

## BATH CARAVANS IN BELGIUM.

The Wounded Allies' Relief Committee, of Sardinia House, Kingsway, W.C., is shortly sending to Belgium, for the benefit of soldiers at the Front, two novel bath caravans, that have been specially arranged to provide the greatest number of baths possible in the shortest time. The designer of the caravans is Mr. J. R. Anderson, A.M.I.C.E., M.I.M.E., the well-known civil engineer, of 4, Adam Street, Adelphi, W.C., who has done the work voluntarily.

Since the caravans will be drawn by horses from place to place, where water can be obtained from rivers or streams, dimensions of breadth and length have been the controlling factors in the case, and as the weight of the caravans must be within the power of two horses to draw, careful consideration has been necessary to details of construction in order to reduce weight to a minimum.

Before arriving at a definite conclusion upon the question of fuel for heating water, consideration had to be given to the possible sources of supply in that part of Belgium where the troops are. At first it was thought that wood fuel would be best, but this idea was finally abandoned for petroleum, for reasons of easier transport and greater heating power. After considering the merits of petroleum fuel boilers in general, the boiler most suitable for the type of hot-water apparatus designed for the caravans was considered to be the one manufactured by Messrs. Clarkson, of Chelmsford, which is used for motive power on the National Company's steam buses and cars. For the purpose of these cars, &c., steam is generated by the boiler, but for the "bath caravans" the heat evolved by the boiler will pass through an ingenious arrangement of tubes within a storage tank, to be quickly absorbed by the water contained in it for almost immediate use. Above the storage tank is placed a secondary tank, into which water will be pumped by manual labour through a pump attached to the caravan for feeding the storage tank under pressure, in order to keep up a continuous supply for filling baths by means of lengths of flexible hose. Before entering the supply tank, the water will be screened and strained.

While allowing some ten to twelve gallons of water per bath at about 120° F., and to be cooled down as necessary by the addition of cold water, and allowing ten minutes per bath, it is estimated that sixty or more baths an hour will be possible. It is assumed that baths will be given continuously for perhaps fourteen

hours without cessation, in which case some 800 men should be dealt with in this time. For the moment, it is intended to construct two such caravans, which should afford accommodation for some 1,600 men in fourteen hours. Twelve enamelled light steel baths of commodious size, some 5 ft. 3 in. long by about 2 ft. 2 in. inside, will be carried on a caravan in specially arranged lockers, with hinged flap doors opening outwards and downwards, and the baths will be "nested" one inside the other for easy transport.

Along the roof of the caravan, on either side, will be fixed roller-controlled waterproof sheeting, to be pulled outwards for securing it to light standard poles to form a weather-proof awning, while at the ends and side easily attached sheetings will be provided to form a complete enclosure, as found necessary. Within the enclosures thus formed, the baths will be placed in rows, and grips will be cut in the ground, or loose wooden troughs laid down, for carrying off waste water to a suitable outlet.

The hot water apparatus, with its tanks, is placed in the rear of the caravan, and is conveniently arranged for outside management and control. It is also housed in a steel plate compartment, insulated from the caravan proper by a double-plate bulkhead partition filled in with non-conducting material for protection against fire. On either side of the boiler is a hot or drying closet, complete with rods and hanging hooks and slatted shelves for clothes and towels, and on either side of the caravan also is provided a Dr. Thresh's Emergency type of disinfectant, enclosed within a steel plate compartment, opening outwards, for dealing with clothes and garments requiring treatment, but as space is limited, these disinfectants can only be on the small scale. None the less, they are sufficient in action, and should be found very useful.

Good sleeping accommodation for two men is provided above the bath lockers, and in the centre of the caravan, approached from a door behind the driver's seat, is a ventilated and lighted passage-way, with a store cupboard of good size at the end, with a useful arrangement of deep shelves over it of the full width of the caravan. In addition, brackets and hooks and other fixings for carrying pump gear, hoses for baths, &c., are provided, and perhaps a portable cooking stove will be carried.

Under the driver's seat is fitted an enclosed and sealed tank for the supply of liquid fuel, sufficient for one day's use, which will be recharged from barrels or kegs brought up from the supply base.

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