been reduced to half the normal amount, probably even less than half.

To sum up, the heart of this man was reduced to the following condition: the superior vena cava was completely destroyed; the coronary sinus was involved in a cicatrix; the sinus of the left auricle formed a cicatricial ring; the interauricular and part of the interventricular septum formed a cicatricial lamina; the commencement and upper half of the main auriculo-ventricular bundle were completely destroyed; and the coronary arteries were partially occluded. Yet with the complete separation of the musculature of the auricles and ventricles there had been only passing syncopal attacks some 13 years before, which was probably the date at which the auriculo-ventricular bundle was first invaded by the infiltration; there were no signs of heart failure, and there were no urgent symptoms of insufficiency of the heart's action.

The lesson to be drawn from the case appears to be that the normal mechanism of the heart may be profoundly changed without a great disturbance of function, provided that these changes are not brought about too suddenly. The recovery which followed the initial syncopal attacks was probably due to the auriculo-ventricular system persisting beyond the point of lesion and taking on an automatic power of originating ventricular contraction. Unfortunately, the routine method of examining the heart does not give us exact facts relating to the action of the several parts of the heart. The lack of such data shows us the necessity of applying to the heart the exact methods of the physiologist, as has been done with success by Mackenzie and Wenckebach.

33 CONSECUTIVE HYSTERECTOMIES.

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THIS series of cases includes 22 abdominal and 11 vaginal hysterectomies. Much has been written and said on the different ways and methods of performing these operations and the advantages of one over the other, and the conditions for which they should be undertaken. I do not propose to enter into this controversy but merely to state my own methods and views. The surgeon who dogmatizes and states that this or that method of removing a uterus is the proper and correct way does not appeal to me. It is my experience that one seldom gets identical conditions to deal with, so that all cases cannot be treated alike but each on its merits. I choose the vaginal route when the uterus is fairly small, especially in parous women, and whenever possible for malignant disease. The vaginal operation is not easier to perform than the abdominal, if as easy, but the patient generally suffers much less during the first day or two and the recovery is quicker. Moreover, the risk of post-operative ventral hernia is obviated, a remote risk I admit but still a reality. On the other hand, the abdominal operation gives the operator a better view and more space, a matter of importance where there are adhesions, &c.

The conditions which chiefly call for hysterectomy are: 1. Malignant disease of the cervix and body. 2. Fibroids with the following symptoms: (a) severe hæmorrhage not controlled by rest, ergot, and calcium lactate; (b) pain resulting from adhesions; (c) pressure effects—urinary trouble, &c.; (d) rapid growth, particularly when near the menopause and in childless women; (e) when their size is such as to cause inconvenience; (f) when they become inflamed or cystic or undergo degeneration; and (g) when they complicate pregnancy and make delivery impossible. 3. Deciduoma malignum. 4. For constant hæmorrhage caused by fibrosis of small uterine blood-vessels. I had one good example of this condition. The patient had been curetted several times before I was asked to see her in consultation. I also curetted but had subsequently to remove the uterus. Ergot and calcium salts had no effect whatever upon the bleeding. 5. Complete uterine prolapse with pain when the uterus cannot be retained in position.

Preparations for abdominal hysterectomy.—The patients are kept in bed for at least three days before operation on a light but nutritious diet, and they are given a mixture of sodii bicarbonas and sodii sulphas thrice daily; this helps to get rid of mucus in the stomach and intestines which accounts

for much of the flatulency after operation. The night before they are given an aperient and a soap and water enema in the morning. About 36 hours before the operation the pubes are shaved and the abdomen is well washed and scrubbed with soap and water, then washed with ether or turpentine, and finally a compress of 1 in 60 carbolic solution is applied. The night before operation the carbolic compress is replaced by one of 1 in 500 biniodide of mercury in equal parts of spirit and water. The biniodide penetrates more deeply than carbolic acid or perchloride of mercury; the latter promptly forms an insoluble albuminate with lymph. The hands are well cleansed for half an hour and are frequently washed with saline solution during the operation.

