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THE SURGICAL TREATMENT OF INTESTINAL TUBERCULOSIS*

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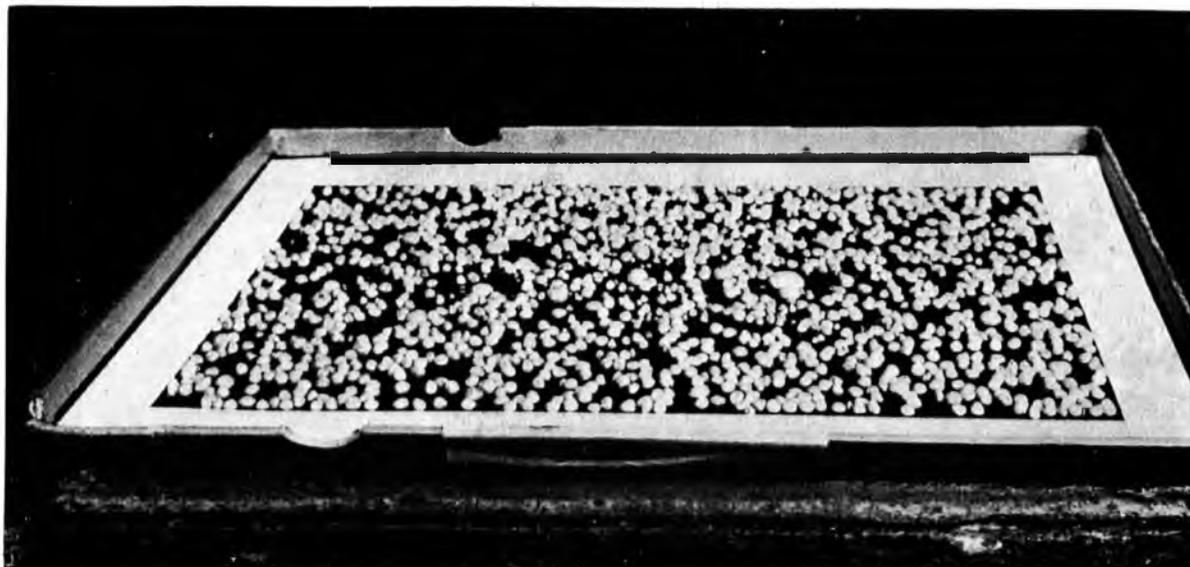
Considerable interest in the surgical treatment of intestinal tuberculosis has been aroused by the recent monograph of Brown and Sampson.¹ At the Trudeau Sanatorium many cases of pulmonary tuberculosis have been found to be complicated by intestinal involvement, and an intensive study has been made of its diagnosis and treatment. It has been repeatedly shown that a large percentage, fifty percent to eighty percent of patients dying with pulmonary tuberculosis reveal at autopsy intestinal tuberculosis also.^{2 3} The recognition of this complication before death has however, not been so frequent.

This contribution was inspired by a series of cases we have had in the clinic during the past seven months, and indicates that intestinal tuberculosis is more common than we had thought. The fact that some of the earlier cases were not diagnosed before operation indicates that we had not considered this as a possibility in making the differential diagnosis.

Clinically one meets with the following varieties :

- (1) Cases where the pulmonary lesion is a prominent factor in the diseases. Most of the cases seen at Saranac fall within this group.
- (2) Cases in which the lungs are normal or show merely old healed lesions as demonstrated by physical examination and X-ray.
- (3) Cases in which intestinal tuberculosis is combined with tuberculous peritonitis, ascitic or dry. (Over fifty percent of patients with tuberculous peritonitis have intestinal tuberculosis; twenty percent of those with intestinal tuberculosis also have tuberculous peritonitis.)⁴

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Urethral Calculi

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Possible modes of infection are as follows :

- (1) Swallowed tuberculous sputum. This is believed to be by far the most common cause.
- (2) Hæmatogenous infection (rare).
- (3) Direct extension, also rare.

AGE :

Relatively rare in children, supposed to be more common after the age of 40 ; one of our patients was 11 years of age, the others between 25-30.

PATHOLOGY :

In fully eighty-five per cent of the cases, the lesion is located in the ileocecal region and the ascending colon.^{5 6} Recent authors state that gastric (pyloric) involvement is not so rare as is generally supposed ; we have had only one case. The primary focus in the intestine is always in the submucous lymphoid tissue, and results in ulceration of the mucosa or hyperplastic changes in the bowel wall, usually both. The intestinal lumen may be so narrowed as to cause actual obstruction ; this has been true in all of our cases. There is frequently dilatation with or without hypertrophy of the terminal ileum proximal to the obstruction. In one of them who had lived in the schistosoma zone there was an interesting combination of tuberculosis and schistosomiasis of the cecum and ileum, both being demonstrated by microscopic examination of the specimen removed at operation. In another case,—a patient who also had lived in a schistosoma-infected area—the gross specimen showed lesions more characteristic of schistosomiasis than of tuberculosis. The pathologist has, however, been able to find microscopic evidence of tuberculosis only, although a prolonged search has been made for schistosoma.

DIAGNOSIS :

In cases known to have pulmonary tuberculosis intestinal involvement is suspected if there are :

- (a) Digestive disturbances, such as constipation or diarrhea.
- (b) Irregular fever not explained by the pulmonary findings.
- (c) Failure to put on weight or gain strength, despite the apparent arrest of the pulmonary process.

In cases when the lungs are normal, or there is no evidence of active tuberculosis, the symptoms point more definitely to some lesion in the right lower abdominal quadrant.

Pain is the most prominent symptom; this may be chronic, recurring, general abdominal, or localized in the right lower quadrant. It may be, and usually is, associated with constipation, which means narrowing of the bowel with consequent partial obstruction. Sometimes the obstruction is acute and there occur severe attacks with nausea and vomiting, simulating appendicitis. It is interesting to note that in three (3) of our cases the patients were admitted with the diagnosis of appendicitis and two of them were operated upon through McBurney incisions. One of the patients was admitted shortly after an attack of pain, so severe and so acute that a pre-operative diagnosis of ovarian cyst with twisted pedicle was made. (There was an orange sized, freely movable mass felt in the right lower quadrant). In all of our cases there has been a palpable mass in the ileocecal region with tenderness at this point. In only one of them was there a history suggesting an ulcerative lesion of the bowel.

Most important of all is the X-ray examination, particularly in early cases, before there is a palpable mass. The gastro-intestinal pictures after barium meal show two striking things:

- (1) Hypermotility, due to ulceration.
- (2) Filling defect in the cecum and ascending colon: this may be due either to hypermotility which empties the affected portion of the bowel rapidly, or to actual stenosis from intrinsic and, less frequently, extrinsic lesions.

Brown and Sampson plead for the more frequent use of the gastro-intestinal as well as chest X-ray examination in the diagnosis of tuberculosis. Our recent experience has taught us to study more carefully these cases of so-called chronic appendicitis.

TREATMENT:

This may be medical or surgical, though with surgical measures one should, of course, combine the recognized medical aids. Some cases are in such poor condition that surgery is contra-indicated. These should be subjected to a general upbuilding regime with active heliotherapy. Calcium chloride (5 c.c. of 5% solution given intravenously) is of great value when diarrhea is a prominent symptom. It may be given twice a week for months, if necessary. Mild, early cases may be cured by medical means alone.

Surgery is clearly indicated in

- (a) Some border line cases.
- (b) Cases with stenosis.
- (c) Those who have resisted thorough medical treatment.

In planning surgical methods one is guided by (1) the nature and extent of the lesion and the pulmonary condition, and by (2) the ability of the patient to stand operative measures. These measures may be palliative (for example, enterostomy to relieve obstruction), or curative (for example, excision of the involved gut and entero-colostomy). The surgeon may consider also, the possibility of a two-stage operation, isolating the tuberculous portion, leaving it *in situ*, and bringing its proximal and distal ends out through the skin. The end of the terminal ileum is anastomosed with the transverse or ascending colon. The diseased portion of bowel is then merely a mucous tube, put at rest by having the fecal current diverted, and may be removed at subsequent operation if and when the patient's condition permits. The simpler short-circulating anastomosis without isolating the diseased portion has not produced good results.

It is, of course, important not to attempt more extensive surgery than the patient can stand, however desirable it might be to do a complete and finished operation. The technic used in resection and anastomosis will be detailed in a future contribution. In two of my cases the terminal ileum was as large as the transverse colon, so that end-to-end anastomosis was indicated; in these I used the aseptic end-to-end method described by Scarff;⁷ in the others end-to-side anastomosis was performed using our adaptation of this procedure. In addition I have invariably done the "prophylactic or complementary enterostomy" popularized by Mayo, to put the bowel at rest, and guard against possible paralytic ileus. This consists in introducing a soft rubber catheter into the ileum proximal to the anastomosis after the manner of Witzel, and bringing it out through a stab wound in the flank. This tube may or may not drain intestinal contents, but it usually does, in addition to providing for the evacuation of gas. It loosens up in about ten days and is withdrawn; the resultant fecal fistula closes spontaneously in a few days. Our experience does not lead one to fear a permanent fistula, although one might expect this in tuberculous cases. The post-operative care is most important. For the first four or five days we allow nothing by mouth or rectum; 1500 to 2000 c.c. of 2.5% glucose solution being given daily intravenously or subcutaneously. This, with the liberal use of morphia reduces intestinal peristalsis to a minimum. Patients are allowed to wash out their mouths with water, acidulated if preferred, but they are not allowed to swallow it. This is most trying and requires the intelligent co-operation of the patient and the family. It is carefully explained before operation and its justification as a life saving measure thoroughly gone into. After five days liquids are given, and soft diet after eight to ten days. The mortality varies with the type of patient subjected

to operation, 25% being the average. Those in whom the pulmonary lesion is of consequence usually die within a few years. Operation, however, does prolong life and makes the patient more comfortable. It is wise to follow the operation with a course in heliotherapy and a general forced feeding regime.

SUMMARY :

Six cases of intestinal tuberculosis were admitted to our Surgical Service during the past seven months. All came in with symptoms of partial obstruction, simulating appendicitis. One was acute, and two had previously been treated for pulmonary tuberculosis but on admission showed nothing active. One had a flare-up of the lung condition after operation. A third showed X-ray evidence of hilum tuberculosis. In the other three the lungs were normal. In five of the six cases a partial entero-colectomy with aseptic entero-colostomy was done. All recovered. In the sixth case, radical operation was contra-indicated by the patient's condition, and enterostomy to relieve obstruction was done. She died forty-five (45) days later.

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**ATRESIA AND STENOSIS OF THE GENITAL PASSAGES
AS SEEN IN CHINA AND KOREA***

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DEFINITION

By atresia one means the closing, and by stenosis the narrowing of the genital passages.

This condition is one of great importance, for in the East, where so few women remain unmarried, and where marriages are arranged for early in life, and without the parties having seen one another, and often without the candour which should be shown in dealing with abnormalities, it is apt to cause much misery and heartburning to the victim, and even lead to suicide.

Let us consider first the genesis of the genital passages, and by this is meant the vulval orifice, the vagina, the uterus and the tubes. These passages are formed by the two Mullerian ducts which fuse to form the uterus and vagina. Failure to do so may result in doubling of the genital passages, though the two even in this case generally join together and have one common central septum; or you may have a perfect vagina with a double uterus which may be simply a double uterus, or a bicornuate uterus, or there may be one cornu separated partially or completely from the main body of the organ. For example, take a case which occurred in the practice of Dr. J. B. Patterson of Korea. The patient was a Korean woman aged thirty-three.

Abdominal exploration was carried out because of atresia of the vagina. The woman was fat, and no uterus could be made out. The vault of the vagina was quite smooth, and in other ways the woman appeared to be perfectly normal.

On opening the abdomen a large amount of pinkish serum escaped. The Fallopian tubes, ovaries and round ligaments were normal. The uterus was represented by two cords about the size of a pencil, forming the free edge of each broad ligament and uniting below in a fibrous mass just above the vagina. This is a condition which is by no means unknown, and I have seen another case which presented an exactly similar condition.

*Contribution from the Department of Obstetrics & Gynecology, Peking Union Medical College.

Sometimes these cords may contain cavities, and the pain of which these patients complain may be, and actually is in some cases, due to the distension of these closed cavities by endometrial blood. The best treatment is the removal of the tubes and the cords representing the uterus, leaving the ovaries behind.

With such possibilities there is also the possibility of one duct being incomplete, or of the vagina being imperfect, occlusion having taken place at either end or in its course. Now let us turn to the subject itself in detail. It naturally falls into two divisions: I. Congenital. II. Acquired.

I. CONGENITAL ATRESIA AND STENOSIS

Atresia hymenalis, commonly called 'imperforate hymen', is not excessively rare. It may be noticed at or soon after birth, but is often confounded with mere adhesion of the labia minora. On one occasion I had just finished a day's journey and arrived at my destination when I was confronted with a party consisting of an old grandmother, a father, and a new born baby. They were sure that the baby had no vagina, and were very doubtful as to whether the child was worth rearing. Looking at it closely, there was a smooth skin surface extending up from the region of the perineum to a short distance below the urethra.

Above this was a lenticular space containing the orifice of the urethra. Placing one's thumbs on either side and stretching the skin, it began to split from a spot just at the apex of the lenticular space, and the labia minora separated, revealing a perfect hymen and vagina, and a narrow line of raw area on both of the labia. All that was needed was to lay in a piece of gauze, and the party went home rejoicing. This condition is due to some slight vulvitis in utero, which leads to adhesion of the labia to one another. Several cases of this nature have come under my notice in China.

Putting this condition aside, we often meet with true imperforate hymen. It may be noticed soon after birth, because of difficulty in micturition or defaecation due to the retention of mucus in the vaginal canal, and its consequent distension. In this case the membrane should be divided and the contents washed out with great gentleness, and every care taken to avoid sepsis which would certainly cause further adhesions.

As a rule, however, this trouble is not discovered until the age of puberty, when the patient begins suffering at the time of the periods, without any menstrual flow being visible. Later on feelings of aching

and heaviness appear in the pelvis, and there may be difficulty in micturition; these signs tend to cover more and more the intermenstrual period until there may be almost constant pain.

Take the case of Miss P., a Chinese student, aet 19, (Hosp. No. 7687) who was admitted to the Peking Union Medical College Hospital on April 15th 1924 under the care of Dr. Lee M. Miles. She had never menstruated. She complained of pain in the right lower quadrant of the abdomen, which had recurred every day during the past three months about three to four o'clock in the afternoon. During the last two weeks the pain had been worse, and had radiated to the legs. These attacks were peculiar in their definiteness and cyclical recurrence. First she had a feeling of distension in the abdomen which lasted about fifteen minutes, followed by severe pain in the right lower quadrant which lasted about half an hour, succeeded by pain radiating to the thighs, especially to the right, which also lasted half an hour. This cycle would repeat itself for ten to eleven hours. There was no fever, nausea, or headache. In the lower abdomen there was a painless moveable mass, more to the right than to the left. In the region of the ext. genitalia, the clitoris and urethra were easily made out. The space between the urethra and the perineal edge was shortened, and felt thick and elastic. Per rectum the vagina was manifestly distended and felt elastic. The pelvic measurements were those of a mild generally contracted pelvis. An incision was made in the space between the urethra and the perineum, and about 500 cc. of brownish tarry fluid drained slowly off. The cavity was gently washed out with iodine solution, the incision enlarged, the edges of the vagina sutured to the external skin, the cavity lightly packed with iodoform gauze, and a douche given three times a week with aseptic precautions. Convalescence was rapid and complete, and she left the hospital well on May 2nd, 1924. (See Illustration 1.)

The blood first collects in and distends the vagina, following this one gets a haematometra, and finally the tubes also distend with blood, but the cornu of the uterus does not distend to any marked extent. Haematosalpinx, as a rule, is a late occurrence, the retained blood in the uterine cavity tending to cause some inflammation with sealing of the inner aperture of the tubes. The distension is a very variable one. In one case you may have a palpable tumour which is composed of the vagina with the undistended uterus attached to the top of it; in other cases you may have a much smaller tumour with some distension of both uterus and vagina.

The mental condition of many of these patients is subnormal, and this fact must be taken into account in the question of operative procedures.

The diagnosis is not as a rule difficult. Where the hymen should be, is a membrane which may or may not bulge, according to whether the tension behind is great or small. If this membrane is thin, it will be bluish in colour, the accumulated blood shining through; if thick, it will be a dull white. A finger in the rectum will reveal a soft, bulging swelling in the region of the vagina, whilst if large a tumour can easily

be felt from the abdomen. Bimanual palpation with a finger in the rectum may reveal the uterus lifted up on a soft swelling. The treatment is not difficult, but must be done judiciously. The patient *must* stay in bed after the operation. The patient is placed in lithotomy position, and the hymen incised in a cruciform manner. The first opening should not be too large, and it may be subsequently enlarged. The contents are inspissated and sticky. Very gentle irrigation should be employed and no pressure from above as there is danger of rupturing the tubes or uterus. Above all, there must be the strictest asepsis. Owing to the dilated and atonic condition of the walls of the distended area, sepsis if it occurs makes its way up with great rapidity and fatal peritonitis may be set up. The patient should stay in bed for ten days to a fortnight, and after evacuation the vagina may be lightly packed with iodoform gauze. Needless to say, the time when the monthly period is due, if this be known, should be carefully avoided.

Sometimes, although the case appears to be an imperforate hymen, it is really an imperforate vagina, and the hymen may be found stretched on the outer surface of the occluded vagina. Take, for instance, the following case:—

A Chinese woman, Miss C., aet 18, (Hosp. No. 17389) was admitted to the Peking Union Medical College Hospital under Dr. N. J. Eastman on July 1st, 1927. She was complaining of lower abdominal pain, constipation of five days duration, difficult and scanty micturition and complete absence of menstruation. There was a palpable mass in the pelvis and her history dated back six months, during which period she had had three severe attacks of lower abdominal pain.

The external genitalia were well formed and the hymen was perfectly distinct, cribriform in appearance, and resting on a whitish tense surface which did not markedly bulge.

There was a swelling slightly to the right, rising out of the pelvis, not fixed, slightly tender, and about the size of an orange. Per rectum the finger at once came on the dilated vagina bulging downwards and backwards into the rectum. The space between the distended vagina and the exterior was estimated at $\frac{1}{4}$ "— $\frac{1}{2}$ ". On account of the pain and constipation operation was carried out at once. The area covered by the hymen was incised, and inspissated dark reddish brown fluid was evacuated after the incision had penetrated about a third of an inch. The abdominal tumour slowly disappeared as the fluid drained out. At the end of the operation the incision was enlarged, and the raw edges were united so as to leave a fairly normal sized vaginal orifice. She made a good recovery, and on discharge the vaginal orifice admitted a 14 mm. Kelly speculum without pain or bleeding.

If the atresia stretches over a considerable part of the vagina, one is faced with a very different proposition. With reasonable care the cases one has just narrated ought to give little trouble and be very satisfactory.

But it is far otherwise with these cases of atresia, in which a long area of the vagina is occluded. It is a question in my own mind whether they should be treated at all in the ordinary way. Certain it is that more than one operator has found them most unsatisfactory, and it is doubtful whether they would not be better treated by a supravaginal hysterectomy, the risks run in the ordinary course of treatment being so great. Take, for example, the following case:—

Mrs. L. S. W. (Hosp. No. 14146) a Chinese woman, aet 21, was admitted to the Peking Union Medical College Hospital on June 24th, 1926. She was complaining of pain in the abdomen of three years duration, worse at the time of menstruation. For the last two years she had noticed a couple of masses in the lower abdomen sometimes larger, sometimes smaller, with occasional tenderness on pressure. She has been married ten months but has never been able to have marital intercourse. The vagina is imperforate. The hymen is apparently blended with the mass of tissue closing the vagina. On rectal examination, about 1 inch up the rectum, the vagina is bulged down into the bowel and this swelling is elastic. With a sound in the bladder and a finger in the rectum the space between these two organs at the level of the stricture is not more than half an inch. In the abdomen there are two masses to be felt, a smaller one on the left, and a larger one on the right. It is probable that the one on the left is the uterus, and the one on the right a distended right tube but this is not certain. Both masses were elastic and slightly tender to pressure. Otherwise the patient appeared to be in good condition.

On June 26th an incision was made transversely, and with a guide in the bladder and one in the rectum, the incision was gradually deepened and at the depth of an inch the haematocolpos was opened. About a pint of sticky, black, altered blood was slowly extruded. The tissue through which a tunnel had been made was very resistant, bled fairly freely and refused to dilate. A gauze pack was inserted for 24 hours, and thereafter the passage was kept open by the passage of a sterile bougie, once a day. On the third day after the day of operation she started fever, and ran an irregular high fever till July 10th. Occasionally she would have a convulsive seizure, and the mass on the right which had greatly diminished in size became larger again and tender. On July 5th to ensure free drainage, a tube was inserted through the stricture, but there was no marked drainage. She was seen in consultation and a diagnosis of possible appendicitis following the operation for atresia was made. On the 10th the abdomen was explored, using McBurney's incision. A large fluctuating mass was exposed stitched to the parietal peritoneum, and opened and drained next day, 300 cc. of foul grey pus being evacuated. She did not improve and died on July 17th, having developed a bronchopneumonia, evidently part of a general septicaemia. The pus from the abdominal abscess showed streptococcus haemolyticus on culture. Swabs from the original haematocolpos gave no bacterial growth, and blood cultures were negative during life.

The autopsy report on the pelvic organs is as follows:

Pelvic Organs:—The uterus is greatly enlarged, measuring 14 x 5 x 7 cm. The left ovary lies quite free within the abdominal cavity and measures 4 x 2½ x 1½ cm. It has an opaque, white appearance and is very firm. It is connected with the fimbriated end of the Fallopian tube by a few delicate

adhesions. The left Fallopian tube shows nothing remarkable. On section the lumen is seen to be patent and somewhat dilated near the fimbriated end but no blood or pus can be expressed from it. The right ovary measures $5\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{2}$ cm. It has the same general appearance as that of the left ovary but is densely bound to the distal end of the Fallopian tube, and both these structures together are closely incorporated in the wall of the mass of tissue described in the right lower quadrant. Also attached to this mass by old adhesions are the caecum and a loop of sigmoid. On opening the sigmoid its mucosa is found to be unaltered. The caecum, however, is the site of a most intense hemorrhagic, diphtheritic colitis, the entire mucosa being thickened and of deep, hemorrhagic, granular appearance. This process stops sharply at the ileo-caecal valve, the ileum being not in the least affected. The appendix lies free in the peritoneal cavity and measures 7 cm. in length and 6 mm. in diameter. Just adjacent to the caecum is a large abscess cavity bounded by the caecum, a loop of sigmoid, and the enlarged mass formed about the right Fallopian tube and the ovary. Dense adhesions bind these structures together. A transverse incision across the entire mass clearly shows that the origin of the infection lay in the right Fallopian tube. The lateral wall of the mass is 3 cm. in thickness and composed of greatly thickened and dilated loops of Fallopian tube and a great deal of dense fibrous tissue. The infection is evidently an extremely ancient one, as indicated by the great amount of fibrous tissue present.

Uterus.—The wall of the uterus measures from 1 to $2\frac{1}{2}$ cm. in thickness. The uterine cavity is lined by thick, friable, reddish yellow, diphtheritic, necrotic membrane. None of the vessels in the myometrium are thrombosed.

MICROSCOPICAL NOTES

Uterus.—The uterus is lined with a thick layer of necrotic tissue and exudate composed of fibrin, leucocytes and large clumps of bacteria. The remains of uterine glands are only occasionally seen. The uterine musculature is intact but a few of the veins are filled with leucocytes, fibrin and bacteria. A section taken to show vagina and cervix shows a few remaining bits of stratified epithelium and an occasional cervical gland. The surface of the vagina is covered by a layer of young but well formed granulation tissue and together with the cervix shows lymphocytic and mononuclear infiltration.

Though the superficial layer of the endometrium is necrotic the underlying portion which is yet intact, in many places shows marked infiltration with lymphocytes and wandering cells. The few remaining uterine glands are very small and widely scattered. No blood pigment is present.

Right Ovary and Fallopian Tube.—Sections taken through the ovary and wall of the multilocular tubo-ovarian abscess reveal fibrosis of the ovary with formation of numerous follicle cysts. The wall of the abscess is composed of the greatly thickened distal portion of the Fallopian tube which is embedded in dense fibrous tissue. There are many irregular pockets of the abscess seen in these sections. They have dense fibrous walls, greatly infiltrated by mononuclear cells and a few polymorphonuclear leucocytes. Within the walls of these abscess-cavities and lying beneath the serosa covering some of them are many large cells filled with pale brown pigment. This is apparently blood-pigment, but only a small amount of it gives a positive iron-reaction. The contents of these cavities consists of polymorphonuclear leucocytes, cellular debris and clumps of bacteria which are morphologically streptococci.

