Notified in A.A.O.s., dated 31st December, 1941.

AUSTRALIAN MILITARY FORCES

FITTING OF BOOTS AND CARE OF FEET

1941

By Authority: L. F. JOHNSTON, C'wealth Govt. Printer, Canberra.
8231.

MILITARY BOARD,
ARMY HEAD-QUARTERS, MELBOURNE.
31st December, 1941.

Issued by Command of the Military Board,

C. B. LAFFAN,
Secretary to the Board.

Notified in A.A.O.s., dated 31st December, 1941.

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SCALE OF ISSUE.

A.H.Q.—	
"G" Branch	10
"A" Branch	10
"Q" Branch	10
"O" Branch	20
H.Q. Comds.—	
N. Comd.	8
E. Comd.	12
S. Comd.	12
W. Comd.	8
H.Q. Dists.—	
4 M.D.	6
6 M.D.	6
7 M.D.	6
8 M.D.	6
H.Q. Sub-Area	6
SCHOOLS—	
R.M.C.	150
R.M.C. (O.T.S. Wing.)	20
C. and S.S.	4
S. of A. (Fd. Med. and Svy.)	10
S. of A. (A. Tk.)	10
S. of A. (Coast and A.A.)	10
S.M.E. (Fd.)	10
S.M.E. (Frt. and A.A.)	10
Chem. Def. School	2
S. of Sigs.	10
No. 1 and No. 2 Inf. O.T.S.	20
M.M.G. School	20
A.S.C. School	20
S. of Mech.	10
S. of Mech. (Mobile Wing)	10
A.F.V. School	10
A.O.C. School	10
R.M.C. School	10
D. and M.T.	20
N. Comd. Tng. School	20
E. Comd. Tng. School	30
S. Comd. Tng. School	30
W. Comd. Tng. School	20

CAVALRY—	
H.Q. Cav. Div.	10
H.Q. Cav. Bde.	5
H.Q. Armd. Div.	10
H.Q. Armd. Bde.	5
H.Q. Sup. Gp.	5
L.H. Regt.	25
M.G. Regt.	25
Armd. Regt.	25
Armd. C. Regt.	25
Div. Cav. Regt.	25
L.H. Tng. Regt.	10
L.H. Tng. Sqn.	10
M.G. Tng. Sqn.	10
Armd. Tng. Regt.	20
ARTY.—	
H.Q. Comd. Arty.	5
H.Q. Div. Arty.	5
Regt. Fd.	30
Regt. Med.	30
Bde. Hy.	15
Regt. A. Tk.	20
Regt. A.A.	30
Bty. Hy.	2
Bty. A.A.	5
Bty. Regt.	20
H.Q. R.A.A. and Fire Comd.	5
ENGRS.—	
H.Q. Comds. Engrs.	5
H.Q. Div. Engrs.	5
W. and F. Coys. (9) or Base Wkshop	20
Fd. Coy. Sqn.	10
(2) Pk. Coy.	10
Engr. Store Base Depot	10
Frt. Coy.	1
A.A. Coy.	1
Svy. Coy. (4)	10
Chem. Warfare Coys. (6)	10

SIGS.—	
Comds. Sigs.	20
Dists. Sigs.	10
Comd. Area Sigs. ..	5
Dist. Area Sigs. ..	5
Frt. Sig. Sec.	1
Cav. Div. Sigs. ..	20
Div. Sigs.	20
INF.—	
H.Q. Div.	25
H.Q. Inf. Bde. ..	10
Pnr. Bn.	50
Inf. Bn. or Grn. Bn. ..	50
Grn. Coy. (Int. Sec.) ..	20
Inf. A. Tk. Coy., Grn. A. Tk. Coy.	5
Comd. or Dist. Grn. Bde. Admin. H.Q. ..	5
N.G. Volunteer Rifles ..	10
Norfolk Is. Inf. Det. ..	10
Papuan Inf. Bn. ..	10
Torres Straits Inf. ..	10
Senior Cadet Det. ..	3
A.A.S.C.—	
Comds. A.A.S.C. ..	5
Dists. A.A.S.C. ..	5
Cav. Div. A.A.S.C. ..	12
Div. A.A.S.C.	12
Cav. Div. Sup. Col. ..	8
Corps Tps. Sup. Col. ..	8
Div. Sup. Col.	10
Corps Amn. Pk. ..	10
Div. Amn. Coy. ..	10
Corps Pet. Pk. ..	10
Cav. Div. Amn. and Pet. Coy.	10
Div. Pet. Coy.	10
W. Comd. Amn. Sec. ..	5
W. Comd. Pet. Sec. ..	5
W. Comd. Sup. Coln. ..	5
4 M.D. Amn. Sec. ..	5
4 M.D. Pet. Sec. ..	5
4 M.D. Sup. Coln. ..	5
6 M.D. Amn. Sec. ..	5

A.A.S.C.—*continued*.	
6 M.D. Pet. Sec. ..	5
M.D. Sup. Coln. ..	5
A.A. Regt. Sec. A.S.C. ..	5
Comd. Pet. Coy. W.C. ..	5
Comd. Pet. Coy. E.C. ..	5
Dist. Pet. Coy. 8 M.D. ..	2
Dist. Pet. 4 and 6 M.D. ..	2
Comd. or Dist. Bulk Pet. and Oil Depot ..	5
Res. M.T. Coy. ..	5
M.T. Depots N.W. 4 and 6 M.Ds.	2
M.T. Depots 7 and 8 M.Ds.	2
Amb. Car Convoys ..	2
Bridge Coys.	5
Aux. H.T. Coys. H.T. Depots	2
Sup. Pers. Coy. (13) ..	2
Fd. Bakery (1) ..	2
Fd. Butchery (2) ..	2
V.C.C.	2
V.R.D. or V.C.C. Sec. ..	2
A.A.O.C.—	
A.H.Q. Tps.	5
A.H.Q. Comd.	5
A.H.Q. Base	5
A.H.Q. Adv. Base ..	5
Fd. Wkshop	5
Dist. Wkshop (3) ..	5
Ord. Wkshop Coys. (4) ..	5
L.A.Ds. (79)	1
C.O.D. N. Comd. ..	5
C.O.D. E. and S. (3 M.D.)	5
C.O.D. W. and S. (4 M.D.)	5
C.O.D. 7 M.D. ..	5
C.O.D. 8 M.D. ..	6
H.Q. Base or Adv. Ord. Depot	5
2 and 3 Ord. Store Coy. ..	10
Adv. Amn. Depot ..	6
Base Amn. Depot ..	5
Amn. Coy.	5
Ord. Fd. Pk.	5

