

manent pleural fistulæ which are consecutive to the incision in empyema. I need scarcely say that nearly all intelligent surgeons of the present day treat cases of empyema, especially in the adult, by free incision and drainage, together with thorough washing out and disinfection of the cavity. The results of this method of treatment are, upon the whole, satisfactory. Dr. Homen, in an interesting paper in (*Archiv fur Klin, Chirurg, Langenbeck's Journal*), gives the statistics of 52 cases of empyema, treated by free incision, drainage and disinfection. Of these fifty per cent. recovered, thirty-three per cent. died, and in seventeen per cent. permanent fistulæ remained. This may be considered a fair statement of the average results obtained in general practice. The pleural fistula is in most cases, the result of the formation or existence of a cavity between the thorax and the lung, lined by soft pus-secreting tissue. This is much more likely to occur where the opening for the evacuation of pus has been made late in the disease, and where the expansive power of the lung has been impaired by the long continued pressure. The size of such a cavity, and the amount of pus discharged from the opening may vary very much, but even a moderate amount of discharge is not only a great inconvenience to the patient, but also a source of danger, by so depleting the system as to lay the foundation of amyloid degeneration of the kidney, spleen and liver, or tuberculosis. In view of these facts, it is clearly the duty of the surgeon to adopt every possible means in order to effect the closure of the cavity. In such cases Estlander's operation seems well calculated to secure the end desired. It consists in the removal of a portion of the chest wall, in order to produce a certain degree of sinking in, and allow the parietal and visceral layers of the pleura (or chest-walls and lung) to come into contact. Before proceeding to discuss the operation, its indications and contra-indications, and the after-treatment, I will report the following case occurring in my practice in the Toronto General Hospital :—

Mary B.—æt 28 years, was admitted into the Hospital on the 6th of November, 1883. Parents living, family history good; has had no illness since childhood, except the present, which took place on the 28th of April, 1882, from an attack of pleurisy. She was treated by Dr. Smith, of Walkerton, who discovered fluid in the pleural cavity of

the right side on the 30th. He aspirated the chest twice during the months of May and June, removing large quantities of serous fluid. On the 8th of July, 1882, when the aspirator was again used, pus was discovered. The chest was then opened by incision and washed out daily from that time until July, 1883, when a second operation was performed in order to enlarge the opening in the chest which had nearly closed. In the latter part of August, 1883, she came under the care of Dr. Stalker, of Walkerton. He continued the treatment by washing out the cavity with a solution of salicylic acid, as carbolic acid had, on a previous occasion, produced symptoms of poisoning. From the time the first incision was made, July 1882, until the date of her admission into the Hospital, there was no appreciable change in her condition or the amount of the discharge. On admission the patient was spare and anæmic, but not extremely emaciated; appetite poor; slight hectic. The right side of the chest was sunken and flattened, causing a certain amount of lateral curvature of the spine and lowering of the right shoulder. In the axillary line, and between the sixth and seventh ribs was the opening in which a rubber tube was inserted. The amount of discharge was from two to four tablespoonfuls daily. In the upper part of the right side the percussion note was clear, but dull in the lower portion. Vesicular respiration was weak throughout, and almost indistinct in the lower part. The left lung was normal, pulse 90, temperature from 99 to 100; bowels regular, urine healthy. In the meantime the cavity was washed out daily with carbolic lotion 1 to 60, to which tincture of iodine was added. But as no improvement followed, on the 30th of November, in the presence of the members of the Hospital staff and medical students, I performed Estlander's operation. Ether was administered and the patient placed upon her left side. An incision about five inches in length was made between, and parallel to, the sixth and seventh ribs. The lower margin of the incision was drawn downwards by means of retractors, so as to expose the seventh rib. The periosteum was divided longitudinally in the median line of the rib, raised on each side, and a portion of the rib three inches long removed by means of a bone cutting forceps. The upper margin of the wound was then drawn upwards and a corresponding portion of the sixth rib removed in the same way. The pleura costalis which was much thickened, was not disturbed