subsequently no evidence whatsoever of content disorder apart from the ideas of guilt with regard to the degraded habits of his acute stage.

I wish to acknowledge the co-operation of Major J. H. Groom, R.A.M.C., and Major Sutton, R.A.M.C., in the collection of the clinical data of this case and under whom all the treatment of the case was carried out. The case was seen by Brigadier G. W. B. James and Brigadier McAlpine. I wish to thank Colonel W. H. Kerr, T.D., for permission to forward the notes of this case for publication.

M.E.S.H. BATH SET.

By Major N. BASTER,
Royal Army Medical Corps.

INTENTION.

To produce an easily and quickly made bath set using as its basis the M.E.S.H. two-gallon improvised shower, described in this number of the Journal (Hutchinson, G. R.).

SPECIFICATION.

(1) Time for erection, two men—3 minutes.
(2) Time taken for initial production of hot water—12 to 13 minutes.
(3) Subsequent production—1 gallon of boiling water per minute.
(4) Water consumption—1½ gallons per man.
(5) Fuel consumption—½ gallon of petrol per hour, hydra full on.
(6) Fuel consumption—½ to ¾ gallon of petrol per hour, hydra turned down and using six sprays only.
(7) Portability—can easily be carried by two men in four lifts.
(8) Transportability—4 sets can be carried by one 15-cwt. truck, 14 to 16 sets in one 3-ton truck.

Time per man for bathing—minimum 4 minutes; 5 minutes is the natural average and allowing each man 5 minutes, 72 men can be bathed in one hour.

The boiler gives adequate water for six sprays each three minutes, enabling 120 men to be bathed in one hour if speed is essential. If six minutes per man is allowed a drum disinfector can be worked from one half of the boiler unit allowing disinfection to be carried out simultaneously with bathing.

Components and Weights (fig. 1).

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Hydra burner</td>
<td>64½ lb.</td>
</tr>
<tr>
<td>(2) Boiler unit</td>
<td>104 lb.</td>
</tr>
<tr>
<td>(3) Frame</td>
<td>137 lb.</td>
</tr>
<tr>
<td>(4) Water containers, spray units (M.E.S.H. 2-gallon improvised showers) and measure</td>
<td>53 lb.</td>
</tr>
<tr>
<td>Total weight of complete set</td>
<td>358½ lb.</td>
</tr>
</tbody>
</table>

Used as a wood burning wall set (2 and 4 as above and 12 small blocks of wood) 160 lb.
### Materials used in construction (all easily obtainable in M.E.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle iron</td>
<td>76 ft.</td>
</tr>
<tr>
<td>Reinforcing iron</td>
<td>27 ft. 6 in.</td>
</tr>
<tr>
<td>&quot;T&quot; iron 1 in.</td>
<td>2 ft.</td>
</tr>
<tr>
<td>Strip iron 1 in.</td>
<td>2 ft. 6 in.</td>
</tr>
<tr>
<td>Strip iron ( \frac{1}{2} ) in.</td>
<td>5 ft. 10 in.</td>
</tr>
<tr>
<td>Sheet iron 18 gauge</td>
<td>2 sq. ft.</td>
</tr>
<tr>
<td>Sheet iron 16 gauge</td>
<td>7 ft. 4( \frac{1}{2} ) in. by 1 ft. 7( \frac{1}{2} ) in.</td>
</tr>
<tr>
<td>Oil drums 5-gallon</td>
<td>2</td>
</tr>
<tr>
<td>Steel tube 1( \frac{1}{2} ) in.</td>
<td>1 ft. 10 in.</td>
</tr>
<tr>
<td>Elbows 1( \frac{1}{2} ) in.</td>
<td>2</td>
</tr>
<tr>
<td>Sockets 1( \frac{1}{2} ) in.</td>
<td>2</td>
</tr>
<tr>
<td>Nipples 1( \frac{1}{2} ) in.</td>
<td>2</td>
</tr>
<tr>
<td>44-gallon drum (water container)</td>
<td>1</td>
</tr>
<tr>
<td>M.E.S.H. 2-gallon showers</td>
<td>6</td>
</tr>
</tbody>
</table>

### Description of Set.

**Boiler Unit** (fig. 1).—Constructed from two 5-gallon oil drums, spot-welded together end to end. Filler and delivery pipes are welded into the drums, filler funnels and extensions to the delivery pipes screw into position. The boiler is set up on a fire box made of sheet iron on a frame of angle iron picket; firebars (also angle iron picket) are arranged at the bottom of the firebox; semi-circular iron strips support the boiler in the firebox. A cover of thin sheet metal covered with blanket is placed on the upper surface of the boiler to provide a jacket. A baffle slides down in front of the firebox for use with a hydra burner. It is removed if any other method of heating is used. For transport, the filler funnels and delivery pipe extensions screw off; the jacket is removed and they all fit inside the firebox. The boilers are turned upside down so that the pipe fittings face into the firebox and are protected. All joints are welded.