Several sections through the right Fallopian tube at more proximal levels show the lumen to be patent and mucosa well preserved. The villi are very large and oedematous and contain many large phagocytic cells filled with brown pigment. In the lumen and scattered throughout the stroma of the villi are many polymorphonuclear leucocytes. The wall of the tube is somewhat thickened and in the subserosa are many large pigment-filled cells as described above in the villi.

Left Ovary and Fallopian Tube:—The left ovary shows fibrous changes and a number of follicle-cysts. The lumen of the left Fallopian tube is patent and the mucosa intact. It is infiltrated by many large pigment-containing phagocytes and in the lumen are many polymorphonuclear leucocytes.

Cultures of heart blood showed a growth of streptococcus haemolyticus.

It seems pretty certain that there had been old trouble in the right tube with the formation of a tubo-ovarian abscess. Whence the infection came is not quite clear but presumably the haematocolpos became infected. The new passage was extremely difficult to keep open. It seems clear that when the temperature failed to drop one ought to have boldly explored the abdomen in the middle line, and removed the tubo-ovarian abscess and probably also the uterus. Similar cases have been reported by Naujoks. This congenital atresia vaginae may occur at the upper part, the lower part being normal, save that in this case the lower vagina is nearly always small and inextensible. The symptoms of the case then depend on the question of a functioning uterus and ovaries, or marriage. If the uterus and ovaries are functioning, then you get much the same symptoms about the age of puberty as you get in an imperforate hymen. If on the other hand you have absence of uterus and ovaries, or these in a rudimentary condition, then you have little to note till married life begins, when you get dyspareunia and sterility.

The most distressing cases are those where the vagina is absent, or where there is only a small cul de sac at the outer end. I have seen three cases of this condition where coitus took place into the bladder, the urethra being dilated and hypertrophied. Needless to say the patient suffered severely, but dared not complain for fear of being sold surreptitiously to some other man.

Where there are signs and symptoms of trouble in the pelvis, and the vagina is absent or rudimentary, it is better to do a laparotomy and clear the whole of the tubes and uterus away, leaving the ovaries. A good many of these cases have other abnormalities and do not stand operative procedures well. In 1921 I treated a young woman with this trouble at the Presbyterian Hospital in Peking. Her vagina ended in a cul de sac, and above it could be felt a uterus. On account of



Illustration 1

*Appearance of the parts in the case of Miss P.
Imperforate hymen.*

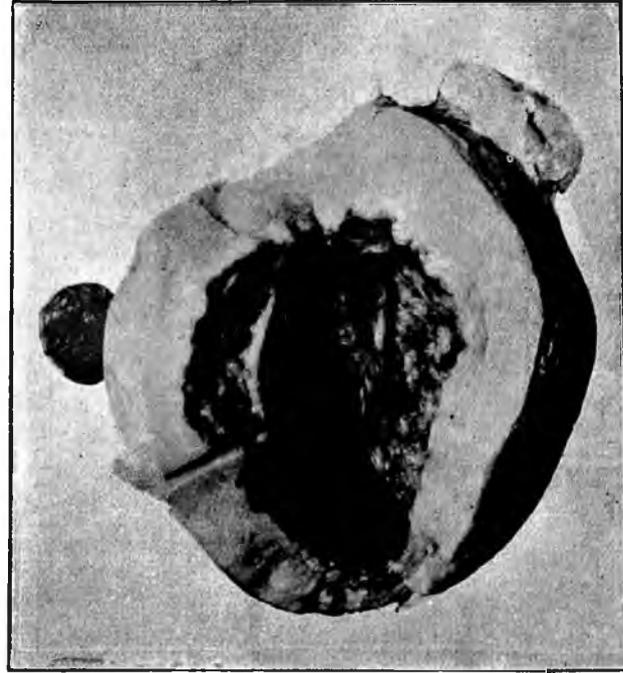


Illustration 3

Haematometra due to occlusion of the cervix.



Illustration 2

Haematometra and haematosalpinx from a case of Dr. Patterson's in Korea. A fair amount of blood escaped when the cervix was cut across.

Patient had no vagina, only one eye and webbed fingers and toes.

pain in the pelvis, I opened up and found an undeveloped uterus, and a tube on the left side sealed and somewhat expanded. I removed the tube. The uterus did not seem to be involved, and there was no tube or ovary on the right side. She developed mental symptoms, possibly, but not certainly, due to sepsis, and died of exhaustion. The main feature was the mental disturbance amounting almost to mania. There is little doubt that in this case I ought to have removed the uterus as well as the tube. The latter was a small haematosalpinx.

The treatment of these congenital cases is very difficult. As I have said, in many cases the best thing to do is to remove the rudimentary uterus and tubes, but if possible the ovaries should be left. In any case, the tubes are not to be removed without the uterus, as not only is it likely not to remove the pain, but the uterus may expand further and you may have blood leakage and peritonitis, at least in the pelvis. You may be asked to cure the atresia vaginae in order to remove the difficulty of having sexual intercourse. In such cases an operation similar to the one I describe later on for acquired atresia or stenosis may be tried.

Where the vagina has been absent or practically so, an operation which is known as Baldwin's may be performed. It consists in isolating a loop of ileum and reuniting the bowel. Then this loop is drawn down into the place of the vagina and fixed there. Later on the loop is opened, and the two limbs thrown into one. Personally I have never done the operation. I know of some cases in which it has been done successfully, but the final result was not satisfactory. The mucous membrane of the bowel is not the same as the mucous membrane of the vagina, and is apt to secrete mucus and become inflamed, and the risk of the operation is not negligible.

Here is another very interesting case. A Korean woman came into Dr. J. B. Patterson's clinic with a tumour in the lower abdomen, atresia of the vagina; one eye, the right; the left eyeball being felt as a rudiment under the skin. The left eyebrow was absent, and she had webbed fingers and toes. There was no family history of similar deformities. On opening the abdomen, the uterus was found to be well formed and somewhat dilated. On the right side, the uterine cornu, tube, ovary, and round ligament were absent. On the left side there was a large mass about 8 x 6 x 4 cm. which proved to be the left tube, closed and enormously dilated by dark blood clot. The uterus and haematosalpinx were removed entire, and the patient made a good recovery. There was a direct connection between the haematometra and the haematosalpinx, but the cornu of the uterus had not yielded to the pressure and was only slightly dilated. (See Illustration 2).

Where there is no vagina, or a bad congenital atresia, the fact should be fairly faced, and the woman remain unmarried. Care must also be taken that the woman is not really a man, for I have met with one case during the last few years in China where a man who had a small undeveloped vagina, epispadias, and a couple of testes, combined with some masculine secondary characteristics, had been brought up as a girl and actually was in a girls' school. And I may add that she strongly resented becoming a man, apparently because she thought that as a woman she would have a less strenuous life. Whenever one meets with a baby whose sex is indeterminate, it is always well to have it brought up as a male. Should you make a mistake, and this is unlikely, it is much more easy to switch from male to female than vice versa.

Now to discuss our second heading:—

II. ACQUIRED ATRESIA AND STENOSIS

This may be further subdivided under four headings:—

1. Due to inflammation in or around the vagina.
2. Due to chemicals applied to the vagina or cervix.
3. Due to tumour in the wall of the vagina.
4. Due to structural alterations in the bones of the pelvis.

1. The cases due to inflammation in or around the vagina are as a rule either (a) subsequent to a difficult or neglected labour, or (b) due to venereal disease, (c) due to neglected foreign bodies left in the vagina, (d) due to senile vaginitis. The inflammatory process due to a difficult or neglected labour is frightfully common in China, where cases are allowed to drag on in labour for days.

There was one case in the Peking Union Medical College Hospital in 1926 where, subsequent to a grievously neglected transverse presentation, the whole vaginal wall was in a necrotic condition, and where there will certainly be bad contracture. The same condition is sure to occur in cases where a Chinese midwife has lacerated the vagina with her nails in attempts at delivery, for such lacerations are always septic and end in the formation of much fibrous tissue. And this is not by any means an uncommon occurrence. Sometimes the process of contracture may take place so insidiously that the atresia may supervene before the patient realises that anything is seriously wrong. A Chinese woman, aet 23, was confined of her first child in October, 1898. The labour was prolonged, apparently by reason of primary uterine inertia, and the head appeared to have been on the perineum for three days. At the close of that time, her relatives

applied to the Changpu Hospital, South Fukien, ten miles distant, but owing to illness, the doctor in charge at that time could not go. He, however, gave them some chloral, which procured sleep, and shortly afterward the child was born without assistance, but dead. No more was heard of the patient till she came to me at the Changpu Hospital on May 5th, 1899.

She then told me the following story: After her confinement she rested for about five days, and then got about her work as usual. Although occasionally suffering a little pain, nothing abnormal was noticed by her, until her husband found that penetration was impossible. For this cause, and also because she had not menstruated since her confinement, she came to hospital.

Her condition was as follows: In common with many southern Chinese women she had only a hair or two about the genitals. The labia were well formed, the clitoris normal, but the opening of the urethra was markedly patulous. The perineum appeared to have been split for about $\frac{1}{4}$ inch from the free margin, but otherwise was normal. From the free edge of the perineum to the free margin of the vestibule, there extended a pink fleshy surface, there being no trace of vaginal orifice or of fossa navicularis. Per rectum, the uterus could be felt in its normal situation, freely movable, the cervix pointing downward and slightly forward, and cleft on its posterior aspect. There was not a trace of present or past inflammation in the broad ligaments, and the appendages appeared natural; but the uterus and cervix were evidently small. With the aid of a bladder sound the thickness between rectum and bladder was measured roughly and appeared to be a little over a quarter of an inch. The measurements of the pelvis were normal.

Three days after admission she was placed under chloroform, and I made a transverse incision across the pink fleshy mass described above. With the aid of a sound in the bladder and one in the rectum these two organs were separated with care by means of the knife and fingers till the cervix was reached. The cervix both in front and behind was freed, and posteriorly I got into the wall of the rectum, but did not perforate it. There was but little bleeding. The cavity thus made was packed with iodoform gauze, the gauze being carried well in front and behind the cervix. The uterus and cervix measured about one and a half inches together, and the cervix was multiparous and cleft backward. A uterine sound entered about half an inch and could not be persuaded to go further. The appendages appeared normal, and there were no adhesions in the pelvis. *No trace of vagina was found during the whole operation.*

After history: On the same night she had three severe attacks of hemorrhage, the blood coming from the bowel high up. It only ceased on the removal of all the vaginal plugging which was not renewed till the following day. Two days after, a small aperture formed high up behind the cervix, and a round worm appeared in the newly formed vagina. But this fistula closed in forty-eight hours. The further history was uneventful. In a month's time she went home with a vagina lined with epithelium, but requiring daily dilatation. The uterus was as before, and a sound would not enter the cervix above a quarter of an inch. Two months afterward, I saw her again. There had been no sign of menstruation, although the woman was in first-rate health, and the vagina, although tending to close, was kept open by the passage of a bougie once or twice a week. The uterus was as before, with no increase in size.

Or take a case like the following: I was called one day, some twenty-five years ago, to go out to the country in South Fukien to a case which was in difficulties. When I got there I found a woman with her vulva so swollen that it was difficult to get one's hand into the vagina. She had a generally contracted pelvis, with a true conjugate of about three and three quarter inches. The child was large, the head impacted, and the foetus was dead. After a great deal of difficulty I got it extracted with the aid of the cephalotribe. She recovered slowly, and I left the region. Eighteen months later she turned up at the hospital in labour, with a bad stenosis of the vagina which would only admit a lead pencil. My colleague the late Dr. James Howie did a Caesarean section and secured a living child.

And as after all one is not merely dealing with diseases, but cases of human interest, let me narrate the further history of the case. Time went on and she became pregnant again, and was looking forward to obtaining another child at the hospital. Two weeks before her full time, the hospital was destroyed by the "Three Dots" Society, and one of the men who led the attack was her husband, and to make it worse he had come to me years before with a large elephantiasis of the scrotum which I had removed, and both these pregnancies were subsequent to that date. Despairing of help, the woman hung herself.

Here is another case of the same nature:

Mrs. L. Y. H., a Chinese woman, aet 31, (Hosp. No. 16514) a patient of Dr. Bash of Peking, was admitted to the Peking Union Medical College Hospital in labour on March 31st, 1927.

In 1921 she became pregnant, the membranes ruptured early in labour, and a Chinese midwife delivered her by cutting up the baby, the vagina being badly lacerated. She was in bed for several weeks and after a few months found that the vagina was blocked. There is now an opening with hard unyielding edges, which will only admit a lead pencil.

This is the second pregnancy and it being manifestly impossible to do anything from below, Dr. N. J. Eastman operated and delivered the patient by Caesarean section and removed the uterus at the supravaginal junction. Convalescence was somewhat stormy due to difficulty of drainage through the tiny opening in the vagina, and a mild bronchopneumonia. The patient made a good recovery and both she and the baby left the hospital in good condition.

Here is another case of the same character :

Mrs. C. C. K., a Chinese woman, aet 17, (Hosp. No. 16626) was admitted to the Peking Union Medical College Hospital on April 12th 1927, complaining of inability for marital intercourse since the birth of her baby.

On February 11th 1927 she went into labour and the baby was probably postmature. Labour lasted for four days and three nights, and the baby was finally delivered by a Chinese midwife with the aid of hooks. After delivery patient had a purulent vaginal discharge for five weeks.

The upper part of the vagina and the cervix are all adherent, thus shortening the vagina. There is no vaginal cervix to be seen but the external os was finally found as a small pin hole opening on the smooth surface and the canal dilated up to No. 8 Hegar. One menstruation had taken place since labour, and the patient was advised to be patient, and if she becomes again pregnant to have a Caesarean section. The vagina at the present time is about two inches in depth.

These cases vary very greatly in their physical findings and in what can be done for them, as this further case shows:—

Mrs. C. K. C., a Chinese woman, aet 30, (Hosp. No. 17884) was admitted to the Peking Union Medical College Hospital on August 31st, 1927 with the following history:—

She had been married for 8 years. A year after marriage she had a child at full term, forceps were used, and the child was stillborn. Two years ago she had a second child born at full term, forceps again used.

There was a good deal of trauma of the vagina at the time of the first birth resulting in stenosis. There was further trauma at the time of the second birth and thereafter complete atresia (after 20 days) with hæmatocolpos. The pressure broke the obstruction on May 20th, 1927, but the opening closed again. During July, 1927, a friend made an opening with scissors and released part of the retained blood. The opening again closed at once. There has been much pain and aching from the retained menses.

On inserting the finger into the rectum one comes at once on a fluctuating swelling in front, and which bulges down into the rectum. The distance from the hæmatocolpos to the outside does not appear to be more than a quarter of an inch. The atresia is situated about three quarters of an inch up the vagina and the bladder and rectum are at this point very close together. The obstructing portion is white and shows no bluish tinge. It appears to be hard fibrous tissue. There is no sign indicating where the cut had been made in July.

The labia were drawn out with fine silk sutures and an incision made transversely with great care in the middle line to avoid entering either bladder or rectum. The hæmatocolpos was entered and the aperture carefully enlarged by dilatation and the knife, till it would admit a finger. Apparently there was

no hæmatometra. Union of the mucous membrane without and that within was accomplished in one or two places. The vagina was swabbed out with *Mercurochrome*, one per cent solution, and a gauze pack put in to check oozing.

A week later the patient was again anæsthetized and incisions made on each side. Dilators were used and carried up to 25 Hegar. The fingers were then used to spread the wound further until two fingers could be inserted easily into the vagina.

A flap was now taken from the inside of each labium keeping the base intact opposite the spread lateral incision. These were turned into the vagina and fixed by one stitch inserted at the inner end of the lateral incision and through the tip of the detached flap. These sutures were of No. 2 chromic gut. The wound left by the removal of the flaps, was sewn up with interrupted sutures of fine silk. No attempt was made to place any sutures in the flaps except those at the tips, and the flaps were maintained in position by a gauze pack smeared on the outer surface with sterile vaseline. This pack was changed daily. At the end of seven days a wooden dilator was used. The vagina was healed, and a dilator of the size of 25 Hegar would pass in readily. She was directed to pass this daily and warned that the next pregnancy must be terminated by Caesarean section.

Accompanying this acquired atresia or stenosis, there is very often a vesicovaginal fistula, and I know of one case in which the stenosis was most marked close inside the outlet, and although the sphincter of the bladder had been destroyed, the stenosis had taken its place, and by its means she was able to retain quite a quantity of urine without dribbling. But the ordinary case is not generally so fortunate.

Atresia or stenosis due to venereal disease presents very varied symptoms. As a rule, the trouble is consequent on ulceration in the vagina, and it produces a hard walled tortuous canal very difficult to treat.

Then one must also remember that ulceration set up by neglected pessaries, and foreign bodies slipped in by accident or design and left there, may leave behind a very troublesome stricture of the vagina, or may lead to atresia of the cervix.

Mrs. G., æt 22, (Hosp. No. 13466) entered the Peking Union Medical College Hospital in May 1926 under the care of Dr. Lee M. Miles, because of a foul smelling yellowish discharge. This had supervened subsequent to an operation of unknown nature. She was then supposed to be pregnant and it was probably an artificial abortion.

On examination cervical obstruction was found, and on this being overcome a pyometra was opened. A subsequent curettage brought away two pieces of material which looked like portions of a laminaria tent.

Hysterotomy was done from the vagina and a full sized laminaria tent removed. This had been introduced at the operation before she entered this hospital, had set up inflammation and caused cervical atresia leading to the formation of a pyometra.

Senile vaginitis, especially when neglected, is apt to produce not merely contractures but an actual atresia of the vagina especially in the upper part. There is no doubt that some of the cases of pyometra are produced in this way, and it must be borne in mind that worse consequences than pyometra may follow. I have seen a cancerous growth beginning on the abdominal side of the atresia, bleeding into the genital passages and producing a large haematometra and haemato-colpos. In a tumour of the uterus occurring after the menopause, there being concurrently an atresia of the vagina, this possibility must be borne in mind.

2. Due to chemicals applied to the vagina or cervix:-

In certain parts of the East, especially in China and Korea, the custom has grown up of applying strong chemicals to the vagina for the following purposes:-

- (a) Bringing on menstruation.
- (b) Bringing about abortion.
- (c) Bringing on labour.
- (d) Improving cases of prolapse.

In the first case it is not uncommon to put into the vagina medicated tampons. As a rule, these act more by virtue of their presence, setting up an irritation due to sepsis, than by virtue of any specific drug contained in them, at least I have not been able to discover any specific drug likely to seriously irritate. But it is quite otherwise when a real irritant such as "lye" is introduced, and this may bring about inflammation and contraction of the upper part of the vagina.

Here is the account of such a case:-

The patient was a married woman of 25 years of age. She had had no children and was under the care of Dr. Jessie McDonald of Kaifeng, Honan.

For two years before coming to the Women's Hospital, Kaifeng, she had complete amenorrhoea, owing probably to tuberculosis of the lungs. Both apices were affected. To cure the amenorrhoea she inserted a Chinese suppository and followed this up by others. Shortly after she began to suffer from frequency of urination and pain in the abdomen.

For four months before coming to hospital she had had severe attacks of abdominal pain lasting about ten days, an attack each month. The pain was so severe on admission that opiates had to be given. The uterus was about the size of a five to six months pregnancy. The vagina was completely closed.

With a sound in the bladder and a forceps in the rectum, Dr. McDonald tried to reach the retained menses but after going in about 2 inches there seemed to be still such a distance to travel that she judged that it would be wiser to remove the uterus. This was done successfully a few days later and the woman made a good recovery.

When one comes to the bringing on of abortion, again we meet with the introduction of medicated tampons. Some of these probably contain a potash salt extracted from wood ashes, but it is very difficult to get these tampons, and one which I did secure did not contain any alkaloid.

Mrs. C. C. Y., aet 39, (Hosp. No. 1561) was admitted into the Peking Union Medical College Hospital in April 1927, complaining of abdominal pain at the time of menstruation.

In January 1922 she came under my care with a mild generally contracted pelvis due to osteomalacia. A Caesarean section was done after a trial of labour, a living child obtained, and her convalescence was good.

In 1924 she again became pregnant, and not wishing to have a pregnancy, in the 3rd month she placed tampons containing some Chinese drug in the vagina. Five days afterwards the foetus came out. From the day of application she had much swelling of the vulva, and the post abortional bleeding lasted a month. Since then her period has been accompanied by dysmenorrhoea, and pain which disappeared after a yellowish discharge and bleeding came on.

The vagina is completely blocked by strong fibrous tissue about one and a half inches from the outlet. A tiny hole is to be found far over on the left from which the menstrual blood comes. The uterus is bound down to the pelvic floor, and the cervix is buried in the fibrous tissue at the top of the vagina. She was advised to have a laparotomy done and the uterus removed.

In the third case, let me give you the history of a specific patient, though I never was able to learn exactly what drug had been introduced.

Mrs. P. N. S. (Hosp. No. 1503) a primipara, aged 29, came into the Peking Union Medical College Hospital in labour on January 18th 1922. Both vulvae were gangrenous, the os was only dilated to admit a finger, the vagina was inflamed, and the anterior abdominal wall showed an infection spreading up from the labia. The condition was subsequent to an attempt to bring on labour by vaginal medication.

A Caesarean section was immediately done, and a healthy male child extracted. The local condition improved greatly after operation, the gangrenous labiae having been cut away, but she developed purulent peritonitis and general septicaemia and died on the 6th day. On admission she was only semiconscious with a rapid pulse and the appearance of being toxic and there is no doubt that she already had severe general sepsis. Had she survived she would undoubtedly have had severe vaginal stenosis if not atresia.

The fourth case especially applies to Korea, though cases occur also in China. It is the custom there for native practitioners, mostly old women, to treat prolapse of the uterus or a relaxed vagina by applying caustics.

If the cervix is visible, hot coals may be applied or alcohol or kerosine may be put on and a light applied; or pure nitric acid is applied to the part. Naturally the worst form of scar is produced in

this way. Mills reports two cases from Korea, where kerosine had been used, where the cervix had been completely burnt off and a tiny hole was left through which the liquor amnii had run away. Crucial incisions were made, the orifice gradually dilated and the children delivered by forceps.

Dr. J. B. Patterson of Kunsan, Korea, has had much experience in this class of case. As a general rule, the atresia is not complete and conception may take place. But when these cases come to labour they are most difficult to treat, and he generally performed Caesarean section. Incision from below may enable the child to be delivered, but you run a grave risk of tearing into the bladder or up into the broad ligament with possible consequent severe haemorrhage.

I have in my possession a uterus in which rupture of the organ occurred in labour, the cervix being obstructed by this cause, and in which the child was loose in the abdominal cavity, and a hysterectomy had to be done to save the woman's life. This patient was also one of Dr. Patterson's cases. But as I have already said the custom is not confined to Korea.

Mrs. T. L. S. (Hosp. No. 552) a Chinese woman of 38 years of age, came to the Peking Union Medical College Hospital on August 24th, 1922. She was a patient from Tatung in Shansi. She was a primipara at full term and labour pains had been going on and off for ten days. The pelvic measurements were normal. When about four and a half months pregnant she had trouble in the vagina and a swelling there which was treated with native medicine, whether this was a partial prolapse is not quite clear, but it was accompanied by constipation and retention of urine. She went to bed for some weeks.

The vagina is now shortened and completely blocked and the os uteri could not be found. The child was dead. A Caesarean section followed by a hysterectomy was done, it being found impossible to lift the uterus up into the abdomen on account of the adhesions in the pelvis. The foetus was about 8 months old and macerated. No sign of the internal os could be found so an artificial opening was made from the remains of the vagina into the lower uterine segment and the uterus amputated as low down as possible, a cigarette drain was passed through the artificial opening and the remains of the cervix sewn up above. The tubes and ovaries on both sides were removed.

The patient left the table in good condition and made a quick and satisfactory recovery.

3. Due to tumours in the wall of the vagina: As a rule these are fibrocellular in nature, and I have seen them blocking the vagina completely. They can be shelled out, but there is a tendency for them to take on a malignant character, and I know of one case in the practice of Dr. J. H. Montgomery of Chuan Chow, Fukien, where I examined the tumour carefully. Its microscopical character was

purely of fibrocellular nature, but it recurred after a time as a frank sarcoma. I have also seen the vagina almost completely blocked by a vaginal cyst in a baby. In this case one was able to remove it and restore the vagina to normal calibre.

