

be drawn outside the vulva and then all trace of the os was obliterated. On bimanual examination—recto-abdominal and recto-vaginal—the cup of inversion could be easily felt with the appendages passing out of it. The surface of the tumour was soft and vascular, the mucous membrane being somewhat tumid and bleeding very easily. The patient was ordered iron and antiseptic vaginal douches. On April 17th an attempt was made under ether to reduce the inversion by taxis. Various expedients were tried unsuccessfully, and it was decided not to persist in efforts at rapid reduction but to rely upon continued elastic pressure. On April 25th Aveling's repositr was applied in accordance with Dr. Aveling's directions. The cup employed had a diameter of one and a half inches and it held its place well without any packing. On the next day the uterus was unreduced and the instrument was re-applied. On April 27th after 51 hours of application the fundus was found to have gone up. The cup of the repositr had followed the fundus and was firmly grasped by the cervix. The attempt to remove the repositr caused so much pain that ether was again administered and the repositr was withdrawn by tilting the cup and using a blunt curette as a button-hook. It was now found that there was still partial inversion of the fundus which felt exactly like a polypus within the os internum. On making steady digital pressure on the tumour and counter-extension on the cervix with three pairs of vulsella, reduction was easily completed. A No. 20 Hegar was passed into the uterine cavity which now measured three and a half inches. The cavity was well washed out and was packed with iodoform gauze for 24 hours. For two or three days there were slight rise of temperature and some abdominal tenderness, with some discharge of an offensive nature from the endometrium. On May 5th the uterus measured two and a half inches and the patient was practically well, but the discharge continued to be offensive for some days. The inversion was thus reduced after 29 week's duration. The amount of pressure used was about three pounds. The general condition of the patient on leaving the hospital was much improved.

The history of this patient bears out the statement that if a case of inversion survives the stage of involution it may give little trouble till menstruation is re-established and then it causes danger from "flooding." Details of the history of onset are wanting. Spontaneous inversion seems to have taken place. Probably the reposition made was not quite complete and relapse occurred by subsequent uterine action.

The diagnosis of such a case of complete inversion is easy if one remembers to make a diagnosis. But the inverted uterus bears such a close likeness to a polypus that some operators have cut it off first and made their diagnosis afterwards. But the diagnosis of *partial* inversion must, I am convinced, be exceedingly difficult in some cases. When in my case the uterus was half reduced it was exceedingly difficult on bimanual examination to recognise the cup of inversion, and if I had not seen the uterus completely turned inside out I should have found it very hard to distinguish it from a case of polypus uteri with partial inversion, and I am not surprised to read that very competent men have sometimes mistaken the one for the other.

There can be no doubt that *the* treatment for chronic inversion is sustained elastic pressure. There seems to be a growing opinion that amputation of an inverted fundus or panhysterectomy for the same condition is hardly ever necessary. Dr. Aveling's repositr seems to be the very best instrument for the purpose. Dr. G. E. Herman goes so far as to say that it has not been known to fail and that an inverted uterus ought never again to be amputated. How far such a universal negative can be sustained I cannot venture to say, but it is certainly one of the triumphs of surgery that a condition which at one time was considered incurable except by amputation is now capable of such successful treatment that the only question is whether the mutilative operation is ever justifiable.

If in case all other methods of reduction fail I think that a trial should be made of Küstner's operation. As I cannot find a clear account of this in modern English textbooks a brief abstract of Küstner's description may be interesting. He has performed it, so far as I know, but once. It was then successful in a very obstinate case. 1. He made a transverse incision through the posterior vaginal cul-de-sac into the pouch of Douglas. 2. He inserted his index finger, sought for adhesions, and tried to reduce the inversion but unsuccessfully. 3. He made an incision in the middle line from the surface of the posterior wall of the uterus right

through to the peritoneum, using as a guide the index finger inserted into the cup of the inversion. The incision began four-fifths of an inch from the extreme fundus, was four-fifths of an inch long, and ended four-fifths of an inch from the os externum. 4. He then found it easy to reduce the inversion. 5. By vulsellum forceps he forcibly retroflected the uterus and drew it into the vaginal incision so as to enable him to suture the uterine wound from the peritoneal side. 6. He then closed the vaginal wound. The patient did well. This operation seems worthy of trial if necessity arises.