MISCELLANEOUS—

Accounts and Cash Officers	2
Prov. Units	2
Salvage Unit	5
Mob. Laundry and Decn. Unit	2
Postal Units	2

COMD. TNG. UNITS—

Comd. Arty. Tng. Depot	5
Fd. or Med. Tng. Regt.	30
A. Tk. Tng. Regt.	30
Fd. Tng. Bty.	10
A. Tk. Tng. Bty.	10
A. A. Tng. Bty.	10
E. and S. Comd. Tng. Depot	5
N. and W. Comd. 4 and 6 M.D. Eng. Tng. Depots	5
N.S. and W. Comd. Svy. Tng. Depots	2
Sig. Tng. Depot	2
Ing. Tng. Bde.	5
W. and S. Comd. A.A.S.C. Tng. Depots	5
N. and W. Comd., 4 and 6 M.D., A.A.S.C. Tng. Depots	5
E. and S. Comd., A.A.O.C. Tng. Depots	5

A.I.F. TNG. UNITS—

Fd. Tng. Regt. E. Comd.	20
Fd. Tng. Regt. S. Comd.	20
Fd. Tng. Bty.	10
A. Tk. Tng. Tp.	10
Fd. Tng. Tp.	10
E. Comd. Eng. Tng. Depot	10
S. Comd. Eng. Tng. Depot	10

A.I.F. TNG. UNITS—*continued.*

E. or S. Comd. Sig. Tng. Depot	10
E. Comd. Inf. Tng. Bde.	10
S. Comd. Inf. Tng. Bde.	10
M.G. Tng. Pl.	10
Prov. Tng. Wing	5
Inf. Tng. Bn.	20
Inf. Tng. Coy.	5
Inf. Tng. Bn.	20
Pnr. Tng. Coy.	5
A.A.S.C. Tng. Depot	5
A.A.O.C. Tng. Depot	5

MEDICAL UNITS—

Cav. Fd. Amb.	5
Cav. Div. Hyg. Sec.	3
Fd. Amb.	5
Fd. Hyg. Sec.	2
Camp Hosp.	5
Camp C.C.S.	5
Camp M.A.C.	2
Con. Depot Med. and Vet. Sec.	5
Base Depot	5
Adv. Depot Med. Store	2
Con. Hosp. 1,200 bed	10
Con. Hosp. 600 bed	5
Con. Depot 2,000 bed	10
Con. Depot 1,500 bed	10
Con. Depot 500 bed	5
Con. Depot 250 bed	5
Spec. Con. Hosp.	5
Frt. Coy. A.A.S.C.	5
Tng. Depot A.M.C.	5
Dental Unit	2
Mob. Hyg. Bac. Lab.	1
Amb. Train	1

FITTING OF BOOTS

AND

CARE OF FEET.

RESPONSIBILITY OF COY. COMDR. AND OFFICERS.

1. The responsibility for seeing that well fitting boots (and clothing) are issued to each man rests upon the Coy. Comdr. The fitting of boots to the feet is essential to ensure the man is properly shod. The matter of the proper fit has so close a relation to military efficiency that it cannot be left to the hazards of chance, indifference, ignorance or prejudice.

NEED FOR GOOD FIT.

2. In connexion with the necessity for properly fitting shoes in the removal of undesirable friction and pressure, it is well to recall the number of completed foot movements required in ordinary marching. Each foot strikes the ground approximately 1,000 times for each mile traversed. If a fair march for infantry in the field is put at 15 miles, with some 3 miles before and after it in the performance of making and breaking camp and for other purposes, it is evident that each foot will strike the ground some 18,000 times during the day. Falling drops of water will ultimately wear away the hardest stone; and it will be apparent that

even a relatively slight defect in the relation between the foot and shoe, if enabled to act with each step through such a vast number of repetitions in such a relatively brief period, can scarcely fail to do injury to the delicate and tender foot structures in contact with it. If the defect be considerable, it is apparent that more or less complete incapacity for marching can scarcely be avoided.

COMMON FAULTS.

3. BY FAR THE MOST COMMON FAULT OF BOOTS WHICH HAVE BEEN SELECTED BY THE MEN THEMSELVES IS INSUFFICIENT LENGTH. In a test of 609 men 425 were wearing boots too short for them. With boots of this sort the toes of the foot, elongating under pressure, are jammed against the front of the shoe in marching, and toe blisters, abrasions, and corns are inevitable. The next most common fault is insufficient width; of the series of men just mentioned, over 25 per cent. had misfitted themselves in this respect, with the probable production of injury in the form of bunions, corns, ingrowing nails, clubbed toes, and other defects. Only an insignificant fraction of soldiers, say 1 or 2 per cent., tend to select boots too large for them. The officers in direct supervision of boot-fitting should bear in mind these comparative tendencies towards misfit in too small sizes, so that they may be properly combated.

ALTERATION IN SIZE OF FOOT ON THE MARCH.

4. Remember the foot has an arch from side to side as well as front to rear. On the march under full equipment the foot may increase in length AND in width up to ½ an inch. In addition the foot swells

with blood during marching. At the halt, therefore, always make the men raise their feet above the level of the rest of the body so that blood tends to drain out from the feet. The swelling is due to increased flow of blood to the part and to interference with its return from the pressure by boot or puttees on the veins. The increased flow to the foot is caused by the repeated striking of the foot against the ground with dilation of the capillaries, just as a red mark follows a blow on the flesh of any other part of the body. After hard marching, the soles of the feet are often painful and reddened from the cause just described. With boots that are too small or puttees too tight, the soldier in warm weather has a feeling of heat and irritation in his feet from congestion due to such interference with the circulation. In winter, on the contrary, the same cause makes the feet cold, numb, and readily susceptible to frost bite.