Malignant disease also will sometimes narrow the upper part of a vagina very seriously, so that it may be a little difficult to make out the exact boundaries of the disease, and in this connection it is well to remember that radium applied to a malignant disease of the cervix may lead to marked contracture of the vagina in its vicinity.

What can one do for the treatment of these acquired atresia and stenoses? If the stricture is a narrow one, much may be done, but if it extends along a large area of the vagina, the outlook is not good. I have several times secured good results by dividing the lateral wall of the vagina and spreading the same. Into the gap thus formed, a large flap with its base toward the perineal region and cut from the labium majus, is turned in and fixed by a few sutures high up near the cervix. There may be very free bleeding, and on more than one occasion I have had to leave on pressure forceps for twenty-four hours. Where the contracture is high up or is actually in the neck of the uterus, should the patient become pregnant the pregnancy should be terminated by a Caesarean section and removal of the uterus.

The use of dilators gives very poor results in a nonpregnant case, and as has been said, incision of the stricture in pregnant cases has to be done with discretion as you are very likely to have tearing into the bladder or broad ligament.

4. Due to structural alterations in the bones of the pelvis: We get this condition in osteomalacia.

With regard to the question of marital relations, in quite a number of cases the tubera ischii become almost apposed, so that one cannot get a finger between them.

Then the inclination of the pubes becomes altered, and the descending rami of the pubes and ascending rami of the ischia also move together so that coition becomes impossible. Where there are several wives this is not a matter of such importance, but where there is only one, the result may be a most miserable home. Take the following case as an example:

Mrs. L. Y. S. (Hosp. No. 3062) aet 26, from Shou Yang, Shansi, came into the Peking Union Medical College Hospital on September 5th, 1922 with the following history: She was married at sixteen years of age. Her first child was born naturally when she was twenty, and died when three years old. Her

second child was born naturally when she was twenty-one, and died when it was three years old. In the case of both these children, the cause of death was unknown. The third child was born when she was twenty-three, and died the day after birth, labour being very difficult. After that time marital relations became more and more difficult till they became impossible. Her first husband sold her off to a second man, who finding coition impossible, was preparing to sell her to a third. She threatened to commit suicide if nothing could be done for her.

Her height was 4' 10". Weight 92 lbs. Pelvic measurements as follows:

Spines 21 cm.
Crests 23.25 cm.
Trochanters 22.5 cm.
Ext. Conjugate 17.5 cm.
Interischial 2.0 cm.

A finger could be got into the vagina with difficulty before and behind the tubera ischii. Coition was manifestly impossible. The Wassermann reaction was negative, and otherwise the patient was in good health.

Two courses were open: (a) To excise the descending ramus of the pubes, ascending ramus of the ischium and part of the ischial tuberosity, on one or both sides. (b) to excise the coccyx, and try to make a vagina opening posterior to the tubera ischii. In the former case there was the possibility of disturbing the balance of the pelvis and weakening the adductor muscles of the thigh. In the latter case, although one might get a larger vaginal opening posterior to the tubera ischii, yet the direction of the vaginal canal would be displaced very seriously. It was decided to try the first course.

The X-ray report of the pelvis was as follows: The bones are a little thinner than normal, and it is noteworthy that this thinning is at the expense of the material between the lines of cancellous tissue so that the cancellous structure stands out very plainly against the darker background. The first portion of the sacrum is very prominent. The pelvis is contracted, and the public bones project sharply forward so that the symphysis lies well anterior to the descending ramus of the pubes.

On September 14th, 1922, the patient was anaesthetized with ether, and placed in lithotomy position, the vulval region having been thoroughly painted on the previous evening with brilliant green and crystal violet paint. A fresh coating was given when she was on the table. The vulval aperture and the anus were both closed by fine silk.

An incision extending from the pubes to below the ischial tuberosity and about four inches long was made about two inches outside the vulval aperture on the left side. The tissues were divided down to the bone, and a subperiosteal resection of the descending ramus of the pubes and the ascending ramus of the ischium and half of the ischial tuberosity was made, bleeding points being carefully secured as cut. There was comparatively little bleeding. The vagina was not opened. Care was taken not to interfere with muscular attachments more than was absolutely necessary, and the wound was sewn up with fine silk, bringing the tissues together in their various layers so as to leave no dead space. After sealing the area around the wound with collodium and gauze, the vagina and anus were again opened.

The patient made a normal convalescence, and on discharge two fingers could be easily inserted into the vagina, and there was no difficulty in walking. She was seen about three months later. Locomotion was perfect, and it had been possible to resume marital relations without any pain or inconvenience.

Before long she became pregnant, and one anticipated a Caesarean section with tying of the tubes and everyone made happy. But we had been too successful. Marital relations were now so easy, that she could not conceive that she could not have a child in the usual way, and aided in this idea by her mother she flatly refused to come to the hospital. After she had been three days in labour, the waters having broken about the end of the second day, she came down to the dispensary at Show-yang asking for help. The uterus was almost in a state of tonic contraction, but the foetus was still alive.

Morphine was given, and the patient brought down to Ping-ting-chow hospital arriving with a pulse of about 180. Caesarean section was performed at once, and the child was delivered with heart beating but it could not be got to breathe. The mother was very ill that night, but with the exception of a smart attack of sepsis, made a good recovery. There was no sign of the pregnancy having caused a further development of osteomalacia, the pelvic condition was good, and the muscles appeared to have drawn the periosteum well outward where there was a crescent of hard tissue, possibly partly osseous. There was no sign of crumpling up of the pelvis on that side, and locomotion was perfect; so that one may justly assume that the operation had proved a success. The patient remains perfectly well as regards the osteomalacia and stenosis and was heard of this year (1927).

To sum up. Atresia and stenosis of the genital passages in China and Korea is by no means rare. Its incidence is contributed to by certain local customs such as the treatment of prolapse by caustics, by primitive midwifery, and by the existence of osteomalacia.

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ACUTE MASTOIDITIS

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Acute mastoiditis is not seen very often in the consulting room in China, but not infrequently patients come up to be treated, for pain, and perhaps redness and swelling in the region of the mastoid process, and the question arises as to whether the bone is involved.

It makes a lot of difference to our peace of mind, not to mention the well-being of the patient, if we have a clear idea of the nature of such cases, and the appropriate line of treatment. It is with this idea in mind that I thought it might be profitable to discuss a somewhat specialised disease. In dealing with a lesion of a special branch of Surgery it may be as well to refresh our minds as to the main anatomical features of the mastoid process.

Anatomy. At birth there is no mastoid process. Gradually, partly by growth of bone and partly by the action of muscles a process is produced. The mastoid process assumes its adult form only in the third year of life (Zuckermandl).

In the anterior and upper portion of the mass of bone forming this process, is a space varying in size, but usually about the size of a pea, which is known as the antrum, which communicates through a small canal with the middle ear.

The rest of the process may be a) diploëtic
b) pneumatic
or c) a mixture of diploëtic and pneumatic in structure.

The relations of the surrounding parts are of great importance and briefly are as follows:—

Above is the tegmen of the antrum separating the latter from the middle fossa of the skull

Anteriorly is the posterior wall of the external auditory meatus, and more internally the middle ear

Internally below is the digastric fossa and higher up the lateral sinus

Posteriorly is the lateral sinus

Externally are the attachments of muscles and the skin.

Actiology. For all practical purposes Mastoiditis does not occur without a previous or concurrent inflammation in the middle ear. A traumatic periostitis, and periostitis due to chill are described, but they are very rare and need not claim our attention.

This being the case, mastoiditis may be said to have the same aetiology as otitis media. It is especially liable to occur, however, during post-influenzal and exanthematous otorrheas. It is more likely to occur if the perforation of the drum is delayed or small, leading to a damming up of secretions in the middle ear, aditus and antrum.

The varieties of organisms which have been found to give rise to mastoiditis are many. Any of the pyogenic organisms can do so, but one strain of *Streptococcus*, *Streptococcus mucosae*, seems to be most at home in this site. Mention should also be made of the Kochs Weeks bacillus which gives rise to a definite type mastoiditis, sub-acute or chronic in character.

Signs & Symptoms. If care is taken in questioning the patient, it is usual to get a history of past or present otorrhea. In the course of the latter, pain has developed in the ear and perhaps radiated over the side of the head.

Sometimes, the onset of the acuter symptoms has coincided with cessation or diminution of the discharge.

Pain as a rule is not severe. If it is, I think it often indicates more than a simple mastoiditis.

Fever and rise of pulse rate, if present, are usually slight. Tenderness on percussion over the mastoid is always present. In a typical case of suppurative mastoiditis there is redness and oedema with forward and downward displacement of the auricle. To test this in slight cases it is useful to get behind the patient and test with a ruler or other straight object the equality or inequality in height of the tops of the pinnae.

On examining the inside of the ear it is usual to find pus in the meatus, often combined with swelling of the latter and a red perforated membrane, perhaps bulging owing to the imperfect drainage.

Diagnosis. Nothing is easier to diagnose than a typical case, with pain, tenderness over the mastoid, redness and swelling of the skin, perhaps a big fluctuating abscess with downward and forward displacement of the auricle and a perforation of the membrane. Practically speaking there are only two other lesions which are commonly confused with mastoiditis namely cellulitis and furunculosis of the External Auditory meatus, but sometimes the differential diagnosis is far from easy. In mastoiditis you often get a diffuse swelling of the canal which is nothing more or less than a secondary cellulitis. At other times there is a local bulging of the wall with a raised portion very like a furuncle, but usually situated deeper in the canal. Both these complications render an examination of the drum very difficult or impossible.

In primary inflammatory lesions of the auditory meatus on the other hand it is not unusual to get an infection of the post-auricular gland, which also may become infected from a septic scalp. There are some points of difference which are of assistance in forming an opinion.

In furunculosis the maximum tenderness is usually in the pre-auricular and infra-auricular regions and pulling the pinna upwards and backwards is very painful. The displacement of the auricle if present is forwards, in mastoiditis downwards and forwards. Constitutional symptoms are slight and there may be a clean history sheet for the ear.

Erysipelas does not sound a very likely thing to be confused with mastoiditis, but it needs to be borne in mind. I have seen at least one mastoid opened up when this has been the trouble. Waiting a day or two is sometimes the only way of clearing up the question, when the lesion is starting behind the ear. In reference to the differential diagnosis and more exact diagnosis of the state of affairs in the bone, some recent work has been done by Stephen Young of Glasgow on the X-ray appearances of the normal and pathological mastoid process. Those who are interested are referred to his article (2) in the Nov. 5 number of the B.M.J.

There is not time to go into all his findings, but he claims that he can form a fair idea of the state of affairs present. This method should be of great help in giving a prognosis as well as forming a diagnosis.

There are several varieties of acute mastoiditis, which may be classified as follows:—

- a. **Muco-periostitis.** The antrum and cells are lined with a fine mucous membrane continuous with that of the middle ear and tightly bound to the periosteum.

This muco periosteum is sometimes the site of an acute inflammation. Some authorities say that this complication occurs in every case of acute otitis media. Others such as Lange say 50%. Be that as it may, in some cases especially after influenza and infectious fevers it manifests itself clinically, presenting pain in the mastoid, tenderness and perhaps redness.

This is the type of case which may resolve spontaneously or go on to the second type of

- b. **Suppurative Osteitis.** Here we get formation of pus and probably necrosis of bone. This variety may be a primary acute mastoid or an acute exacerbation of a chronic osteitis.

The pus may be unable to escape, but in most cases of acute mastoiditis it finds its way through the outer plate of the mastoid process and we get a post-auricular, sub-periosteal abscess.

Sometimes however, owing to structural peculiarities, it perforates the inner wall and tracks down the neck forming a third type known as

- c. **Bezold's mastoiditis.** This is commonest in children.
- d. **Influenzal mastoiditis** is especially rapid in destruction particularly in the apical cells (Ballin) and is correspondingly painful.

Termination. What happens to the case of acute mastoiditis which is left to pursue its own course?

1. **Resolution.** There is no doubt that a large number of the muco-periostitis variety resolve, as while I do not know of any figures giving the percentage incidence of mastoiditis in otitis media which require operative treatment, our experience would put it down as a small one.

A suppurative osteitis on the other hand usually leads to

2. A sub-periosteal abscess which bursts externally and either
3. Heals after discharging its contents or
4. Leaves a chronic sinus leading down to a sequestrum.
5. Some cases involve rapidly the meninges, lateral sinus, internal ear or brain.

The commonest complication in this group, in acute mastoiditis, is a peri-sinus abscess which may lead to thrombosis of the sinus and pyæmia.

Meningitis may develop later.

But meningitis, extradural, cerebral and cerebellar abscesses are usually found in association with

6. A chronic septic cavity in the mastoid which may be an end result of an untreated acute mastoiditis.

Treatment. The main difficulty in treatment is to decide whether, and when to operate, and each case must be taken on its merits.

The mastoiditis concurrent with a first attack of otitis media referred to above as a muco-periostitis should not be opened up at once. Paracentesis of the membrane, not burst, or the enlarging of an insufficient opening with applications of ichthyol or cold compresses externally and the administration of urotropine internally should be tried.

Mention might be made of the real therapeutic value of the latter drug in aural surgery.

The indications for operation are :—

- a. Oedema and redness, or abscess formation over mastoid
- b. Bulging of post. meatal wall
- c. Signs of complications.

Ballin in *Politzers Diseases of the Ear*¹ discountenances too early interference in the absence of these signs.

His theory is that early on, the damage is undefined and more harm may be done in opening up healthy spaces than would occur during the delay of a day or two while the disease is becoming localised.

It is true that in operating on fairly early cases, it is sometimes difficult to know whether one has done enough, and as long as it is quite clear that the three indications above are regarded as absolute his advice is good.

Operative measures. In a case of acute mastoiditis—as apart from an acute exacerbation of a chronic mastoid—the simple antrotomy or Schwartz's operation is all that is required.

Some authorities advocate opening up the bone, but in certain cases not opening the antrum. This seems to be in conflict with general surgical principles, as all are agreed that it is through the antrum that infection takes place.

As a guiding rule Bain, one of my chiefs at home, used to say that in cases with under two years otorrhea, do an antrotomy first unless of course there are obvious indications for more extensive measures. If this amount of conservatism is justified at home, it is much more so out here. At home a two years otorrhea has probably had some sort of treatment, whereas in China if there has been any attempt to deal with it, it has probably been a wrong one.

This was borne in on my mind the other day when I applied the above rule—there was a history of six or seven years—and did a radical mastoid. On reaching the middle ear and removing the ossicles I came to the conclusion that an antrotomy would have probably been sufficient.

The details of this simple operation can be found in any book on operative surgery and so we need not spend the time in describing them. There are one or two points however which might be worth while mentioning.

In children there is no mistaking the site of the antrum. If pus is not exuding from a sinus, there is always a small area immediately posterior to the upper part of the Ext. Auditory meatus with little vascular holes. This is the cortical covering of the antrum.

The operation can often be performed with a sharp spoon. Care must be taken in infants under three not to wound the facial nerve in the first incision. It emerges from the stylomastoid foramen, and in infants as mentioned in the early part of this paper, there is no mastoid process to protect it.

In adults the same vascular area is usually present, but it is generally necessary to use hammer and gouge to open up the antrum. In using these instruments it is imperative when working in a dangerous area to have the gouge held obliquely to the skull and not at right angles.

In making the preliminary cuts in the bone, one must bear in mind the level of the dura and the proximity of the lat. sinus.

The backward prolongation of the root of the zygoma, known as the suprameatal line clinically, is the most obvious landmark in the upper part of the wound and can be taken as the level of the dura in the region above the antrum. I have never seen the dura exposed below this line in this area. This latter accident is not so serious as it sounds as long as it is not injured.

The lateral sinus cannot be avoided so easily, but by keeping well up and forward it will not be encroached upon unless it is abnormally far forward.

Should this be opened inadvertently there is free hæmorrhage, but it can always be controlled by gauze packing and while a very annoying and worrying accident I have not seen any ill effects in three cases where it happened.

When the cavity has been dealt with, the question remains whether to pack, do a partial suture, or whether to let the cavity fill with blood and sew up.

The latter is too risky.

The first method of packing is safest, but the wound is very slow in healing, and often leaves a depressed scar owing to the auricular half of the wound sinking to a lower level than the supported occipital half.

The partial closure of the wound with a rubber dam drain in the lower angle of the wound for three or four days, according to the

discharge, is suitable for many cases, but in rapid virulent infections with extensive necrosis and offensive thin pus, it is best to pack with cyanide or iodoform gauze and let the cavity granulate slowly from the bottom.

In taking a final look at the cavity it is well worth while to pack with gauze soaked in H_2O_2 and wait for a minute or so.

It is a perfect hæmostatic for such cases.

Advantage should be taken of the anæsthetic to feel if there are any adenoids and before the child goes out of hospital these should be removed if they are present.

Prognosis. The immediate prognosis of acute mastoiditis is good. In a series of 50 cases I only remember two deaths.

One was a baby of 9 months from pneumonia. The other was a case of fatal meningitis secondary to a labyrinthitis.

On the other hand while the otorrhea clears up at once in a majority of cases, in not a few it remains resistant to treatment and as such must be looked upon as a potential cause of trouble, but no more so than an ordinary otorrhea.

Unfortunately, it is not possible to follow up cases in England from Canton, and it is almost as hopeless to try and find the few patients one has had out here, and so I must apologise if some of the remarks in this paper are more in the nature of impressions than statistical data.

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GOITRE

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Jefferys and Maxwell in their "Diseases of China" state that while goiter has not been frequently reported in China, there is evidence of its tremendous prevalence in certain localities. It is probably found sporadically, widely distributed and in endemic areas. It is reported as abundant around Peking and in Shantung Province. The center of Formosa in the mountains back of Tainan, is said to be prolific in goiter cases.

King (*China Med. Jour.* xxxiii, No. 1, Jan. 1919) reports parts of Kansu (the high plateau south of the Mongolian border watered by the upper reaches of the Yellow River) very goiterous. He gives the native explanation of the cause as the drinking of spring water or the water of mountain streams in which the roots of willows or other trees are exposed. The opinion prevails that sea weed is curative (due no doubt to its iodine content).

Bolt (who spoke before our Association a number of years ago) (*China Med. Jour.* xxviii, No. 5, Sept. 1914) reports a very marked endemic goiter region with numerous nests in the mountainous country to the east and north of Peking, where the prevalence of goiter seems to have some relation to the water supply which comes from shallow surface wells and is very soft. He reports even the hen's eggs lacking in lime salts. In one village he visited, 50% of the population had some degree of thyroid enlargement.

Dr. R. G. Mills, when a resident of Korea (*Bulletin of the Manilla Medical Society March, 1912*) stated, "Simple cases of goiter are generally reported as uncommon in Korea, and those with exophthalmic symptoms have not been observed. In Kangkei and that section of Korea, simple goiter is quite common in various stages of development. The Koreans have a saying that anyone who drinks the water that drains from the decaying roots of the edible pine will develop the disease."

Occasionally we all see cystic goiters which are quite symptomless but cases exhibiting hyperthyroid activity are sufficiently rare to make it seem worth while to report the following two cases:—(In addition one case of exophthalmos was seen within the past year which had had a partial thyroidectomy at Severance. It was not followed up but was advised to again consult Severance Hospital.)

Case 1. D-27-228. The 22 year old daughter in a home of wealth and comfort, recently married and in the absence of her husband at school in Japan, she alternates between her own home and that of her husband in another city which is equal in wealth and comfort to her own. She first came in April, 1927, stating that for the past four years her neck has become swollen and she has a nervous tremor whenever she is tired. She states that there has been no relation to menstrual periods which are regular.

Examination reveals a moderately enlarged, symmetrical thyroid gland. Heart rate 90. B. P. sitting 124-80 B.M.R. by Read's formula plus 22. Moderate dermatographia. Fine tremor present. Neck measures 13 inches. Chest examination negative. By way of experiment she was given thyroid gland, gr. 1 twice a day for ten days which increased the subjective symptoms. After that the only treatment has been calcium iodide at intervals. She was advised to include seaweed in her diet, since it had been lacking. When last seen in the dispensary the last of Sept. she was two months pregnant, but the neck measured only 12 inches. Pulse 100. B. P. 130-70 (B. M. R. plus 86) No tremor. When seen the middle of November, during a visit to the home of her parents-in-law, she reported herself as feeling fine, with no subjective symptoms and the swelling of the neck had disappeared: Diagnosis: Diffuse hypertrophic goiter with recession.

Case 2. H-919. F. age 36. First seen in her home in Sariwon, she later entered the hospital December 2, 1926.

History. Measles in childhood. Menarche at 17. Menstrual periods last for 4-5 days with considerable pain. Once a month, sometimes before period, sometimes after, she has a severe headache accompanied by pelvic pain. Has always had more or less leukorrhoea. Married at 18, at 19 she had a severe vaginal hemorrhage, possibly a miscarriage. Has never been pregnant otherwise. At 24 she had a dilatation and curettage in a hospital at Chinnampo but no improvement in the dysmenorrhoea resulted.

The present trouble began eight months ago with pain in shoulders. Her husband died a month later of cancer of the stomach and she had been under a severe strain for a long time on account of his illness. After his death she felt better, did her housework and attended church, but was always conscious of a swelling of her throat. Four months ago she began to have palpitation, parasthesias of hands, arms and shoulders, and nystagmus with some dimness of vision. She was treated in a hospital in Sariwon for uterine and cardiac trouble. There has been no menstrual period for two months. Following her physician's advice she has been very restricted in diet and exercise. She has perspired very freely, has lost much of her hair and says she has lost half her weight (probably an exaggeration). At present she complains of weakness, palpitation, parasthesias, especially in arms and shoulders, and trembling vision. Dryness of eyes and throat. Perspiration less excessive than formerly.

Examination. Anemic, asthenic, quite emaciated. Five gold crowns on teeth with some pyorrhea. No root shadows by transillumination (no X-ray available). Slight protrusion of eyes. No lagging of lids—Gracfe's sign negative. Left eye does not follow on convergence—Moebius' sign positive. Loewe's test negative—no dilatation after 40 minutes. Dilatation marked after two hours. Frequent blinking of eyelids.

Thyroid symmetrically enlarged, size of a small hens egg, soft. Neck circumference 12". Fairly distinct bruit over thyroid. Skin of neck gets very red with manipulation. Dermatographia very marked.

Throat red. Tonsils negative. Nose negative except right turbinate slightly enlarged.

P. 80. R. 16. B. P. 126-78. B. M. R. Read's formula plus 14. Cardiac dullness not increased. Apex beat not palpable. Systolic murmur over base. Skin quite moist. Lungs, liver and spleen negative.

Vaginal examination negative except for some redness about introitus.

Laboratory reports:—

Stool, *Ascaris*, trichuris

Urine, normal

Blood, on entrance, 12/2 Hb. 80% Reds 4,990,000 Whites 10,800

Lymph. 12, Large Mono. 7, Polys 81

12/22 Hb. 80% Reds 5,080,000 Whites 7,600

Lymph. 17, Large Mono. 7, Polys 75.

Blood chemistry N. Prot. Nit. 42. Blood sugar 58.

Goetsch test 12/3 very positive with rise of systolic pressure 14 mm and fall of diastolic pressure 40 mm, with increase in tremor, intensity of heart murmur, eye symptoms and general throbbing all over body.

Quinine tolerance test, 10 grains t.i.d. well borne at first. Later with improvement was cut down because of developing tinnitus.

Diagnosis. Diffuse hypertrophic goiter with slight exophthalmos.

Summary of Treatment. 10 grains K.I. per diem for six days caused marked increase of subjective symptoms and size of neck. In addition to symptomatic treatment, the treatment consisted largely of ovarian extract, quinine hydrobromide to tolerance and luminal.

Results. Left hospital 4/8/27 after four months treatment, greatly improved, Thyroid gland hard and small. All objective signs had disappeared but the dermatographia which still persists. Weight increased. Recent report was that she was well, subjectively and objectively.

DISCUSSION

There are almost as many classifications of goiter as there are authors on the subject. That of Plummer in *Oxford Medicine* is perhaps as satisfactory as any:—

1. Diffuse.

- a. Colloid, with fluctuations of the amount of colloid stored in the vesicles.