In regard to the literature of the subject I have found the most valuable contributions to be the following: 1. Dr. John Green Grosse's classical essay.² Such an essay as this, so exhaustive, luminous, and scholarly, it is a treat to read. The illustrations are excellent. 2. Observations on this subject in Dr. Matthews Duncan's Clinical Lectures. 3. Dr. Aveling's lecture,³ containing directions for the use of the repositr. 4. Küstner's paper.⁴ 5. Dr. Galabin also gives some useful hints in his "Diseases of Women."

Leeds.

THE X RAYS IN PROGNOSIS OF PULMONARY TUBERCULOSIS.

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IN October of last year a short paper by me was published in THE LANCET on the use of the x rays in diseases of the chest. I there pointed out that the x rays might possibly be found useful in prognosis in cases of pulmonary tuberculosis. The following case which has recently been under treatment in the hospital is, I think, worthy of record.

A schoolboy, aged 11 years, was admitted into the City of London Hospital for Diseases of the Chest, under the care of Dr. Harrington Sainsbury (who has kindly given me permission to make use of the notes of the case) on Oct. 17th, 1898. There was no family history of tubercle. The patient had had a cough for about a year, which had become worse during the last six months. Expectoration was slight; there were no hæmoptysis and no night sweats. He had been wasting for the last three months. His evening temperature was 103.4°F. The physical signs before admission were as follows. There were dulness to percussion, tubular breathing with whispered pectoriloquy, and fine consonating râles at the apex of the right upper lobe. The left apex was apparently free. The following skiagram (Fig. 1) was taken before the patient's admission to the hospital. It shows massive consolidation of the apex of the right upper lobe, but gives no evidence of cavitation which the physical signs led one to believe existed. Although the left apex on auscultation was apparently free, the skiagram shows distinct evidence of commencing consolidation in that position. The patient remained under observation 12 weeks in the hospital. The treatment consisted in the administration of cod-liver oil and creasote in gradually increasing doses up to 40 minims of the latter with iron and arsenic. The general health of the patient improved somewhat while in the hospital. The temperature gradually fell during the first three weeks to nearly the normal level, but never quite reached it, the evening temperature always being slightly above 99°. The patient gained six pounds in weight. The physical signs indicated some clearing up of the right apex; the physical signs being *nil* at the left apex. The skiagram (Fig. 2) is from the chest of the same patient after his discharge from the hospital. From a therapeutical point of view it is very disappointing. It shows a steady progress of the disease downwards in the left upper lobe and also in the right lower lobe, notwithstanding the auscultation signs on the left side remained negative.