THE CORRECT FIT OF A BOOT.

5. A boot fits, in the true sense, by gripping properly the instep and ankle. The forepart of the foot should be quite free as regards length and width. An army boot is made of thick leather and must be an easy fit before being "broken in".

6. (*a*) FOR LENGTH.—With boots which have NOT got a blocked toe (a square rise from the front of the sole, as in British army boots) there should be $\frac{3}{8}$ of an inch clear space in front of the big toe (or longest toe) in order to allow for possible expansion and to prevent the boot upper from pressing down on the nail of the big toe, *especially during a long march*, and over a long period. Boots with a blocked toe need at least $\frac{1}{2}$ of an inch clear in front of the big toe to allow for possible expansion.

(*b*) FOR WIDTH.—The man should stand on the foot being tested. Boots must be wide enough to leave the toes uncramped and free, and also must not compress the forepart of the foot especially the toes. Testing for width is done by grasping the vamp (part covering the toes and lower instep) at its widest part and bringing the thumb and finger together slowly. The leather should not feel hard, tense (tight) or bulging, not be so loose as to wrinkle easily.

7. FOR ANKLE INSTEP.—The boot should be a snug fit around the instep and ankle as well as being a loose fit across the toes, and with plenty of room in front of the big toe. In fitting the boot the laces must be properly tied after passing through all the holes and being well tightened. A well fitting boot will usually have the margins of its quarters up to ½ inch apart when well laced. Boots which do not fit properly around the instep and ankle are dangerous. Unless the foot can be held snugly, slipping about in the boot on the march, with consequent injury, is practically certain. It is possible, however, to correct a fit around the instep and ankle. This is done by inserting one or more thicknesses of blanket, cloth, or felt, torn into suitable strips, between the tongue and the lacing of the boot so that the latter, when pulled tight, may thus have a point of firm support by which it can keep the foot in its proper position in the boot.

8. BOOTS.—All unit staffs and all concerned with issues are to take every care to ensure the best possible fit being made when issuing. Boots must be fitted over thick socks. It is absolutely vital to get a boot that is wide enough and long enough, and there is no way of remedying a failure to do so, other than getting new boots. A very simple and recommended device for

lessening the friction between the foot and the sock is a leather strap and buckle. The Coindreau strap, as used in the French army, is recommended. It is ⅛ of an inch thick, fully ½ inch wide and 29 inches long. The strap is passed, as a figure of 8, under the foot, over the instep, and around the ankle, being buckled on the outer side of ankle. This device so lessens friction that a man with blistered feet can often march in comfort. The strap can be improvised from a puttee or bandage.

Coindreau Strap.

HOW TO FIT BOOTS.

(*Preferably with aid of Foot Measuring Board.*)

9. (*a*) Stand man on measuring board in bare feet. Details of measuring board are given in para. 26. See that his heels are in contact with the heelboard and the inner edges of his feet are gently pressed against the wooden strip between the feet.

(*b*) Read off length of boots indicated on the scale by the longer foot. To allow for slight variations in the making of boots many scales are marked with two alternative sizes (e.g. 4-5, 5-6, 6-7, etc.). The size required is one or other of these; with boots of the present type the larger size is the more probable, with boots of the new blocked-toe type the smaller size is the more probable.

(*c*) Read off the greatest width of foot. If it is about the line marked "width 5" this indicates that "width 5" fitting is required. If the greatest width of either foot is $\frac{1}{3}$ inch or more less than the width 5 line the width of boot indicated is "width 4". If it is $\frac{1}{3}$ inch or more greater than "width 5" a size (in length) larger will be required in a "width 5". Army boots are made in width 4 and 5 only.

N.B.—It is vital to realize that the size and width read from the measuring board are merely the size and width to give the man to try on. He has NOT YET BEEN FITTED. He may need a larger size and/or width, he may need a smaller. Some boots vary from army standards and occasionally they are wrongly marked. Boots are fitted as under:—

(*d*) The soldier puts on thick socks and boots of the size and width indicated, as above, by the measuring board, and laces them up. Both boots must be checked for fit, as one foot often varies from the other. The boots must fit the bigger foot.

LENGTH.—Verified by pressing the thumb against the end of the longest toe and ensuring that there is $\frac{3}{8}$ inch clear between it and the end of the vamp in front of it. In boots with blocked toecaps the position of the longest toe cannot readily be felt and it may be necessary to accept the size (length) indicated by the measuring board for this type of boot.

(*e*) WIDTH.—The man must stand with all his weight on the foot being tested. Verified by grasping the vamp (covers the toes and lower instep) at its widest part and bringing the thumb and finger together slowly; if it feels hard, tense, tight, or bulging give a wider fitting. If already a "width 5" try a larger size boot in "width 5"; if the vamp wrinkles easily in the grasp a narrower fitting should be tried.

(*f*) ANKLE AND INSTEP.—When laced up the quarters or uppers should be NO MORE than ½ inch apart, nor should they be so loose as to meet.

(*g*) A well fitting marching boot should leave the forepart of the foot quite free. A boot is held to the foot by its grip over the instep and around the ankles and heel. Having got a boot of the correct length and width, if it is found that the quarters meet, the fit of the boots can be adjusted by inserting one or more strips of flannel between the tongue and the laces. It is better to have too much length than too little.

(*h*) If the soldier says the boots are too tight or too small give him a wider fitting, or a larger size. If he says they are too big DO NOT give him a narrower fitting, or smaller size, UNLESS this is confirmed by actual manipulation.

(*j*) New boots should at once be moulded to the feet (broken in) by standing in water for 20 minutes with boots and socks on and then working (not sitting) in them all day until they are dry. Boots are then improved by being greased inside and out. See para. 11.

(*k*) Once verified, the correct size of boot should be entered in the man's paybook. It must be made an offence for men to wear boots other than the prescribed size. The size of boots should be checked at kit inspections, and must always be done when men report with corns, ingrowing toenails, blisters, or sore feet.