- b. Hypertrophic. Proliferation and hyperfunction due to hypertrophy of normal adult vesicular epithelium (Exophthalmic Goiter)
2. Local.
- a. Degenerative—colloid.
 - b. Proliferative with development of new acini.
Adenoma (circumscribed proliferation of parenchymatous tissue (usually embryonal)
 - 1. Benign, (remain encapsulated, cease to proliferate and gradually degenerate)
 - 2. Hyperfunctioning.

The known function of the thyroid gland is the elaboration and delivery to the body through the circulation of a secretion containing the active agent thyroxin. Colloid is also stored in the vesicles of the gland, which function may be accessory to the production and storage of thyroxin, as well as the storage of iodine for the elaboration of thyroxin. The human body contains approximately 14 milligrams of thyroxin and the daily requirement to hold the local metabolism at normal is approximately 0.75 mg.

Plummer states that "Three more or less overlapping phases in thyroid activity are readily conceived, one in which the thyroid is discharging its secretion in response to stimulation originating in the demands of the organism: one in which the products of the gland are being elaborated and stored in the thyroid: and a resting phase that may exist where the demands of the tissues are satisfied and the storage capacity of the thyroid is exhausted. Factors causing abnormal fluctuations in the secretory process of the gland as a whole are often anatomically expressed by the development of diffuse hypertrophic or diffuse colloid goiter".

So called "endemic" or "adolescent" goiters are diffuse colloid or adenomatous or a combination of the two. In the former there is a soft symmetrical enlargement, in the latter it is unsymmetrical and nodular. The essential pathological condition is a storage of colloid. The majority of cases occur within the second decade of life. The basal metabolism is within or below normal limits. There may be no symptoms or there may be indications of hypothyroidism including dry skin and lack of energy. An increased supply of iodine to the thyroid favors the absorption of an excess of colloid. When absorption is slow it may be due to the presence of adenomatous tissue and the majority of adenomatous goiters have their inception in colloid goiter. Adenomatous tissue is very prone to degenerate and hypertrophy and practically always

hyperfunctions. It can elaborate and store colloid long before it can elaborate and store thyroxin, and the average interval between the time the goiter is first noticed and the onset of hyperthyroidism in Plummer's cases was seventeen and six tenths years. This is quite in contrast to the development of hyperthyroidism in a diffuse hypertrophic goiter where the interval between the first enlargement of the gland and symptoms of hyperactivity is short. After the age of forty there is a tendency for adenomatous goiters that up to that time have produced no hyperthyroid symptoms to overfunction and produce an excess of thyroxin with the accompanying signs of hyperactivity.

Hyperthyroidism occurs in either a hyperfunctioning adenoma or a diffuse hypertrophy of the whole gland—exophthalmic goiter. The clinical manifestations of hyperthyroidism associated with adenomatous goiter are only exaggerations of normal physiologic reactions due to an excess of a normal secretion, viz. 1. Cardiovascular reactions that are indicative of an increased minute-volume flow of blood from the heart, 2. Increased perspiration and surface temperature indicative of an elevation of heat elimination, 3. Increased food consumption, in most cases insufficient to maintain the body weight. 4. A group of findings attributable to stimulation, irritability and fatigue of the nervous system, particularly the sympathetic system. Hence we have an increase of the basal metabolic rate. Very rarely is there exophthalmos, it is characteristically absent. These reactions are essentially normal reactions in character but of increased intensity and practically always return to normal within three weeks following the enucleation of the adenoma.

In the case of exophthalmic goiter on the other hand, we have a diffuse hypertrophy of the thyroid, the result of an intensive stimulation from some unknown source, of the entire previously normal gland, an increased output of thyroxin of *abnormal* quality, hyperthyroidization of the organism and later a hyperplasia of the thyroid. The stimulation is, in most cases of high intensity, causing hypertrophy from the onset as contrasted with hyperthyroidism in adenoma where there is a long slow development. There is an increased B.M.R. with the resulting secondary manifestations, with a peculiar nervous syndrome and usually exophthalmos with a tendency to gastro-intestinal crises of vomiting and diarrhea. The organism breaks down much more quickly from exophthalmic goiter than from the more simple hyperthyroid condition.

It seems to be clearly proven that the so-called endemic goiter, of both the diffuse and adenomatous colloid varieties is due to a deficiency of iodine metabolism. It occurs most frequently in regions far from the

sea coast, where the water and soil are in general poor in iodine. At the same time, McCarrison by his studies in the endemic goiter regions of the Himalayas has with equal conclusiveness demonstrated the infectious nature of goiter, the nature of the infecting organism as yet undetermined. Plummer maintains, and McCarrison now agrees, that "both the iodine and bacterial factors coexist and that, in regions of low available iodine in the food and water supply, even this small amount may be rendered unavailable by its utilization or fixation by certain types of intestinal flora". The abnormal increase of colloid in the thyroid gland, can, therefore, at the present time best be explained as the deposit or storage by the thyroid of an incomplete, and possibly a waste, inactive by-product as the result of the gland having to maintain a normal or nearly normal thyroxin content of the body under the difficulty of an insufficient quantity or concentration of available iodine.

The typical, diffuse, colloid enlargement of the thyroid usually appears first about puberty, iodine in proper amounts will prevent its development, and after it has developed, will cause the absorption of the excess colloid. But the administration of iodine to persons over thirty years of age having adenomatous goiters often initiates hyperthyroidism. Once initiated by an excess of iodine, the hyperthyroidism will continue for months or years without further administration of iodine. Hence the need for careful diagnosis before the administration of iodine. "Dried thyroid gland or thyroxin has proved as reliable for the reduction of colloid goiter as iodine and avoids the danger of initiating hyperthyroidism if adenomatous tissue is also present. Our motto should be **no Iodine in Adenoma**.

Operation is rarely if ever indicated in cases of diffuse colloid goiter because there are no symptoms of hyperthyroidism, unless it be for cosmetic effect or to relieve pressure symptoms. However, colloid goiters containing adenomatous masses, often are best treated by operation, because an increasing proportion of patients with adenomas spontaneously develop symptoms of hyperthyroidism after the age of 40.

Though the etiology of colloid goiter is so well known, that of exophthalmic goiter has not as yet been determined, and there is nothing to suggest that they are in any way interrelated. Something occurs to alter the nature of the thyroid secretion, thus accounting for the several peculiar symptoms which cannot be produced by the administrations of thyroid extract or thyroxin. Two thirds of the patients dying from exophthalmic goiter at the Mayo clinic have an enlarged thymus gland which is frequently accompanied by a lymphoid hyperplasia. In many instances the cervical sympathetic nerves reveal evidence of chronic and acute, widespread, nutritive changes. Bram

maintains that exophthalmic goiter is not primarily a disease of the thyroid gland, but rather of the vegetative nervous system. Hertzler states that "The whole picture of this form of goiter suggests that there is a powerful influence outside of the thyroid gland". It is on this basis that Bram has developed his medical treatment for the disease, consisting of rest in bed for at least 16 hours out of the 24, moderate exercise, mild hydrotherapy, a liberal, nourishing diet with a minimum of meat, and medicine as indicated, especially quinine hydrobromide, iodine or iodides in small amounts, luminal, atropine, digitalis (though Bram says it has no effect on hyperthyroid tachycardia) and ovarian or testicular, and pancreatic extracts; for thyroid hyperfunction is accompanied by adrenal and posterior pituitary hyperfunction, sympatheticotonia, vaginismus and pancreatic and ovarian hypofunction. Plummer claims that the administration of iodine does not prevent or materially change the course of exophthalmic goiter and that the popular impression that iodine administration will intensify the hyperthyroidism of exophthalmic goiter probably is not correct.

The almost universal surgical treatment of exophthalmic goiters is probably a confession of ignorance of the real nature of the disease. In the present state of our knowledge, surgery is the ultimate procedure in the majority of cases. But the medical treatment should be tried at least as a measure preparatory to operation, and if results were always as good as those reported by Bram there would be no need for operation. "In adenoma with hyperthyroidism the operation is directed to the removal of the tumor, while in exophthalmic goiter the surgical procedures are planned to reduce in the more severe cases the overactivity of the diffuse parenchymatous, hypertrophied thyroid by successive steps, first one or more ligations and finally one or more partial thyroidectomies". The work of Crile, Hertzler and the workers in the Mayo Clinic, as well as many others, has robbed the operation of its terrors in experienced hands. But for the inexperienced and occasional operator, it is still an operation to be considered otherwise than lightly.

No reference in print to the subject of goiter in Korea has been found other than that of Dr. Mills mentioned in the first part of this paper. Probably the fact of Chosen being a peninsula with no part of the land a great distance from the sea, and the large factor that the sea foods play in the diet of the people, accounts for the comparative rarity of endemic goiter in this country, Mills' report of frequency around Kangkei being the exception which proves the rule. Nevertheless, with the changing economic and social conditions which are coming so rapidly in Chosen, with increasing strain and stress, we should not be surprised to see an increasing number of cases of hyperthyroidism,

especially of the exophthalmic variety. The writer has had under his care at different times three foreigners who presented symptoms of thyroid hyperactivity and all three have been operated on in America. In two of the cases the diagnosis was not easy—in one, suspected but not proven by myself, the diagnosis was made only by a goiter specialist in America. The fact that after devoting special attention to the subject on my last furlough, I have had these two cases, herewith reported, among my Korean patients, makes me wonder if possibly we have not been overlooking them in the past. Inasmuch as early recognition and treatment are all important, it behooves us to be ready to recognise them when they come to us, and to be ready to handle them properly, by medical treatment if possible, and failing in that by appropriate surgical treatment.

This paper is manifestly merely an introduction to a great problem. The subject of hypothyroidism in all its phases has not been touched upon. We would be glad to hear of the experience of others along these lines, in the hope that our knowledge may be increased to the mutual benefit of ourselves and our patients.

TESTS

Quinine Test.

Neutral quinine hydrobromide, 10 gr. caps, t.i.d. Poorly borne in all non-toxic goiters and other conditions. Well borne in hyperthyroidism. Appearance of tinnitus after long administration in hyperthyroidism a sign of recovery.

Goetsch Adrenalin Test.

Inject 0.5 cc of 1:1000 adrenalin. Take readings of pulse, resp, and B.P. every 2½ min, for 10 min. Then every 5 min. up to one hour, then every 10 min. for ½ hour longer. In a positive reaction there is a rise of systolic B.P. and fall of diastolic. Rise in pulse rate. Subjective symptoms exaggerated. A test only of adrenalin hypersensitivity which accompanies thyroid hyperfunction. Should be used with great caution.

Loewi's Mydriasis Test.

1:1000 adrenalin in conjunctival sac produces mydriasis within ½ hour through stimulation of the sympathetic.

Read's B. M. R. Formula.

(P. P. \times .74 plus P.R.) \times .75 minus 72 equals B. M. R.

Must have high pulse and high B. P. Probably gives results 5-10 points too high.

DEMENTIA PRECOX AS AN ENDOCRINOPATHY

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The understanding of the largest single group of mental anomaly, most commonly known by the name Dementia Precox; Schizophrenia, or Adolescent Insanity, has been very hazy, and the psychoanalysts have vainly attempted to attach a psychic basis to this disease. This symptom complex is undoubtedly a psychosis essentially of the period of puberty and adolescence, and is characterized by a mental deterioration tending to progress, although frequently interrupted by remissions, but very definitely showing no gross abnormality of the brain and no consistent histopathological findings in the central nervous system. In fact the brain of the so-called dementia precox case is invariably pronounced characteristically normal. In examining a large number of autopsies, as well as live material of this type, and going over the extensive literature on the subject, it has been concluded as will be shown later that this mental symptom complex is essentially, if not entirely, dependent on a dysfunction of the endocrine balance.

The literature is far too extensive to completely review in this article, but it is interesting to note that most of the articles so far published on the subject clearly show that there are very definite changes in the endocrine glands in "dementia precox." Kraepelin¹ in 1881 first called attention to the relation of this disease to the endocrines, especially to the sex glands.

Frankel² found infantile type of genitalia in 72 per cent of 176 cases of dementia precox cases examined, and Mott³ showed pathological changes in the testes, defective maturation of the primordial follicle, and proliferation of the stroma, so that he concluded that dementia precox results from deficient productive energy of the generative organs, and Lewis⁴ after a review of 143 autopsies on dementia precox cases as compared to 458 other autopsies concluded that gonadal atrophy is more commonly found in dementia precox cases than in other individuals. But unfortunately most authors take the degree of spermatogenesis as the criteria of degeneration of the endocrine function of the testes, while this is an erroneous conclusion as will be later pointed out.

The most complete study of the problem recently was by Langfeldt⁵ who reports a detailed clinical examination of 40 unquestionable cases of dementia precox, using every test of any value. He divided

these cases into three type groups: 16 catatonics, 11 hebephrenics, and 13 mixed. In the catatonics he found the following essential disturbances present in both the acute as well as the quiescent cases: slow pulse, low blood pressure, lymphocytosis, glandular swelling, pilocarpin test positive, Aschner positive, and reduced basal metabolism. Catatonics in acute illness usually show dilated pupils, tachycardia, exophthalmos, and reduced glucose tolerance. In the hebephrenic cases, in both the acute and chronic state, there was a normal basal metabolism and a normal blood picture, tachycardia, exophthalmos, tremor, dilated pupils, and reduced glucose tolerance, and usually large firm testes.

A number of articles have recently appeared which attempt to show that there are constant changes in the cerebral cortex in cases of dementia praecox, but these examinations do not however disprove the hypothesis of an endocrine genesis of this disease, as these changes, which are most frequently seen in the second and third stratum of the cortex, may just as well be secondary as primary changes.

During several years spent in China opportunity was given to examine twenty Chinese eunuchs abandoned after the dissolution of the Imperial Court in Peking, and three Skopecs driven from Russia and refugeeing in China. These latter individuals were castrated because of their religious teaching and it is said that there were at least 150,000 members of this sect before the intolerance of the Soviet scattered them out of Siberia. This sect has been in existence since 1757, and many of the subjects were castrated in childhood. Two of the Skopecs examined had their external genitals completely removed, as was the case with a number of the Chinese cases.

The examination of these twenty-three eunuchs showed a number of general characteristics found in all of them: 15 tended to be obese, and the remainder were emaciated, probably due to starvation. The larynx was infantile. The body frame was markedly longer in the extremities. In all the cases it was found that the ratio (body length: leg length:: 1.75:1) was the rule, while in an equal number of normal individuals it was found that the ratio (height: leg length:: 2:1) was the rule. The pelvis was juvenile. There was an acrocynosis and the nails were spotted. Several of the individuals showed a rather general cyanosis of the body, while the remainder were very pale. The skin was clammy, rather puffy, doughy, and creased. The subcutaneous fat was more abundant than in normal men; in the gluteal region, under the breasts, in the trochanters, abdominal wall, and especially under the mons veneris. The middle of the upper lip, under the chin, the cheeks and the upper part of the neck was hairless.

The perineum, axillae, and extremities did not have the abundant hair that is commonly found in the normal male. The pubic hair formed an horizontal, and in 2 or 3 of the individuals a concave line across the body, as is normal for females, and which in the normal male should be convex or should form a triangle with the apex at the umbilicus.

Psychologically these individuals were found to all have good intelligence, were all orientated, but had been living a hand-to-mouth existence since they had been thrown on their own resources. They all appeared very introspective, and apathetic. Although they could talk quite intelligently when questioned, they never volunteered any information and appeared very stupid. They seemed methodical in their actions, and only two of the individuals showed any purposeful efforts. There was a distinct lack of affect, and they were cold and passive, although in dire straits financially. At least half of these eunuchs had got into trouble because of their tempers, and two had been sentenced because of murder. They all appeared moody. Most of the eunuchs who still retained the penis, stated that they had often indulged in sexual intercourse with prostitutes, although they had found that their erections were always of short duration. They all said that they indulged in homosexual practices and other perversions. Ten of them had had gonorrhoea and one had an active chancre. Unfortunately no blood examinations or basal metabolisms could be done on these cases, although Shen and Lin⁶ have reported the nitrogen metabolism of eunuchs examined by them, and it conforms to the general picture.

Because the examination of these eunuchs showed them to be almost typical prototypes of what is considered "dementia precox," it was decided to make an examination of the autopsy material of diagnosed "dementia precox" cases recorded at St. Elizabeths Hospital, and to examine a large number of "dementia precox" cases still under care, and to see if the symptom-picture remained the same.

Before making the above examination, in order to determine a normal somatic standard, 50 normally reacting males and 24 normally reacting females between the ages 16 and 50 years were examined. Since all these persons came within the scale of characteristics for normals, they were used as a basis of comparison for the patients examined as examples of "dementia precox." Out of the four thousand patients now under care here at the hospital were chosen 70 males and 40 females diagnosed as typical cases of dementia precox and these were given careful physical examinations.

The males ranged between the ages 18 and 48 years, but 77.1 per cent were under 30 years of age, and all appeared in good physical health. Of this number about 40 per cent were of the thin type, and about 30 per cent were obese. Over 5 per cent showed acrocynosis, and most of them appeared rather pasty, 11 per cent had polyuria, 5.5 per cent increased salivation and an equal number showed dermographism. Sixty per cent were found to have female distribution of hair, 38.5 per cent had a penis smaller than normal, while 23 per cent had a penis larger than normal. Only about 6 per cent showed what appeared to be normal testes, and 68.5 per cent showed more or less pathology of the prostate. Of these cases 43 per cent showed unmistakable signs of masturbation, and several had undoubtedly abused themselves to excess.

Over 22 per cent had had a severe toxic illness before the onset of the psychosis. The severe attacks recorded were diphtheria, yellow fever, malaria, small-pox, mumps, scarlet fever, and influenza. There is plenty of authority to substantiate the fact that the toxemias have a very deleterious effect on the endocrines, and some, such as mumps, appear to have a selective effect on the gonads. The adrenals are known to be especially sensitive to toxins.

The fact that the majority of these patients were able to perform an erection, and also to have an orgasm, is no criteria of normality of the gonads. Erection may not be associated with sexual desire, for priapism may be a sign of cervical injury, myeloid leukemia, and tabes, even though the testes have been removed. Then again the reflex centers may have acquired the mechanism of erection before the loss of the sexual stimulation, as was shown by the above eunuchs. As to extrusion of semen, this may take place without erection, and simply as a reflex emptying of distended vesicles.

The female patients examined ranged between 16 and 47 years of age, but 87.5 per cent were between 20 and 40. The onset of the first signs of psychosis was recorded as being between 10 and 18 years of age in most of the cases, although 75 per cent of these individuals were married.

On physical examination it was found that the majority were of the thin type, 22.5 per cent showed male distribution of hair, and practically all the cases showed abnormalities of the external genitals and breasts. None of the women showed normal menstrual histories, although 35 per cent of these cases had been pregnant one or more times. Bimanual examination showed that 52.5 per cent of the women

had unmistakable ovarian pathology, 25 per cent had had their ovaries removed some time before the onset of the psychosis, and 2.5 per cent showed infantile uteri.

Over 55 per cent of these women had had a serious illness before psychopathic symptoms developed, and 5 per cent showed first signs during pregnancy.

A detailed study of four hundred and eighty-seven autopsies was made to determine if there was any biometric and microscopic differentiation between the cases diagnosed as dementia precox and the other psychoses. Of this number 158 males and 24 females were dementia precox cadavers, and 241 males and 64 females had died without the diagnosis of "dementia precox." The detailed study of these cases was too extensive to report here, but will be published elsewhere. Nevertheless the salient facts will be given.

Eighty per cent of the male dementia precox cadavers showed a female distribution of hair growth, and 62.5 per cent showed obvious signs of masturbation.

The brain in over 31 per cent of these cases was found to be normal in all respects, while only acute or minor degenerative changes were found in the remaining 68 per cent. The brains of these cases averaged up slightly heavier than those of the non-dementia precox cadavers.

The hypophysis, ephiphysis, thymus, thyroid, parathyroids, and pancreas showed nothing striking, although the adrenal glands revealed some rather remarkable but not consistent changes. Only 25.3 per cent of the adrenals could be classed as being normal. Also, only 14.5 per cent of the prostate glands were without noticeable pathology.

The most interesting findings in the endocrine system of the dementia precox cadavers was seen in the testes, as only 4.4 per cent of these glands were normal, and this small percentage might quite well be accounted for by the errors of psychological diagnosis. Of these glands 34 per cent were fibrosed and 61.6 per cent were diagnosed microscopically as chronic interstitial orchitis. Although pathology was also found in the non-dementia precox testes, the percentages were much lower. Up to 40 years of age the non-dementia precox testes showed few changes, and after this age the changes were usually diagnosed atrophy or fibrosis, as would be in keeping with senile changes.

In studying the testes, as mentioned before, unfortunately pathologists have taken the presence or absence of active spermatogenesis as the criteria of functioning or non-functioning testes. This is a wrong conclusion as the increment of the gland is not dependent on the spermatogenesis but on the lipoidal type of interstitial cells between the spermatic tubules. The presence or absence of this constituent is the true criteria of the endocrine activity. Spermatogenesis is dependent on sexual activity although shrinkage of the interstitial substance may cause a choking off of the spermatic tubules and thus an atrophy. Cases, whether dementia praecox or not, who indulge in moderate sexual stimulation, either by coitus or masturbation showed active spermatogenesis in spite of age. Non-use of the spermatozoa caused atrophy of disuse, and over stimulation appears to cause degeneration by fatigue. Testes of the non-dementia praecox cases although in many cases containing no spermatozoa still had varying amounts of interstitial elements, while masturbating or sexually active dementia praecox individuals, although having apparently normal spermatogenesis contained little or none of the lipoidal substance between the tubules.

Of the twenty-four female dementia praecox cadavers examined 20 per cent were of the catatonic type, 35 per cent hebephrenic, and 45 per cent were of the mixed type, which included the paranoid, simple and undifferentiated. Of the cases 58 per cent were legally married, 8 per cent had been in "free-love" marriage, and 34 per cent were single. All but two of the married women had had children, having from 1 to 5 each, and one of the single women had had a miscarriage. The histories revealed that the psychoses developed between the ages 17 to 52 years of age, while about 80 per cent of the women developed their psychoses before 39 years.

Thirty per cent gave a history of a severe attack of measles some time in their life, 20 per cent scarlet fever, 10 per cent typhoid, 10 per cent diphtheria, 10 per cent mumps, and 10 per cent influenza; 10 per cent had chorea, 30 per cent showed histories of alcoholism in one or both of the parents, 20 per cent had parents that were psychotic, 10 per cent had miscarriages and 30 per cent dated the psychosis from pregnancy.

Slightly over 28 per cent of these female cadavers showed male distribution of hair, and 43.8 per cent showed atrophic breasts, while 6.2 per cent had juvenile breasts.

The brain and glandular system showed essentially the same findings as those found in the male cadavers, although only one normal set of adrenals was found in the dementia praecox females. Nevertheless, no uniform pathology was found in the adrenals.

The uterus was normal in only 15 per cent of the cases, while none of the ovaries were normal. Twenty-five per cent of the cadavers had had their ovaries removed previous to the psychosis, while of the ovaries examined from these dementia precox cases 33 per cent were atrophic, 60 per cent were sclerotic or cystic, and 6.3 per cent were cancerous. Some pathological changes were seen in the ovaries from the non-dementia precox females, but nothing compared to the general subnormality of the dementia precox gonads.

SUMMARY

The literature in general supports the contention that endocrinopathy is consistently found in dementia precox cases.

Twenty-three eunuchs examined showed typical dementia precox or schizoid characters; good intelligence and orientation, but distinct changes in the affect. Some retained sexual function but no libido.

Seventy five male dementia precox cases examined showed at least 60 per cent to be eunuchoid in type, only 5.7 per cent having apparently normal testes, with also other signs of endocrine dysfunction. A large number nevertheless sexually functioned.

Forty five female dementia precox cases showed 52.5 per cent to have undoubted ovarian pathology, although some had been pregnant.

Pathological examination of 158 male and 24 female dementia precox cadavers showed marked endocrine changes. No normal ovaries and only a small percentage of normal testes were found in these cases.

Almost every dementia precox individual gave a history of having had one or more of the severe toxemias, and at least a fourth of the cases inherited defective somatoplasm.

DISCUSSION

Dementia precox in the past has been more or less placed in the class of incurable and hopeless diseases, and anything that offers a possible amelioration is worthy of support. Much suggestive work on the problem has been done in the past, but without proper co-operation and without sufficient scientific conclusion.