The operation.—Four dry sterilised towels are pinned together around the area of operation. The abdomen is opened in the usual way and then I clamp the broad ligament close to the uterus, then ligature it well to the other side of the clamp. The broad ligament is now divided; this is repeated on the other side. The peritoneum along the anterior surface of the uterus is divided transversely about one and a half inches above the utero-vesical fold and then along the posterior surface; these incisions extend as far as the divisions of the broad ligaments. The peritoneum is now well reflected downwards and until the uterine vessels are exposed or felt. These vessels are ligatured before division, but in cases where the fibroids grow from the lateral walls and between the layers of the broad ligaments one always cannot do this and they have to be divided first and secured as best one can. In the incomplete hysterectomy the uterus is well drawn up into the wound and then amputated at the level of the internal os. When complete hysterectomy is done (having previously well prepared the vagina) the bladder is well separated in front and the vagina is opened into posteriorly close to the cervix after having further reflected the peritoneum. The vaginal connexion of the uterus is now divided with a curved scissors. Having removed the uterus, the vaginal wall is brought together with a purse-string suture and the peritoneal flaps with a continuous suture. If there is much oozing from the cervical stump after incomplete hysterectomy a swab wrung from boiling water is applied for a few seconds. Swabs are moistened in saline solution before use. With regard to ligatures and sutures, for blood vessels I use catgut (chromicised) ligatures; peritoneum, continuous catgut suture; musculo-aponeurotic layer, interrupted catgut about three-quarters of an inch apart, then I bring the aponeurosis alone accurately together with interrupted No. 2 or 3 silk sutures; skin, continuous No. 3 silk which I remove about the fifth day. In the vaginal operation I have used both clamps and ligatures with equally good results. The operation is completed more quickly with clamps. It is important to make the openings into the abdomen through the anterior and posterior fornices sufficiently wide, and if this is done properly the uterine vessels, &c., are more easily secured, and the ureters are not so liable to be included by the ligatures or clamps. The peritoneum is generally brought together by about two sutures and the vagina lightly packed with gauze.

After-treatment in the abdominal operation.—The patients are quickly put back to bed between blankets in a dark, quiet, warm, and well-ventilated room. After about 12 hours they are given a teaspoonful of hot water occasionally, and if not sick after about 18 hours are allowed two or three teaspoonfuls of milk in equal parts of hot water, which amount is gradually increased. If the sickness persists I order a tumblerful of hot water containing 30 grains of sodii bicarbonas to be given; this helps to wash out the stomach and get rid of mucus and bile resulting to some extent from the anæsthetic. On the morning of the third day a pint of soap-and-water enema with four to six drachms of turpentine is given and followed by an aperient by the mouth. The dressing is not touched generally until the fifth day. The patient is kept in bed for a month.

Case 23 I saw in consultation with her medical man, but did not elicit any history of old gastric ulcer. She had had great trouble with her bowels for about two or three years, having to take aperients constantly and suffered much pain. I attributed this to pressure effects of growth. When in the nursing home hot fomentations had to be applied to the abdomen to relieve pain whenever an aperient was given; she was also generally sick. For the first two days after operation she did well. On the third day she was a little sick and the abdomen was somewhat distended. Her temperature was 99.2° F. and her pulse was 100. A pint of soap-and-water enema with four drachms

TABLE OF CASES.