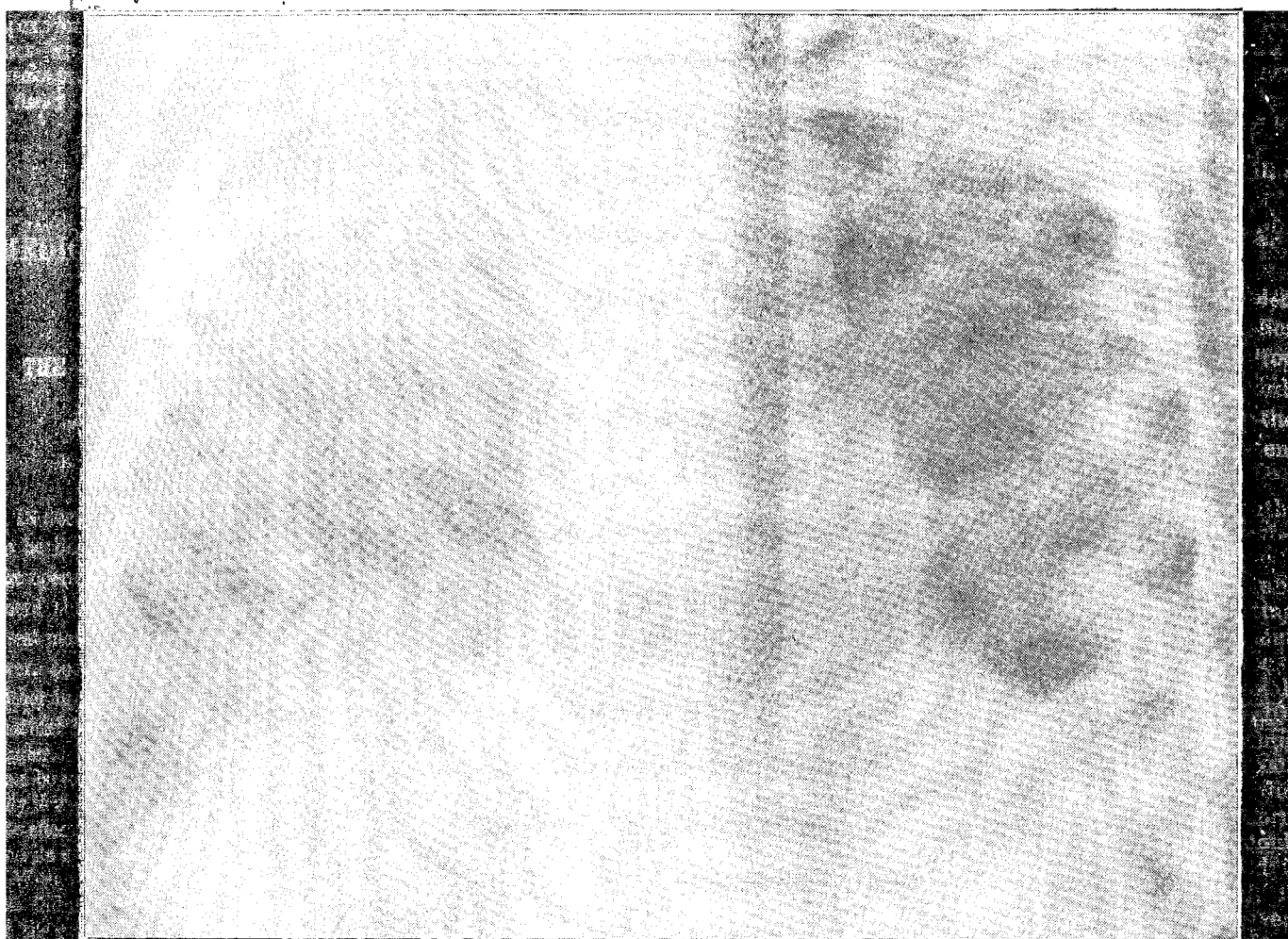
It is in cases such as this that I think the x rays will be found useful in prognosis. The patient is still under observation as an out-patient, and is in spite of treatment

² Transactions of the Provincial Medical and Surgical Association, vol. xiii., et seq.

³ Brit. Med. Jour., 1876.

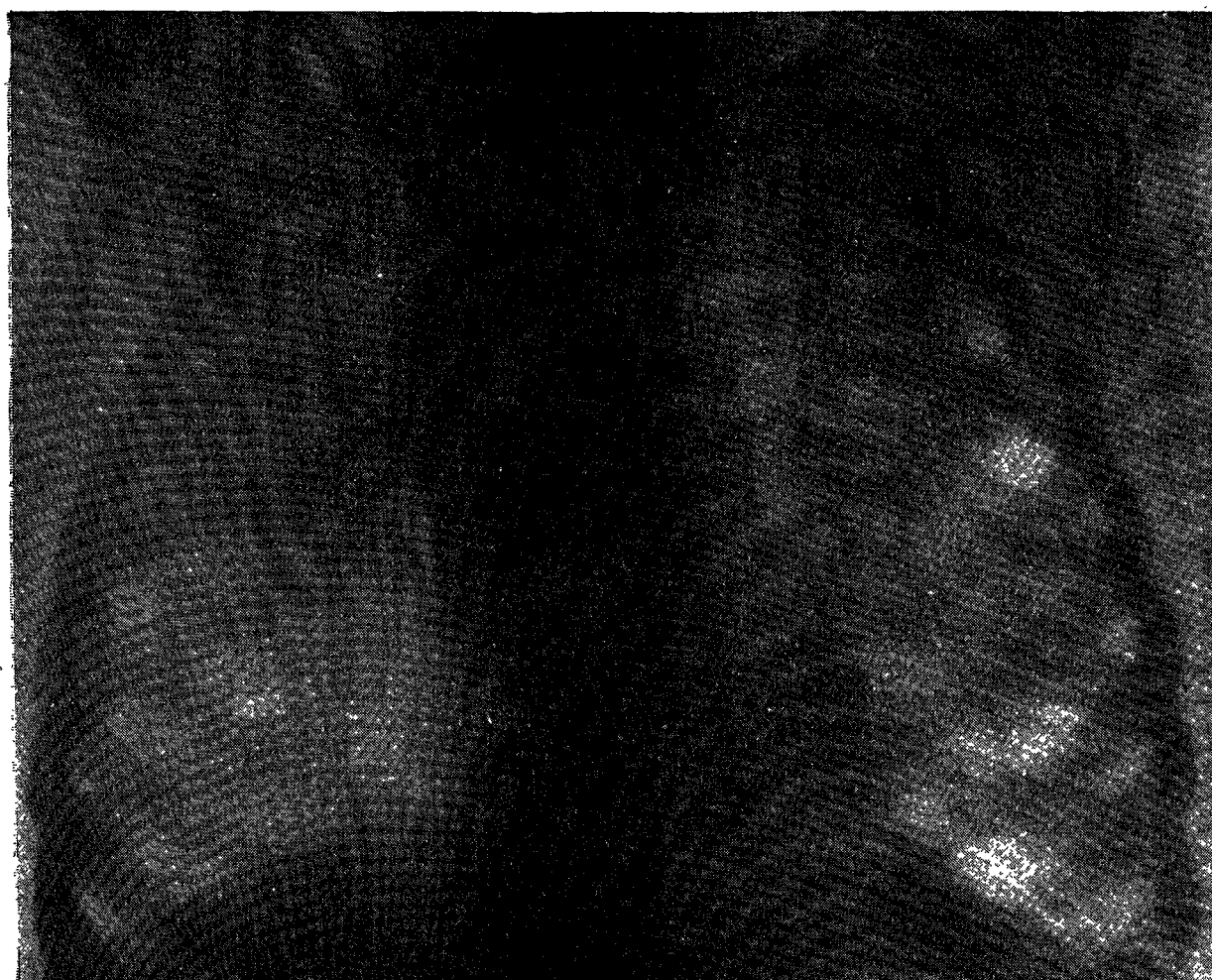
⁴ Centralblatt für Gynäkologie, 1893.