The clinical and histo-pathological work that has already been completed shows that there is apparently no consistent pathology in the brain substance, but very consistent lack of gonadal increrion. Examination of eunuchs showed them to have schizophrenic characteristics

with marked affect disorganization, while on the other hand unmistakable cases of dementia praecox are quite consistently eunuchoid in physique.

It is well known that the endocrines are very sensitive to toxins; such as ovaritis or orchitis during mumps and scarlet fever, and in chronic alcoholics or opium smokers. There is abundant pathological evidence to show that patients dying in acute toxemia have hemorrhagic and destructive changes in the adrenals. Patients seldom recover from typhoid without some endocrine imbalance. Thus a history of toxemia or fatigue, either prenatal or postnatal is suggestive as a precursor of dementia praecox. The tenseness of catatonia might be explained by the apparent hyperfunction of the thyroid in these cases.

Without the driving force characteristic of the endocrines, and especially of the gonads there is no wonder that the so-called dementia praecox character develops.

With the conclusion that this disease is primarily a disorder of the endocrine system, and especially of the gonads, the supplying of this increment should assist the individual in readjustment to life. It is hoped that in due time this will be proved.

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**SCARLET FEVER RASH
and
TOXIN OF HEMOLYTIC STREPTOCOCCI**

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1. Parallelism between immunity to scarlet fever and the Schultz-Charlton phenomenon.

It is a well known act that sera of scarlet fever convalescent patients and some healthy sera blanch scarlet fever rash after 8—48 hours, in most cases after about 24 hours, when intradermally injected into scarlet fever patients at the reddened area in the acute stage of the disease. This reaction is now generally known by the names of the first observers, Schultz and Charlton.¹ Since the first report, the phenomenon has been studied by many scientists such as Neumann,² Haselhorst,³ Paschen,⁴ Zlatogoroff,⁵ Dorner,⁶ Mulsoy,⁷ Meyer,⁸ Mair,⁹ Dick,¹⁰ Joe,¹¹ Zoeller,¹² Blake and Trask and Lynch,¹³ Blake,¹⁴ Toyoda and Moriwaki and Futagi,¹⁵ Futagi,¹⁶ Satake, Dochez,¹⁷ Birkhaug,¹⁸ Toomey and Nourse,¹⁹ Reymond, Steinkopf, Tron &c.. The Schultz-Charlton rash extinction phenomenon is of peculiar interest in that this phenomenon is extremely specific to scarlet fever and therefore the reaction serves to differentiate scarlet fever rash from other exanthematous infections like measles initial exanthem of varioloid, rubeola, scarlatiniform rash caused by toxin of staphylococci, and many other different toxic as well as serum rashes. Although the rash of erythema nodosum has been reported to be blanched with streptococcic antitoxin,²⁰ the report awaits farther confirmation.

I made an extensive experiment concerning this reaction with the sera of 30 convalescent scarlet fever patients and the sera of 85 healthy adults, and this resulted in 89% positive of the former and 56.8% positive of the latter. I employed 0.1 c.c. of sera in every instance tested. The positive percentage of healthy human sera widely differs according to authors, namely, 40%, Mulsoy,⁷ 60%, Haselhorst,³ 61.9%, Satake.²¹ It is my opinion that these wide differences are related to the average age of the groups tested, i.e. the positive percentage of a group consisting of adults is higher than that of younger persons.

The nature of the specific substance in the sera which develops blanching is not fully known; however recent investigations indicate that the effect is due to the action of an antitoxin on the scarlet fever toxin and that the blanching is brought about by neutralization of the toxin *in situ* by the antitoxin. It must accordingly be regarded that

patients become antitoxic to scarlet fever in the course of the disease (acquired immunity) and some healthy persons also become antitoxic during life (natural immunity).

The Schultz-Charlton reaction of sera of scarlet fever patients is absolutely negative at the early stage of the disease, and it begins steadily to show blanching qualities in the course of the disease. This is true in the tests of a group of patients as well as in individual patients as shown in Tables 1 and 2.

TABLE 1

Schultz-Charlton's reaction of sera of patients in the course of scarlet fever.

days of the disease.	cases tested	positive cases		negative cases	
		actual number	%	actual number	%
1—3	5	—	—	5	100.0
4—10	8	3	37.5	2	62.5
11—20	5	3	60.0	2	40.0
20—25	11	8	72.7	3	26.3
26—35	23	20	87.1	3	12.9

TABLE 2

Schultz-Charlton's reaction of sera of patients in the course of scarlet fever.

patients	days of the disease		
	2—3	10	28—35
I. Y.	—	±	—
K. G.	—	+	++
Y. T.	—	±	+
M. K.	—	—	±
D. T.	—	±	++

Table 1 shows that the positive percentage of sera becomes greater as the disease advances in the groups of patients. Table 2 shows that the Schultz-Charlton reaction of the serum of each individual patient becomes positive during the course of scarlet fever.

Positive Schultz-Charlton reaction of sera is one of the most marked biological changes which scarlet fever patients undergo during the disease, and is a sign of immunity against scarlet fever. In my experience, immunity to scarlet fever as expressed in Schultz-Charlton reaction of sera, conferred by scarlet fever patients, is of different grades, some sera hardly blanch the rash in undiluted condition while other blanch in a dilution of 1: 5, or even in a dilution of 1:40.

Sera of normal laboratory animals like the horse, mule, donkey, rabbit, guinea-pig, mouse, rat, sheep or goat never blanch the scarlet fever rash. However an animal like the horse acquires the ability to blanch scarlet fever rash when properly immunized with the toxin of hemolytic streptococci associated with scarlet fever. This important fact was developed on the basis of Dick's conception regarding the etiology of scarlet fever. I tested with immune sera of my own making from Manchurian Donkey (10 tests), Antitoxin of Parke Davis & Co., (10 tests) horse immune sera of Wellcome Physiological Research Laboratory (10 tests), and antitoxin of Eli Lilly & Co. (21 tests) and found these sera to be Schultz-Charlton reaction positive in almost every instance tested. Zlatogoroff was able to induce an extended positive Schultz-Charlton reaction in young albino rabbits by treating the animals appropriately with fresh materials from scarlet fever patients. Futagi of my hospital also produced Schultz-Charlton reaction-positive-sera in rabbits by immunization with hemolytic streptococci after Dochez's method and I confirmed this. It is an exceedingly important fact that sera of animals thus immunized with hemolytic streptococci develop Schultz-Charlton reaction.

Schultz-Charlton reaction of sera has a specific correlation with Dick's skin reaction in individuals. Namely, sera of strongly Dick-positive persons do not blanch scarlet fever rash while sera of negative reactors blanch it, and the reverse is also true.

These data are summarized in Table 3.

TABLE 3

Correlation between Schultz-Charlton's and Dick's Reaction.

Name	Age	Dick's reaction of the skin	Schultz-Charlton's reaction of serum
O. H.	34	+++	—
T. M.	5	+++	—
T. S.	8	++	—
U. M.	50	++	—
Y. S.	34	++	—
O. S.	38	++	—
Y. K.	26	++	—
N. S.	38	++	—
O. T.	34	+	—
S. N.	24	+	±
F. A.	27	+	—
I. G.	31	+	—
M. S.	32	+	—
A. C.	33	+	—
U. M.	44	+	—
A. H.	11	+	—
N. G.	29	+	—
F. N.	18	+	±
N. S.	40	±	—
N. N.	33	±	±
M. A.	18	±	—
T. T.	40	—	++
T. S.	36	—	++
U. R.	19	—	++
I. H.	16	—	+
M. Y.	22	—	+
K. O.	25	—	++
M. M.	17	—	++
T. L.	6 m.	+	—
M. L.	2 m.	+	—
L. W.	3	—	++
C. L.	2	—	++
T. M.	28	—	++
T. V.	39	±	±

It is well known that Dick-positive reactors can be made negative by preventive immunization after Dick. I had the chance to immunize more than 4,000 Japanese children in Manchuria and 70 % of them became Dick-negative after injections of 1,000-60,000 units of toxin as expressed in skin test doses. By injections of toxin of hemolytic streptococci, Dick-positive persons become negative and at the same time the Schultz-Charlton reaction of the sera becomes positive. Here also lies specific relation between the two reactions as Table 4 shows.

TABLE 4

Correlation of Schultz-Charlton's and Dick's reaction before and after preventive immunisation.

Name	Age	Number of Injections	Dick's Reaction		Schultz-Charlton's reaction	
			before the Injections	after the Injections	before the Injections	after the Injections
S. N.	34	4	+++	—	—	+
T. M.	5	6	+++	±	—	±
T. S.	8	8	++	—	—	++
U. M.	50	3	++	—	—	+
Y. S.	34	3	++	—	—	+
D. S.	38	3	++	—	—	+
Y. K.	26	4	++	—	—	++
S. S.	44	3	++	—	—	++
N. S.	38	3	++	—	—	+
N. G.	29	4	+	—	±	+
F. A.	27	3	+	—	—	+
F. N.	18	3	+	—	±	+
S. S.	32	3	+	—	—	+
A. C.	33	2	+	±	—	—
Y.	12	5	+	±	—	+

The Dick reaction is the best method of ascertaining individual immunity or susceptibility to scarlet fever and therefore the reaction can be regarded as an external index of individual immunity or susceptibility to scarlet fever. In the same way the Schultz-Charlton reaction which has specific relation with the Dick reaction may be called an internal index of individual immunity or susceptibility to scarlet fever.

Not only animals like horses and rabbits but also human beings can be made Schultz-Charlton positive by injections of toxin of hemolytic streptococci; human beings therefore can be Schultz-Charlton reaction positive in three ways; acquired immunity through recovering from scarlet fever; natural immunity; and by preventive immunization. This is an evidence that immunity thus given in three different ways is of one and the same nature.

2. Experimental scarlatiniform rash and Schultz-Charlton reaction.

Filtrates of scarlatinal streptococci cultures several days old contain substances which cause characteristic symptoms of scarlet fever-like fever, generalized rash, nausea, vomiting, pallor oris, strawberry tongue and neutrophilic leucocytosis, when injected in suitable amounts into susceptible persons. This was first observed and described by Russian investigators²² when they performed preventive injection of scarlet fever after Gabritscewsky's method, and of late has been laid on a sound experimental basis by Dick.²³ I injected 1277 susceptible children with from 500 to 2,000 s. t. d. of toxin and observed typical scarlatinal form eruption with all clinical signs of scarlet fever in 30 (2.9%) children who were strong Dick reactors. Relatively large amounts of toxin as 5,000 s. t. d. when subcutaneously or intramuscularly injected into susceptible persons do not fail to cause scarlatinal rash several hours after the injection. The rash thus experimentally produced can be blanched by streptococcic antitoxin; and this is a matter of course for it is only a reaction between homologous toxin and antitoxin, as the natural scarlet fever rash is blanched by sera of convalescent scarlet fever patients. Then, what will be the result of Schultz-Charlton test of convalescent serum of scarlet fever patients on the experimental scarlatiniform rash thus produced? The following tests were undertaken to determine the question.

REPORT OF CASES TESTED

CASE I.—M. K. a girl, aged 7, Dick reaction (+) 5 p.m. 4th Jan., 4,000 s.t.d. of toxin of scarlatinal streptococci intramuscularly injected. 8 p.m. nausea followed with vomit. 9 p.m. generalized rash appeared, a temperature of 39° C., pallor oris positive. Schultz-Charlton test with scarlet fever convalescent serum (Y. T.) slightly positive. The rash and other symptoms disappeared next morning. No injection in the pharynx, the tongue strawberry like.

White blood cells count, 21 hours after the injection. Numbering 13,400.

Polymorphonuclear neutrophilic leucocytes	...	...	...	...	...	82 %
Eosinophils	...	...	...	...	...	0 %
Mast cells	...	...	...	...	...	0 %
Lymphocytes	...	...	...	...	...	8 %
Monocytes	...	...	...	...	...	8 %
Plasma cells	...	...	...	...	...	2 %
Doehle's cell inclusion	...	...	...	...	...	(+)

CASE 2.—J. K. a boy, 11 years old. Dick reaction (+) 5 p.m. 4th Jan. 5,000 s.t.d. of toxin intramuscularly injected. 9 p.m. nausea and vomit, intensive rash on the entire body, headache, pallor oris positive, slight injection in the pharynx. All symptoms with exception of the rash disappeared next morning. The rash still present the next evening. Schultz-Charlton reaction with three different scarlet fever convalescent sera (K. S. and 0) all distinctly positive. White blood cells count on the morning of 5th Jan. Numbering 27,800.

Neutrophilic leucocytes	...	...	...	...	...	73 %
Eosinophils	...	...	...	...	...	4 %
Basophils	...	...	...	...	...	0 %
Lymphocytes	...	...	...	...	...	19 %
Large mononuclear cells	...	...	...	...	...	4 %
Plasma cells	...	...	...	...	...	0 %
Doehle's cell inclusion	...	...	...	...	...	(+)

CASE 3.—G. A. a boy, aged 9. Dick reaction (+) 5 p.m. 12 Jan. 5,000 s.t.d. of toxin intramuscularly injected. 10 p.m. a marked generalized rash with nausea and head ache, no vomit. Schultz-Charlton reaction with sera of convalescent scarlet fever patient (0) positive. The throat not inflamed.

Experimental scarlatiniform rash fades sooner than natural scarlet fever rash does. I therefore injected known sera of positive Schultz-Charlton reaction prior to the administration of the toxin as is done in the case of "Keller'sches Aussparungsphenomen"²⁴ in measles, otherwise the result may not be seen, because experimental rash disappears relatively soon before Schultz-Charlton reaction can appear.

CASE 4.—J. J., aged 3, a girl, Dick reaction (++) 11 a.m. 17 April, 24 hours broth culture of hemolytic streptococci isolated from the throat of a scarlet fever patient (S. S.) in the acute stage of the disease, inoculated in the pharynx. 21 April, slight sore throat, 22 April, the temperature went up to 40° C, a marked rash on the entire body which was later, on 30 April, followed with a weak desquamation. Schultz-Charlton reaction with convalescent serum (T. I.) positive, the fever persisted for 4 days. The convalescence was uncomplicated. White blood cells count on 22 April, numbering 15,800.

Neutrophilic leucocytes	...	...	...	...	...	86 %
Eosinophils	...	...	...	...	...	3 %
Lymphocytes	...	...	...	...	...	5 %
Large mononuclear leucocytes	...	...	...	...	...	5.5 %
Plasma cells	...	...	...	...	...	0.5 %
Doehle's cell inclusion	...	...	...	...	...	(+)

CONCLUSIONS

The above mentioned experiments show that experimental scarlatiniform rash is blanched with sera of scarlet fever convalescent patients. Natural scarlet fever rash is blanched with sera immunized with toxin of hemolytic streptococci, and experimental scarlatiniform rash caused by toxin of hemolytic streptococci is blanched with sera of convalescent scarlet fever patients. The results of these cross reactions suggest to me that scarlet fever rash is the same nature as that caused experimentally with toxin of hemolytic streptococci so far as Schultz-Charlton reaction is concerned.

3. Further minor observations regarding the specific relationship between scarlet fever rash and toxin of hemolytic streptococci.

When persons who have had pyogenic foci like furuncle, carbuncle and pustule secondary to insect bites &c., later catch scarlet fever, the rash is often blanched about the area of previous cured pyogenic foci. I observed 3 such cases among my scarlet fever patients.

- 1.—K. K. a woman aged 26, carbuncle on the chest.
- 2.—Y. F. a boy aged 8, furuncles on the abdomen.
- 3.—K. U. a girl, 12 years old, insect bites on the right forearm.

This phenomenon has also been observed by others and is called spontaneous extinction reaction.²⁵⁻²⁶

As no bacteriological research to determine whether or not the pyogenic process had relation to hemolytic streptococci was done definite relationship between these spontaneous extinction reactions and hemolytic streptococci could not be established. In case of persons previously injected intradermally or subcutaneously with amounts of toxin of hemolytic streptococci who later develop scarlet fever, specific phenomena are often observed around the area of the previous injection. The phenomena may be reduced to the following two types.

1. As a sign of local active immunity, the scarlet fever rash is entirely absent at the site of the previous injection. The blanching exists as long as the rash is present. Cases which I observed are summarized in Table 5.

These local blanchings are doubtless due to the specific action of toxin of hemolytic streptococci to scarlet fever rash and may be called a modified Schultz-Charlton phenomenon. Such extinction of scarlet fever rash due to local active immunity can be observed in scarlet fever patients when toxin of hemolytic streptococci is intradermally injected at the beginning of the disease, in a limited number of cases in which the rash persists exceptionally long. I observed the toxin extinction²⁷ of this kind in 3 cases as shown in Table 6.

TABLE 5

Cases of local immunity.

Name	Age	Site of the blanching	Number of days between the injection and the onset of the disease
T. K.	7	left upper arm	7
M.	10	„	10
K. T.	32	„	14
K. M.	12	„	10
M. M.	10	flexor surface of left forearm	24
K. D.	14	„	15
T. H.	6	„	6

TABLE 6.

Toxin extinction.

Name	Age	day of the disease on which the injection done	Toxin injected	day of the disease on which extinction occurred
K. T.	32	1	30 S.T.D.	3
Y. O.	8	1	20 S.T.D.	5
C. H.	4	1	100 S.T.D.	4

2. Rather intensive reddening occurs at the site of the previous injection, often as a forerunner of scarlet fever rash, and the reddening persists as long as the rash exists on the other parts of the body. This is simply a modified Arthus's phenomenon. The cases which I saw are shown in Table 7.

There is sometimes a transitory form between 1); and 2), in such cases the blanched area is surrounded by a markedly reddened ring.²⁸⁻³³

TABLE 7.
Cases of local reddening.

Name	Age	Site of the reddening	Number of days between the injection and the onset of the disease
K. M.	34	flexor surface of left forearm	4
S. I.	8	"	6
H. F.	11	"	2
F. N.	10	"	30
A. I.	13	"	16
S. H.	25	"	unknown
T. E.	8	"	28
A. S.	8	"	7
F. S.	13	"	3
K. S.	7	"	60

SUMMARY.

From the above mentioned experiments and minor clinical observations, the author has come to the following summary and conclusions:

1. Toxin of hemolytic streptococci can develop scarlatiniform rash in persons.
2. Immunization with toxin of hemolytic streptococci can turn sera of persons of negative Schultz-Charlton reaction to positive, as is shown in animals like horses and rabbits.
3. Experimental rash caused with toxin of hemolytic streptococci is blanched not only with animal homologous immune sera, but also with natural scarlet fever convalescent sera just as natural scarlet fever rash is blanched not only with sera of scarlet fever convalescent patients but also with animal immune sera.

CONCLUSIONS.

1. Scarlet fever rash and experimental rash caused by toxin of hemolytic streptococci are of the same nature.
2. Immunity with toxin of hemolytic streptococci and immunity against scarlet fever are of the same nature.

I have to thank Prof. Dr. T. Togoda for the interest he has taken and the guidance he has given in this investigation, also Dr. Satake, and Dr. Hutagi for encouragement in prosecuting the work.

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Clinical Notes

DIVERTICULAR CALCULI IN THE URETHRA

CASE REPORT

DANIEL G. LAI, B.S., M.D.

Hopo, Kwangtung

While stones in the kidney and bladder are quite commonly seen in South China,¹ it is comparatively rare to find them in such a large quantity in an urethral diverticulum as shown in the following case:—

History.—C. G., a Chinese boatman, 37 years old, married, was admitted to the Hopo General Hospital, Hopo, Kwangtung on May 6, 1927, complaining of difficulty in urination and a mass in the scrotum of more than ten years' duration. Several years previous to the present illness, he had received a lacerated wound of the genitalia from a blow, resulting in slight hemorrhage and swelling of the scrotum. From that time, he began to experience some difficulty in urination characterized by dribbling and pain. Five years later, he noticed a small mass with crepitant sensation behind the testes at the scrotum. The mass gradually increased in size until it looked like a goose-egg pressing on the urethra. One year ago, he, occasionally, passed some green-pea-like stones. Just before admission to the Hospital, he had marked frequency of urination (ten times a day and six times at night) with dribbling and pain at the urethra. However, he never noticed any gross hematuria, or pain in the bladder and kidney regions. Some pressure sensation at the rectum was felt during defecation.

Past history was negative. Denied any venereal infection. One elder brother had some dysuria, but no similar mass in the scrotum.

Physical Examination, revealed a moderately well nourished and developed adult. Head organs essentially negative except pyorrhea alveolaris. Lungs clear. Heart normal. Blood pressure, systolic 105, diastolic 70. Abdomen, no masses or tenderness. Liver and spleen not enlarged.

At the peno-scrotal region, there was a hard, non-tender crepitating and irreducible mass of the size of a goose-egg, lying behind the testes. A small catheter passed only to a distance of 4 cm. from the meatus, and could not go further. During cough, no impulses were felt at the mass. No discharge from the urethra. Rectal examination confirmed the presence of the same mass at the scrotum.

LABORATORY FINDINGS:—

Urine—(on admission) cloudy and yellowish, reaction neutral, specific gravity 1010. Albumen two plus, sediment many red blood cells.

Blood.—White cells, 8,200; red cells, 4,200,000; hemoglobin 70% (Tallqvist); Neutrophiles 67%, Eosinophiles 2%, small lymphocytes 23%, large lymphocytes, 6%.

Kahn test of blood serum negative for syphilis.

Stools positive for ascaris ova.

Diagnosis of diverticular calculi in the urethra was chiefly based on the history of passage of stones, crepitant sensation of the mass and other clinical findings, though X-ray and cystoscopic examinations, and pyelogram would have been great aids if we had had such facilities in the Hospital.

Operation.—On May 8th, 1927, under local anaesthesia (1% novocain), my colleague, Dr. C. H. Chen, and I made incisions through the scrotal skin, and after freeing the mass from the surrounding adhesions, we opened up the diverticulum and took out by forceps 2170 stones varying in size from pin heads to big peas. (See frontis piece) They weigh all together 81 grams. The stones are shining and greenish yellow. Some of them are faceted while the remaining ones are smooth. On cutting, the surfaces are striated and whitish.

The diverticular wound was closed by double continuous silk sutures, and the scrotal skin by single interrupted sutures. Patient left the operating room in good condition.

Post-operative conditions.—Right after operation, patient was greatly relieved by easier urination. However, next day, the temperature rose to 102 deg. F., and it gradually subsided within one week. In the meantime, he began to have a fistula, and urine came out from the normal channel, and the new opening. Two months later, the fistula closed spontaneously, and the wound was well healed. Last urinalysis on Aug. 2nd, 1927 did not show many red cells, and only moderate amount of white cells, though albumen was still two plus.

Discussion. Young and Davis² state, "Calculi seldom originate in the urethra, and when they do it is usually when the urethra is much distorted by trauma or the results of inflammation. Thus calculi occasionally arise in blind passages or diverticula of the urethra". Our case had a definite history of trauma which seemed to have some bearing on the calculus formation in the urethra. The pre-existing diverticulum might have been another factor. Of course, one must remember that most urethral stones have originated in the bladder or kidney, and are simply arrested in their passage through the urethra.

Large stones in the urethra have been reported in literature. One mentioned by Sarkas³ weighed two ounces (60 grms). Some of them have long standing. Hirsch⁴ reported a case of urethral calculus of fifty-three years' duration. Multiple concretions were also noted. Karajur as cited by Mapes⁵ removed 85 stones from a sac behind the prostate, and during convalescence 415 more spontaneously extruded. Wu and Wheeler⁶ of Tsinan, Shantung found 93 urethral calculi in a Chinese boy aged nine. We extracted 2170 stones from our case.

Summary.—2170 stones weighing 81 grams were extracted from a urethral diverticulum in a Chinese boatman 37 years old, with history of trauma followed by dysuria, formation of a mass at the scrotum, passage of calculi and crepitant sensation.

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NEPHRITIS WITH OEDEMA CAUSED BY MALIGNANT MALARIA

(The first Case of Malignant Malaria Admitted to the Shantung Christian University Hospital)

E. B. STRUTHERS, M.B., D.T.M. and H.

Sun Yung Lu, a soldier 39 years of age, whose home was in Tsinan, was admitted to the University Hospital on Nov. 20 1926.

He was exceedingly dyspnoeic and coughed frequently. His whole body was oedematous.

He had lived in Kwangsi for the past 7 years and had had malaria in 1919 and 1921.

Up to a month before admission he had been perfectly well. Before leaving Kwangsi for Tsinan however he became ill. At first there was some fever with chilly sensations, followed in 3 days by swelling of the legs, and later of his whole body.