No. of case.	Age in years.	Disease.	Operation.	Result.	Remarks.
1	34	Cancer of vaginal portion.	Vaginal hysterectomy.	Recovery.	Married; children; uterus retroflexed and painful.
2	45	Cancer of cervix.	"	"	Married; children.
3	39	Fibroids.	Abdominal hysterectomy.	"	Married; children; retention of urine; pressure on pelvic veins and nerves.
4	47	"	"	"	Married; no children; rapid growth.
5	29	Fibroid.	"	"	Married; children; many small intramural growths causing severe bleeding.
6	About 35	Cancer of cervix.	Vaginal hysterectomy	"	Married; children.
7	47	Fibroids inflamed and undergoing degeneration.	Abdominal hysterectomy.	"	Single.
8	40	Cancer of cervix, hydro-salpinx, and cystic ovary.	Abdominal hysterectomy, ovariectomy, &c.	"	Married; no children.
9	38	Fibroids.	Abdominal hysterectomy.	"	Married; children; severe bleeding.
10	56	Malignant disease of cervix.	Vaginal hysterectomy.	"	Married; children; proved later to be sloughing syphilitic ulcer which had destroyed anterior part of cervix.
11	40	Fibroids and ischio-rectal abscess.	Abdominal hysterectomy.	"	Single; much pain; growth adherent to omentum and sigmoid flexure. She was an in-patient at a provincial hospital for two or three weeks and then was discharged unrelieved and was unable to continue her employment.
12	56	Fibroids.	"	"	Married; children; pain and retention of urine.
13	30	Fibrosis of uterine blood-vessels, left hydro-salpinx, enlarged ovary.	Abdominal hysterectomy, ovariectomy, &c.	"	Married; no children; pelvis a mass of adhesions; pelvis packed with gauze. On the second day she drank contents of two flower vases; much vomiting and collapse. Subsequently did well.
14	30	Double pyosalpinx.	Abdominal hysterectomy, salpingectomy.	"	Married; no children; pain and discharge. Tubes and uterus very adherent to each other, and also to rectum and bladder. Pelvis packed with gauze. Uterus removed to stop bleeding, &c.
15	32	Cancer of vaginal portion.	Vaginal hysterectomy.	"	Married; children.
16	52	Cancer of cervix.	"	"	Married; children. When I was douching vagina after removal of clamps with 1 in 80 carbolic solution some of it got into the peritoneal cavity; shortly afterwards there was profound collapse and the patient nearly died. Her medical adviser was soon in attendance and he gave coffee and brandy per rectum. She soon recovered.
17	54	Fibroids, sloughing.	Abdominal hysterectomy.	"	Married; children. Offensive discharge and bleeding; bladder trouble.
18	About 45	Cancer of body.	"	"	Single; great pain and offensive discharge. Uterus too big to remove per vaginam.
19	47	Cancer of cervix.	Vaginal hysterectomy.	"	Married; children; case advanced. Ten months later recurrence and secondary growth in liver.
20	34	Fibroids.	Abdominal hysterectomy.	"	Single; severe bleeding and pain at periods.
21	32	Procidentia uteri.	Vaginal hysterectomy.	"	Married; children. There was a large mass (inflammatory) in pelvis. Uterus could not be kept up. Much pain and urinary trouble. Later much better and comfortable.
22	46	Fibroid.	Abdominal hysterectomy.	"	Married; children; pain and bladder trouble.
23	48	Fibroids.	"	Death.	Married; no children. Fibroids large and growing. Died on the fourth day after operation from obstruction of colon due to old gastric ulcer.
24	About 40	Cancer of vaginal portion.	Vaginal hysterectomy.	Recovery.	Married; children.
25	53	Fibroids, undergoing degeneration.	Abdominal hysterectomy.	"	Single; pain and profuse offensive discharge.
26	31	Fibroids.	"	"	Married; child; severe hæmorrhage.
27	37	Cancer of cervix.	Vaginal hysterectomy.	"	Married; children.
28	41	Cervical fibroid.	"	"	Married; no children; hæmorrhage.
29	42	Fibroids and large post-operative ventral hernia.	Abdominal hysterectomy.	"	Married; children; severe bleeding and pain. Four years previously laparotomy was performed for suppurative condition in pelvis. Hernia of the size of a foetal head. Intestines adherent to posterior aspect of scar. Pelvis a mass of adhesions. The whole scar excised.
30	About 36	Fibroid.	"	"	Married; children; profound bleeding. Miscarriage two and a half years ago, curetted by her medical man and subsequently at a London hospital. Later she was admitted to a provincial hospital for bleeding. Shortly afterwards I saw her in consultation and advised hysterectomy.
31	52	Fibroids.	"	"	Married; children; pain and offensive discharge.
32	40	Fibroids and chronic salpingitis.	"	"	Married; no children; pelvic pain, bleeding, and discharge.
33	38	Fibroid and ovarian cyst.	Abdominal hysterectomy and ovariectomy.	"	Married; child; hæmorrhage and pain.