(*l*) Some deformities require attention—

(i) *High instep sometimes requires one size longer* than indicated by measurement.

(ii) Bunions, if large, should be fitted with one size longer than the indicated length.

(*m*) When the new type of Army boots, with the blocked toes, are issued, foot measuring boards which are not marked with alternative sizes should be so marked, the new size being one smaller than that already shown, e.g. the line 9 inches from the heel board should be marked "3-4".

OBJECTIONS TO BE MET.

10. The average soldier may be expected to object more or less vigorously to the size and width of the boots given him under his FIRST fitting. Accustomed as he has been to shoes which constantly bind and compress his feet, he will regard the new boots given him as too long and too loose. The squeezing of his feet by the footwear he has himself habitually chosen has been so long continued that it appears natural to him that his new boots should be slightly tight. Any complaint that the boots are unduly large should be looked upon with some doubt and should be disregarded unless *corroborated by the actual manipulation of the* boot and foot by the methods described above in fitting. Besides fitting boots to his men the officer is called upon to combat error, prejudice, and misconception. Units with a properly trained army chiropodist must use him to test the fit of all boots issued.

BREAKING IN BOOTS.

11. It must be remembered that the boot is built over a last which has perfectly smooth surfaces and gently curving contours such as are not found in the shape of

any one foot and the boot has to be "broken in" so that it is moulded accurately to the foot inside, thus equalizing the pressure on the skin, with enlargement where needed at the expense of excess leather elsewhere. It must be emphasised that the process of "breaking in" is not without some risk that the foot, and not the boot, will "break in" first.

When dubbin, grease, or neatsfoot oil is available, a very excellent method of adapting the boots to the feet, after careful fitting of the latter, consists in having the man stand in his boots in about 3 inches of water for about 20 minutes, or until the leather becomes thoroughly wet and pliable and in condition to stretch easily. The soldier then walks on a level surface for about an hour, or until the boots have dried on his feet, to the shape of which the pressures of body weight and muscular action have forced the leather in drying to conform. Boots treated in this way are made as comfortable in an hour, and without any possible danger of injury to the feet, as could be done with a week's wear under the ordinary method of "breaking in". This method is particularly necessary and valuable where troops are issued new boots which there is no time to break in slowly before they must be used for marching. It can be properly used under any conditions except where the temperature is well below freezing; and even then can often be carried out to a less complete but still advantageous extent by wearing the damp boots indoors. The method does the boot no harm, and merely secures, with intent, the beneficial results which would happen in any case through the first rain in which the boots are worn. It is a deliberate repetition of the method originally employed to make the leather adapt itself to the last in manufacture, and which is again employed to make the

leather of the resulting boot conform to the actual contours of the foot which it must subsequently enclose and protect.

If this method is adopted, before the boots are quite dry, dubbin should be applied, particularly to the inside of the boots and rubbed in. If dubbin is not available, neatsfoot oil or grease must be used.

An alternative and quick method of softening boots so that they mould themselves to the foot is copiously to vaseline (or grease) the bare feet, or better still, the outside of the socks, and wear the boots for a while. It must be remembered that the application of grease on the outside of military boots, which are made of thick leather, will probably take a very long time to soften the inside, and also temporarily spoils the polishing qualities of the leather. On the other hand, by applying the grease on the inside the porous side of the leather is immediately reached and the grease is able to penetrate more quickly. Any hard patches or corrugations in contact with the feet are quickly softened.

CARE OF BOOTS.

12. The correct dressing to put on boots for preserving them is dubbin. An authorized issue of dubbin will be made free to units on requisition to C.O.O. on the basis of one pound per sixteen pairs of boots.

TO DRESS BOOTS.

13. Boots to be washed with common yellow soap and cold water, using a brush to remove dirt and any coating of polish that may have been applied. Boots then to be placed in the shade and when nearly dry, but whilst still in such a state of pliability from dampness, as would afford the greatest comfort to the

wearer, to have the dubbin well rubbed in with the hand (or foot, as above) except round the joint between sole and upper and in the joints of the tongue, where it is desirable that it should be well worked in with a brush. The waist of the sole, i.e., the portion immediately in front of the heel is also to be well dubbed, and tongue and laces to be well softened.

After the use of dubbin, boots should be worn straight away for a short time in order to ensure, before the dampness has dried out of them, their assuming or retaining the correct shape of the foot to which they belong.

SOCKS.

14. On service it is most desirable that three pairs of socks should at all times be available, and *frequent inspections are necessary to see that a clean and proper* supply is maintained by each man. No man can be considered an efficient foot soldier who does not start on service with two pairs of well-fitting thick socks, since one of the most important points in the care of the feet consists in putting on a dry pair of socks at the end of a march after the feet have been washed. Many disabilities are due to defects in socks rather than in boots.

The army regulation sock is made entirely of wool of a three-fold worsted yarn, the foot and ankle being strengthened by an additional thread of yarn.

It is designed to provide (1) an ample "cushion" between the foot and the boot, (2) sufficient actual wool to absorb, into the fibres themselves, the maximum amount of perspiration which can normally be produced, and (3) sufficient air space to allow a high degree of insulation and evaporation.

One of the most important points in regard to socks intended for marching purposes, is fit. If too large, they will wrinkle and crease in the boot. If too small, they will compress the foot and wear out very quickly.

Any admixture of cotton in a sock is undesirable. Although cotton is practically immune from shrinkage (or, more correctly, "felting"), it absorbs far less moisture than wool, lacks the insulating qualities and tends to become hard in wear.

Ribbed socks, though they have the advantage of allowing a freer circulation of air to the foot, are more liable to shrinkage than plain ones. The regulation sock is now ribbed only at the top; this assists in keeping it up when worn with slacks.

Seams, other than the necessary join across the toe, should be avoided, and this join should be knitted (or, more correctly, "linked"), not sewn.

SHRINKAGE.

15. Army socks undergo a special process to minimize shrinkage; and, in fact, if properly washed, an army sock should not shrink *more than one inch in length*. When, therefore, the soldier has been fitted as described above, he should wear his socks about barracks, &c., until they have been washed two or three times, and thus shrunk.

