A few cases of enteric occurred among the privates of an artillery detachment. Every possible precaution was at once adopted. A vigorous investigation was at once begun to find the source of the infection.

All sorts of things were sent to me for examination. At length I discovered the enteric microbe in water taken from the tap of an iron cistern in the Battery Aerated Water Factory. Observations made at the time tended to show that the water coming from the piped supply that was daily poured into the cistern was free of enteric. Apparently a temporary infection of the water in the cistern had occurred. But why had it persisted? The help of the medical officer in charge of the battery was invoked. On failing to find any obvious reason for the persistence of the infection by questioning the attendants in the factory, he had the cistern emptied. At the bottom and attached to the exit pipe he found a small filter. It was one made by a well-known firm of aerated water machine manufacturers, the use of which is now strictly forbidden, and the existence of which had been overlooked when these filters had been abolished. It was found afterwards that the public water supply had been temporarily infected with the enteric microbe. The medical officer who investigated the matter is of opinion that the presence of this filter is a probable reason why the consumers of aerated waters from this factory suffered relatively more severely than did other bodies of troops in the station.² This case appears to be an apt illustration of the capacity of ordinary filters to act as breeding places for microbes.

If the ordinary mess president attempts to improve his kitchen, he is likely to do more harm than good. For instance, he will issue orders that the floor is to be washed every day, instead of once a week. Under existing conditions, cleaning kitchens in Upper India is a dangerous process. Cooking the sahib's dinner is regarded as a somewhat unclean occupation by most natives. Mohammedans do not like it because we eat bacon, and Hindus look askance at the business because we eat beef. For these reasons native cooks in general are of rather low caste and low standing; hence they are apt to stand on what little dignity they have, and consider it beneath them to clean the floors of the kitchens in which they work; consequently the sweeper has to be called in to do the business. In Upper India there are no sewers. The sweeper is a man who fulfils the functions of a sewer; he is apt to carry about outside him what sewers in other countries carry about inside them—namely, dangerous microbes. I have elsewhere published an account of a very clear case in which I proved that the sweeper was introducing cholera microbes into the cookhouse because of his methodical habit of reserving one broom for clean work, such as sweeping out barracks, and another broom for dirty work, such as cleaning out latrines and cookhouses.³ Those who know India will agree with me that stopping this abominable custom may not be so easy as it appears on the surface. It is possible that the mess president would most readily achieve this object by insisting that the cook should sleep on the kitchen floor, if possible with his head in a degchie. The mess president would then have an assurance that he at present lacks that neither the one or the other would be cleaned with the broom that is used for the servants' latrines.

Both in the present paper and elsewhere I have given examples of the dangers attending the washing of dishcloths in India.⁴ I doubt whether in the whole of India there is a mess president or club secretary who has a reasonable certainty that his kitchen dishcloths are not washed in water infected with either cholera or enteric microbes. Unless the mess president can arrange for the sterilisation of washed dishcloths, it might be wiser to leave them dirty.

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¹ I was unable to obtain this particular piece of muslin for examination, because on the occurrence of the outbreak the cook had been dismissed. He had then gone to Naini Tal, taking with him his muslin. A few days after his arrival in Naini Tal there was another dinner party cholera outbreak, but no connection between this and the newly-arrived cook and his muslin could be traced. ² My having been suddenly sent to Bombay in connection with the bubonic fever outbreak is the reason why I have been unable to obtain definite figures with regard to this case. The above is the opinion of the medical officer who carried out the investigation. ³ See *Cholera in Indian Cantonments*, Pioneer Press, Allahabad, India (Deighton, Bell, and Co., Cambridge). ⁴ See the Annual Report of the Chemical Examiner and Bacteriologist to the North-West Provinces and Oudh for 1895, Government Press, Allahabad.

A CASE OF DECIDUOMA MALIGNUM, WITH AN ACCOUNT OF THE POST-MORTEM EXAMINATION AND MICROSCOPIC APPEARANCES.

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CONSIDERABLE attention is being given at the present time to the study of the clinical characters and pathology of that form of new growth known as deciduoma malignum, and it is therefore desirable that all recognised cases should be put on record. The literature of the subject is chiefly to be found in Germany and America, though scattered notices have appeared from time to time in English medical periodicals. The recent important discussion at the Obstetrical Society of London will bring the disease more prominently to the notice of English practitioners, and as few cases have hitherto been reported in this country, the following particulars may be of interest:

Mrs. S., aged 30, was admitted to the New Hospital for Women on June 19th, 1896.