of turpentine was given and she passed a little faecal matter and flatus. In the evening an aperient was given but without result. On the fourth day the abdomen was a little more distended and the patient was occasionally sick, but she assured me it was not more than she generally experienced after an aperient. The temperature was 99° and her pulse was 104. I ordered her a one-grain calomel pill every two hours—four to be taken in all—and soap-and-water enema with turpentine; a little flatus was passed. Six hours later (tea-time) the patient said that she felt better and asked if she might have a chop, which, of course, was refused. The temperature was 99° and the pulse was 106. I felt uneasy about her and feared obstruction. As her general condition was good, and taking into account the past trouble with her bowels, I decided to wait a little longer. About 8 P.M. the nurse telephoned me and said that the patient had become suddenly worse and that the temperature was 96° and the pulse 140. I saw her at once and found her collapsed and the abdomen very much distended; the extremities were cold. Two pints of saline solution were injected into the median basilic vein and coffee and brandy were given per rectum. She rallied well, but whilst I was preparing to reopen the abdomen with all haste she suddenly collapsed again and died shortly afterwards. After death I found a mass of adhesions on the lower and posterior aspects of the stomach, in which was incorporated the transverse colon, and that the obstruction was here. On the next day her medical man told me that she nearly died from gastric ulcer four years previously. Had it not been for the past history of trouble with the action of the bowels, and the absence of any evidence of previous abdominal trouble, I would have reopened the abdomen early on the fourth day. Yet her condition was fairly satisfactory when I saw her at tea-time excepting that the bowels had not acted. The operation itself was perfectly successful.

General remarks.—The most important element in abdominal surgery is asepsis. It is not uncommon to see the most elaborate preparations and yet to observe during the operation absolute lack of, or inability to carry out, the aseptic technique. Apart from direct infection by the hands, ligatures, particles of dust, &c., it is most important to avoid unnecessary injury to the peritoneal endothelial cells by rough handling, rough sponging with dry swabs, the introduction by the hands, swabs, &c., of strong corrosives—carbolic acid, perchloride of mercury, and exposure to a temperature much below the normal of the peritoneal cavity. A very vivid imagination is not required to appreciate the damage to the peritoneum caused by carbolic acid and perchloride of mercury. Everyone knows their effect upon the stratified epithelium of the hands. What then of their effects upon the delicate peritoneal endothelial cells?

Again, hæmorrhage and imperfect hæmostasis are factors in aiding sepsis. Where there has been much bleeding a certain amount of collapse is certain to follow, a state of things where life is at a low ebb, and with it *pro rata* the germicidal powers of the tissues. Again, there is such a thing as immunity. Normal blood contains proteid substances called alexins or bacteriolysins which are strongly bactericidal and a protection against general bacterial invasion. The condition of the blood is not normal after hæmorrhage and amongst other things lost in proportion are these bacteriolysins. There is little doubt but that the leucocytes, particularly the polynuclear cells, play the important rôle of scavengers on the advent of bacteria. After hæmorrhage their total number is greatly reduced for some time. It is true that the proportion of white corpuscles to the red are enormously increased, but the increase is chiefly due to the lymphocytes which do not possess the phagocytic qualities of the polynuclear leucocytes.

