

insure success. Success is sure to follow strict antiseptic precautions, but it must be remembered that bacteria will crawl into the spigot if the bung alone be stopped.

Probably no better place than Bellevue Hospital can be found for comparing the benefits of antiseptic measures with the results of ordinary wound treatment, and in the wards where the details for keeping wounds in an aseptic condition have been carefully studied most gratifying results have been obtained. It is a common thing for very bad compound fractures and the largest of operation wounds to heal under one or two dressings, and such dressings remain perfectly sweet for three or four weeks at a time, so that there is no necessity for the surgeon disturbing them in any way. The patient, instead of having his wounds dressed every day or two while profuse suppuration is draining away his strength, quietly reads his paper and peacefully chews his tobacco while the surgeon passes through the ward and glances at the temperature chart at the head of the bed. In the wards in question pyæmia and septicæmia are unheard-of diseases, and foul, purulent wounds are entirely out of date. Primary union is by far the commonest method of repair, and in granulating wounds the discharge is so small in quantity that it seldom appears through the permanent dressings.

Various methods and different kinds of antiseptic dressings are employed in the different divisions, but the commonest antiseptic solutions are of carbolic acid, bichloride of mercury, salicylic and boracic acids. Iodoform is in constant use. Carbolized gauze, borated cotton, or prepared peat, form the larger part of the bulky dressings. Ligatures are carefully prepared before being used, and so are drainage-tubes and protection silk. The solutions of carbolic acid are aqueous ones, and in the proportions of one part to twenty, one part to thirty, or one part to forty of water. Bichloride of mercury is diluted with from one thousand to five thousand parts of water. Salicylic and boracic acids are usually combined in the proportion of one part of the former to six parts of the latter, and these are dissolved in five hundred parts of water. In some of the wards the orderlies and nurses are given written directions, and the following is a copy of these :

"I. No one shall touch a wound, or the vicinity of a wound, unless his hands are thoroughly carbolized.

"II. No material shall be allowed to touch a wound, or the vicinity of a wound, unless it has been antiseptically prepared.

"III. No sponge shall be employed about a wound unless the sponge has been antiseptically prepared.

"IV. No prepared sponge shall be used after it has come in contact with any substance which has not been rendered aseptic.

"V. Sponges are not to be touched by any person whose hands are not carbolized

"VI. Sponges employed are not to be used at more than one operation.

"VII. During an operation sponges that are bloody are to be washed in a solution of carbolic acid (1 to 40), and by a person whose hands are carbolized.

"VIII. Protective silk and rubber drainage-tubes are to be kept in bottles filled with carbolic acid solution (1 to 40), and these articles are to be removed by the senior or junior assistants only.

"IX. All material for dressings is to be kept in a perfectly clean place, and the material shall be handled only by carbolized hands.

"X. Dressings are to be made up by such persons only as have carbolized hands.

"XI. Dressings are to be prepared on clean towels and must not touch surrounding objects.

"XII. Instruments are to be kept in carbolic acid solution during an operation, and are to be handled by aseptic hands only."

In giving a description of the routine which would be followed in an operation, it is perhaps best to select some particular case. Let us suppose, for instance, that a man who has suffered a compound fracture of the patella has just been brought in. The patient having been undressed is placed upon a table, which is covered with a rubber blanket and which slopes downward from the end where his head lies. The blanket is gathered at the lower end of the table so that irrigating fluids may run into a pail placed for their reception. Above the table is suspended a large pail which contains any one of the antiseptic solutions which the surgeon may prefer, and descending from it is a long rubber tube supplied with a sprinkling nozzle and stopcock. The injured knee is now scrubbed with soapsuds and the hairs in the vicinity are shaved off with a sharp scalpel or razor. The knee and the leg above and below are washed with strong carbolic acid solution, and towels which have been wet with the same are placed in every direction about the limb, leaving exposed only that portion which immediately concerns the operator. One assistant is to share the work of the operating surgeon, another handles instruments, and another manages the irrigator. The nurses handle the sponges which are being used by the surgeons, and all parties, with the exception of the one who gives the anæsthetic, have rendered their hands aseptic. The operator now makes an incision which opens up the knee-joint widely and exposes the fragments of the patella. The fluid from the irrigator is thrown in jets over the wound and all clots are washed away. Bleeding vessels are attended to, and the fragments of bone trimmed so that they be readily approximated, and at frequent intervals the irrigator is made to play over the exposed parts. The patella having been firmly