CARE OF SOCKS.

16. Darning of holes must be carefully and properly done in order to preserve the original size and shape of the sock and to offer no projections or knots. Socks with undarned holes must not be worn, as the edges of the holes are apt to curl up and lead to sore feet and abrasions, especially under the toes.

Lastly, but by no means of least importance, the sock should be clean at all times, for not only is a dirty sock hard and non-absorbent, but it is a harbourer of germs, which invariably cause swollen and offensive feet.

SUBSTITUTE FOR SOCKS.

17. In the absence of socks it is worth remembering that a good substitute can be made from cloth, fairly thin flannel, or even cotton or linen. A piece about the size of an ordinary triangular bandage should be taken. The foot is placed on this with the heel in the centre of one of the sides at a distance of about four inches from the edge. The edge is then brought up the back of the foot to a little higher than the top of the boot, and the free ends of the bandage folded round the foot. The size of the material should be such that when the edge is on a level with the top of the boot the point should still remain long enough to come over the toes to a spot in front of the ankle with the edge behind. The use of the foot-cloth is common in continental armies. In the absence of suitable cloth, paper may be used.

CARE OF THE FEET.

18. FOOT INSPECTIONS should be held regularly by company or platoon officers. No man should therefore be able to begin a march with ill-fitting boots or socks. Men's feet will be inspected by platoon, &c., commanders immediately after every march. It must be realized that this is essentially the duty of the unit officer and not that of the medical officer. A keen officer by regular inspection of his men's feet will considerably increase the marching efficiency of his unit. Any deformity of foot or toe nails, or any nasty sore that is seen must be brought to the notice of the medical officer.

19. CLEANLINESS.—It may be taken as an axiom that dirty feet are unsound feet, and therefore an officer commanding a unit must *impress upon his men the importance of cleanliness of the feet and insist on its observance.*

Many men, before joining the Army, do not appreciate the importance of clean feet, and, after enlistment, may find that company and platoon officers do not give the subject its proper consideration. Every facility should be given in barracks for men to keep their feet clean, and in most barracks footbaths are now installed. *The feet should be washed with water and soap every day, and on active service as often as possible. Almost as important as washing is drying after washing, and especially drying completely between the toes.*

20. HARDENING THE FEET.—The feet may be hardened and made fit for marching in many ways. Bathing in cold water and a generous use of soap are of great value. The socks and feet should be kept as dry as possible. The feet may be soaked regularly at night in a solution of salt, alum, or saltpetre (about a handful of any one of these in two quarts of water). Sea water has a hardening effect on feet.

21. PREVENTION OF SORE FEET.—*Above all things keep the feet clean by the free use of soap and cold water followed by careful drying.* Men who are prone to tender feet may ward off the condition by applying grease or soap to the feet, or by applying soap to the outer surface of the sole of the socks.

Sore feet are much aided by rubbing into them zinc or boracic ointment.

Changing into canvas shoes after a march rests the feet enormously and allows time for the boots to be aired and dried.

22. CARE OF FEET AT END OF A MARCH.—The following is the suggested routine for the care of the feet at the end of a march. While it will often happen that the whole of this routine cannot be carried out daily, it should be adhered to as far as possible and the consequent reduction in sore feet will be most marked:—

(*a*) Remove boots, dry and clean.

(*b*) Wash feet in cold water, rub with spirit, or alum solution, treat blisters, abrasions, &c., dust with foot-powder.

(*c*) Put on clean socks and canvas shoes, or slippers.

(*d*) Wash and dry socks, rub them until soft, darn, but leave no ridges.

N.B.—A useful foot-powder is—

	Parts.
Salicylic acid	3
Boric acid	10
Talc	87

If the feet are swollen and painful, after washing the feet in cold water and before rubbing with spirit, &c., soak the feet in a very hot footbath of water and condys crystals 1 in 3,000. This footbath disinfects the feet, preventing sores becoming septic, and the hot water relieves pain and congestion in the feet. Its only drawback is that it has a purely temporary softening action on the feet, and must, therefore, not be used just before a march. It does no harm the night before a march. After soaking feet in hot water they should be soaked in cold water and dried by rubbing briskly with a towel.

TO TREAT A BLISTER OR ABRASION.

23. A blister consists of a collection of fluid under the horny layer of the skin which becomes detached from the mucous layer and raised above the level of the surrounding skin. In the foot the blister is most often met with under the heel or just above it, and is caused by some internal projection, or by to-and-fro, or up-and-down friction in a too large or badly-laced boot. In other cases blisters are met with on the sides of the feet or where one toe rubs the next.

TREATMENT.—If the source of irritation which caused the blister be removed, and the blister left to itself (the foot being rested), the fluid will be gradually absorbed and all will be well; the raised layer of skin will not be rubbed off until that beneath has become hard enough to replace it. This natural cure may be much hastened, however. In treating a blister the following routine should be adopted:—

Take off the boot and sock, search for the cause of the blister or abrasion, and remove the cause. Often it is found to be some projecting seam or wrinkle in the lining of a boot. If it should be the curled up edge of a hole in a sock, the sock should be changed or suitably darned, or failing that, after greasing the foot with zinc ointment, it may be advisable to dispense with the sock and replace it by a cloth or paper foot-cover.

Wash the foot well, dry thoroughly by dabbing with a towel and put tincture of iodine over and around the blistered area. Next, the fluid must be drawn from the blister. This is done with a sterilized needle or a sharp-pointed knife (sterilized by passing through a flame). The needle or knife blade is inserted into the edge of the blister and is then raised to allow the

fluid to run out beneath it. When the fluid is removed the skin protecting the blister is carefully flattened down but not cut away, and the area painted with iodine. Over this, place a piece of adhesive strapping large enough to extend at least ½ inch in all directions around the blister, and press it firmly on skin so as to remove all wrinkles. Watch for redness around this strapping; do not remove strapping for 4-6 days unless redness appears, or the strapping becomes loose. This will protect the tender layers of the skin from pressure or injury until such time as a new horny layer has formed beneath that raised by the blister and is able to take its place.