History of Present Illness.—The patient had been delivered of her fourth child three weeks previously. The labour was normal, and the placenta was examined, and considered to be complete. The loss at the time of labour was slight, and she was up on the fourteenth day. She then had slight hæmorrhage, and was ordered back to bed. On June 17th she got up again, profuse hæmorrhage occurred, and she was admitted to the hospital.

On admission she was blanched and exhausted; the temperature was 102°, and the pulse 120. She was lethargic, and it was difficult to rouse her to take food or answer questions. The uterus on vaginal examination was felt to be high, the os closed. Hæmorrhage was slight. The urine dribbled away; a specimen (3 xl), withdrawn by the catheter, was acid, of specific gravity 1020, contained no albumen or sugar. Nothing abnormal was detected in chest or abdomen.

On June 20th the patient was anaesthetised and the cervix dilated. A mass was felt adherent to the posterior wall of the uterus, the feel and appearance being that of placental tissue. It was removed by the finger and curette, and the uterus douched and lightly packed with iodoform gauze.

On June 23rd she was still lethargic. No bleeding had occurred since curetting, and the temperature was normal.

On June 24th she was delirious at night and tried to get out of bed, but she had no delusions. She slept at 3 A.M. after a draught of potassium bromide.

On July 7th her condition was good. Slight bleeding occurred, which was thought to be probably a normal period.

On July 12th it had ceased, and she was doing well.

On July 13th she had headache, the temperature was 101°, and she vomited three times. At 2.30 A.M. (July 14th) the house-surgeon was sent for, and found the patient had passed two large clots, and the bed was drenched by the discharge of a great quantity of blood-stained serum. She was blanched and faint, the pulse was 130.

On July 15th another large clot was passed. The uterus was felt to be high. The os was patulous, and admitted the tip of the finger; a roughish mass was felt presenting through it. There was no fœtor. The temperature was 98° and the pulse 120. Examined under an anæsthetic, on July 16th, the os was found to be patulous, and no dilators were needed for the exploration of the uterine cavity, which measured 3 inches, and was occupied by a mass of pale organised material growing from the posterior wall. This was removed, and over its site the uterine wall was felt to be extremely thin. There was little hæmorrhage during the curetting. The uterus was douched, and lightly packed as before.

In the afternoon the temperature ran up to 103.4°. At 4.45 P.M. antistreptococcus serum (Pasteur Institute), 5 c.cm., was injected into the abdominal wall. At 6.30 P.M. the temperature was 102°, and the pulse 146. At 10 P.M. antistreptococcus serum, 10 c.cm., was injected. At 11 P.M. the temperature was 101°, and the pulse 132.

On July 17th the general condition was improved. The temperature was normal, and there was no hæmorrhage.

On July 22nd a clot the size of a walnut was passed. The general condition was good.

On July 25th two large clots were passed. At 11.45 P.M. she was seen in consultation with Mrs. Scharlieb, senior surgeon to the hospital, and hysterectomy decided on. During the night there was no more bleeding, but at 3.30 A.M. heart failure, with great restlessness, set in, and in spite of efforts to stimulate the heart by means of ether, strychnine, digitalis, etc., the patient died at 5.30 A.M., before the operation could be performed.

Post-mortem examination thirty and a-half hours after death. Rigor mortis was present, but not marked. The body was well nourished, but exceedingly blanched. On opening the thorax nothing abnormal was observed superficially. Each pleural cavity contained $\frac{3}{4}$ v of clear fluid. The general surface of the pleura was not inflamed, but there were some recent readily broken-down adhesions round the roots of both lungs, and between the lobes of the right lung. Both lower lobes were congested, but the lungs were everywhere crepitant. In both lungs were seen a number of circumscribed, circular nodules, varying in size from a pea to a small walnut; nearly all were near the surface of the lung, some projected above it, and a few were embedded deeply in its substance. Their colour was for the most part deep red, a few were whitish, and gave a definite sensation of grittiness to the knife. The heart and pericardium were healthy. There was no peritonitis nor enteritis. The liver, spleen, and kidneys were extremely pale, but no evidence of growth were seen. The brain and membranes were normal to the naked eye, and no growth was found after hardening.