**Shower Units**.—M.E.S.H. portable 2-gallon showers, fitted into two-thirds of a 44-gallon drum for transport.

**Burner**.—Petrol cooker No. 1 advised, though any other method of heating can be used. Firebox is arranged so that petrol cooker No. 1 can be used as standard. If not available, front shield can be removed and wood, charcoal or scrub can be used.
Frame (fig. 2).—Frame is made up of angle iron picket, welded together to provide requisite lengths. It consists of a top member supported by three legs at either end, which are tapered to fit into sockets in the top member (see "A," fig. 2). Three holders ("B" fig. 2) for spray units are welded on to each side of the top members. They consist of a vertical hook, made of reinforcing bar, and at the bottom have a small platform made of angle iron picket with a small strip welded on to it to prevent forward movement of the spray unit.
when in position. Each pair is joined with a short length of reinforcing bar welded to the bottom ends. This improves rigidity and makes the top member a cradle for the legs during transport. All joints are welded. Enlargements of "A" and "B" appear in fig. 3. For transport the frame is completely collapsible.

**Fig. 4.**

**Fig. 5.**

**Method of Use.**

_Erection._—The boiler is placed in position, about ten yards from where the sprays will be located.
The boilers are set right way up on the firebox with the delivery pipes screwed in and the jacket put over the boiler, leaving a 2 inch gap at far end of the firebox from the burner, which serves as a chimney. The boilers are filled with water (fig. 4).

The frame is then erected by raising one end of the top member, slipping into position two legs, raising the other end of the top member and slipping into position two other legs. The frame is now rendered rigid by putting into position the two bracing legs. The frame is now ready for use. (Fig. 5 shows frame erected with sprays in position.)
The sprays are taken from their container and set out in a row on the left hand side of the boiler; the container, which becomes the water reservoir, is placed on the right (fig. 6). The Burner is placed in position and lit. The unit is now ready for use (fig. 7).

OPERATION.

The operator stands on the right of the boiler, bathers pick up showers, pass to left of boiler, hold shower under delivery pipe from which they receive half a gallon of boiling water, displaced by a half gallon of cold water, put in with the measure from the water reservoir. The bathers then top up their showers with cold water from the water source, stand pipe, tap, water cart or whatever source is used and proceed to the shower stand, when they fix up their showers and bathe. They return past the boiler and deposit their empty showers; dry and dress.

PERSONNEL FOR OBSERVATION.

The whole set is operated by one man who can be trained to use the set in a few minutes. It is suggested that the first two men bathed be kept to instruct future bathers in filling up the sprays and to "police" the bathing.

POINTS OF INTEREST.

The outfit is made from readily available materials of the cheapest character and almost no tubing is used. No pump is necessary to lift the water to give the required head for showering as each man lifts his own shower. No nuts and bolts are used in the construction and erection; welding is used when fixed joints are necessary; the major components fit together. Repairs can be easily carried out by any Army fitter in the case of major damage. Any minor damage can be repaired by the operator. The apparatus is of robust construction and sets made now should see the war out successfully.

Erection.—The shower framework takes less than two minutes to erect. It dismantles into very small bulk and can be erected inside a building or in an I.P.P. tent, which latter makes a very good bathhouse.

Portability.—The whole apparatus can be comfortably carried in four lifts by two men. This gives it the very great advantage that it can be erected in places not accessible to motor transport. It often happens that the last hundred yards to a suitable bathing place cannot be traversed by lorry. It is readily adaptable to mule transport.

One 3-ton truck will carry 14 to 16 sets.

One 15-cwt. truck will carry 4 sets.

Extension.—Further sets of six sprays can be added by the addition of a further top member and two legs per six sprays. In anything but the coldest weather one boiler unit will supply two sets of six sprays.

Use as a "Wall Set."—Instead of using the independent support frame a wall can be used for supporting the sprays which are screwed or nailed on to the wall and used as shown in the previous article. This will be of great value when a stone or cement floored room is used for bathing.

CONCLUSION.

(1) The apparatus gives a simply-made bath set.
(2) It can be carried in two man lifts and easily transported by M.T.
(3) It is easily and quickly made of readily available materials.
(4) It is simply and quickly erected and got into operation.
(5) It is operated by one man who requires no special training.
(6) In an emergency it would be possible to arrange for large numbers of these bath sets to be manufactured locally in the Middle East.

(7) Finally, it is a matter for discussion whether a bath unit constructed on the lines described, because of its greater adaptability, simplicity of operation and economy in per-
sonnel, requiring only one man to work each set, and its ease of transport, is not better fitted for field work than the present Army bath set.

My thanks are due to No. 52 Mobile Bath Unit who carried out the practical trials, to the Commandant, M. E. School of Hygiene, and D.M.S., G.H.Q., M.E.F., for permission to make this communication.

A PORTABLE IMPROVISED SHOWER.

By Staff Serjeant G. R. Hutchinson,
Royal Army Medical Corps,
M.E. School of Hygiene.

(1) INTENTION.

A great need exists for some portable easily devised appliance to provide satisfactory bathing arrangements under field conditions. Bathing in cut-down 4-gallon petrol tins, which have been the standby in the Middle East, results in rather inefficient ablution and waste of the already precious small quantity of water which can be allotted for ablution out of a daily ration of say one to two gallons per day.

The sponging or splashing of water from a cut-down 4-gallon petrol tin on to the body often resulted in feet being washed before the rest of the body and so on. This misuse of precious water can be obviated by showering.

(2) EVOLUTION OF DESIGN.

It was decided early that water container and shower rose must be combined because of shortage of piping and tubing to improvise the more formal types of shower bath. The earlier models were constructed from 4-gallon non-returnable petrol tins for the water reser-