A broken blister or abrasion is best treated by painting on methylated spirit or a solution of 1 in 3000 of condys crystals, or by friars balsam, or, as a last resort, iodine. Over this, place a piece of adhesive strapping. This will protect the tender layers of the skin from pressure or injury until such time as a new horny layer has formed.

If a blister keeps refilling after being emptied the man should report to the R.M.O.

TINEA.

24. The prevalence of FUNGUS infections of the feet among Australian troops renders this condition particularly important, more especially in hot climates where tinea, apparently previously cured, shows itself afresh.

Inspection for tinea must always be carried out during routine unit foot inspections.

The men themselves must make frequent inspections of their own feet with particular searching between and under the toes for "dead white" skin, blisters and

fissures; this is the only method of detection as the condition frequently at first causes no disability. *A soldier who suspects he has tinea must report to the R.M.O. at the earliest opportunity.*

Once discovered the most vigorous methods are necessary to eradicate what may be very contagious to others and. if the condition spreads to the foot, leg, or groins, a very disabling condition to the soldier.

As tinea is most commonly transferred in ablution houses the following preventive measures are recommended:—

(*a*) Duckboards in ablution houses should be washed down daily with antiseptic (Cresyl, Lysol, &c.), 1 in 1,000 and exposed for long hours to strong sunlight.

(*b*) Feet should be soaked regularly in a condys solution 1 in 3,000.

(*c*) Soldiers must be warned after washing to dry thoroughly the clefts between their toes, using methylated spirits when possible to ensure complete drying.

(*d*) Feet which sweat profusely should be dusted with talc or equivalent powder, especially in the toe clefts.

(*e*) A clean pair of socks should be put on daily, or as often as possible. (*See* para. 17 for substitute for socks.)

(*f*) Towels must be dried thoroughly, in sunlight if possible.

When tinea is present the above measures must be followed, and Mycozol or Whitfield's ointment applied morning and night to the affected areas. It is useless

to use Whitfield's ointment unless it is rubbed into the affected area for at least three minutes *by the clock*. Treatment should be continued for some weeks after the disease has apparently disappeared.

A FEW PARTICULARS OF SIZES OF AUSTRALIAN BOOTS.

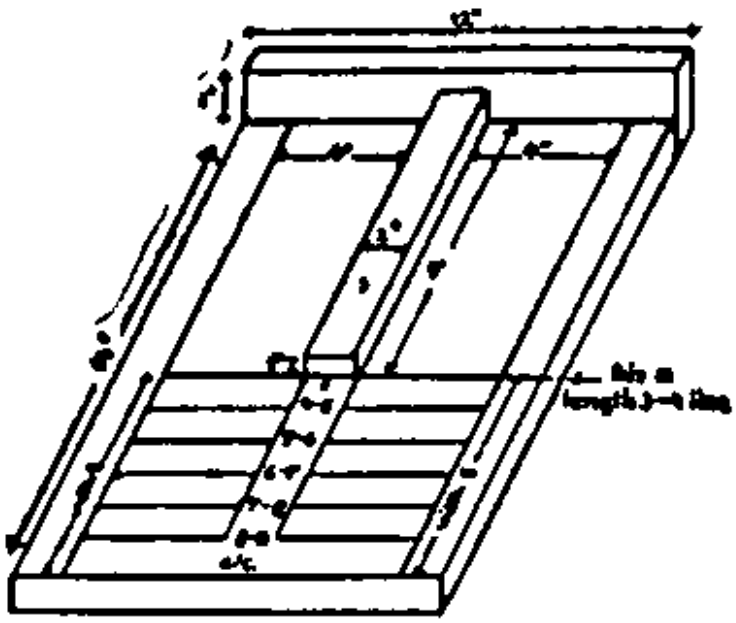
25. Boots are supplied in normal sizes of 4 to 12, and in widths 4 or 5. Some width 3 still exist in stock. Other sized boots can be specially obtained.

Size.	Actual inside length.	Typical civilian (Bedggood) inside length.
	inches.	inches.
2	9	..
3	9⅓	..
4	9⅔	..
5	10	9¾
6	10⅓	10
7	10⅔	10⅜
8	11	10¾
9	11⅓	11
10	11⅔	11⅜
11	12	11¾
12	12⅓	12⅛

From para. 5 of these notes it will be seen that if a man's bare foot measures 11 inches he should be fitted

by a boot measuring inside 11⅜ inches. The measuring board allowed for this extra lengtht (i.e., 2 sizes bigger than the bare measurement).

A Foot Measuring Board.



The board can be conveniently covered with celluloid (e.g. cleaned X-ray film). It must be kept clean to prevent the spread of tinea, etc.

26. A measuring board can be made and ruled in a few minutes.

(*a*) Lines, ⅛ inch apart, should be ruled parallel to the heelboard. The nearest line should be 9 inches from the heelboard. These lines should be marked to show the size (length) of boot corresponding to the distance. Lengths of feet need sizes as shown.

Length of foot without socks.	Probable size required in present pattern Australian boot. (Soft sloping toe.)	Probable size required in new pattern Australian boot. Blocked toe. (Sudden rise.)
9	4	3
9⅛	5	4
9⅜	6	5
10	7	6
10⅛	8	7
10⅜	9	8
11	10	9
11⅛	11	10
11⅜	12	11

(*b*) Parallel to the edges of the centre dividing board lines should be ruled on each side and 4 inches from it. These lines correspond to fittings "width 5". This does NOT mean that the width of the inside of a "width 5" is 4 inches wide; it only means that a foot 4 inches wide is suited normally by a "width 5" fitting.

Appendix "A".

INSTRUCTIONS FOR PREVENTION AND/OR EARLY TREATMENT OF MINOR FOOT DISABILITIES.

1. Some casualties are avoidable. You can't learn to avoid a direct hit but you can learn easily how to avoid casualties from preventable foot troubles. Of the foot casualties sent to 1 Aust. Gen. Hosp. from units at

least 60 per cent. are due to avoidable causes. Considerations of time and transport make it essential that minor foot disabilities should be treated AT THEIR SOURCE (i.e., in the unit) and that steps aimed at prevention should also be initiated there.

