repetition was not necessary. In the third case 70 c.cm. of cusol were injected.

We wish to acknowledge our indebtedness to Lieut.-Colonel West, R.A.M.C.(T.), for permission to study these cases; also to the staff of the Canadian Mobile Laboratory, who carried out the necessary bacteriological work.

REFERENCE.

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NOTES ON CLOTHING AGAINST COLD.

BY

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THE following brief notes are founded upon experience gained in Labrador and North Newfoundland during the last five-and-twenty years; they express not only my own opinion, but the winter practice of those who live and work in the countries mentioned.

The source of heat being the body, and the chilling of the body being the result of loss of heat, we design our garments against this issue, and I may say at once that we do not use india-rubber boots or any waterproofed garments.

Exercise being conducive to increased production of heat, we make our clothing very light and see that the material is as far as possible (1) thin and pliant, (2) wind and waterproof, (3) durable, (4) inexpensive.

We always use two layers of light material instead of one layer of heavy. We never use flannel or wool outside, but as it contains air spaces and can be woven thick, soft, and light, we use a thick undergarment and a very light outside one. The colder it is the thinner material we use for boots, because it is more pliable.

Jumper.

The general plan of the upper garment is always the same. To adapt it for use in Europe in mild climates where rain is frequent we should use light Willesden canvas outside, or Burberry or light waterproof rubber material. When very cold we wear a second loose one underneath. The essential point is that there shall be no draughts.

1. At the neck draughts are avoided by making the capot, or hood, continuous with the body piece.

2. Leakage in front is avoided by making the jacket in one piece and getting into it from below.

3. Leakage below is avoided by a canvas or webbing belt fastened on to the lower edge of the jacket, or heavy elastic sewed in, or a soft pliable thong running through a gusset.

4. Leakage through the arm is avoided by a rubber band round a reversed cuff inside (as shown in Fig. 1), or

FIG. 1.—Showing the jacket (jumper) and the hood (capot); also the harness for carrying gloves. The waist band and the left wrist band are open.

webbing strap sewn on the outside edge of the sleeve cuff, exactly as the belt is attached.

5. Leakage round the face is stopped by a draw string round the opening.

The best belt fastenings are without any buckle, but have glove push-fastenings and a thong going through an eye. They can be opened and closed in a moment with gloves on.

In hot weather the sleeves and belt can be loosened and the hood thrown back, so that the wearer has a cool light garment. It is a funnel through which air blows. There is no garment on earth to beat it; it cramps nothing, no snow can get inside, nor can rain, especially when two are worn. It is the next thing to a diver's suit when in use, and makes a splendid bag or sack when not in use. With No. 2 canvas it can be used as a wash-basin if wanted. The breath can also be kept in more or less to add to warmth at a pinch, if the capot is loose enough. We often carry light articles in our capots as we run along by the sledges. When in extreme cold we use two; one is often of mere calico over one of duffel or blanket. The canvas is easily cleaned from mud when dry. There are no folds to catch on obstructions.

Gloves and Mitts.

Our mitts, when we are shooting, have the right index separate. All our gloves are double, the outside being skin, or wind-proof material, light and soft, and water-tight if possible. The inside mitt is woollen and soft and thick. The glove always goes over the sleeve, and has a strap as well round the wrist (Fig. 2). The inside glove

FIG. 2.—T, Travelling glove or mitt. S, Shooting gloves. The strap at the wrist is of canvas or rubber; the upper strap is of canvas.

alone might have a separate index finger. Lastly, we suspend the outside mitts by a string round our necks, so that we can leave them dangling when we throw them off in a hurry.

Trousers.

For trousers we use the same material as for the jumper, canvas or "duck" (Fig. 3). We find the chest

FIG. 3.—Side and front view of trousers. The braces are sewn on to the trousers at the back. They are usually made of canvas, but might be of elastic. When desired the knee strap can be loosened and the trousers worn as running shorts outside the boots.

flap coming right up from the breeches a very great saving of heat. The back should also be above the waist; there can then be no leak of heat. The trouser always goes well inside the boot tops. We use no opening for urination—the trouser is all in one piece. A flap might be made if necessary, but we want no draughts.

Boots and Socks.

For boots we use sealskin and deerskin. Deerskin boots are the warmest, but are not watertight; we use them in hard frost.

Our boot materials are, as are all our garments, soft, light, and water and wind tight (Fig. 4). There are no nails and no pegs. The sole is soft; we use no thread; all are sewn with tissue from tendons, and as these swell with wet they never leak. We soak the boot or rub it over with tar and oil. It wants careful treatment to keep it from tinting or rotting, as we use raw or green skins. These are the most watertight. The hair is shaved off, and so there are no holes left in the leather. Occasionally we tan these skins and then soak them in tar and oil. It would be hard to get any number of these boots from Labrador now, as the

FIG. 4.—Boot.

coast is shut off from communication. They could not be obtained in any quantity till autumn, though a few thousand pairs of the tanned boots might be obtained in a few months, especially if the old sealskins from the Newfoundland fishery were purchased for the purpose. I think, however, skins of pigs or goats or dogs, and possibly sheep, would serve just as well. The features are, first, that they should be absolutely soft and very thin, so that the foot can move in every joint and keep warm. They are large and loose, and strap or tie round the knee. Very often, especially in spring, we carry the boot above the knee and tie it again, as then we can kneel to shoot or crawl on wet ground. The boot will take easily three pairs of socks. Very often in wet weather we use a pair of shoes of the same material, or of tanned skin inside the boot, and then two pairs of socks. These will keep dry on wet ground all day. The outer thin boot when of tanned skin "seeps water" a little, and the inside shoe keeps that from the sock. The looseness of the boot would prevent anything like "trench foot" from pressure. The boots are perfectly good on stony ground, the number of socks inside prevent the stones cutting the boot, and very soon the wearer does not notice the inequalities. We use them often, long after all the snow is gone, on our rocky hills and shores.

