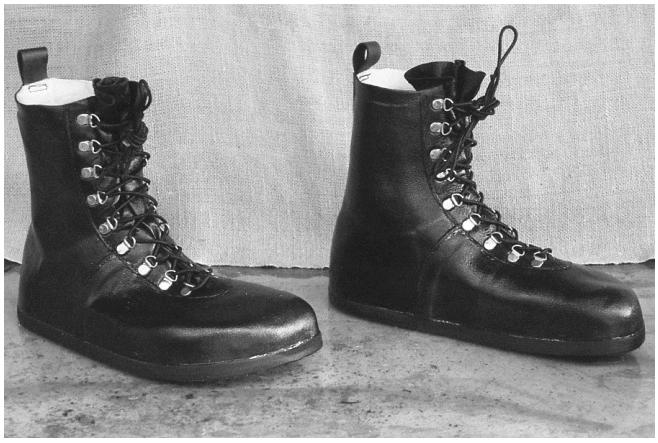
182 Mid and outer soles have been attached and pressed. The customer requested a flat soled boot without a heel wedge.

183 The lasts have been removed from boots.

184 The tongues have been bonded, stitched and rivet holes have been opened.

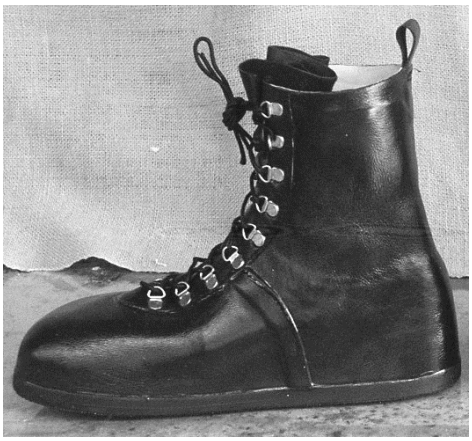
185 Speed lace rings have been added, boot laces made, inserts finished and notice some recommended boot care products. McNett boot cleaner, waterproofing gel, and a urethane sealer for emergency repairs.

186 More finished views.

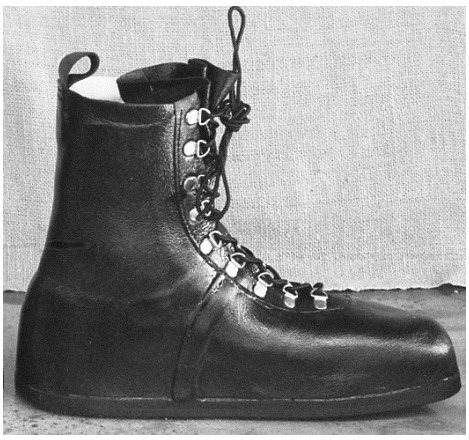


187 Ditto.

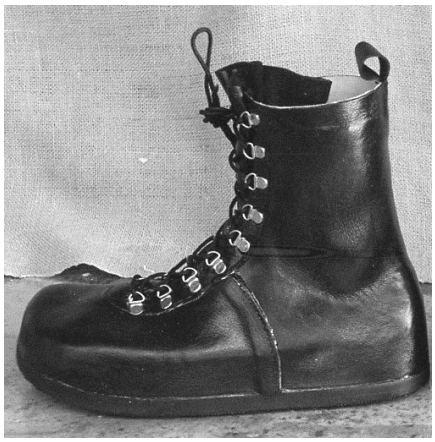
188 Ditto.



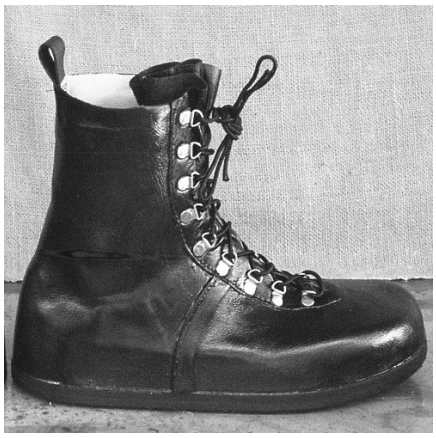
189 Ditto.



190 Ditto.



191 Ditto.



192 Ditto.

193 Examples of lower Humboldt boot styles.

194 Ditto.

195

196

197

198

There are many possible styles of boots. The following pictures will give you an idea of the many variations suitable for the molded footwear processes.

By changing materials, methods and procedures, boots can be made which are suitable for indoor dress, indoor and outdoor use, hiking, different weather conditions and many other individual wearer needs.