2. A very important step in elimination of minor foot disabilities in a unit while in training areas is the EARLY DETECTION of factors responsible for their production.

3. Ill-fitting boots are by far the greatest contributing factor to the minor disabilities of the feet which have required treatment in training areas.

4. Incorrect use of the foot muscles is in addition a potent source of trouble, and is frequently, but not always, directly attributable to ill-fitting boots.

5. Neglect of details of hygiene, particularly in summer, is still apparent in many of those seeking treatment.

6. In most instances the soldier is still ignorant of the measures he should take to avoid foot disability; but many soldiers are careless in carrying out details in spite of instruction.

7. The responsibility for attention to details rests with the Company Commander.

8. Neglect on the part of the soldier in carrying out instruction in measures outlined for the care of the feet should be made a disciplinary measure.

9. Every Regimental Chirodopist who has passed an AIF (ME) course is now trained in the preventive and corrective measures outlined in this instruction.

Steps to be Taken.

11. All Officers and ORs responsible for the training of soldiers should read the AIF pamphlet "Fitting of Boots and Care of Feet, 1941".

12. *Parades for inspection of feet* should be held regularly, once each week. Every OR should attend this parade.

13. The fullest use should be made of the regimental corporal chiropodist.

14. Foot inspection should include—

(*a*) State of repair of soles and heels of boots.
(*b*) State of socks, repair and cleanliness.
(*c*) Hygiene of feet.
(*d*) Rashes.
(*e*) Corns.
(*f*) Ingrowing toenails.
(*g*) Deformities.
(*h*) Flat feet and early evidence of bunions.

15. A nominal roll should be made of all men with any foot disability, and as far as practicable, immediate treatment should be given by Regimental Chiropodist.

16. Short lectures should be given regularly by *Platoon Commander and/or* Regimental Chiropodist on hygiene of feet, particularly during summer months.

17. A survey should be made of the feet of all ORs by the Regimental Chiropodist, including—

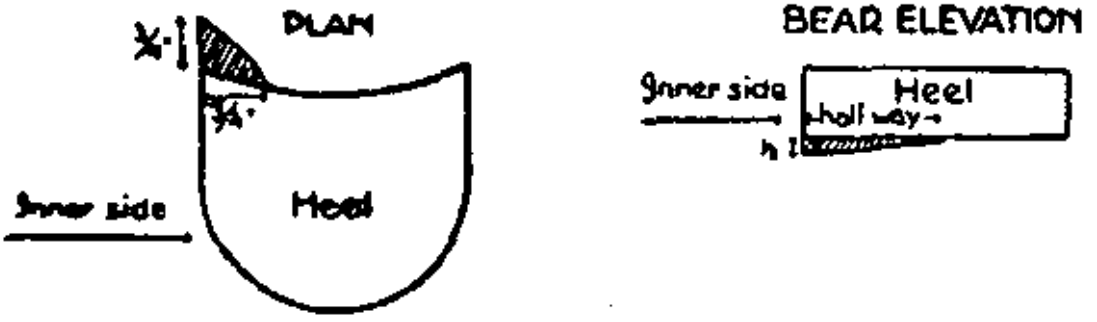
(*a*) measurement of feet,
(*b*) check on fitting of boots.

18. All new boots issued should be checked for fit by Regimental Chiropodist.

19. Soldiers with flat feet or bunions should have a course of training by Regimental Chiropodist in exercises for correct use of toe and foot muscles. (*See* Appx. "B".) These soldiers should also have the inner side of heel of boot raised $\frac{1}{8}$ inch and extend $\frac{1}{4}$ inch. Such correction when made by the Regimental

Bootmaker must be checked and approved by the Regimental Chiropodist before being worn by the soldier. NO other correction of boots should be permitted. The heel plate and soles must be kept in good repair.

NOTE.—Wedge is best placed between layers of leather of heel.



20. When feasible soldiers with continuing disability from flat feet or bunions should be referred, at the discretion of the RMO, to the Foot Clinic at 1 Aust. Gen. Hosp. for foot support.

21. Deformities of feet should be referred, at the discretion of the RMO, to the orthopoedic surgeon at an Aust. Gen. Hosp. for advice and treatment. It is essential that soldiers referred under paras. 20 and 21 should wear or bring their boots.

22. Sand shoes should be regarded as for occasional wear only (e.g., after changing boots in the evening), and on no account should be permitted for routine use.

23. The issue of "light heavy" or "driver's" boots is NOT an alternative measure to the instructions laid down. Where it is impossible to correctly fit a man with Army boots he should be referred to an Aust. Gen. Hosp. (*See* para. 21 above.)

24. Records should be kept of all examinations under paras. 15, 17, 18 and 19 above.

Appendix "B".

SPECIAL EDUCATIONAL FOOT EXERCISES.

Objects.

1. To instruct soldiers in the correct use of the muscles of the feet.

2. By so doing to prevent certain foot disabilities such as corns and foot strain.

3. To teach selected soldiers how to instruct in such exercises, and how to detect faults in the correct use of the feet.

Methods of Instruction.

4. The squad is sized, and divided into small squads (e.g., four men of approx. same size). This was found to be an important preliminary.

5. During the early exercises (i.e., until exercise 12 is reached) each squad of four works independently of the others, but all are within close range of the chief instructor. When marching, it is convenient to have each squad on the same line at distances of about four paces.

6. The exercises are arranged in progressive order from simple to complex, the latter not being attempted until the more simple are mastered.

7. Throughout the period of training each member of each squad in turn must take the squad and be responsible for correcting faults, and demonstrating correct methods.

8. A short period of mutual training is also given, in which each squad of four is split up into pairs and each man in each pair acts alternatively as student and demonstrator.

9. Regular short periods of revision of early exercises are introduced during teaching of more complex exercises.

10. All training is constantly supervised by chief instructor.

11. Each exercise period (30 minutes) is opened by a short talk on the exercise to be performed, and a demonstration of the performance of it, after which the whole squad performs the exercise before breaking up into smaller squads of four.

