

Electrically Heated Beds for the Wounded

ONCE it was thought that a patient was receiving the finest kind of treatment if he was surrounded by hot-water bottles, *i. e.*, providing he required that kind of treatment. Now the English hospital experts have devised an electrically heated mattress for treating such cases as pneumonia and shell shock. The hot water bottle provides an uneven heat at best—and for the proper treatment of such cases as these, the heating effect must be uniform and should be capable of fine regulation.

A successful solution has now been reached by Mr. H. J. Gauvain at the Treloar Cripples' Hospital, Alton, England, where two wards are now supplied with electric

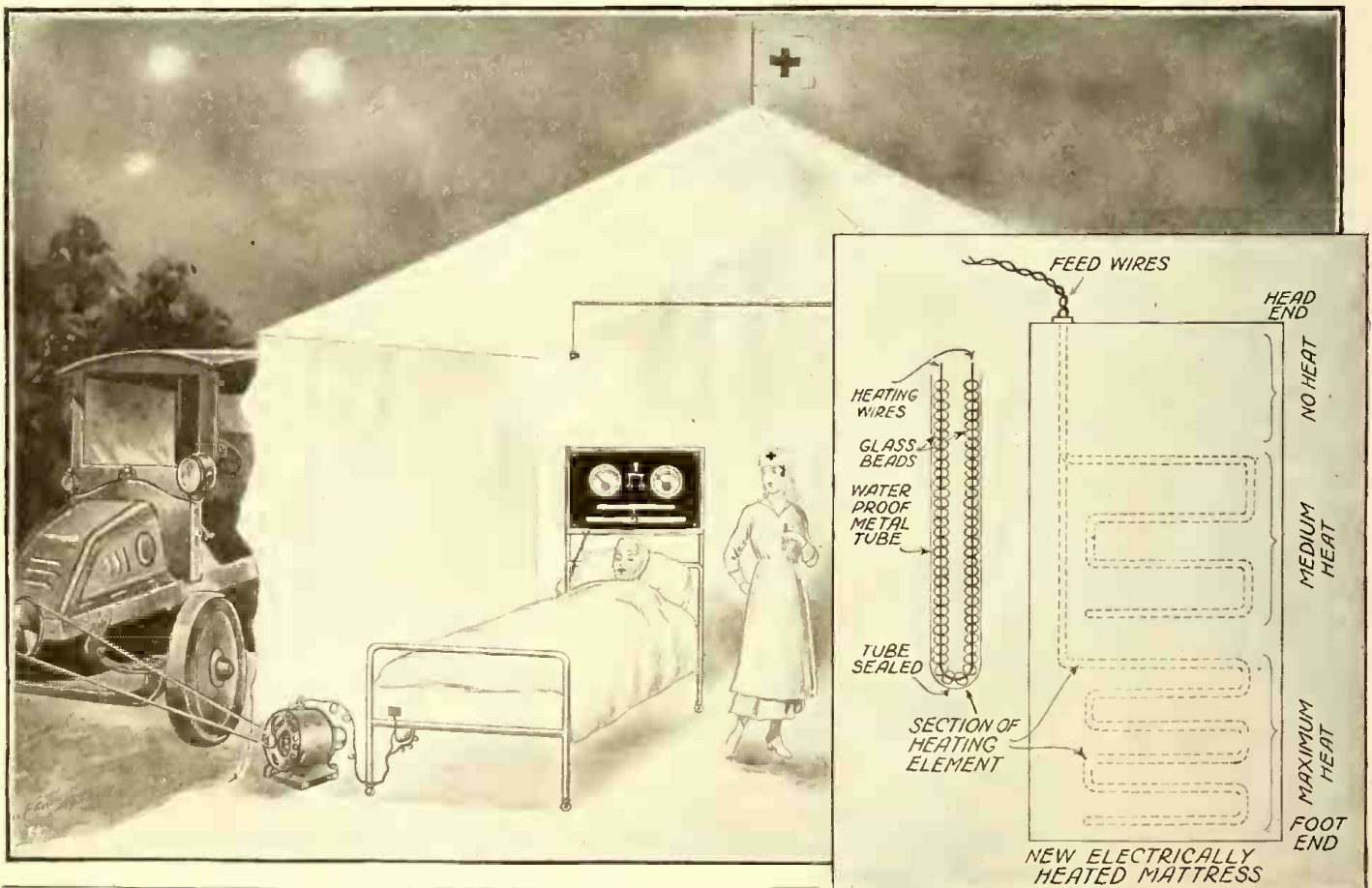
The wires are connected with a switchboard on the wall at the head of a bed which contains a variable resistance, so that the current can be graduated to any required extent. It is so arranged that when the current is full on the temperature of the bed is raised 25° to 30° F. above that which would obtain apart from the heating, and this has been found in practise to meet the needs of the small cripples, many of whom are fastened on splints which do not allow of the close contact of the bedclothes. A fuse prevents the passage of any current exceeding this amount.

Several of the usual difficulties have thus been met: the temperature of the mattress can not rise to any dangerous degree, the

and infirmaries would save much time and relieve the nursing staff of a tiresome routine. Electrically heated beds have already been found of advantage in the treatment of shell shock at field-hospitals, and for military purposes it will be seen that the current required may be instantly supplied from a portable dynamo driven by a motor-lorry or car, as shown in the accompanying illustration.

GERMANS BUILDING ALUMINUM TRANSFORMERS.

Scarcity of copper has led to the construction of transformers with aluminum windings, says a German writer, and he contends that it is possible even in normal



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A Recent English Invention for Treating Various Ailments, Such as Shell Shock, Pneumonia, Etc., Consists of an Electrically Heated Mattress Which Can Be Regulated as Desired. Where No Electric Currents Available It Can Be Produced by Hooking Up a Dynamo to a Motor Lorry. The Mattress Is Water-Proof and Can Thus Be Sterilized in the Usual Way.

mattresses which have proved both safe and convenient in practise even when a child is the occupant of the bed.

The mattress does not differ in appearance from any other except that a flexible wire enters it at the head end thru a terminal which is flush with the surface, and therefore not exposed to injury. The resistance wire is insulated by glass beads in flexible metallic tubing incorporated in the substance of the mattress. The mattress is differentially heated and the heating element is so disposed that the maximum warmth is generated at the foot-end, less in the middle, and none at all at the head end. This distribution of heat is maintained in whatever position the mattress is turned, either from head to foot or side to side.

tubing is so flexible that the mattress can be shaken or rolled up, and the resistance wire is water-proof in the spiral metallic tubing, so that no short-circuiting results, even if the mattress is wetted. The mattress may be sterilized in the ordinary way. The system is equally applicable whether the bed be in or out of doors. The saving of time at the Cripples' Hospital amounts to an aggregate of three hours a day in each ward where the electric mattress has replaced the filling or hot-water bottles, while inasmuch as the current required for maximum heating is only half an ampere at 110 volts, the total expenditure of energy for 200 or more beds would be by no means prohibitive. It is believed that the general adoption of a similar appliance in hospitals

times to build air-cooled transformers cheaper and lighter if aluminum be employed instead of copper. The ratio of the prices of insulated aluminum and copper wire is taken as 1.4:1.0. In the most economical design of transformer with copper windings it is necessary to leave considerable spaces between the coils in order to obtain adequate cooling. When aluminum windings are used this space can be conveniently reduced without prejudice to the temperature rise. Owing to the relatively greater proportion of the cross-section of the coils which is occupied by metal, the difference between internal and external temperatures is less with aluminum windings than with copper. The difficulty of making joints in the winding is rather serious.