On examination he was obviously exceedingly ill. He was very dyspnoeic and oedematous; the face and forehead pitting easily on pressure. The legs and especially the ankles were much swollen. There were numerous rales in both lungs and they were dull at the bases. The spleen was easily palpable.

Temperature 101 F. Pulse 100. Resp. 36. Blood Pressure $\frac{140}{80}$

LABORATORY FINDINGS:—

The urine contained a considerable quantity of albumin with the presence of numerous granular casts. W.B.C. present. Sp. Gr. 1015.

Blood picture, Hb. 40%, R.B.C. 3,120,000 W.B.C. 4,600.

Differential:—Polys. 72% Lymph. 24% Large Mono. 4%.

A smear showed numerous *crecscents*.

Under quinine medication his condition rapidly improved. The dyspnoea and cough became less; the temperature fell to normal in 2 days. The urine output increased from 900 c.c. on admission to 5,000 c.c. 3 days after beginning administration of quinine, and the oedema had completely disappeared from the legs in 4 days; the albumin and casts from the urine in 6 days.

The patient was discharged from hospital in good condition 13 days after admission. *Crescents* were still present in much reduced numbers in the peripheral blood. He returned a week later for a further supply of quinine as he intended leaving Tsinan.

REMARKS:—

Although nephritis is not a common complication of malaria, it was reported from Palestine and Mesopotamia during the war. On the West coast of Africa, ascites and oedema in children is said to be caused by malaria.

In connection with this case, the following case record reported by Dudgeon and Clarke, and included by S. P. James in his book "Malaria at Home and Abroad", is of interest.

"Private M. had malaria in April, 1917. No history of previous illness. On Nov. 22 he had swelling of legs and feet, dyspnoea, vomiting, and cough. The urine contained albumin. On the 26th. there was slight oedema of the eyelids, feet, and hands, and a blood film contained *crecscents*. He died on this day after five uraemic fits. At the post-mortem examination acute tubal nephritis with extreme tubal degeneration was found. (Nephritis and Uraemia).

Editorials

THE REFERENDUM

The Section of the Journal devoted to Association News contains the Minutes of the last Executive Committee Meeting. The most important item of business at this meeting was the consideration of the minute of the National Medical Association on the question of the amalgamation of the English part of the National Journal with the China Medical Journal.

The Executive Committee was unanimously in favour of doing everything possible to meet the wishes of the National Association in the matter but, owing to the importance of this proposal, felt that a referendum of the Members should be taken on the question.

A letter giving fuller explanations and a post card for reply has been sent to every Member. Should, owing to the vagaries of the post, any not have received this a line to the Secretary will ensure a copy by return.

So far as these have yet come in, there is a striking unanimity in favour of these proposals. The figures to date are: In favour 250: against 10.

BIENNIAL CONFERENCE. 1929.

We take this opportunity of reminding Members of the Biennial Conference due to be held in Shanghai about the time of the Chinese New Year, 1929.

Some time ago the Executive Committee appointed a Conference Committee which has been working on the arrangements for the meeting and which has been able to come to general decisions on a draft programme. Such particulars as are available at this date will be found in the current issue of the *Journal* in the Section devoted to Association News. We ask all the Members to read this carefully.

It is impossible of course to forecast how far political conditions may still militate against the holding of a completely representative Conference at that time, but it may be hoped that all parts of China may be well represented at the meeting. This is particularly important in view of the fact that several matters of vital importance to the Association are likely to be brought before the Conference. We hope therefore that Members will make every effort to be present at the meetings.

As far as possible at this date a list of Chairmen and Secretaries of the Sections is published in the notes referred to above and it is urgently requested that Members interested in particular branches of medical science and who will be prepared to read papers or give demonstrations on special subjects shall communicate with either the Chairman or Secretary of the Section to which such communications belong, at as early a date as possible. This will allow the officers of the sections to get their individual programmes in hand in good time and to make suitable arrangements for their meetings.

It is hoped that one or two new features will be introduced into the programme of the Conference but reference to these will be made later in our columns.

EXTRAORDINARY CASES

When we challenged other Members to cap Dr. Cheal's story of a urethral calculus we hardly believed that any response would be forthcoming, but what China contains in the way of extraordinary cases is, to say the least, remarkable.

Dr. Cheal gave us a case quite unique in its way for a urethral calculus (*C.M.J. August, 1927*). Drs. Wu and Wheeler followed this up with a remarkable history of a child with 93 true urethral calculi (*C.M.J. February, 1928*). In this issue we publish a further, and we think it must be a final story of 2,170 calculi in a urethral diverticulum, by Dr. Lai. We say final because we refuse to believe that even in China this case can be capped.

In recent months we have had several correspondents who have wondered whether tumours that they have removed have not equalled the famous one operated on by Dr. Reifsneider many years ago in Shanghai. Though a case by Dr. Lewis of Paotingfu which we hope to publish next month comes within measurable distance of this, Dr. Reifsneider's is still *facile princeps*.

As the details of it have been largely forgotten we give the following description :

The tumour weighed 180lbs and contained no less than 22 gallons of fluid. The woman was 25 years of age, and her height was only 4ft 8 in., her girth before operation 5 ft. 9 in. The weight of the woman after operation was about half that of the tumour.

The pages of the *Journal* are still open to competitors with unique cases to describe though the Editor does not see his way to offer a prize for the largest tumour !

THE B.M.A. AND COLLECTIVE INVESTIGATION

Two papers have recently (Dec. 31, 1927, and Jan. 7, 1928) appeared in the *British Medical Journal* on this interesting topic: The first one begins with a quotation from the Presidential address at the 1880 Conference. The opening sentence of this reads as follows:

“One work—a work that specially appertains to the Association, the work of collective action, of the pull together of the profession, I mean the work of cumulative observation, or accumulated data—has been too little attempted; or if attempted has been productive of too little result.”

On this there follows, in these two papers, a description of the work attempted, the many difficulties met and the amount of success that has more recently attended the efforts of the British Medical Association in this direction. Into all these it is impossible to enter in detail but we gather that what success has been gained has been by interesting the profession in the solution of problems of treatment with regard to more common yet not too successfully treated ailments, and the results of well known but disputed surgical procedures, which every practising physician will meet.

The two subjects at present chosen for investigation are those of the treatment of varicose ulceration and the after-history of gastro-enterostomy. A full questionnaire on these subjects is printed in the *Journal* and forms of enquiry are sent to any doctor willing to help in the solution of these problems.

Now if the solution of such questions is called for at home, how much more urgent is the solution of the problems of medicine and surgery out here, where the field is comparatively untouched and the difficulties to be met by the doctor are so much greater. Much in the way of research may be impossible in many of our busy hospitals, but surely the work involved in such enquiries as these is not so great as to deter any keen physician from making them, and the cumulative results might be of the greatest value.

We are aware that the very word “questionnaire” is like a red rag to a bull to some of our profession; there has been in the past a tendency to broadcast unauthorised enquiries occasionally of a nature which might have provoked the most peace-loving to expressions of wrath. There is however a place and time for everything and assuredly there is a place for collective investigation such as the British Medical Association attempts.

We would earnestly suggest that at our next Conference this matter be carefully considered with a view to any enquiries for collective investigation being sent out with the full imprimatur of the Association on subjects on the necessity for investigation of which we are all mutually agreed.

DR. R. C. BEEBE

A cable recently received from America tells of the death of our former Secretary, Dr. R. C. Beebe. An obituary notice will be found in this issue of the *Journal*, and an appreciation of him from his old friend, Dr. E. M. Merrins, our former Editor.

The major part of his work for China was carried out in Nanking, but at the end of 1915 Dr. Beebe removed his residence to Shanghai and thereafter gave his entire time to the Association as its Secretary. Although in his later years of office Dr. Beebe was sorely afflicted by a chronic and incurable disease he bravely carried on this work until 1923, when increasing disability made it impossible for him to get about.

To him the China Medical Association owes much for his generous help and guidance through many years. The present Secretary also gratefully acknowledges much help and advice without which he would have found his new position a very perplexing one. Dr. Beebe was a most lovable man whom his many friends can ill spare.

China Medical Association Section

MINUTES OF THE EXECUTIVE COMMITTEE

A meeting of the Executive Committee was held in the offices of the Association on Thursday, 1st. March 1928 at 9 a.m.

Present:—Drs. Morris, Gordon Thompson, New, Tyau, Iva Miller, Robertson, Earle and James L. Maxwell (Secretary.)

At the request of the meeting Dr. Gordon Thompson took the chair and opened with prayer.

Minutes of previous meeting:—The Minutes of the meeting of 25th. November 1927 were approved.

Election of Vice-President:—Dr. H. H. Morris was unanimously elected as Vice-President of the Association and then took the chair in place of Dr. Gordon Thompson.

Financial Statement:—The audited Balance-sheet for 1927 was presented by the Treasurer showing a total income of \$22,618.41 and expenditure of \$21,913.21. The Balance-sheet was approved.

The Treasurer also presented a Budget for 1928 calling attention to the fact that owing to the absence of two out of three of its members the Finance Committee had been unable to meet.

The Budget was accepted.

China Medical Journal:—The Editor read a copy of minutes adopted by the National Medical Association at its meeting in Peking in February 1928 and received by him from the Secretary.

The minutes advocated an amalgamation of the English part of the Journal of the National Medical Association with the China Medical Journal to form a National Medical Journal in the English language, to be called The Chinese Medical Journal—English Edition.

After discussion the Executive Committee unanimously approved the principle and instructed the Secretary to take a Referendum of the members thereon.

The Committee appointed a sub-committee consisting of Drs. Maxwell, W.S. New and Gordon Thompson to consider details for carrying out this decision in the case of the Referendum being in favour of so doing.

The Committee desired to express its opinion that "English Section" should be substituted for "English Edition" in the name.

Institute of Hospital Technology:—The Secretary reported the receipt of letters from America and England in reply to the minute on this subject of the meeting of 25th. November 1927. The substance of these letters was that however favourable the Committees at home might be towards the I. H. T. nothing could be accomplished in the matter until the medical members of the several missions on the field had explained the value and pressed the needs of the Institute on their mission representatives in China and through them on their Boards at home.

Attention was called to the difficulty of getting anything done in the matter unless specific proposals giving the cost and the amount that would have to be contributed by the various missions as well as a tentative plan of how the work was to be carried out were made. With this opinion the Committee agreed and appointed Drs. Maxwell, Snell and Robertson as a sub-committee to draw up plans.

N. A. C. and Midwifery Training:—The Secretary reported that in answer to a letter from him a communication had been received from

Miss Hope Bell, one of the Secretaries of the Nurses Association of China enclosing copies of minutes adopted at the N.A.C. Conference in Shanghai, January 1928. The Minutes included one referring to a resolution of the China Medical Association adopted at the Conference of the Association in Peking, September 1926, which had been referred by the Conference to the Joint Committee of the C.M.A. and N.A.C. advocating the training in midwifery of women not holding a diploma in general nursing.

The Minute of the Nurses Association read as follows :—

“ THAT the N.A.C. cannot participate in any scheme which prepares to train non-nurses in the science of midwifery.”

In view of the resolutions adopted by the Conference of the China Medical Association, the Executive Committee passed the following Minutes :—

“ THAT the Executive Committee reaffirms its opinion expressed in the minute of the Council on Medical Education of January 12th. 1926, unanimously approved by the Committee at its meeting of 11th. June and endorsed by the Biennial Conference on 8th. September 1926,

and

THAT the Secretary be instructed to communicate with the Executive Committee of the National Medical Association with a view to considering the possibility of joint action of the two Associations in arranging for a certificate to be given to trained midwives not possessing a diploma in nursing.”

Schools of Medicine and Midwifery :—The Secretary read a letter from Dr. Hou-ki Hu, Commissioner of Public Health for the Municipality of Greater Shanghai, asking for the help of the Association in inspecting Medical Schools and Midwifery Schools within the district under the Municipality of Greater Shanghai.

The Committee adopted the following resolutions and instructed the Secretary to send them to Dr. Hu :—

“ THAT the Executive Committee of the China Medical Association assures Dr. Hou-ki Hu of its willingness to assist in the inspection of the Schools referred to ;

but

THAT the Committee feels that such action should only be taken by it in conjunction with the National Medical Association and requests Dr. Hu to communicate with that Association informing them at the same time of our willingness to give every assistance possible in this important matter.”

1929 Conference:—The Secretary gave a brief interim report of the work of the Conference Committee which was generally approved and it was agreed to consider a further report at the next meeting of the Executive Committee.

C. M. A. Representatives: Dr. Josephine Lawney was appointed C. M. A. representative on the Council on Health Education with Dr. K. H. Li as alternate.

The Secretary reported that Dr. Harvey Howard would not be able to represent the Association at the American Medical Association's Conference, and Dr. J. Heng Liu was appointed in his place subject to Dr. Liu being able and willing to represent the C. M. A. at those meetings.

The Secretary reported that Dr. Wallace Crawford would be unable to be present at the meetings of the Canadian Medical Association and was instructed to find some other suitable representative.

An invitation to send a delegate to the Centenary Celebration of the Faculty of Medicine, Cairo and the International Congress of Tropical Medicine and Hygiene was presented. It appeared however that it was unlikely that any member of the Association would be in Egypt at the time.

Anatomical Casts:—The Secretary showed the Committee anatomical plaster casts sent out by Mr. Cathcart of Edinburgh—see Executive Committee minutes of 27th. October 1927. A letter from Mr. Cathcart was read pointing out new difficulties that had arisen in supplying such casts owing to the fact that many of the moulds for them had been broken in transit to Edinburgh and asking what the Committee wished to do in the matter.

Agreed to reply that owing to disturbed conditions in China and the uncertainty of the present position of the Medical Schools the Committee could not see its way to proceed further with the matter at this time. It instructed the Secretary however to send the casts, when possible, to the Anatomical Society with enquiries as to whether that Society would care to take the matter up.

Tuberculosis Sanitaria in China:—A letter from the agent of the Czecho-slovakian Government enquiring about Tuberculosis Sanitaria in China was referred to Dr. Robertson for reply.

Advertisements:—The Editor asked for advice about an advertisement of Carter's pills offered for insertion in the Journal. Discussion on the subject showed no uniformity of opinion on the question of advertisements but a general feeling that the proposed advertisement in its present form was ineligible.

Date of next meeting:—Agreed to hold the next meeting of the Committee on or about Thursday 3rd. May.

XIXth. BIENNIAL CONFERENCE, 1929

A Conference Committee has been appointed to make the necessary arrangements for the forthcoming Conference. Announcements with regard to place, date, sectional arrangements etc. will appear in the *Journal* from month to month.

The personnel of the Conference Committee consists of:—Drs. James L. Maxwell, R. C. Robertson, W. S. New, U. K. Koo, J. C. McCracken, with the Secretaries of the different Sections.

The Sections for the Conference with the Chairmen and Secretaries and their postal addresses are given below:—

<i>Section</i>	<i>Chairman</i>	<i>Secretary</i>
Medicine and Medical Pathology	Dr. K.H. Li, Soochow Hospital	Dr. J.C. Lawney, Margaret Williamson Hospital, West Gate, Shanghai.
Surgery and Surgical Pathology	Dr. H. Gordon Thompson 79 Ave. du Roi Albert Shanghai	Dr. J.A. Snell, Soochow Hospital
Obstetrics and Gynaecology	Dr. J. Preston Maxwell P. U. M. C.	Dr. S.R. Parsons, Margaret Williamson Hospital, West Gate, Shanghai
Ophthalmology and Otolaryngology	Dr. F.E. Dilley, Temple Hill Hospital, Chefoo.	Dr. T.M. Li, 25 Jinkee Road, Shanghai.
Hygiene and Public Health	Dr. J.B. Grant P. U. M. C.	Dr. Iva M. Miller, Missions Building 23 Yuen Ming Yuen Road, Shanghai.

Physiology: To be arranged by the Physiological Society.

Anatomy: To be arranged by the Anatomical Society.

It is very earnestly requested that members willing to present papers at the Conference will communicate with the Chairman or Secretary of the Section to which such papers belong as soon as possible.

The work of the officers of the Sections would be made much lighter if they could know beforehand what material would be at their disposal.

Missionary Section**DEVOLUTION IN MANCHURIA**

W. A. YOUNG, M.B., C.M., D.P.H.

The devolving of our work upon our Chinese colleagues is a practical topic in hospital circles in Moukden. The staff all feel it will make for efficiency and the commitment of much of the administrative and social work to the Christian laity will free others of us for professional duties.

The main difficulties centre round finance and personnel.

Finance. In most places it is naturally difficult to get a Board of Directors of Christians who are willing to take large financial responsibilities upon themselves as these are out of all proportion to their own financial influence and experience. In Britain hospital boards are largely composed of men who even if they are not able to give much out of their own pockets are yet in touch with friends to whom an appeal can be made in an emergency and further, such institutions command a large measure of trade credit. Here in Moukden while it may be that our budget of Mex \$70,000 would frighten the less intelligent members of our Christian community, on closer inspection the leaders of that community would find confidence in our financial position. Ninetyfive per cent of our income comes from our patients—sales, fees, subscriptions—and so is a matter entirely within control. Funds from overseas, contributions from capricious officials and merchants hardly affect us now. Our aim is to secure enough income from well-to-do patients to enable us to run our institution and at the same time do much for the poor and needy. One bogey we can foresee: a boycott would lead to greatly reduced clinics and thus our income would be correspondingly reduced. Against such a day we have a great store of good-will laid up in the hearts of Chinese friends and faith in God's overshadowing care already evidenced in the work during the last fifty years. So on the whole we feel finance will not hinder devolution.

Personnel. This work now contains within itself a splendid staff of Chinese colleagues who acting either as heads of departments or in responsible positions are men and women doctors capable of taking the place of their comrades from other lands at no distant date. The departments of Eyes, E.N.T., V.D. and Skins are entirely staffed by Chinese. Further in our Christian Community we know we have many men and women capable of helping on our Board. If such work as we are doing is to remain an integral part of church life and work in the future it is high time we enlisted greater sympathy and interest from our Christian friends. Only let them see from the inside what a glorious opportunity

is presented of following in the footsteps of our Master in these wards and among the appealing crowds of out-patients and little chance will remain of shutting such charitable works of mercy out from the Church's programme in this land.

The following scheme indicates the lines along which we propose moving in the immediate future.

MOUKDEN HOSPITAL DEVOLUTION PROPOSALS

The Hospital Committee in making the following proposals do so believing that ultimately these hospitals should be taken over by the Synod of Manchuria as representing the Chinese Christian Church. Since the Hospital Committee are confident that the purposes for which these institutions were created, as stated below, can be best conserved by some such plan as is now outlined, we hereby invite all interested to help to make this medical work more and more instrumental in the Coming of the Kingdom of God in China.

The following are the changes recommended; to have in place of the Present Hospital Committee, 1, a Board of Directors, and 2, a Staff Committee. This Board of Directors shall appoint *inter alia* an Executive Committee and a Finance Committee.

CONSTITUTION OF THE BOARD OF DIRECTORS

1. The Board shall consist of thirteen members nominated by the following authorities, by the General Medical Board of Synod, two, by West Church, Moukden, one, by East Church Moukden, one, by North Church Moukden one, by country districts nominated by Presbytery one, by the Senatus of the Moukden Medical College one, and by the Hospital Staff Committee six.
 - (a) The majority of the Board shall be Chinese.
 - (b) All members to be Christian.
 - (c) Women members may be nominated by any of the nominating authorities.
 - (d) The six Staff members shall include *ex officio* the superintendent and the assistant superintendents of the Men's and Women's Hospitals.
 - (e) Nominations shall be made every two years.
2. The Board shall select its own Chairman and other office-bearers and appoint a Hospital Superintendent who should preferably be a Chinese doctor. The Assistant Superintendents may be foreign missionaries nominated by the Mission Council of the U. F. Church of Scotland but appointed by the Board.
3. The Board shall conduct its business in Chinese.

4. The functions of the Board shall be:—
 - (a) To maintain and develop the work of the hospitals that they may fulfil the functions of Medical Missions, namely, to propagate the Gospel of Jesus Christ, to heal the sick and relieve suffering, more especially amongst the poor and needy, to assist in the training of Chinese doctors and nurses in a Christian atmosphere and to disseminate the knowledge of public health in the Community.
 - (b) To control all matters connected with the hospitals. The Board of Directors shall conform to suggestions that the General Medical Board of Synod may issue for the guidance of all Mission Hospitals in the province but it shall be understood that the Board shall not interfere with the actual working and internal administration of the hospitals, which matters are the special responsibility of the staff acting through the Executive Committee.
 - (c) To prepare an annual report with an audited statement of accounts for presentation to the Synod through the General Medical Board.
5. The Board shall have at least two statutory meetings per annum. Members shall be entitled to travelling expenses and board if desired.
6. The Board shall appoint an Executive Committee of seven members, four forming a quorum.
 - (a) The superintendent and the two assistant superintendents of the Men's and Women's Hospitals shall be *ex officio* members of the Executive Committee and of the other four members at least one shall be a member of staff.
 - (b) When the Treasurer or the Heads of Departments are not members of Executive they may be co-opted, without having a vote, for matters connected with their departments.
 - (c) The functions of the Executive Committee shall be:—
 1. To carry out the instructions of the Board of Directors.
 2. To carry out the instructions of the Staff Committee in all matters which the Board have committed to the Staff Committee, viz. "the actual working and internal administration of the hospitals." When the Executive considers any instructions of the Staff Committee beyond its powers, the Executive shall refer the matter to the Board and shall withhold execution until the ruling of the Board is known.
 3. To make plans and proposals for the welfare of the work to lay before the Board or the Staff Committee as the case may be.
 4. To call meetings of the Board and prepare the agenda for them.

5. To call a special meeting of the Board at the request of a majority of the heads of departments, except when a statutory meeting of the Board shall be due to be held within a month.
7. The Board shall appoint the Treasurer and the Finance Committee, which shall be responsible for the collection and administration of the funds of the hospitals. The treasurer shall be chairman of this committee and outside members may be elected. This committee may initiate schemes for raising money and remit them direct to the Board for consideration. It may hold up schemes of the Board on financial grounds and ask for reconsideration.
8. This constitution may be altered at a meeting of the Board of Directors if a two-thirds majority is in favour of the proposed change.

CONSTITUTION OF THE STAFF COMMITTEE

1. The Staff Committee shall in the first instance consist of the present members of the Hospital Committee and shall have power to nominate new members to its number for the approval of the Board of Directors.
2. The Staff Committee shall meet as required to arrange for the carrying on of the professional side of the work, such as allocation of wards, clinics, theatre work, and house staff appointments.
3. The Staff Committee shall nominate candidates for the Heads of Departments as such vacancies occur, their appointment being made by the Board.

Note. The phrase "Heads of Departments" is equivalent to members of the present Hospital Committee.

TEMPORARY MEASURES

It is suggested that as a temporary measure the Present Hospital Committee arrange as soon as possible:—

1. To conduct its business in Chinese.
2. To add to its numbers Chinese Christians interested in the work.
3. To appoint an Executive Committee.
4. To appoint a Nomination Committee.

The function of the Nomination Committee would be *inter alia*, when the Hospital Committee adjudges the time has come to change into a Board of Directors, the Nomination Committee would be asked to select thirteen of its members* to constitute the first Board of Directors. If at that date the General Medical Board of Synod and other nominating bodies are functioning the first Board might be appointed as in para. 1 above.

*i.e. Members of the Hospital Committee of that date.

Current Medical Literature

**THE MORE EASILY OBSERVED PATHOLOGICAL CHANGES IN
THE CEREBRO - SPINAL FLUID, AND THEIR
CLINICAL INTERPRETATIONS**

J. F. OSMOND BODMAN

Lieut., I.M.S.,

The object of this is to reiterate the manner in which simple examination of the cerebro-spinal fluid, without the assistance of a laboratory or expensive apparatus, when combined with the clinical findings, can prove of the greatest value in diagnosis.