12. The "positive" method is followed (i.e., the soldiers are actually shown what to do, with frequent repetitions) in order to encourage imitation. Every care is taken to avoid reference to faulty use of muscles, in order to enable them to build up clear and correct mental pictures and to enable them to forget the faulty ones.

13. Emphasis is laid on the fact that these are therapeutic exercises, not conforming in every detail with the "Infantry Training Manual". It is possible to utilize these exercises in marching without violating instructions for normal marching. The position of attention and stand at ease in these exercises is to be used only by men doing special educational foot training.

Exercises.

EXERCISE 1.—Squad, already sized, is in line.

Attention: The feet are placed firmly on the ground, with the inner borders of the feet parallel and not turned out at an angle; feet four inches apart.

EXERCISE 2.—*Stand at ease:* The feet are maintained in a parallel position, and about twelve inches apart.

All subsequent exercises, including marching, are carried out with feet parallel as in 1 and 2 above.

EXERCISE 3.—*Raising inner arch of foot:* From position of attention—By numbers—ONE—While toes and heels are maintained in contact with ground the feet are rolled outwards in such a way that the inner arch of the foot is raised about ½ an inch, and some of the body weight is deflected onto the outer side of the foot, which remains in contact with the ground. TWO: The feet are rolled inwards, thus permitting the inner arch to fall about ½ an inch, but without moving toes or heels from their previous position.

EXERCISE 4.—*Slow march, maintaining inner arch of foot raised.* From position of attention. By numbers—ONE: Raise inner arches of feet as in exercise 3. TWO: Carry left foot forwards about 28 inches, keeping inner arch raised, and bring it to ground on heel first, then outer border of foot, then toes, keeping inner arch raised all the time. THREE: As the left foot is coming in contact with the ground, the right foot is raised from the ground, with inner arch raised and carried forward, repeating movements of left. FOUR: Movement repeated by left foot, but with shorter pace to recover at position of attention, inner arch of each foot still being raised.

EXERCISE 5.—*Perform same movements as in Exercise 4 but in quick time.*

EXERCISE 6.—From position of attention. *Development of spring in gait by utilizing the grasping action of the toes, particularly the great toe.* (The mechanical advantage of the great toe is lost in proportion as the feet are turned out at an angle.)

By numbers—SLOW TIME—ONE: Carry left foot forward, toes pointing upward, whole foot parallel to line of march, and bring to ground on heel. TWO: Thrust body upwards and forwards by pressing firmly

the right great-toe on ground, at same time rocking forward on left foot, bringing left toe to ground, and raising right heel from ground. THREE: Repeat ONE with right foot. FOUR: Repeat TWO with left foot.

EXERCISE 7.—Mark off 30-inch intervals with pegs or white bricks along the line of march. Repeat exercise 6 along the line of markers, and endeavour to lengthen pace by more active spring off back foot on TWO and FOUR. Repeat by marching along this line, with an exaggerated spring off back foot at each step, in order to thrust body upwards and forwards in rhythmical manner. The effect of this exercise correctly performed is—

(*a*) to lengthen pace of shorter men in the squad.
(*b*) to give more rest to short muscles of feet between periods of weight bearing.
(*c*) to impart a definite "spring" to gait, so lessening fatigue.
(*d*) to utilize to the full the power available in the long muscles of the toes in propelling the body forwards.

EXERCISE 8.—Combine exercises 3 and 7 in the act of marching in slow time.

EXERCISE 9.—Combine exercises 3 and 7 in the act of marching in quick time.

EXERCISE 10.—Perform exercise 9 along a line of markers with a pace of 34 inches.

EXERCISE 11.—Perform exercise 10 while maintaining dressing.

EXERCISE 12.—Resume formation of whole squad in line by the right, and repeat exercise 11.

N.B.—Up to exercise 13 men are allowed to watch their feet.

EXERCISE 13.—Repeat 12, *while recovering correct* posture of body. (Head erect, chin in, abdomen in, knees straight while bearing weight, arms swinging correctly, feet lifted well off ground, and good spring in gait.)

EXERCISE 14.—Repeat exercise 13, each man carrying a pack of 40 lb. as a route march over various kinds of ground, with a 34-inch pace, but at a rate slightly slower than the regulation rate, so that the usual distance of 2½ miles is covered in the hour.

Comment.

(A) The position of attention described, enables the soldier to maintain balance and avoid swaying, while retaining the physiological advantage of keeping the feet parallel. The object of lengthening pace is to encourage the development of the "spring" in gait which involves more efficient use of the great toe muscles, with consequent diminution of fatigue. Once this action is perfected the length of pace may readily be diminished to 30 inches if desired, while retaining use of the toe muscles. The longer pace is, however, much more efficient for *longer marches provided the* time is not too quick.

(B) The long muscles of the toes are partly responsible for propelling the body in the line in which the foot is pointing. Consequently if the feet are held at an angle of 30 degrees while marching the force exerted by those muscles is partly resolved into a force *propelling the body in* the line of march, and partly into a force tending to carry the body to one or other side at each step taken. The latter component of the propelling force is wasted from the point of view of locomotion.

(c) When the feet are carried in a *position parallel with the line of march*, there is no wasted lateral component of the propelling force, and there is a consequent diminution of fatigue.

The correct use of the toes also assists in elevating the arches of the feet, so preventing undue pressure on the heads of the metatarsal bones and the consequent corns which are so frequent in the soldier who is not using his toes correctly.

(n) Tight boots cause disability—

(*a*) By so compressing the toes that they are unable to support the weight of the front portion of the foot; consequently the weight of the body is borne on the heel, outer side of foot and "tread" or "ball" of foot. The action of the propelling muscles of the toes is also lost in such cases. Corns develop where this increased pressure is manifest (i.e., under the heads of the metatarsal bones) and increase the discomfort and fatigue of marching, so setting up a vicious circle.

(*b*) By direct pressure on the sides and upper surface of the toes (much less important).

By Authority: L. F. JOHNSTON, C'wealth. Gov. Printer, Canberra.