

injection. Bransford Lewis⁵ reports that, using this solution, he has found it possible to anæsthetise the corium, but in the deeper tissues the anæsthesia was not perfect. This has been my own experience, and latterly I have used a $\frac{1}{2}$ per cent. solution in removing a rodent ulcer of the nose and in other minor operations with complete satisfaction. It is impossible to keep weak solutions for any length of time without fungi appearing in them; therefore it is preferable to make the solution fresh from the solid drug for each operation. For this purpose Messrs. Allen and Hanburys have kindly made for me pellets, each containing one grain of cocaine hydrochlorate and half a grain of common salt. One such pellet dissolved in three drachms of boiling water gives a sterile $\frac{1}{2}$ per cent. solution, which is cooled by placing the vessel in cold water or on ice. Tested on myself, it produced in one minute complete anæsthesia, which lasted exactly a quarter of an hour. When the elastic band was used the anæsthesia was complete for twenty minutes, and after the band was removed at the end of this time the anæsthesia lasted ten minutes longer.

The method of making the injections.—When injections are made for the purpose of anæsthetising the skin, the corium should first be filled with the solution. This is accomplished by using a very fine needle and introducing it almost parallel to the surface of the skin. A few drops are injected, causing a slight wheal to appear, and after a pause of a few seconds the needle is pushed further, and the process is repeated until the whole of the corium is infiltrated. The subcutaneous and deeper tissues are to be treated in a similar way. This method has been described in detail by Schleich, but it has been used by many surgeons, including myself, for years. The merit of showing the anæsthetic effect of fluids injected into tissues so as to cause pressure on the nerves, and the suggestion of making the addition of common salt to solutions of cocaine, apparently belong to Schleich. There is, however, a limit to the desirable degree of infiltration. If the wheal produced by the entry of the fluid into the tissues is very tense the parts remain tender and the skin red for over twenty-four hours.

The elastic band.—As the result of a personal experiment I can say that for the first five minutes the band gives rise to but little discomfort, but after that the discomfort increases, until at the end of twenty minutes I was glad to get it off. In an operation which can be completed within fifteen minutes the band is not necessary, but in old people it is advisable to apply the band until after the chief incisions have been made, so that the tendency to absorption of the drug is diminished. In some cases the band is required in order to secure a wound unobscured by blood. If the band is used for more than a quarter of an hour tenderness and redness follow in the part which has been subjected to the action of cocaine.

Other details.—It need hardly be mentioned that perfect antiseptic precautions should be observed, yet some cases have come to my notice in which subcutaneous abscesses &c. have followed hypodermic injections of cocaine. These have been due to the lack of simple precautions. An ideal syringe should be capable of being placed in boiling water with the other instruments, and at the same time should be perfect as a hydraulic machine. The syringe I have used for some years without any mishap answers the second, but not the first, of these requirements. By using it solely for the one purpose, and by cleansing it with a 5 per cent. carbolic solution before and after each operation, it has been kept aseptic. It is also kept in an air-tight metal case, which keeps the piston moist. The instrument was made for me by Mr. T. Hawksley, who has also brought to my notice two other instruments—one with a solid steel piston fitted with cork; this can be placed in boiling water without detriment, but the cork fittings would, in my opinion, be liable to wear and become defective; the other is the instrument used for mercurial injections in syphilis—it has platino-iridium needles and an ingenious rubber piston (the latter would prevent its being sterilised by heat). A perfect syringe has, I think, yet to be found.

Substitutes for cocaine.—Lucas Championnière has recently suggested guaiacol dissolved in olive oil as a substitute for cocaine. I have tried on myself a solution of thirty grains in one ounce of olive oil, and find it produces anæsthesia, but causes considerable swelling; and, whilst in the central part of the swelling there is anæsthesia, there is much smarting at

the peripheral part of the area into which the fluid has been injected. The smarting lasts much longer than the anæsthesia. I am not, therefore, inclined to try this drug on patients.

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Clinical Notes : MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF REVOLVER ACCIDENT.

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A LAD aged seventeen years was admitted into the Royal Infirmary, Newcastle-on-Tyne, on Feb. 6th, 1895, in a very critical condition, his left chest being full of pus, the result of a pistol accident fourteen days previously. Over the apex of the heart there was a small entrance wound; the ball was lodged in his chest. The apex-beat was felt under the right nipple. Thirty ounces of pus were at once drawn off by aspiration, and three pints were drawn off the next day by the same means. On the following day, the lad being much improved, the chest was incised and drained without chloroform; thirty ounces of pus escaped. On May 10th a portion of the seventh rib was removed to permit of better drainage. On June 6th the lad left the hospital in a fairly satisfactory condition, gaining strength, in good spirits, and with about one drachm of discharge daily escaping through the tube.

Remarks.—One interesting point in the case is, Where is the ball lodged? The lad never spat any blood; fluid quickly accumulated in the chest after the accident, but without marked symptoms, apparently, till the quantity was very large, and on admission he was too ill to have his chest incised or to take chloroform. Two weeks after leaving the infirmary he had a troublesome attack of hysteria, during which he refused food and had to be fed by the stomach-pump, resisted being dressed, had retention of urine, bit and scratched and kicked, and altogether behaved like a maniac. The attack lasted some four or five days. Since then his progress towards recovery has been satisfactory, and he is now strong and well.

Since writing the above I have had a second patient under my care suffering in a similar manner. A lad aged seventeen years was admitted into the Royal Infirmary on Dec. 22nd, 1895, suffering from internal hæmorrhage, the result of a bullet wound received two hours previously. While the patient's father was explaining to him the action of a revolver the weapon exploded and the ball entered his abdomen a little above the pubes; it could be felt lying under the skin of the left buttock. On opening the abdomen it was found to contain a large quantity of blood. The bladder was full of clot, and there were four perforations of the small intestine. The ball had passed out of the pelvis through the left sacro-sciatic notch, injuring an artery in its neighbourhood, probably the gluteal or a branch of that vessel. The bladder and abdomen were freed from blood, and an attempt was made to find the wounded artery, but this was unsuccessful, and at last the common iliac artery was ligatured. The injured gut was resected and the ends sutured, Allingham's bobbin being used. The ball was then extracted and a large drainage-tube introduced into the pelvis from the buttock wound alongside the bladder. The peritoneal cavity was carefully sutured so as to shut it off as completely as possible from the bladder, and the wound closed. Transfusion of hot saline fluid was performed during the operation. The lad rallied and was able to give a full account of the accident. At 4 A.M. on Monday, Dec. 23rd, however, he began to sink, and died during the morning. This is the second serious revolver accident which has been treated at the Royal Infirmary during the last few months. In the other case, reported above, a youth aged seventeen accidentally shot himself with a toy revolver, the ball entering his chest over the apex of the heart; empyema followed, from which he has only just now recovered.

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⁵ Journal of Cutaneous and Genito-Urinary Diseases, July, 1895.