

are taken to cleanse the part about to be operated upon. In addition to a general bath, the entire limb, including the hand or foot, is washed with soap and water, with a flesh-brush, and all the hairs are shaved cleanly from the part. This washing is followed by a douche of an antiseptic solution, and then all the parts adjacent to the wound are covered with towels, wrung out of bichloride solution.

The personal preparation of the surgeon and his assistants for the operation was limited to self-protection against soiling their clothes or person. No special thought was ever given to the condition of the hands and nails. The assistants came directly from other ward duties, their hands soiled with the thousand impure matters which they must handle, and with slight or no washing, engaged actively in the manipulations of the operation. Now the surgeon and his assistants take infinite pains with their hands. Soap and water and the flesh-brush are brought into active use, to be followed by a douche of bichloride solution. The nails, the most fertile source of filth in the body, are rendered scrupulously clean. Many will recall with a shudder the long claw-like nail of one surgeon, which penetrated, unwashed, every wound where he was present. Not only is no bystander invited to put his finger in the wound, but scarcely an attendant at Bellevue would allow such an intrusion.

The sponges of former times were universally believed to be the carriers of filth to the wounds, and yet little was done to purify them except to cleanse them in water. They may have been boiled at first to free them from sand, but they were not purified by any adequate means when first prepared, nor after their use in suppurating wounds. Now, the process of purification of sponges is elaborate in the extreme, and is so exact in details as to render them positively harmless in wounds.

The ordinary silk ligatures were formerly regarded as necessarily foreign bodies in wounds, and no care was taken of them to improve their condition. They were carried about in any convenient pocket, and at the operation the silk was cut of proper lengths, waxed, and then drawn through a buttonhole of an assistant, or laid on any convenient surface. Now, the ligature thread undergoes a long process of cleansing and disinfection at the hands of a chemist, and is then applied to a reel enclosed in a corked bottle filled with antiseptic fluid. From this bottle it is removed only as it is drawn out at the moment of using it. Considering the well-recognized fact that the ligature, as formerly used, was an intense irritant to wounds, it is not surprising that surgeons applied as few as possible. From time to time they resorted to other methods of closing arteries, as by torsion, or metallic wires, to avoid the use of silk. But all these devices bore no comparison to the simple and efficient antiseptic ligature of to day. Reeled off

from the bottle, clean, strong, and supple, the surgeon applies them without other limit than the complete suppression of hemorrhage.

Recognizing the silk ligature as an irritant, the surgeon always used to cut off but one end, and left the other depending from the wound, to be removed by traction when it had finally separated from the end of the vessel to which it had been applied. And well and faithfully did the ligature meet its indications, for, during the first week, the most critical period in the history of the wound, it did not fail to induce free, and often profuse, suppuration. But now, not only does the surgeon apply the ligature, but he cuts off both ends, and closes the wound as completely as if there was no foreign substance left between its surfaces. Nor is he disappointed. No suppuration follows the presence of the ligatures, and union takes place as promptly as if no ligatures had been used. The operation being completed in the shortest possible time, the operator concluded by exploring all parts of the wound with his unwashed fingers. If it was a hernia, he thrust his fingers as far into the abdominal cavity as possible, and explored it freely. This act completed it was a very common occurrence, also, for the surgeon to invite any bystander to examine the wound with his fingers, and sometimes several persons would avail themselves of the opportunity to improve their tactual sensibilities.

Many a wound that may possibly have escaped previous poisoning at the hands of the operator and his instruments, has received the final charge of septic matters from the dirty fingers of a casual looker-on. Now, the most scrupulous care is taken to protect the wound from injury, either at the hands of the surgeon or his assistants. Exploration is cautiously made with fingers cleansed and disinfected, and even that act is completed by a douche, over the entire surface examined, of the bichloride solution. If the finger of a bystander were introduced into the wound unwashed and undisinfected, the surgeon would regard the act as probably fatal to recovery without suppuration. Hence, no one is now invited by courtesy, or to obtain an opinion, to examine the wound by digital exploration unless they have made due preparation for the act.

In closing an ordinary wound the surgeon formerly took great pains to provide for the drainage of pus. The most dependent part of the wound was left open, and all the ligatures were drawn out at that point. The edges of the skin were brought into apposition by the interrupted suture, at intervals of half an inch, and the intervening skin was approximated by adhesive plaster. The suture and adhesive plaster were alike unprepared by any process that would relieve them of filth, and far too often both contained the germs of putrefaction. Now the surgeon employs sutures that, like the ligatures, have been relieved of all possible elements