Generally speaking, other things being equal, the alkalinity of the blood favours its bacterial action. After hæmorrhage the resistance of the body, as before stated, is at a low standard, and it does not appear on *a priori* grounds impossible that lowered blood alkalinity may play a part in this depression of resistance. I have, however, no direct evidence to offer on this point, nor do I know that it has been investigated. What we do know is that after severe bleeding a sudden call is made upon the lymph to replace the fluid of the lost blood, and so there will be swept into the circulation by-products of metabolism from the tissues and organs of the body, and many of these have acidic properties. It is thus quite possible that after hæmorrhage a diminution of the blood alkalinity may be a contributory factor to the ease

with which sepsis may be induced. In diabetes, where the alkalinity of the blood is reduced by the excessive formation of fatty acids, we have a somewhat analogous condition, only in diabetes there is not also that reduction of the red corpuscles which occurs after hæmorrhage. Alkalinity of the blood and of the tissues it bathes favours vital oxidative processes. The lessening of the blood cells (the oxygen carriers) *plus* any diminution of alkalinity if such occurs after hæmorrhage, will therefore depress those oxidations by which the body ultimately defends itself against deleterious agencies.

Imperfect hæmostasis means that a certain amount of blood is poured into the pelvis; it may be absorbed or not, depending upon the quantity and the absorbing qualities of the peritoneum. If not absorbed here is a nidus of tissue—not normal blood nor living tissue in the physiological sense—suitable for the growth and multiplication of micro-organisms. Raw surfaces are fruitful in the production of intestinal obstruction and every precaution is necessary to prevent them. On several occasions I have met extensive ones with much capillary oozing. If I somehow cannot cover them over with peritoneum and stop the oozing I gently pack the parts with gauze, which I remove 24 or 30 hours later. I operate in a theatre or room with the temperature at about 75° F. Stimulants and strychnine I do not use unless very clearly indicated. Why whip a willing horse?

As to shock, this is a term often used wrongly, whether in ignorance or otherwise I cannot tell. Deaths on about the fourth and fifth days are generally owing to suppurative peritonitis and intestinal obstruction due to adhesions and not to shock. Then again deaths from hæmorrhage with all its cardinal symptoms—small, rapid pulse, profound pallor, dilated pupils, thirst, and restlessness—are often laid to the credit of shock. For this class of operator I fear there is no hope, for there is no excuse for allowing a patient to die from hæmorrhage. That patients may suffer from shock after prolonged handling and exposure of peritoneum, especially if the anæsthetic has been faultily administered, I do not deny. Happily I have not met with it. Sound knowledge of the principles of modern surgery, deliberate execution, the carrying out of details, physical endurance, and good sight are essentials in pelvic surgery, which should not be undertaken by anyone not possessing them, for no one can afford to concede points when the life of a patient is at stake.

Harley-street, W.

FURTHER NOTE TO A CASE OF MYELOPATHIC OR SPLENOMEGALIC POLYCYTHÆMIA.¹

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THE present case was first exhibited at the clinical meeting of the Clinical Society on April 22nd, 1904, and was subsequently described in full in the Transactions of the Royal Medical and Chirurgical Society² as "A Case of Splenomegalic or Myelopathic Polycythæmia with True Plethora and Arterial Hypertonia without Cyanosis." The disease (with or without obvious cyanosis) is also known as Vaquez's disease (since Vaquez published the first definite description of a case) and as Osler's disease (since Osler a few years ago drew attention to its main features as constituting a new "clinical entity"). H. Senator³ has recently described it under the heading "Erythrocytosis Megalosplenica." The terms "polycythæmia vera" and "polycythæmia rubra" do not distinguish it from the polycythæmia of high altitudes or from the polycythæmia of congenital heart diseases, &c.

The patient is a Roumanian Jewess, now about 40 years of age. Her general appearance is much the same as when her case was described in May, 1905, at the Royal Medical and Chirurgical Society. The spleen is, if anything, rather larger and harder and more distinctly felt, and in the right inferior quarter of the abdomen a large tumour has

¹ The original paper was published in THE LANCET, May 13th, 1905, p. 1254. The case was shown at the clinical meeting of the Medical Society of London on Nov. 12th, 1906.

² Transactions of the Royal Medical and Chirurgical Society, vol. lxxxviii., 1905, pp. 191-223.

³ Zeitschrift für Klinische Medizin, vol. lx., p. 357.