Fig. 1.—Photograph showing macroscopic appearance of growth in posterior wall of uterus. Its anterior wall is divided by longitudinal section, and the cavity exposed.

Generative System.—No sign of inflammatory changes. The uterus, tubes, and ovaries were removed *en masse*. The vagina was occupied by a large clot, and no growth was seen. On opening into the uterus by longitudinal section through its anterior wall, an oval mass was seen growing from the posterior wall, projecting forward into the uterine cavity, which it filled, and presenting an irregular, pinkish, somewhat granular appearance (see Fig. 1). Fibrinous fragments adhered to its surface, but no slough, and it was quite without fœtor. The growth measured 2 in. by 1 in. It involved the whole thickness of the uterine wall, a nodule appearing posteriorly under its peritoneal surface, dark red in colour, and the size of a small filbert. The cavity of the uterus measured 3 in., and its mucosa over that part of the uterine surface unoccupied by growth was pale and normal in appearance. Both ovaries contained cysts. In the upper part of the right ovary the ovarian tissue was destroyed by cystic degeneration, and immediately below the cyst was a suspicious nodule the size

of a large pea. There was no evidence of growth in the broad ligaments.

Microscopic Appearances.—Sections have been made of the growth in the uterus, of scrapings taken at the time of the second curetting, of the lung, ovary, tube, and broad ligament, also of the liver, spleen, and kidney.

Figs. 2 and 3 show the appearance of sections from the

Fig. 2. Microphotograph of section of growth in uterus under low power (Zeiss objective B.). Shows: A A A. Masses of syncytium in which nuclei are seen. The vacuolation of the syncytial masses is well shown. B B. Spaces filled with blood and fibrin and whitish areas of irregular shape which were the seat of hæmorrhage, but from which the blood has partially disappeared in the process of preparation.

Fig. 3. Microphotograph of section of growth in uterus under high power (Zeiss objective E.). Shows: A A. Smaller masses of syncytium than in Fig. 2. B B. Small groups and larger masses of epithelioid cells.

growth in the uterus under a low and a high power. Those

familiar with the disease will recognise the structure which has been described as characteristic of it.

1. Large irregular spaces which are filled with blood, fibrin, and leucocytes. These spaces occupy a large proportion of the growth.

2. Protoplasmic masses, the so-called syncytium, in which are embedded nuclei of varying shapes and sizes, staining irregularly, and containing one or more nucleoli. A considerable number of the nuclei are of triangular shape, others are round, or oval. In some parts the syncytial masses are vacuolated, or split into elongated cavities, which give the appearance of a coarse network. The shapes and sizes of these masses vary remarkably, and where new tissue is being invaded the syncytium appears to advance by means of narrow finger-like processes.

3. In addition to the syncytium epithelioid cells are seen either single, in small groups of two or three, or in larger masses adhering together. Some of these cell masses are free

Fig. 4. Drawing from section of growth in uterus under low power (Zeiss apochrom. 8.0 m.m. 0.65). Shows: A A. Syncytial masses, in which nuclei are embedded. The vacuolation of the syncytium is well seen. B B. Irregular spaces occupied by blood, network of fibrin, and leucocytes. C C. Whitish areas which were the seat of hemorrhage, but from which the blood has partially disappeared in the process of preparation.

in the blood spaces; in parts they adhere to the syncytium, or block off one blood space from another. No blood vessels are seen, and no intercellular substance can be detected in the growth.

The metastatic deposits in the lung show the same general characters, but owing to their necrotic condition care is needed in finding areas suitable for observation. The syncytial masses are well shown in many parts, and evidence of hemorrhage is everywhere present.

The growth in the ovary presents points of difference which are of interest. The first sections examined showed merely cell proliferation, and had the appearance of round-celled sarcoma. After careful searching some areas were found in which the areolar structure was apparent, and in

which large branching cells were observed resembling the plasmodial cells seen in some rapidly growing sarcomata. Characteristic syncytium has not been detected in sections from the ovary in this case.

No evidence of growth was found microscopically in any of the other structures removed for examination.

REMARKS.

