disturbance in the eye which impedes the escape of the intra-ocular fluid. The last two varieties, namely, those connected with intra-ocular tumours and with intra-ocular hæmorrhage,

Fig. 25.—Tumour of iris. Secondary glaucoma. (Mr. McHardy's case).

Fig. 26.—Tumour of iris. Filtration angle open. No glaucoma. (Mr. Solomon's case).

bear superficially a close resemblance to the primary form, the causes of which will be considered in the concluding lecture.

A CASE OF PELVIC TUMOUR TREATED BY GALVANO-PUNCTURE: CURED.

By J. INGLIS-PARSONS, M.D.

No one who has had practical experience of galvano-puncture will have the hardihood to deny its power of destroying almost any tissue with which it comes in contact. It also accomplishes this in a way that no other agent is capable of doing; and, when surgical procedure is quite inadmissible, it is a direct means of saving life, as the notes of the following case show.

Mrs. W., aged 44, married; family none; one miscarriage eighteen years ago. Menstruation always been regular, loss slight, until October 13th, 1887, when she had a severe attack of hæmorrhage, lasting several days.

October 28th. Admitted into Chelsea Hospital for Women, under Dr. Edis.

November 1st. Examination: A mass as large as a foetal head can be felt between the bladder and uterus, projecting above the pubes, and pressing down the anterior vaginal wall. The cervix can be felt high up and far back; the anterior lip is enlarged. Sound passes upwards backwards, and shows uterus to be separate from the tumour.

November 7th. The patient complains of great pelvic pain, with occasional vomiting, and pain on micturition. Ether was administered, and a consultation held. It was agreed that the tumour was either a fibroid or sarcoma; and that, from its position and

close attachment to the bladder and surrounding organs, no surgical procedure was admissible beyond puncture with a finetroc. Somewhat serious bleeding followed this procedure, and was checked in the usual way.

November 25th. As the tumour rapidly increased, Dr. Edis passed the case on to me for galvano-puncture. The first application was on November 25th, 1887, and the last on February 6th, 1888. In all, twenty-eight were made between and inclusive of these dates. The duration of the applications varied from twenty minutes to half an hour; intensity of current from 100 to 250 milliampères, average 150. Two fine insulated platinum needles were used. These were driven through the anterior vaginal wall into the tumour to a depth of one inch, and connected to the positive pole. A large copper electrode on a felt pad, placed over the abdomen, formed the negative pole. No anæsthetic was used, nor was it required, as the introduction of the needles caused no pain. The temperature rose only once on December 13th, 1887, to 102° F., but in a few days it was normal again. A depression could be felt in forty-eight hours after each application of the current, corresponding to the site of puncture, and large enough to admit the index finger. After each application, the vagina was well douched with a carbolic injection (1 in 60); an iodoform pessary was passed morning and evening. At the end of the treatment, it was impossible to introduce a needle without causing pain, showing that very little of the tumour was left. Bimanually nothing could be detected by the hand on the abdomen; *per vaginam* a hard board-like mass could be felt, spread out between the uterus and bladder, and in front of the anterior vaginal wall. She has no pain now; no vomiting. Two-thirds of the tumour have disappeared.

April 6th, 1888. The patient came up to town; has been in excellent health. On examination, the local condition remains unaltered.

October, 1888. One year after the commencement of her illness, she was in very good health; no sign of recurrence. The tumour is still one-third of its original size.

REMARKS.—Hitherto considerable diffidence has been felt in resorting to this method, on account of the difficulty experienced in insulating the needles with any material capable of adhering to them when they are driven into the tissues, and of standing the action of acids and alkalies which form at the respective poles. For if puncture be made through the vaginal wall by a non-insulated needle, the current acts on the vagina as well as on the tumour, and a sinus communicating with the tumour is the result. Whereas, if the needle be insulated so that only the point be left exposed, the current acts on the tumour alone and the vaginal wall remains intact, except for the small opening made by the passage of the needle, and which soon closes up. By this means the chances of septic infection are reduced to zero.

Galvano-puncture has often been compared by those ignorant of its use to the actual cautery. The difference, however, is very wide. With the latter, whatever tissue comes in contact with it is charred by the heat and destroyed, and it is utterly impossible to apply it to a tumour covered by healthy tissues, such as the vaginal wall, without first destroying them, and so producing a sinus with all its attendant risks. Whereas, with galvano-puncture by insulated needles, there is no damage done to the healthy tissues, which have to be pierced first in order to reach the tumour; the insulation protects them from the current, while the bare point acts on the tumour. Nor is there any development of heat sufficient to produce an appreciable effect. The reason is this: Nearly two-thirds of the electrical force are expended in electrolysis. As the current enters the body it spreads out, and finally converges on the other pole. Any development of heat, caused by the resistance of the needles and the body, is spread over a large area, and is quite insignificant. Ciniselli has given up trying to insulate needles. Apostoli, Onimus, and Legros use a movable sheath. But if this is driven into the tissues and makes too large an opening, it is apt to set up a sinus. If it is not so used, the current will come off at the point of entry and produce the same result.

The insulating material used is gutta-percha, put on in fine layers, compressed and tapered down towards the point, so as to have no shoulder. The inert mass left behind in this case is, no doubt, the fibrous tissue of the tumour, all the rest being destroyed.

BEQUESTS.—Under the will of Miss Agnes Sarah Adams, the Hospital for Diseases of the Chest, Brompton, receives £500; the Cancer Hospital, Brompton, £500; St. Thomas's Hospital, £250.