improvisation easy. For the rapid instruction of recruits on mobilization the advantage is obvious. Some doubt was felt at first lest time would be wasted during a lecture by the necessary manipulations. This was not found to occur, and many time-saving devices are possible. For example—by pressing an inverted jampan into the sand, a cleanly cut soakage pit can be dug without delay; the sand remaining in the pot when it is lifted up. In the same way a tin mould, 3 in. by 1 in. (according to the scale used) is useful for the rapid formation of a row of shallow trenches.

A model terrain is useful for explaining to Officers and N.C.O.'s the best positions for dressing stations or the essentials of field sketching. By its means the demonstration of contour lines is wonderfully simplified, and it serves as an alternative to the usual potato method. For this purpose a large office table is necessary, which can be fitted up as follows: A frame the size of the table top is made of laths about 1½ in. in depth and jointed at the corners by metal hinges from which the pins have been removed and nails substituted. Small blocks of wood nailed to the sides of the frame keep it from sliding off the table. A sheet is laid over all and sand spread on this and heaped up into hills and hollows, slips of evergreen are stuck in to represent trees. Very effective houses, churches and other buildings can be made of thin cardboard after the manner of theatrical scenery, touched up with coloured pencils. They are placed upright in the sand. A little chalk powder dusted on to the roads makes them stand out clearly. On the sand and sheet being removed, the frame is readily taken apart by withdrawing the nails from the hinges at its corners. Bomb-proofs, rifle pits and fortifications can also be demonstrated by this method.


A DESIGN FOR A WATER BOTTLE.

By Staff-Serjeant E. B. Dewberry,
Royal Army Medical Corps,
AND
George J. Clarke, Q.S.A.

CONSTRUCTION.

Part I consists of a vessel formed of two pieces of metal, the body and the base. The body is vertical on its transverse axis and diminishes on its conjugate axis, thus offering a grip to the felt pouch. The body is sufficient in size to admit freely an adult hand for cleansing purposes. The top of the body is flanged and sunk to receive the washer. The body is in one piece of metal and closed with a water-tight joint at A. (Fig. 1.)
The base is stamped in one piece of metal to fit the body and closed with a water-tight joint at B. The shape of the base is such that no part is inaccessible for cleansing.

Figure 1 shows a vessel and stopper made throughout of aluminium, consisting simply of a body, movable lid, two clips, and a stopper, all easily detachable, every part capable of being easily cleaned. The bottle is light and its contents can be warmed over the fire should coffee or cocoa be substituted for water.

Being made solely of aluminium the design has to be such that the metal can be stamped to shape without fracture, and as aluminium is a great resister of flux all joints are welded and closed by hydraulic power, but are nevertheless thoroughly water-tight.

Part II consists of a movable lid with neck attached.

The lid is flat in order that Parts III and IV may, when in position,
be at fair tension. The edge of the lid is sunk to fit over the washer. The neck is circular in plan and closed to the lid with a water-tight joint at C. The top of the neck D is beaded to obviate a sharp edge coming in contact with the lips and converges to point E to fit the stopper exactly. The neck is easily accessible for cleansing with the index finger.

*Parts III and IV* are two clips, each being alike, and each stamped to form a groove at the edge. The clips slide on from the shoulder of the vessel, fully covering the sunk flanges to both body and lid, and com-

![Diagram](http://militaryhealth.bmj.com/)

FIG. 2.

pressing them tightly over the washer. The clips are cut away at H to fit up to the neck attached to the lid and are notched at G to allow the short ends of the washer to protrude as shown at F.

The stopper consists of two pieces of metal each stamped to shape and closed with a milled water-tight joint at J. (This joint is milled to prevent the cap from working loose.) The cap is of good diameter and milled on edge M to afford a firm grip to the finger and thumb. The stopper is ground to fit into the neck perfectly and has a fine screw thread.
Attached to the stopper by means of a riveted pin L is an aluminium chain, one link of which is a split ring for disconnecting. At the end of the chain is a perforated disc K. This disc serves a dual purpose: (1) Its normal position inside the vessel prevents the loss of the stopper; and (2) when the stopper is withdrawn to the full length of the chain the disc lodges in the converging neck between C and E, thus preventing insects or solids from entering the vessel, or in cases of tea leaves or coffee grounds, preventing solids within the vessel from entering the person's mouth.

The chain, not being exposed, is not liable to be broken by entanglement with bushes or accoutrements. When packed away in store the lid and stopper can be inverted, thus protecting both lid and stopper and reducing the vessel to a minimum size.

The carrier (see fig. 2) consists of a pouch and shoulder strap. The pouch is a leather bound, felt, bottomless pocket made to fit the body of vessel. The pouch being bottomless the vessel wedges into it and is easily dislodged; moreover, the pouch cannot be used for other purposes and can be easily cleaned. The shoulder strap (similar to that now in use) passes around the pouch and is stitched to it, thereby relieving the strain on the felt caused by the weight of the vessel when filled.

The diverging lines of the strap (when carried over the shoulder) are checked by a cross tension strap which slides up or down as required; the tendency to diverge will cause the cross tension strap to press upon the stopper and also prevent the vessel from being jerked out of the pouch. The tension strap also brings the shoulder strap close up to the edge of the clips, thus securing them firmly.

The Washer is simply a short length of plain soft white twine boiled in white wax, this can be easily renewed at a minimum cost. The twine can be slightly warmed in water and pressed into the sunk groove formed in the flange of body; over this is placed the lid, the inverted groove on the edge of which fits over the washer, and the two clips secure the whole and form a water-tight joint.

In case of emergency plain twine or even a piece of bootlace will temporarily suffice until waxed twine is procurable.

The ends of the washer should protrude at F for inspection and also to afford facility for easy removal or renewal.

<table>
<thead>
<tr>
<th>Weight</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Weight empty</td>
<td></td>
<td></td>
<td></td>
<td>about 5 oz.</td>
</tr>
<tr>
<td>&quot; full</td>
<td></td>
<td></td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>&quot; of strap and pouch</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
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