

of our hospitals, and to-night will present you with a summary of what was found.

Let us, while reviewing the sterilization of dressings and instruments, also look at the means used to render aseptic the parts immediately about the field of operation and also the cleansing of the surgeon's hands.

That the seat of operation should be sterile does not admit of question. Too little attention has, as a rule, been given to this subject, for of how much avail can completely aseptic instruments and dressings be if the parts immediately about the wound are not first rendered aseptic? The methods of cleansing the parts, now practised, vary with different surgeons. With some the preparations are very extensive, notably in Germany. Von Bergmann (*Centralblatt f. Chir.*), for instance, orders the patient a general warm bath, in which he is thoroughly scrubbed with soap and brush, and from this bath is immediately taken to the operating-table. Here the parts are rinsed with alcohol and afterward rubbed with ether and washed again with 1:2000 bichloride solution. At the Presbyterian Hospital, New York, the routine is to give the patient, the night before operation, a general warm full bath, and on the morning of the operation the parts are shaved and scrubbed and another warm bath given. Then, for the few hours preceeding the operation, the parts are covered with cloths wet with a one-per-cent mixture of creolin. Immediately before the incision is made the parts are scrubbed with *sapo viridis*, irrigated with bichloride, 1:2000 then a solution of iodoform in ether is scrubbed over the surface.

At the majority of the metropolitan hospitals the preparations are not so elaborate; the general rule being to have the parts about the wound shaved, well scrubbed, and covered by an antiseptic solution for a few hours before operation.

As to the means used by the surgeon to render aseptic the hands: The majority thoroughly scrub the hands with soap and warm water and then *dip* them in a solution of either bichloride or biniodide of mercury just previous to beginning the operation. Others use green soap in place of the ordinary soap, *dip* the hands first

in alcohol and then in some antiseptic solution, and from time to time during the operation rinse off the blood in the solution.

The general plan of sterilizing the instruments is to have them thoroughly washed with soap and hot water and well dried after each operation. Before being again used they are placed in an antiseptic solution, either three-per-cent. carbolic or 1:4000 hydronaphthol. In some of the hospitals for the more important operations, as laparotomies, the instruments are either boiled or submitted to dry or moist heat.

The usual method of treating the dressings is to subject them to the action of some chemical germicide. The chemical most used for this purpose is the mercuric chloride in solution of the strength of 1:1000 or 1:2000.

Besides chemicals, the well-known sterilizing properties of heat are taken advantage of for rendering sterile both instruments and dressings. The common gas oven, in which dry heat is obtained, the use of superheated steam, and ordinary boiling are examples of this method. It is the object of this paper to more particularly direct attention to these means of sterilization and the facility with which it can be carried out.

Heat has always been considered, by the bacteriologists, as the most efficient of sterilizers. Many varieties of bacteria, in fluids, are killed by a temperature of 100° C., if it be continued long enough. When dry they resist somewhat higher temperatures; the spores being more resistant than the bacteria. Even these may be destroyed by repeating the application of the heat after they have had time to develop. From this it follows that all germs existing in dressings or on instruments can be destroyed without the use of chemicals, provided the exposure to heat be made long enough and the temperature sufficiently high.

Burrell and Tucker (*Boston Med. and Surgical Journal*, Oct. 3, 1889) have made some very interesting experiments testing the efficiency of heat and chemicals to sterilize instruments and dressings. They took a number of instruments from a glass case in the hospital, and found