bilirubin at the site of production of ammonia, though the latter may exist as such for only a very short time, is sufficient to explain the formation of the bilirubin ammonium salt. The liver cells are, in fact, the most probable site of formation of the ammonium salt.

Our views, therefore, as to the chemical nature of the two forms of bilirubin do not in any way conflict with the modern theory of jaundice, but on the other hand appear to lend it some support.

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DOUBLE VAGINA AND SINGLE UTERUS.

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IN the *JOURNAL* of March 13th (p. 476) Dr. Macgown of Kong-Kong reports a remarkable and interesting case of double uterus with double vagina, in which, occasion for Caesarean section having arisen, he was given the opportunity of verifying his previous clinical observations as to the degree of duplication of the uterus.

In the rare lapses on the part of Nature from her usual wonderful precision the departure from normal in failure to effect fusion of the Müllerian ducts increases as the failure extends from the level of the Fallopian tubes downwards. Thus uterus didelphys (or uterus septus) with double vagina, as met with by Dr. Macgown, is an exceedingly rare condition. A reversal in the order of fusion by which double vagina is associated with complete coalescence in the body of the uterus and the uterine cavity is probably the rarest of all such abnormalities. In the limited field of research at my immediate disposal I find no such case recorded, but that a few cases similar to the one I now wish to describe can be cited I do not doubt.

A woman, aged 29, married seven years, nulliparous and desirous of children, consulted me solely in respect of the infertility of her marriage. She was of good physique and health, menstruation had been regular, and she was aware of no sexual incapacity or anatomical defect.

On digital examination the ostium vaginae and the vagina itself appeared normal, and the cervix uteri was fully developed and centrally situated, but, as it seemed, a thin membrane covered the whole of the vaginal cervix, intervening between it and the examining finger. On preparing to insert a vaginal speculum I noticed (almost by chance, I think) to the left of the ostium vaginae, and tucked away against the left labium, what at first sight looked like a second meatus urinarius. The meatus urethrae proper was in its natural position anteriorly. On drawing the labium further aside there was displayed an intact left hymen having a natural opening no larger than would easily admit a No. 10 catheter. The next day, under a general anaesthetic, I broke down this left hymen and discovered a completely separate left vagina with a normal cervix and cervical canal beyond it. This was, of course, the cervix I had previously felt through the septum from the right vagina. Right up in the fornix of the right vagina was a rudimentary bud-like right vaginal cervix no larger than a hazel-nut. It had an umbilicated central depression but no patent cervical canal, and it appeared to spring from the side of the left (main) cervix at the level of the internal os. The body of the uterus, as far as I could determine its outline bimanually, was neither bicornuate nor unicornuate. The vaginal septum was thick and fleshy below, thin and membranous above, and it extended the whole length of the vagina right up to the angle formed by the rudimentary right cervix. Either vagina admitted a 1½-inch Fergusson's speculum easily, the septum being deflected to the opposite side. The two blades of a bivalve speculum, being passed, one into each vagina, displayed the septum and its attachments perfectly.

Evidently the menstrual flow had always been through the left vagina, and probably the virginal condition of the right hymen had been similar to that of the left. Had the left hymen given way instead of the right on the patient's marriage, I could see no reason to doubt that impregnation would have occurred, or to suppose that the vaginal septum would have opposed any resistance in parturition, and so have been destroyed. I think it even possible that the very existence of the right vagina might then have been unnoticed in the ordinary course of obstetric attendance. However that may have been, in deference to the patient's paramount desire to have children, and to give her the greater chance of its fulfilment, I decided to throw the two vaginae into one by division or excision of the septum. Accordingly the septum was divided by scissors from below upwards, and the cut edges of the lower thick parts were sewn over by a few loops of

continuous suture. The flaps retracted and shrivelled, and when I next saw the patient, eight months later, little more than an anterior and a posterior raphe remained. She was then already five months pregnant. Gestation was perfectly normal throughout and went to its full term, and in due course I delivered her of a well developed male child after a rather easy labour. She subsequently, as I was informed, bore another (female) child—again without difficulty.

Apart from the fact that neither before nor during pregnancy could I detect a separate right uterine body, or any vestige thereof (although therein I may have been mistaken), my reasons for believing that only the vagina was double are: (1) that there was no history of haematometra or other pelvic crisis arising from puberty, and (2) that the vaginal septum, while thick and fleshy below, thinned almost to the vanishing point at the fornix. Against such view may be urged the existence of a rudimentary right cervix. But this appeared to be integumentary rather than substantial in structure, and, that being so, would it not morphologically belong to the vagina rather than to the uterus?

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TUBERCULIN LINIMENT.

THE value of tuberculin in the treatment of tuberculosis is enhanced if one realizes the conditions under which the best results are likely to be obtained. Some two years ago, as the result of an analysis of 96 cases treated with tuberculin, I formed a working theory as to the class of case in which it was likely to prove beneficial. The details were published in the *JOURNAL*.¹ I have had no reason to alter the conclusions to which I then came, which were:

1. That fibrosis is an important factor in tuberculin therapy, and that, other things being equal, the less fibrosis there be the more satisfactory will be the results with tuberculin.
2. That hypersensitiveness is no contraindication to tuberculin therapy.
3. That in subsensitive cases much improvement cannot be expected except in asthma.

By far the best results, in my experience, are obtained in hypersensitive cases and in asthma. The difficulty is that if hypersensitive subjects be treated with hypodermic injections of tuberculin the general reactions may be unduly severe, and in the asthmatics an attack of asthma may be precipitated. For these reasons one is apt to be deterred from giving tuberculin in the very cases in which it is such a powerful agent for good. Fortunately, there are other ways of exhibiting tuberculin besides the hypodermic method.

Sir Robert Philip has advocated² the administration of tuberculin as an ointment. I use this method frequently with satisfactory results. It has, however, the disadvantage that the dosage cannot be accurately regulated. Dr. James Crockett³ speaks favourably of tuberculin liniment. I have given this method an extensive trial and have found it valuable. A description of the procedure adopted may therefore be of interest.

The patient is first tested as to sensitiveness to tuberculin by the von Pirquet method modified by Ellis. This consists in performing a cutaneous test with dilutions of "old tuberculin." Those cases which react to 1 in 500 dilution are classified as hypersensitive, those to 1 in 100 as sensitive, and those to 1 in 10 as subsensitive. A skiagram of the lungs is taken and the extent of fibrosis, if present, is noted. The test is essential and the x-ray report most desirable, for, as indicated above, a knowledge of the degree of sensitiveness to tuberculin and the amount of fibrosis is the keynote to successful tuberculin therapy and to prognosis.

The patients take their own temperatures four times a day and their weight is recorded weekly. They attend hospital once or twice a week for treatment, which is conducted as follows: 0.01 c.cm. of T.A.F. ("tuberculin albumose frei") is diluted with a suitable quantity (say 0.5 c.cm.) of compound camphor liniment. This the patient rubs into the back of his upper arm. If there be no local reaction to this the dose is doubled at the next sitting, and doubling is continued at each subsequent sitting till

¹ *BRITISH MEDICAL JOURNAL*, June 14th, 1924.

² *Ibid.*, March 24th, 1923.

³ *Edinburgh Medical Journal*, March, 1924.