It will be seen from the foregoing account that this case agrees in most particulars with those already recorded. Its resemblance in microscopic structure is very close to that which is the subject of the paper by Dr. J. Whitridge Williams, published in the *Transactions of the American Gynecological Society for 1895*. Dr. J. W. Williams's paper is the most exhaustive I have been able to find on this subject in the English language; it is illustrated by very beautiful microphotographs, and contains an extensive bibliography. Among German pathologists deciduoma is classed with the carcinomata or the sarcomata, according to the view taken of the tissue in which the primary changes originate. Dr. J. W. Williams believes that both forms occur, and may even be combined in the same tumour, and he expressly

Fig. 5. Drawing from section of growth in uterus under high power (Zeiss apochrom. 4.00 m.m. 0.95). A A. Smaller masses of syncytium than in Fig. 4. B B. Small groups, and larger mass of epithelioid cells.

states that, in his opinion, the name "deciduoma malignum" is a general term, convenient for clinical use, but not implying necessarily tumours of identical structure. In England its affinities are regarded apparently as being with the sarcomata, so far as can be gathered from the published reports of recent discussions on the subject. In the transactions of the Obstetrical Society of London, printed in the *American Journal of Obstetrics* for September, 1896, Dr. Kanthack is reported as saying that "he himself firmly believed that the deciduoma was a typical sarcoma, characterised by features common to many forms of sarcoma." In the same number of the *American Journal of Obstetrics* (p. 434) Dr. Spencer is reported as saying that "he regards deciduoma as a distinct pathological entity, and as a disease arising from the products of conception." With this opinion those who have had the opportunity of observing the disease will probably agree.

From the varying views held at present it is clear that the last word is not yet said as to the classification of this new growth, or its relation to the more usual forms of malignant disease. All observers are agreed as to its malignancy, and as in all probability hysterectomy before metastasis has occurred is the only procedure which holds out the smallest hope of saving the life of the patient, early diagnosis is of the utmost importance. The growth has a definite structure, and can be recognised from its microscopic characters. In the case of Mrs. S. some of the most characteristic sections

are from scrapings removed from the uterus during life, and it is fortunate that these easily-obtained specimens give, in some cases at least, a result from which a diagnosis is possible.

The following points were characteristic in the case of Mrs. S.:

1. That the disease appeared in connection with pregnancy.
2. That the patient was a young woman.
3. That dangerous hæmorrhage was present; that it was intermittent, and occurred without warning after days of quiescence.
4. That nervous symptoms (lethargy and delirium) were present. In some recorded cases delirium has been a marked feature.
5. That metastatic new growths were found in the lungs and ovary.

I am greatly indebted to Mrs. Flemming, M.D., Pathologist to the New Hospital for Women, for the care with which she has conducted the pathological investigation.

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A CASE OF SO-CALLED PROLAPSUS UTERI (CERVICAL HYPERTROPHY) IN A VIRGIN, TREATED SURGICALLY AFTER A NEW METHOD.

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THE questions of the causation and pathology of what is known as prolapsus uteri in virgins and nulliparous women have given rise to much discussion, and very opposite opinions are held by different writers. By some it is stated that enlargement of the cervix is always secondary to prolapse, while by others it is held that cervical hypertrophy may precede and cause prolapse. In all cases of prolapse of the uterus in multiparæ we find enlargement of the cervix, but not in all cases of hypertrophy of the cervix do we find descent of the uterus. In many cases of simple hypertrophy of the portio vaginalis, a condition by no means uncommon in nulliparæ, the fundus uteri is found in its normal position, that is, there has been no descent or prolapse of the uterus as a whole; in such cases, the hypertrophy takes place below the level of the attachments of the vagina to the uterus, and these attachments are not interfered with, so that uterus and vagina preserve their normal relations to the pelvis. In other cases, hypertrophy occurs in that part of the cervix which lies above the vaginal attachments, so that in the process of its growth the cervix pushes downwards the vaginal wall or walls and the vagina comes to hold an altered and abnormal relation to the pelvic structures while the uterine fundus may still be at its normal level. That this really does take place has been proved by the researches of Huguier.

Schroeder describes the cervix as consisting of three portions, in any one of which hypertrophy may occur. The vagina is attached to the cervix in front at a lower level than posteriorly, that part below the attachment of the anterior vaginal wall lies wholly free in the vagina (Fig. A 1.); the next or intermediate portion is free on its posterior aspect, bounded above by the attachment of the posterior vaginal wall, but in front it is attached by loose connective tissue to the bladder (Fig. A 2); the third or supravaginal portion lies wholly above the vagina (Fig. A 3).