FIG. 1.



Thorax of the patient before admission to the hospital, showing the right lung to be principally affected.

FIG. 2.



Thorax of the patient after discharge from hospital, showing the extension of the disease in the left lung.

steadily losing ground. On the last examination of the chest physical signs were found on auscultation at the left apex, leaving no doubt about that side being affected, a fact which the x rays had shown to be the case some weeks previously.

Harley-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THE OPTICAL EFFECT OF REMOVAL OF THE LENS IN MYOPIA.

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In deciding whether a particular case of myopia is likely to be benefited by removal of the lens the optical effect of the operation is so important a factor that it is a pity that there should be any misconception with regard to it. A great many inaccurate and misleading statements have, however, been made by writers on this subject, while many either ignore this branch of it, or treat it by means of mathematical formulæ which are rather alarming to the average reader. The only points which are of practical importance can be made clear without any abstruse calculations, especially if we are careful not to confound two different things—the effect of the operation on the actual refraction of the eye and its effect on the correcting lens required.

With regard to the refraction if we confine the term to the influence exerted by the refracting surfaces and media of the eye on rays entering it it is evident that if the lens has the same value in all cases and lies in the same position relative to the cornea—and there is no evidence that myopia has any influence on either of these conditions—then the effect on the refraction of removing the lens must be the same in all cases.

When we consider the effect of the operation on the correcting lens required for the myopia we introduce another factor, the length of the eye, or the position of the screen on which it is required to throw images of external objects. It is a well-known fact that in the complete eye every millimetre of difference in length produces about 3 D. of myopia or hypermetropia, but when we remove the crystalline lens we alter the character of the eye as an optical instrument and make it a much weaker instrument than it was before. Consequently, changes in its length produce less effect, each millimetre of length now corresponding to only 1.38 D. We may indeed compare the complete eye and the aphakic eye to the high and low powers of a microscope. With the high power (corresponding to the complete eye) a fraction of a turn of the fine adjustment will make an appreciable difference, while with the low power (corresponding to the aphakic eye) several turns would be required to produce the same effect. The length of the emmetropic eye is about 23 millimetres, but the emmetropic length of the aphakic eye is about 31 millimetres—the focal length of the cornea. Therefore abnormalities in length are calculated from different standards in the complete and in the aphakic eye, the difference being eight millimetres.