It is well established that unadulterated cerebrospinal fluid is perfectly transparent, even when viewed by the strongest illumination, and although in certain cases there may be no opacity, this opacity when seen is a definite indication that disease is present. In order to determine this, some care must be taken in collecting the fluid. It is best to have at hand three tubes when withdrawing fluid by lumbar puncture. One of these tubes is specially cleaned before being sterilised, first being washed in hot soda solution, to remove all grease, and then cleaned in three washes of spirit. Into the first of these tubes the first specimen of fluid withdrawn is collected; this is usually blood-stained from injury to the anterior plexus of veins. When the flow of blood has ceased, the second tube is opened, and a few c.c. of fluid collected therein. This serves a double purpose, for by this means the needle is washed out of any remaining blood, and this specimen—although not pure enough for cytological examination—is sufficiently pure for the Wasserman reaction if needed. The third tube, which has been specially cleaned, serves to receive the last portion withdrawn. Thus the two greatest fallacies in the examination for opacity, namely, admixed blood and dirty glass-ware, have been avoided. Sometimes cotton-wool fibres cause trouble, but after a little care has been exercised in the preparation of the plugs this can also be eliminated. The fluid should never be examined by direct light, because it is not possible thus to see the finer degrees of opacity. The method which has been found to give the best results in this connection is the use of an ordinary reading lamp placed on a black surface, against which only the lower two inches of the tube are allowed to be in contact. The tube is then viewed from above, and a comparison is made against a tube containing pure distilled water. By this means the fluid is seen illuminated by indirect light, on a dark background.

Disease.	Opacity.			Clot.
Influenzal meningitis	slight.			
Meningococcal meningitis	...	very slight	... ..	greenish, not always present.
Pneumococcal meningitis	...	greyish	... ..	pearl grey clot.
Tubercular meningitis	...	slight, increased by ad- dition of N/NaOH.	...	delicate clot with clear fluid. Clot is pathog- nomic.
Gummatous meningitis	...	definite.	...	
Pyogenic meningitis	...	gross	... ..	heavy clot.
Acute early anterior polio- myelitis	faint	... ..	may form.
Encephalitis lethargica	...	very faint.	...	
Neurosyphilis	present	... ..	clot may form.
G. P. I.	definite.	...	

The colour of the fluid is also of importance. If it is still blood-stained after the precautions already enumerated have been taken, allow it to stand for a short time, when if no sediment of red blood corpuscles is formed, and the supernatant fluid is still reddened, the admixture of blood is not accidental, but is due to some pre-existing cause of hæmorrhage, such as those formed in the subarachnoid hæmorrhages of encephalitis lethargica, from cerebral tumour, or injury to the skull. In this latter connection it is interesting to note that the cerebrospinal fluid withdrawn may not appear reddened for a day or even longer. If no colour is obvious, the fluid should be examined by the method of indirect lighting, but in this case over a white background. A yellow colour is imparted to the fluid in those diseases of which jaundice is a symptom. A very similar colour is also seen in tuberculous meningitis. Pneumococcal meningitis gives a greyish tinge, and pyogenic meningitis a definite green colour. In those cases in which adhesions have formed, or where tumour or deformity cause obstruction to the circulation of the cerebrospinal fluid, the fluid when withdrawn is of a green colour, and frequently clots immediately after removal. Specimens collected from cases of polyneuritis, of any ætiology except diphtheritic, are also often greenish coloured and show immediate coagulation.

The estimation of the total protein content of the cerebrospinal fluid is easily carried out, and constitutes one of the most valuable tests available. It is most easily estimated in the following manner. A series of standard opacities are made by placing in nine small tubes, which have previously been thoroughly cleaned and sterilised, twenty drops of sterile serum diluted to contain 1.0, 0.75, 0.5, 0.25, 0.1, 0.075, 0.05, 0.025 and 0.01 per cent, of total protein, as measured by Aufrecht's albuminometer. To each of these nine tubes are then added five drops of a thirty per cent. sterile solution of trichloroacetic acid, and

the tubes sealed off. The precipitates thus formed are permanent. To carry out the estimation twenty drops of the cerebrospinal fluid are placed in a similar tube, and five drops of the standard trichloroacetic acid solution added, and the precipitate thus formed compared against the standard opacities.

Now normal cerebrospinal fluid never contains more than 0.03 per cent. total protein, and any increase in this is a definite indication of disease of the nervous system, with one exception, that is, uræmia. Again this increase is in the albumen fraction, except in syphilis of the nervous system and some rarer cases of encephalitis lethargica. In neurosyphilis the increase is in the globulin content, and, this incidentally is not an increase in the normal globulin of the fluid, but due to the formation of euglobulin. Pandy's test affords a simple method of demonstrating the presence of globulin. One c.c. of a 6.5 per cent. solution of carbolic acid is added to one or two drops of the fluid, when, if globulin be present, a blue precipitate will be formed.

PROTEIN CONTENTS

Normal	0.015 to 0.03%	
Uræmia	0.04 to 0.07%	the only general disease giving increased protein.
Diseases of the choroidal plexus ...	0.04 to 0.1 %	
Tabes	0.05 to 0.08%	
Neurosyphilis	0.05 to 0.1 %	globulin + + +
G. P. I.	" " "	
Acute anterior Poliomyelitis, early	" " "	
Pyogenic meningitis...	0.1 to 0.2 %	
Tubercular meningitis	0.1 to 0.25%	
Meningococcal	0.3 to 0.8 %	highest total protein.
Tumour above the cerebellum ...	0.1 to 0.25%	
Tumour below the cerebellum ...	0.03 to 0.1 %	
Encephalitis lethargica	up to 0.15%	
Landry's paralysis	up to 0.05%	

Finally we come to the cytology of the cerebrospinal fluid. For this examination it is essential that there should be good instruments and good lighting. A cytological examination carried out under adverse circumstances is often more misleading than useful. There are four main types of cells found, classified according to their origin.

1. Cells liberated by the actual destruction of brain tissue.

2. Cells formed in the inflammation, of the soft membranes, and which are almost certainly identical with those seen in the perivascular cuffing of encephalitis lethargica, which are at liberty to wander throughout any of the prolongations of the sub-arachnoid space.

3. Cells from the inflammation of the cerebral parenchyma.

4. Cells derived from the blood, seen either in cases of hæmorrhage of the cerebral vessels, or in an inflammatory exudate caused by any acute suppurative condition.

Disease.	Cytology.
Normal	Not more than 6 per c. mm.
Tubercular meningitis	In the early stages some polymorphs, later lymphocytes and mononuclears.
Syphilitic „	Lymphatic.
Typhoid „	Lymphocytic.
Meningococcal meningitis	Early up to 80 per cent. polynucleosis, later lymphocytic.
Pyogenic meningitis	Up to 98 per cent polynucleosis.
Pneumococcal	90-95 per cent. polymorphonuclears.
Acute anterior poliomyelitis	Firstly 70 per cent polynucleosis, then lymphocytic; drops at the end of 14 days.
Sclerosis	Up to 25 cells per c.mm.; lymphocytes.
Brain abscess	Polymorphonuclears.
Encephalitis lethargica	Lymphocytic; it should be remembered that at least 33 per cent. of cases are acellular.
Hæmatomyelia	Lymphocytic.
Sinus thrombosis	At first lymphocytic, then polynucleosis.
Post-basic meningitis of infants	Polymorphs at first seen; later only lymphocytes.
Mumps	Lymphocytes seen.
G. P. I.	Lymphocytic usually as many as 250 per c.mm.

From the above remarks it will be noticed that for the purposes of eliminating a number of diseases the protein estimation herein outlined, which can almost be done at the bedside, is the important chemical reaction. This coupled with a cell count is nearly sufficient to form a diagnosis in relation to the clinical facts elicited. If one last word of warning might be added, it is to emphasise the necessity of examining cerebrospinal fluid the moment it is obtained, and this especially refers to the cytology of the fluid.

OBSERVATIONS ON THE INSULIN-GLUCOSE METHOD IN SHOCK

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I would advise every obstetrician to carry in his bag two ampoules of glucose, which, when added to a pint of sterile water will make a 10 per cent. solution. This should be injected intravenously, taking at least an hour to do so; for, if given faster there is danger of acute dilatation of the right heart.

In addition we have a new weapon of defence against shock in insulin; for, as you know, the first defensive reaction of the organism in shock is the mobilisation of all the available glycogen in the blood stream, to be distributed to the body cells to furnish them with energy.

This supply, however, is soon exhausted; hence the necessity for replenishing the glycogen with glucose becomes of extreme importance.

To combat shock it is necessary to give to the body some substance which will give rise to an immediate supply of energy, whilst at the same time furnishing sufficient fluids to keep up the circulating volume of blood; for the state of shock is really an internal asphyxia and acidosis with oxidative processes held in check. Consequently any method for promoting combustion and oxidation and at the same time providing heat energy, will be effective.

The amount of insulin to be injected depends upon the amount of glucose given. For every 50 grains of glucose 1 unit of insulin should be given; therefore, if you have used 1 pint of a 10 per cent. solution, you must inject 16 units of insulin.

The total amount of insulin, however, should be divided into equal doses; one part being given a quarter of an hour after the intravenous administration has begun; the remainder at the end.

Nixon, from whose paper in the *Clinical Journal* this information has been taken, emphasises the fact that there are some drugs which influence the beneficial effects of the insulin treatment; for instance *adrenalin counteracts the insulin effect, and pituitrin diminishes the sugar fall; but on the other hand, ergotoxin, ergotin, and ernutin, given previously, increase its value.*

Since I learned this method, I am sure that I have been able to prevent shock—or tide over patients who would otherwise have developed shock after severe operations. It is because of the ease and simplicity of the method that I bring it to your notice, for I am aware that many of you are occasionally 'up against' the problem of post-operative shock, or the condition of which I am speaking—rupture of the uterus.

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THE FORMATION OF AN ARTIFICIAL VAGINA BY A NEW PLASTIC TECHNIC

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The two best accepted technics for the formation of a vagina in malformed individuals, are the one, the method of Baldwin which utilizes a double barrel segment of the small intestine transplanted into the rectovesical septum (53 cases with a mortality of 20.75 per cent), and the other the operation of Popow-Schubert in which the lower rectum is transplanted into the vulva, the upper rectal segment being utilized for reestablishing the continuity of the intestinal canal (53 cases; no immediate operative deaths; 2 died of sepsis; frequent intestinal fistulae and varying degrees of incontinence. Franz).

Other less dangerous methods, such as the homoplastic transplantation of vaginal mucosa obtained from other patients (Küstner, Mackenrodt), Thiersch skin grafts, Douglas peritoneum transplants (Stoeckel-Kroemer), utilization of the labial mucous membrane (Bumm, Graves), have given almost uniformly unsatisfactory results, because of subsequent scarring and contraction with consequent obliteration or stenosis of the newly formed canal. The same applies to the use of a pedunculated skin flap with immediate flap transplantation (Fraenkel).

Because of the fact that an artificial vagina is made solely for the purpose of establishing a coital organ, it seems unjustified, in our opinion, to undertake an operation which involves grave risks. We have frequently refused to operate at all in unmarried individuals with no strong sex urge. Occasionally, however, individuals present themselves, either married or with strong sex feeling, in whom it seems justified for the sake of the happiness of the patient and that of the husband, to attempt to establish a vagina, in spite of the danger incident to either the Baldwin or Schubert operation. In the last case which presented itself, a woman divorced because of impotentia coeundi, we tried a new technic which appears entirely devoid of danger and which has now, after a period of over six months given a satisfactory and apparently a permanent result.

Our aim was to devise a well vitalized skin flap, devoid of hair; a flap readily and freely movable for transplantation; a flap with a raw surface free of infection. We have obtained such a flap by modifying the tube-flap method described by Gillies and others.

TECHNIC

The flap is outlined along the inner surface of one thigh by making two parallel incisions extending from the hairline close to the labia, downward along the long diameter of the thigh for about seven

inches. Between these two incisions which are placed three inches apart, the skin and underlying fat are undermined down to the fascia lata for the entire length of the incisions. If, as we found, there is too thick a layer of fat, some of the subcutaneous tissue may be carefully trimmed off from the deep surface of the flap. The long narrow flap, attached merely above and below, is now sutured together with the raw surface turned toward the inside of the tube, by a continuous or interrupted fine silk suture which takes in merely the skin, completely inverting the subcutaneous tissue. At the upper and lower ends where the skin attachment is maintained, small nicks of about $\frac{1}{2}$ inch, directed diagonally outward from the flap, will allow better approximation of the lower portion of the tube.

The denuded area on the thigh, left open beneath the bridge-tube flap, is closed by undermining the skin laterally (keeping close to the fascia lata) until the two skin edges can be brought together without undue tension beneath the newly established skin tube. If tension is encountered, 2 or 3 shotted, plate sutures may be adjusted before the skin edge is approximated with a running or interrupted catgut suture. A very light dressing which exerts little pressure on the tube-flap is applied.

If the tube has not been made so long as to impair its nutrition, the distal end of the flap may be partly incised two weeks from the primary operation, in order to force the proximal pedicle to assume more of the nutrition of the entire flap, but care must be taken not to completely disconnect the distal attachment, until the final step of the operation is to be accomplished, as otherwise retraction and shortening may take place.

The third and final step consists in establishing (1) a canal in the rectourethral vesicle septum by incising in the vulvar orifice and separating bluntly the loose connective tissue between the urethra and bladder anteriorly and the rectum posteriorly, for a distance of at least $3\frac{1}{2}$ inches, preferably until the peritoneal fold has been encountered and pushed up; (2) (a) the complete cutting across of the distal end of the flap; (b) the splitting of the flap along the original line of skin union; (c) the careful excision of such subcutaneous scar tissue as has formed in the interior of the flap. The flap when unrolled, forms a large, supple, uninfected skin flap which is further mobilized by extending the incisions at the base of the pedicle prolonging the two incisions first used, almost up to the vulva; (d) turning the pedicle through an arc of 180 degrees and then folding it over an appropriate hollow vaginal plug or speculum with its raw surface outward, the epithelial surface in contact with the speculum. Near the top of the

speculum two holes have been bored. Near the free end of the flap two strong silk guide sutures are passed and pulled through the speculum so as to appear at its open end. This maneuver turns in the top of the flap so as to form the upper blind end of the vagina and at the same time supplies a drainage opening for discharges. If necessary, the longitudinal edge of the flap can be secured to the speculum by a few transverse sutures. (e) Introduce the speculum and flap into the gap between the rectum and vagina, (f) uniting the free end of the anterior portion of the flap wherever possible with the vulvar skin.

In eight days the speculum may be removed. Either then or four days later the base of the flap as it enters the new formed vaginal opening, is completely severed and the edge of the new vaginal tissue united to the vulvar edge. The redundant base of the flap is turned back on to the thigh and is used to cover the granulating area left on the thigh close to the vulva.

The resulting vagina should be dilated with plugs by the patient for a period of time varying from two months to a year until the danger of possible contraction is passed.

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THE USE OF HYPERTONIC SOLUTIONS IN THE TREATMENT OF INCREASED INTRACRANIAL PRESSURE

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The most obvious way to reduce raised intracranial pressure is to abolish in part the rigidity of the skull—in other words, to perform a decompressive operation. This was till recently the only method available, and it is still the method of election in certain circumstances. There are, however, a number of conditions associated with increased intracranial pressure in the treatment of which such a serious operation is unjustifiable, and others again in which it is to be avoided if possible. My present object is to describe another method of lowering the intracranial pressure which has many therapeutic applications, and which can be used sometimes as a substitute for, and sometimes as an adjuvant to, craniectomy.

THE PHYSIOLOGICAL ACTION OF HYPERTONIC SOLUTIONS

We owe to Weed the discovery that hypertonic solutions can be used to lower the intracranial pressure. Weed injected intravenously into animals a concentrated solution of sodium chloride, and showed

that a pronounced fall in the pressure of the spinal fluid occurred, and that if part of the skull were first removed shrinkage of the brain could be observed to follow the injection. Further investigations demonstrated the means by which these results were brought about. The intravenous injection of hypertonic solutions raises the osmotic tension of the blood, and so leads to the passage of water from the brain into the blood stream. There is an actual resorption of cerebrospinal fluid, which passes up the perivascular spaces into the cerebral capillaries, and, according to some authorities, also passes back into the blood through the choroid plexuses. The result is a marked fall in the intracranial pressure. It was not long before other workers demonstrated that the same results could be achieved less directly by administering hypertonic solutions by way of the alimentary canal. These raise the osmotic tension of the blood by withdrawing water into the intestine.

MODES OF ADMINISTRATION

1. *Intravenous Injection.*—Intravenous injection is used when it is desired to lower the intracranial pressure as rapidly as possible. The most convenient hypertonic solution for intravenous use is a sterile solution of sodium chloride in distilled water. The maximal dose is 100 c.cm. of a 30 per cent. solution, and I have given this amount in certain conditions without ill effects. For most purposes, however, this is more than is necessary, and it is sufficient to give 70 to 100 c.cm. of a 15 per cent. solution, or half these amounts of a solution double the strength. Some workers employ concentrated solutions of glucose, for which certain advantages are claimed. It is said that after the intravenous injection of glucose the fall of intracranial pressure is slower and more sustained, and is less likely to be followed by a reactionary rise than after the use of sodium chloride. Moreover, glucose possesses nutritive value, and is of help in combating shock and acidosis. The maximal dose is 100 c.cm. of a 50 per cent. solution in normal saline. Whether sodium chloride or glucose solution is employed, it should be administered very slowly at a rate not exceeding 3 c.cm. a minute.

2. *Administration by the Mouth.*—To obtain comparable results by oral administration it is necessary to give large amounts either of sodium chloride or of magnesium sulphate. The dose of the former is 16 grams, given in 2-gram capsules with 80 c.cm. of water, and of the latter 3 ounces of a 50 per cent. solution. Oral administration possesses certain disadvantages, and I have not employed it to obtain a rapid reduction of intracranial pressure. Repeated doses of a half to one drachm of magnesium sulphate, however, may be given by the mouth when a mild continuous action is desirable.

3. *Rectal Administration.*—This is the most generally useful way of giving hypertonic solutions. The dose is 6 ounces of a 50 per cent. solution of magnesium sulphate, which should be run slowly into the rectum at body temperature. Unless it is retained for half an hour it will not produce its full effect and should be repeated an hour later.

PERSISTENT CEREBRAL CONTUSION

We now come to the consideration of conditions which are amenable to treatment by means of hypertonic solutions. We owe to Trotter the recognition as a clinical entity of a condition which is perhaps best described as "persistent cerebral contusion." This is the result of a minor head injury—either a fall on the head which at the time gives rise to simple concussion or a localized injury not associated with loss of consciousness and produced by a fall or a blow. Following such an accident a patient may develop a train of symptoms which are only too familiar, and which, since they are often extremely disabling, are of considerable medico-legal importance. The principal symptom is headache, which may not appear until the patient gets up, if he has been confined to bed following his injury. The headache is paroxysmal and is sometimes extremely severe. It is especially liable to be brought on by mental excitement, muscular exertion, and stooping—activities which often lead also to giddiness. The patient is usually nervous and irritable, and may develop a typical anxiety neurosis. There are as a rule no physical signs of a gross injury to the brain or of raised intracranial pressure, but in a considerable number of cases bradycardia is present. It is unusual for radiograms of the skull to show any abnormality.

The prevention of persistent cerebral contusion is to be achieved only by the adequate treatment of the case in the early stages; but the method of treatment is the same whether the case is seen early or late. Rest is the first essential, and the patient should be absolutely confined to bed and not allowed to get up for any purpose. Hypertonic solutions are employed to lower the intracranial pressure and assist in the absorption of the exudate. In mild cases it may be sufficient to give half to one drachm doses of magnesium sulphate thrice daily by the mouth, and this may be usefully combined with 10 grains of potassium bromide. Intravenous injections of hypertonic saline, however, are more effective and should, if possible, be used in all cases. The usual dose is 100 c.cm. of 15 per cent. sodium chloride in distilled water, and this may be repeated in four or five days if necessary. In some cases one such injection is sufficient to free the patient from headache, and, since the treatment is curative, he may then be allowed to get up. If medical measures fail, a subtemporal decompression can

usually be relied upon to relieve the symptoms, but it is hardly ever likely to be necessary if hypertonic solutions are given a fair trial. Early treatment of cerebral contusion is of great importance, since if the patient is given time to develop, in addition, an anxiety neurosis, he presents a much more difficult problem.

HEAD INJURIES IN THE ACUTE STAGE

Cases of head injury in the acute stage present many difficulties, both of diagnosis and treatment, which can only be successfully met by the close co-operation of surgeon and neurologist. Hypertonic solutions are of definite value in treatment, whether or not operative intervention is undertaken. They can be used as an adjuvant to decompression to aid in the reduction of cerebral oedema. They may tide the patient over the difficult period when operation hangs in the balance, and so render decompression unnecessary; and they undoubtedly promote recovery and diminish the risk of sequelae in the milder cases of contusion and concussion in which operation is not indicated.

In all cases of severe injury the intravenous mode of administration should be used, and the glucose solution would seem to possess the advantage of combating acidosis and shock. Hypertonic solutions, however, should not be employed in any form if shock is profound, as indicated by low temperature and blood pressure, and a rapid or rising pulse rate. The treatment of head injuries by hypertonic solutions is the rational use of methods which in the form of free purgation with calomel and salines have been used empirically for many years.

INTRACRANIAL TUMOUR

The value of hypertonic solutions in cases of cerebral tumour lies in the fact that they break these vicious circles and permit a readjustment of the volumes of the intracranial contents which may last for a considerable time. This they do mainly by reducing the formation and increasing the absorption of cerebro-spinal fluid, and so temporarily relieving the hydrocephalus. The following are the chief indications for employing them.

1. *As an Aid to Diagnosis.*—Not uncommonly a patient with an intracranial tumour is in a semi-comatose condition when first seen, and is quite unable to co-operate in the examination of sensibility or the visual fields. In such cases two or three rectal injections of magnesium sulphate solution may be sufficient to restore the patient to consciousness and render a full examination possible.

2. *In Emergencies.*—If a patient with an intracranial tumour suddenly becomes comatose, as may occasionally happen after ventriculography or in other circumstances, an intravenous injection of hypertonic saline may reduce the intracranial pressure sufficiently long to permit operation to be performed.

3. *As Palliative Treatment.*—In inoperable cases or while a patient is awaiting operation it is often possible to relieve headaches and vomiting by giving magnesium sulphate either by the mouth or by the rectum.

CEREBRAL HAEMORRHAGE

Hypertonic solutions have only a limited value in this condition. Intravenous injections are contraindicated as tending to raise the blood pressure, and it is doubtful if the rectal mode of administration can influence a haemorrhage which is still in progress. The rectal injections, however, may be of value as a means of reducing the intracranial pressure in patients in whom there is reason to believe that the haemorrhage has stopped but who show no signs of recovering consciousness. Free purgation reduces the intracranial pressure in exactly the same way as hypertonic solutions administered by the alimentary canal, and possesses the same physiological justification.

OTHER CONDITIONS

There are other conditions associated with increased intracranial pressure in the treatment of which hypertonic solutions are useful. In the post-operative treatment of cerebral abscess they may be used to reduce oedema of the brain around the abscess cavity, and so diminish a tendency to herniation and promote drainage. They are also of value for the relief of headache in epidemic encephalitis and meningitis. Other applications will suggest themselves, but enough has been said to show that Weed's discovery has rendered available therapeutic methods of the greatest value in diseases of the nervous system.

B. M. J. January 21, 1928

Book Reviews

AN INTRODUCTION TO MEDICAL PROTOZOLOGY. ROBERT KNOWLES B. A. (Cantab.) M. R. C. S., L. R. C. P., LT-COL. I. M. S. Published by Thacker, Spink and Co. Calcutta. Rupees 25. Can also be obtained from W. Thacker and Co. 2 Creed Lane, London.

The Reviewer has one criticism only to make on this book and that relates to its title. If a book of nearly 900 large pages is required to *introduce* us to Medical (mark you *medical* not *general*) Protozoology, to what dimensions would a text book on the subject reach? We have visions of our already crowded library shelves and the need of a new book case to meet the needs of this single branch of Medical Zoology. The prospects indeed lead us to the conclusions of the wise man of old: "Of making many books there is no end and much study is a weariness to the flesh".

In truth however Col. Knowles does not do justice to himself. The book is a series of lectures excellently told in clear and easily read style containing certainly all about medical protozoology that any medical reader requires to know and a good deal more, and the writer manages the good deal more without the reader losing his interest in the essentials.

The book is very well illustrated with innumerable photographs and drawings in the text and sixteen excellent coloured plates. With some of these plates we are very much impressed, as coming very much nearer our ideal of what such plates should be than anything we have seen before. There must always be a conflict in the mind of the maker of such illustrations between depicting what the microscopist ought to see and what in general practice he does see when he examines a slide, say of faeces emulsion for cysts and protozoa. The former leads the artist to strengthen what should be the pertinent features of the body being examined and leads to an ideal picture seldom or never seen. The latter tends to too accurate delineation of extraneous objects which confuses the picture and does not allow for the selective vision of even the non-expert microscopist. Here the artist seems to have struck the happy mean and is to be congratulated on his success in doing so.