When hypertrophy attacks the intermediate portion, the anterior vaginal wall alone is displaced downwards; when the supravaginal portion hypertrophies, both anterior and posterior vaginal walls are displaced, and, while the hypertrophy goes on, the position of the fundus is not necessarily at first affected; but at a later period, when the hypertrophy has

become considerable, especially if there is much hypertrophy of the vaginal portion, it seems to me hardly possible that the fundus can continue to maintain its normal level, that on the other hand there must necessarily be a certain degree of descent of the uterus as a whole for two reasons: (1) the weight of the enlarged cervix will drag the whole uterus downwards; (2) the presence of the hypertrophied cervix within the cavity of the vagina will set up contractions of the vaginal musculature, and these will bring about further descent of the uterus. While recognising that this descent does occur, it seems to me that it must be looked upon as secondary to the hypertrophy which is the preceding and leading cause of the descent.

This condition is illustrated in the following case:

A. B., aged 21, a short thick-set and squarely-built young woman, came to me at the Clinical Hospital because of a falling of the womb. Menstruation began at 17, was of the twenty-eight day type, lasting seven days but of small quantity; one year later, she began to be troubled with a sense of pelvic discomfort and bearing down, but menstruation was regular; leucorrhœa commenced and she had to pass water frequently, and her bowels were constipated. Some time later, but the patient does not exactly remember the time, she noticed something between the labia, but not till two and a half years ago did she tell her mother, who then found the "womb was outside."

In October, 1895, the condition was as follows: The cervix, much enlarged and thickened with a transverse diameter of $1\frac{1}{2}$ inch, is seen projecting about $\frac{3}{4}$ inch through the vulvar cleft. There is no prolapse of the lower part of the anterior or posterior vaginal wall. Both anterior and posterior fornices are persistent, but both anterior and posterior vaginal walls are shortened, the anterior measuring about $1\frac{1}{4}$ inch. On the anterior surface of the cervix $1\frac{1}{4}$ inch from the os externum is a prominence of the vaginal covering, and, on passing the bladder sound, this prominence is found to limit the attachment of bladder to cervix; the level of the anterior fornix is still $\frac{3}{4}$ inch higher. The exact measurement of the posterior wall was not taken, but the posterior fornix reached quite $\frac{1}{2}$ inch higher than the anterior. There was, moreover, a bulging of the vaginal covering on the posterior aspect of the cervix similar to that on the anterior aspect but there was no trace of rectocele or other deviation of the rectum from its normal position.

By bimanual examination, the fundus of the uterus is felt behind the pubic symphysis apparently a little lower than its normal level. The sound passes forward $4\frac{1}{2}$ inches. The cervix can be pushed back into the vagina and remains there so long as the patient is recumbent, but on getting up into the erect posture and straining or walking about, the cervix again appears through the vulvar opening.

An examination of the relations of the cervix to the vulvar outlet and the vaginal fornices shows that there is hypertrophy of the cervix in each of its three divisions: the vaginal portion is hypertrophied, from say $\frac{3}{4}$ inch, to $1\frac{1}{4}$ inch and the intermediate measures $1\frac{1}{4}$ inch; together these measure $2\frac{1}{2}$ inches, leaving above them an internal measurement by the sound of $2\frac{1}{4}$ inches ($4\frac{1}{2}$ minus $2\frac{1}{2}$); deducting from this the length of the normal uterine body, which averages in its internal measurement above $1\frac{1}{2}$ inch, we have left $\frac{3}{4}$ inch, which probably represents the hypertrophied supravaginal portion of the cervix.

With the patient lying in bed, the external os reaches just beyond the vulvar opening, and the fundus is felt at or about its normal level; taking $2\frac{1}{2}$ inches as the normal measurement of the anterior vaginal wall and $2\frac{1}{2}$ inches as the normal internal measurement of the uterus, of which $\frac{3}{4}$ inch projects into the vagina below the anterior fornix, we get a length of $4\frac{1}{2}$ inches—that is, the normal distance from vaginal aperture to inner surface of fundus uteri. In the present case the whole of this distance is occupied by the uterus and its cervix, when the patient is lying in bed, so that the fundus is lying at its normal level (Fig. B). When, however, the patient moves about in the erect posture the os externum projects $\frac{3}{4}$ inch or more through the vulvar opening; there is, therefore, a descent of the whole uterus—that is, there is a secondary prolapse, due to the weight of the hypertrophied cervix. (Fig. C.)

In this case, then, we have, I think, undoubted evidence