The practical effect of these facts will be rendered clear by a few examples. 1. Myopia 15 D.—The eye is therefore five millimetres too long. After removal of the lens the length would have to be eight millimetres more than the emmetropic eye. It is only five millimetres, therefore the eye is three millimetres too short and for correction it would require + 4 D. (3×1.38). 2. Myopia 24 D.—The eye is therefore eight millimetres too long, but after removal of its lens the length will be exactly right. 3. Myopia 30 D.—The eye is therefore 10 millimetres too long. After removal of the lens it will be two millimetres too long ($10 - 8$), therefore it will require for correction 2.75 D. (2×1.38). It will be seen that the optical effect of the operation as regards the myopia in the first example is 19 D. (the difference between -15 and +4). In the second the effect is 24 D., and in the third the effect is 28 D. ($30 - 2$). In other words, the

greater the degree of the myopia the more it is affected by the operation.

It must be borne in mind that I have not used exact figures and consequently the results do not agree with those found in actual practice but they correspond fairly closely.

Cavendish-square.

HEMORRHAGE DURING AN OPERATION FOR CONVERGENT STRABISMUS.

By MARY R. WILSON, M.D. CORNELL, U.S.A.

DIVISION of a rectus muscle for the relief of strabismus is rarely associated with, or followed by, any complication. The following case in which rather alarming bleeding was observed is perhaps sufficiently uncommon to be recorded in the pages of THE LANCET. The patient was under the care of Mr. Sydney Stephenson, by whose kindness I am enabled to publish the notes.

A girl, aged 11 years, was admitted to the Ophthalmic School at Hanwell on Feb. 9th, 1899, suffering from sub-acute inflammation of the conjunctiva due to the diplo-bacilli described by Morax.¹ She also had a convergent strabismus of the left eye measuring nearly 50°. The squinting eye "fixed" fairly well and showed no limitation of outward movement, and the primary and secondary deviations were equal. At this time right vision equalled $\frac{1}{3}$ and No. 4 J. at 12 centimetres, and left vision equalled $\frac{5}{6}$ and No. 10 J. at 27 centimetres. When under atropine the eye tended to become straight, yet, curiously enough, correction spectacles (right eye + 6 D. sph.; left eye + 7 D. sph.) did not influence the size of the strabismus in the least. Corrected vision equalled $\frac{5}{6}$ for each eye. No diplopia could be detected and the fundi were normal. On April 3rd it was decided to operate for the strabismus. The child, it was thought, would bear the operation well if the eye were put under the influence of a solution of hydrochlorate of cocaine (2 per cent.). She proved, however, so exceedingly refractory that division of the internal rectus of the squinting eye was accomplished with difficulty. The moment the operation appeared to be completed, a jet of what seemed to be arterial blood issued from the conjunctival wound, and in the course of a few seconds the eyeball became thrust forward and the lids so greatly thickened by the effusion of blood in their tissues that removal of the speculum was a difficult matter. A pad and roller bandage were firmly applied and the child was put to bed immediately. Two and a half hours later the eye was examined, when the lids were found to be much distended, the upper one being purplish and the lower one of a light-greenish colour. There had been some pain which, it was said, had disappeared. The temperature was normal. On April 4th the lids were swollen so much that they could not be opened, while the swelling had extended to the side of the face. The lids were greatly discoloured, the upper one especially, but there was no pain. The temperature rose to 99° F., the highest point reached during the continuance of the trouble. The eye was kept firmly bandaged. Two days later (April 6th) the temperature was again normal and there was no pain. The discolouration and swelling of the lids persisted but the latter were slightly opened with little difficulty. The cornea was bright and the child counted fingers. The eyeball was still proptosed, but not markedly, while the swelling had not disappeared from the side of the face. The movements of the eye in the orbit were good. The pad and bandage were re-applied. By the 8th the left eye was better in every way but a new feature presented: ecchymosis had passed through the cellular tissue of the bridge of the nose and extended to the right eye. On the 10th the child was able to open the lids of the left eye a little and although there was much effusion of blood beneath the ocular conjunctiva there was neither pain nor uneasiness. On the 13th the child could open the lids of the left eye. Much ecchymosis existed but the lids could be everted. Ecchymosis was present also on the right side of the nose and the lower lid of the right eye. A fortnight later, on the 26th, a faint discolouration of the skin of the lids, side of the nose, and left cheek still persisted. There was also a bright red ecchymosis in the ocular conjunctiva on the outer side of the globe near the corneal margin and the discolouration had not disappeared from the lower lid.

¹ Annales de l'Institut Pasteur, 1896.