A complete section of the book amounting to 140 pages is given to Laboratory Methods and we cannot too highly praise the clear concise directions that this section contains.

The small cost of this volume amounting only to about \$17 Mex. is remarkable for a book of this nature and very welcome as bringing it within the reach of practically everyone. It is only fair to point out however that this has only been made possible by the Governing Body of the Endowment Fund of the Calcutta School of Tropical Medicine financing the publication of the book. Most certainly a copy of it ought to be in every hospital in China. J. L. M.

MEDICAL GUIDE. Issued by the National Medical Association of China on the occasion of the Seventh Biennial Conference. January 27th to February 2nd, 1928. Peking.

This Medical Guide was a fitting souvenir given to the delegates attending the Biennial Conference in Peking and its make-up is thus affected by a desire

to meet two ends, viz. to provide an interesting summary of the medical situation in the capital city and to provide a medical directory for China as a whole. Thus the first half of the book is taken up with a description of the Medical Institutions, Schools and Hospitals of Peking while the remainder consists of lists of Institutions, Schools and Hospitals of China at large, with a directory of Chinese Physicians and a classified list of Medical Suppliers. The earlier half is beautifully illustrated.

While this adds enormously to the interest of the book we question the wisdom of the plan as regards future editions. The ends in view of the two halves are not quite the same and we believe that they would be better issued separately.

A good many criticisms might be made with regard to the "directory" part of this work. Some of these we would point out with a view to helping the compilers in a future edition for we sincerely hope that this part will be re-issued annually or at any rate biennially. The lack of such a directory has been a very serious one out here, and several times the writer of this review has made up his mind to prepare such a work. The difficulties in the way are however very great indeed and we confess in the end to have shirked the attempt. It is therefore a very sincere meed of praise that we offer to the authors of the directory and a very hearty expression of goodwill for even better success in the future.

The Directory contains a long list of Medical Colleges, and frankly some of these ought not to have been included in this list or at least not without comment. One of the first duties of a united Chinese Medical Association should be to grade medical colleges and some of the ones enumerated here would hardly reach even a C grade.

The list of Hospitals is well arranged for reference and clearly printed but in very many cases the same hospital has been entered under two names as two separate hospitals. The whole of this list wants very careful checking up. The error just mentioned would reduce the number of hospitals in one province by 25 per cent, and we believe that this would roughly be the proportion all through the list.

The directory of Chinese physicians is a good beginning but we suggest that if the book is to be of real value to many of the medical suppliers given in the last section, the names and addresses will have to be entered in Roman letters as well as the Chinese Characters.

Lastly this book should have a very wide circulation as a book of reference becoming eventually the standard Medical Directory for China. It should therefore have a more durable cover and the price and sales agency should be clearly indicated.

J. L. M.

A HANDBOOK OF HISTOLOGY. A. McL. WATSON, M. A., PH.D. E. and S. Livingstone 16/17 Teviot Place, Edinburgh. Price 8/6 net.

The aim of this little book is to present to the medical student a short, concise description of the tissues and organs. It is admirably suited for this purpose. The paper is good, the letter press large and clear, and the illustrations are very excellent.

The whole subject of normal histology is sufficiently covered and the arrangement is good. Practical instructions for the preparation of specimens are

given at the end and there is a comprehensive index. For the student nothing better could be desired.

It seems curious that the sympathetic nervous system is completely left out but this would appear to be the only blemish in the book. It is however rather a serious one considering the increasing number of surgical operations on this system, while we are left after reading the section on vessels with the idea that arteries have no nerves.

Despite this we heartily congratulate the Author on producing a book which is excellently planned and should be at least as valuable out here as at Home.

J. L. M.

OUTLINES OF DENTAL SCIENCE. Volume VII Dental Pathology, J. L. DUDLEY BUXTON, L.D.S. Publishers: E. & S. Livingstone, 16-17 Teviot Place, Edinburgh 1927. With Illustrations. Price 7/6 per copy.

We are indeed living in a scientific age, and the volume of Dental Pathology in the series of Outlines of Dental Science is, in my opinion, one of the evident fruits of Modern Science, being up to date in all most essential details. The chapters contained in the book are enlightened, clear and most interesting and it should, therefore, prove itself useful and handy to dentists, dental students, and medical missionaries and in fact, all medical practitioners in a country like the one in which we live, where in most parts, the services of a modern dentist are rare if not unknown altogether.

OUTLINES OF DENTAL SCIENCE. Volume VIII Dental Surgery. J. L. DUDLEY BUXTON, L.D.S. Publishers: E. & S. Livingstone, 16-17 Teviot Place, Edinburgh 1927. With Illustrations. Price 7/6 per copy.

This is another volume of the much needed work, entitled: Outlines of Dental Science. Both the author and the publishers are to be heartily congratulated on such a valuable contribution. As indicated in the preface, this is written to be used with the previous volume on Dental Pathology, and with another volume to follow on Practical Dental Surgery. No dentist or medical practitioner in this great and suffering country can afford to be unprovided with this interesting little book without some considerable loss.

OUTLINES OF DENTAL SCIENCE. Volume IX Operative Dentistry. J. D. Hamilton Jamieson, L.D.S. Publishers: E. & S. Livingstone, 16-17 Teviot Place, Edinburgh 1927. With Illustrations. Price 7/6 per copy.

Through the medium of its comprehensive outlines of dental science, volume ix, Dr. J.D.H. Jamieson and the Livingstone Press are rendering valuable service to the dental cause, or in broader sense, to the relief of human suffering. All essential points relating to Operative Dentistry are presented in a manner that presses their significance home upon the reader. In a preface the author logically states, that until the stage of prevention of oral disease by means of scientific nutrition has been reached, reparative work will have to be done, and operators trained to do it. No truer statement has been made. Beginning with an early chapter on Separation, Control of Moisture, Isolation of Mandibular Incisors and

Canines, Isolation of Mandibular Premolars and Molars, the book before us proceeds to describe the Preparation of Cavities, General Principles, Hypersensitive Dentine, Inlays, Porcelain and Gold. Another informative chapter is devoted to Treatment of the Teeth of Children. Something is also mentioned about Bleaching and Apicectomy. The book concludes with an enlightening chapter on Extraction of Teeth, Accidents during Extraction and Control of Hæmorrhage, and the whole technique is explained so that it is grasped and understood without any difficulty by anybody who has an average command of the English vocabulary. The outline omits nothing vital to the intelligent study of the subject. Principles and practice are brought together so arrestingly as to deepen the scientific interest of the Dental public. It adds to their knowledge of what has been done in more recent years in an endeavor to cause their realisation of the incontrovertible fact that the Dental Profession is not one of subservience to but of hearty cooperation with the sister Profession of Medicine.—T. S. W

“ADVICE TO THE EXPECTANT MOTHER ON THE CARE OF HER HEALTH” 2nd Edition. F. J. BROWNE. E. & S. Livingstone, Edinburgh. Price Sixpence

The Second Edition of this little pamphlet has been issued and one is glad to be again able to recommend it heartily. It has been improved and enlarged by the inclusion of sections on baby clothing, general care of the baby and care of the premature baby. All of these are excellent, and the pamphlet should be of great use to those who have the care of antenatal cases and especially to married missionary ladies living up country. The pamphlet is not too large and expensive, and it deserves a wide circulation. J. P. M.

MOSQUITO SURVEYS. A Handbook for Anti-Malarial and Anti-Mosquito Field Workers. MALCOLM E. MACGREGOR. The Wellcome Bureau of Scientific Research. London. 282 pp.

This latest publication of the Wellcome Bureau of Scientific Research, from the pen of the Entomologist of the Bureau in charge of the Field Laboratory at Wisley, Surrey, is a welcome addition to the monographic studies that have resulted from researches sponsored by this institute. The book is prefaced with a foreword by Sir Ronald Ross, who explains the background of the investigations on which the monograph is based, as well as testifying to the special qualifications of the author. Although primarily a report of intensive epidemiological and biological surveys made by Mr. MacGregor with respect to the mosquitoes of Mauritius and Rodriguez, the greater portion of the data presented deals with the classification, morphology and bionomics of mosquitoes, including adults, larvae and pupae. Perhaps the most valuable part of the memoir to laboratory and field workers is the section on technique, in which all of the minutiae connected with collecting, rearing, studying and mounting mosquitoes are so clearly explained that any biologist or medical man who pays careful attention to the directions can, with a little practice, carry out the more essential details. One might wish that the topic of control of mosquitoes, which is confined to ten pages, had been elaborated into a full section, but the brief presentation of this portion includes at least the more important recent methods of attack of the control problem. At the back of the book is a section of “References, and a

List of Publications specially useful to Field Workers". As far as field work in China is concerned it is to be regretted that the more recent publications by Meloney and Lee on the anophelines of the Peking area appeared too late to be included in the bibliography. The book is beautifully illustrated with half-tone and zinc figures, which distinctly help the reader to interpret the more technical descriptions in the text. Addressed as it is to the field worker in mosquito and malaria-control the volume is bound to appeal to its audience. Perhaps the most interesting thing about the book is the way in which a special series of field surveys has been utilized to develop the general subject. The work is commended to all medical men and biologists interested in either the bionomics or strictly medical importance of mosquitoes.

E. C. F.

Hospital Reports

LUCHOWFU CHRISTIAN HOSPITAL, HOFEI, ANHWEI. 1926

Doctors	Vierling, Corpron, Chen and Wei.	
Nurses	Foreign 1. Chinese 2.	
Inpatients		693
Outpatient attendances		22,454

The hospital was happy in being free from both anti-Christian and anti-foreign agitation during 1926 and a waiting list of cases kept most of the beds full throughout the year. Unfortunately a note at the end of the report had to tell a different condition of things during 1927, in the spring of which the place was invaded by soldiers, the missionaries' houses looted and they themselves driven out. Eventually the hospital had to be temporarily closed.

During the course of 1926 the place was visited by cholera and much of the work during the epidemic fell on the hospital.

The local income was well maintained throughout the year.

Tables of operations and diseases are included in the report.

STOUT MEMORIAL HOSPITAL, WUCHOW. 1927

Doctors	Leavell, Mansfield Bailey, Wei, Chiu and Fung.	
Nurses	Foreign 1. Chinese 2.	
Inpatients		758
Outpatient attendances		7,381

The report for the year is one of encouragement in the face of many difficulties and of steady progress with much hope for the future. The staff has been strengthened by the appointment of a foreign business-manager.

The financial position of the hospital is very satisfactory and the amount of work especially in the surgical department has been large.

The writer dwells on the faithfulness of the Chinese staff and their willingness to do anything asked of them even when this was not their own work. Two excellent photographs set off an interesting report.

SHOKA CHRISTIAN HOSPITAL, FORMOSA. 1927

Doctors	Landsborough and Mumford.	
Nurses	None	
	Inpatients	1,187
	Outpatient attendances	14,300

It is disappointing to notice that owing to internal difficulties the hospital had to be closed for some months. Despite this the figures given above show how great the work carried on has been.

It is satisfactory to learn that an experienced foreign nurse was to take over the nursing charge of the patients and that plans were on foot for a new hospital.

Several interesting cases are referred to, among them one of Bulimia, a condition as to which we have seen no previous reference among the Chinese.

MCCORMICK HOSPITAL, CHIENGMAL, SIAM

Doctors	McKean, Cort and O'Brien.	
Nurses	Foreign 2. Siamese 2.	
	Inpatients	851
	Outpatient attendances	3,256

The report though noting a small decrease in the number of inpatients is one of all round progress in the matter of service rendered to the patients. Their Majesties the King and Queen of Siam visited the hospital in the course of the year and expressed surprise and pleasure at seeing such a plant in the provinces.

An interesting description of Public Health phases of the work is given and of the Nurses Training School.

The report closes with interesting records of Medical, Surgical and other cases.

Correspondence

The University of Amoy

University of Amoy
Amoy, China.
March 23, 1928.

The Editor,
China Medical Journal

Dear Dr. Maxwell,

Permit me to correct the false statement, circulated in Shanghai, and repeated in the current number of the C. M. J. that Dr. Lim Boon Keng has resigned the post of the presidency of the Amoy University. He is in Singapore partly for a short rest and partly for business on behalf of the University. He is expected back sometime next month, when we hope to launch a new building programme. A Library, designed after the Temple of Agriculture in Peking, and for 200,000 volumes, will be under construction in the course of the year. The Library contains at present 20,000 volumes, (foreign) and 30,000 volumes (Chinese) to which another 10,000, through the generous gift of Mr. Oeitjoe, a sugar magnate, will soon be added. The University has also recently acquired the library of the late professor Julius Morgenroth, Paul Ehrlich's co-worker, for the sum of M. 12,000.

Besides the Library, a gas-plant and probably a small observatory will also be put up.

So you see we are very much alive and not at all defunct, as some misinformed persons would have our friends up North believe.

Please excuse me for my justifiable outburst, because I was very much annoyed to learn from Dr. Wu Lienteh that there was a belief abroad in Shanghai that the Amoy University had ceased to exist.

Yours sincerely,
O. K. Khaw

The Editor regrets that he inserted a note in the March Journal stating that Dr. Lim Boon Keng had resigned the post of President of Amoy University. He had the information from what appeared to be an unimpeachable source. It has never been suggested that the University was anything but in a flourishing condition.

Epidemic Encephalitis

Referring to the correspondence on this subject the Editor has received a letter from Dr. A. J. Watson of Yunnanfu. Dr. Watson is convinced that the explanation of the facts in regard to the presence of Epidemic Encephalitis in Yunnanfu prior to its appearance in other countries as suggested by Dr. Pfister in his letter in our January issue is not the correct one.

Unfortunately Dr. Watson has been laid aside with a severe attack of Typhoid Fever and has to leave at once for home to recuperate. He asks us to explain that this is the reason why he has been unable to reply to Dr. Pfister's letter but he hopes before long to be able to publish further facts in regard to the early appearance of the disease in Yunnanfu.

WANTED COLUMN

A **Chinese Dentist**, fully qualified, with post-graduate experience in the United States is anxious to be connected with some Christian Institution preferably in the South. Further particulars can be obtained from the Secretary.

A **Doctor** is wanted in Kobe, Japan, to take over private practice of an American Doctor for the summer. Communicate with Dr. J. L. McSparran, 24 Nakayamate dori, 2 chome, Kobe, Japan.

Obituaries

Dr. R. C. Beebe

Reference is made in our Editorials to the loss to the Association from the death of its former Secretary, Dr. Beebe. We append here the memorial notice of him that appeared in the North China Daily News of March 1st, 1928, and an appreciation by Dr. Merrins received as we go to press.

New York, March 13

The death is announced of Dr. Robert C. Beebe, formerly Secretary Emeritus of the Shanghai Branch of the Board of Foreign Missions of the Methodist Episcopal Church. —Reuter.

A cablegram was received yesterday from Clifton Springs, N. Y. announcing the death of Dr. R. C. Beebe formerly residing at 42 Route Ghisi at the age of 73. Dr. Beebe had been in poor health for several years, and had been confined to his house. He came to China in 1884 as a missionary of the Methodist Episcopal Church and was stationed at Nanking where he built a large Hospital. His work soon brought him into prominence in the city and surrounding country, and his name was known in thousands of villages from which poor sufferers came to him for treatment. In the foreign community, among the officials and gentry, as well as by the poor he was loved as a true type of the good physician. Thirty years ago Viceroy Lin Kun-yi

recommended him for a high decoration which was conferred upon him by the Emperor, and this was only one of many marks of confidence shown in him at Nanking. He was one of the promoters of the foreign school, Hillcrest. He served for several years as Dean of the Medical School of Nanking University. In 1915 he removed to Shanghai and became the Secretary of the Medical Association, continuing in this position for seven years until ill health obliged him to resign. In recent years several poems by him have appeared in magazines.

Dr. Beebe was a man of rare ability and of perfect devotion to his work of loving service in the name of his Master. Before coming to China he was offered a lucrative position with Parke, Davis & Co. in their laboratories, but he preferred to spend his life as a missionary. In his chosen work he gave all his time to the relief of distress and to the bringing of light into homes darkened with disease.

He is survived by a widow who is the sister of the Rev. E. C. Lobenstine, and by two daughters, one of whom is Mrs. F. S. Niles of the Presbyterian Mission, Huaiyuan, Anhui province.

At Clifton Springs, New York, on March 13th, 1928 Dr. Robert C. Beebe entered into rest after a long illness.

Having been closely associated with him in the service of the China Medical Missionary Association when he was its Executive Secretary and the writer was Editor of the China Medical Journal, it is a privilege to be permitted to say a few words on the life work of Dr. Beebe as a medical missionary.

Arriving in China in 1884 and resigning in 1923, his years of active service almost coincide with the distinct stage in the development of medical work in China which followed the period of adventurous pioneering and isolated medical practice. It was marked by a rapid increase in the number of medical missionaries, by the formation of the China Medical Missionary Association, of which Dr. Beebe was an original member; by the building of large well-equipped hospitals, the opening of medical schools, the training of nurses and by the commencement of numerous other enterprises necessary for the establishment in China of the practice of scientific medicine on a sound and permanent basis. The third and final stage will be reached when there is a sufficiency of competent Chinese physicians willing to undertake the medical care of their own people. It is true this goal has not yet been attained, but recent political and social changes seem to indicate that hereafter foreign medical missionaries will be fewer in China and their status very different from what it has been, so that the second period may be regarded as almost closed, though not in the manner we hoped.

At the beginning of this period of great and rapid development Dr. Beebe was in Nanking. There he remained for many years in charge of a large hospital. He was very successful both as physician and surgeon and was highly esteemed personally by Chinese and foreigners alike. In the affairs of the C. M. M. Association he was always keenly

interested and his wise counsel and practical co-operation were of great value. In 1899 he was elected its President for the usual term. In the course of time as the work and interests of the Association expanded, it became necessary to appoint a full-time Executive Secretary. Dr. Beebe was elected unanimously to this position in 1915. By his tact, geniality he won the confidence and affection of his colleagues and the affairs of the Association prospered. The writer, as Editor of the Journal at this time, owed much to him for his sagacious advice and friendly encouragement. In 1923, stricken by a disabling malady, Dr. Beebe felt obliged to retire. Resolutions were passed by members of the Association expressing the general regret and thanking him for his long and faithful service. He gave a hearty welcome to his successor, our present very efficient Executive Secretary and gladly responded whenever his help was sought. So ended forty years of successful and happy service.

It is in adversity however, when the soul is tried as by fire, that the strength and beauty of the Christian character shines forth. During the latter years of his life Dr. Beebe suffered from spastic paraplegia which slowly and relentlessly made him physically helpless. It is hard to retire from active service when the mind is still clear and vigorous and to become a mere passive spectator of human life; it is hard for one accustomed to minister to be reduced himself to complete dependence on others—even though the ministrants are loving devoted wife and relatives—and learn to the full the lessons of patience and gracious humility; it is hard to endure the long nights with their sleeplessness, weariness and pain, with no illusive hopes, knowing full well in the light of his own professional knowledge that there must be but the one ending. "The loss of

youth is melancholy enough," wrote Horace Walpole, "but to enter into old age through the gate of infirmity is most disheartening." This was the lot of Dr. Beebe. Yet he was seldom or never heard to complain. He seemed cheerful, resigned, interested in current events. It gave him great pleasure to meet old friends. Of these he had many as his own disposition was friendly. He had his own strong religious convictions, but whether his friends were Christian or non-Christian, Fundamentalist or Modernist, Roman Catholic or Quaker, he loved them all. It is said sometimes that a long illness with all its pains and disabilities and with death always hovering near, is a *via dolorosa* more to be feared than death itself. The fortitude and resignation shown by Dr. Beebe should dispel this fear. Indeed his whole life was a constant strength and inspiration to others, in his earlier years by his active service, in the later years by his sufferings patiently and nobly borne.

"And one of the elders answered, saying unto me, These that are arrayed in white robes, who are they and whence came they? And I said unto him, My Lord, thou knowest. And he said to me, These are they that came out of the great tribulation."

E. M. M.

Dr. J. H. McCartney

With Dr. McCartney of Chungking the Association loses another of its senior Members.

Dr. McCartney came to China in 1890 in the service of the Methodist Episcopal Board. Through his whole time in China he has been resident in Chungking.

The following tribute appeared in the North China Daily News but we

hope to be able to publish an appreciation from a fellow worker in a subsequent issue.

We regret to announce the death of Dr. J. H. McCartney which occurred at Chungking on March 20. He had been in Chungking for about 35 years, and was a widely known figure in China, especially in the upper reaches of the Yangtze. A leading man in the social and business world of Chungking it is probable that he was the best known man in Western Szechuan.

Dr. McCartney was formerly connected with a missionary society, but for a number of years he had been practising on his own account, specializing in surgical work. He leaves two sons and a daughter: Mr. Roy McCartney, who is in business in U.S.A., and Dr. J. Lincoln McCartney, formerly of Hankow, who is now practising in U.S.A., his daughter being Mrs. V. R. Butts.

Dr. Anna J. Gloss

News has also come of the death of another of our senior Members and one of the earliest of the women medical workers in China.

Dr. Anna J. Gloss came to China in 1885 also under the Methodist Episcopal Board. Her first five years were spent at the Isabella Fisher Hospital in Tientsin. Following this she spent twenty years in Peking in charge of the Sleeper Davis Memorial Hospital.

Dr. Gloss established the Women's Union Medical College in Peking which is now a part of the Medical Department of Shantung Christian University. She passed away at Pasadena, California, after thirteen years residence in the Homeland.

News and Comments

New York Post-Graduate Medical School

The Board of Directors of the New York Post-Graduate Medical School and Hospital announce that Edward Hicks Hume, M.A., M.D., LL.D., former president of the Colleges of Yale-in-China, and for many years identified with national and international hospital and medical educational work, has been appointed Director of that institution as of March 1, 1928.

This appointment marks a radical change in the policies of the institution as it follows a survey made of the personnel and resources of the institution which Dr. Hume has been working on since May 1927, and in which he proposes certain administrative and teaching rearrangements, and makes recommendations regarding a new building program and better integration with the nationwide plans for graduate medical teaching. Under the new regime, responsibility will be centralized, so that the various departments of the institution, as well as the three officers directly concerned with administration, namely, the Dean of the Medical School, the Superintendent of the Hospital and the Principal of the School of Nursing, will be responsible to the Board of Directors through the newly appointed executive officer.

The Directors of the institution, appreciating the need of a new program adequate to the demands of advancing medical practice, have determined to build up for the institution such a program of medical opportunity in teaching and research, and such a financial foundation as will enable it more adequately to serve the field. In this connection

it is significant that the New York Academy of Medicine has just completed a series of studies on the past, present and future of graduate medicine in the vicinity of New York. The study on the future of graduate medicine was prepared by a member of the staff of the New York Post-Graduate Medical School and lays chief emphasis on the fact that graduate medical teaching, like undergraduate teaching, is a part of the national health service. It is for the improvement of the health of the community, and the better provision of facilities for the prevention and cure of disease, that the New York Post-Graduate Medical School takes up its task anew.

Dr. Lim Bun-Keng

Dr. Lim Bun-Keng is returning shortly to Amoy to start a new building programme for the University over which he presides. His many friends will congratulate him on his happy escape at Singapore. The attention of readers is called to a letter in the Correspondence columns correcting an error in the March issue.

Linguists needed

The Editor regrets to confess his linguistic inabilities. Journals are being received, or offered in exchange, from Germany, Italy and Spanish South America, also books from time to time in these languages for review. Should any member with the necessary knowledge be prepared to read and review these from time to time will he kindly communicate with the Editor, C. M. J., who will make the necessary arrangements for forwarding the periodicals to him.

NEW MEMBERS PROPOSED

Busby, W. A.	M.R.C.S., L.R.C.P., Lond.	L.M.S.	Kulangsu, Amoy.
	Proposers:—Dr. Edward Cundall Dr. Stephen D. Sturton		
Kuan, T. Y.	M. B. Moukden	Ind.	Chang-Chia-Wan, Kirin,
	Proposers:—Dr. Hugh W. Y. Taylor Dr. H. S. D. Garven		
Worth, H. R.	M.B., Ch.B., Edinburgh	E.P.M.	Swatow, Tung.
	Proposers:—Dr. N. D. Fraser Dr. H. Ross		

NEW MEMBERS ELECTED

Dr. D. M. Black	U.C.C.	Lungchintsun, Kirin Prov.
Dr. Chang Ho	Ind.	Yunnanfu, Yun.
Dr. W. S. Flowers	B.M.S.	Tsinan, Sung.