The sewing is always done with sinews. The fascia lumborum of the deer is dried and thread made from it by tearing the fibres and twisting them. This swells with the wet and prevents any leaking. Also the sewing is done exactly like sewing bowel; the stitches go only half way through the skin.

To demonstrate the way they resist water I would say our kajaks, one of which I always use for shooting on the sea, are only of one single layer of this sealskin, sewn together with this same sinew in this way, and they never leak a drop. I have driven my kajak through rough water, hunting all day, and never got damp even. One can run and jump in this costume as one did in football flannels. Among our doctors we have had more than one 'varsity runner and other athletes, and it is the unanimous opinion that when we get rid of our hard boots at the beginning of the winter, and abandon our conventional European clothing we begin to know what ease and comfort in moving is, and what resisting cold and wet means. There is no hard boot made that will save a foot from frost-bite. The sealers travelling over the sea ice put a thin tap or sole, pegged into our thin sealskin boot, so that they can screw in the "chisel" and "sparble" that prevents slipping.

This soft boot also allows yet another very important improvement over any hard boot. There is so much room in the boot that if the feet are cold and wet socks can be discarded and grass or hay used instead. The hay is just twisted into a hank loosely and bound round the foot, enough to enable one to distribute it around in the boot. A wisp is first put into the toe and on the sole. Hay is cheap—grass is easy to get. The air spaces are very warm. It takes a lot of water to wet hay. The foot sweats less in hay than in wool. There is no reason,

however, why one sock should not be worn inside the hay. When hay is wet, it can be changed by putting it into the cap or capot to dry from the heat of the body, as a scout does his matches. The "Lap" always uses grass in his skin boots, and wears the change grass in his tam-o'-shanter or knitted cap. The soft wading stockings are rendered almost useless in a hard boot—as the boot must be large and clumsy. They could readily be used in a perfectly soft boot.

A vamp is a low shoe made in wool (Fig. 5). The shops sell them. But much the best are those we make by

FIG. 5.—A, Vamp in knitted wool. B, Cross sections of vamp with wisps of raw wool drawn in. C, Vamps one over the other.

knitting the vamp, and then drawing in wisps of raw wool through the meshes, so that all the raw wool is inside. This gets trodden into a thick soft layer. The wool can be left greasy if preferred. It is very warm, and not easily wetted. To show how soft a boot is I would add that when one is wet and it has been taken off we turn it inside out and hang it up to dry. If a raw skin boot is hard, when we are putting it on we rub it on a boot stick and break it soft again, or just throw it in a bucket of water. The boots are so light that a spare pair could easily be carried to the trench and used as a pair of waterproof bags for rations if necessary. We never use any overcoat, hard hat, or hard belt, or any clumsy, heavy, hard contrivance at all.

Lice and fleas cannot breed in canvas and linen, as they can in hairy sheepskins and goat, and the heat necessary can yet be retained.

CHLORAMINE IN THE TREATMENT OF WOUNDS OF THE MOUTH AND JAWS.

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(Report to the Medical Research Committee.)

THE septic character of all gunshot wounds involving the mouth and the disadvantages attending the use of the common antiseptics led me to try in these cases a new agent—chloramine (toluene sodium sulphochloramide).

The suggestion was made to me by Dr. H. D. Dakin, by whom the preparation was made. He advised a 2 per cent. aqueous solution for use as an irrigant and mouth wash.

During the months of October, November, and December, there was a great falling off in the number of surgical cases received on board this ship, but I was able to try the effect of this agent in seven cases, and in all the result was highly satisfactory. Where necessary, the usual surgical procedures were carried out under an anaesthetic, such as the opening up of external wounds, the removal of loose bone, teeth, foreign bodies, and ragged portions of tissue, the arrest of haemorrhage, and the suturing where possible of severed tissues—for example, the soft palate. Tubes were inserted through the wounds and the mouth to allow access of the injected fluid to all the damaged surfaces. The external wounds were dressed in the usual way, but the distal ends of the tubes were allowed to project outside the bandage, so that the reagent could be introduced frequently without disturbing the dressing. Irrigation was carried out every hour during the day, and as often as possible during the night, the patient sitting up in bed. Three or four syringefuls (2 oz. capacity) were injected through each tube, the fluid returning through the mouth into a receptacle. The patient was fed through a tube, irrigation with the chloramine solution being carried out immediately before and after.

Chloramine, besides being a powerful antiseptic, has the property of penetrating the tissues, and is not so readily neutralized by albuminous discharges as the simpler chemical antiseptics; also it is bland and quite pleasant to use, being non-irritant.