

that in Morris's statistics six out of seven cases under 10 years of age died. The symptoms are collapse, vomiting, local pain and tenderness, attacks of ureteral and renal spasm, and disturbance of renal function, hæmaturia, and diminution of urine. The collapse is usually profound and of long duration. The face is pale and drawn and covered with sweat. Temperature is subnormal, the pulse quick and small, and the extremities cold. The aspect of the patient for some hours is discouraging in the extreme. In some cases ecchymoses appear at the root of the penis and over the external abdominal ring (Morris). Testicular retraction due to the severe hæmaturia and the passage of clots in the ureter have been observed. A tumour from the extravasation may occur rapidly, rounded in form and dull to percussion, and fluctuation may be felt. Hæmaturia may be due to simple contusion of the kidney or by transudation. After the effects of the shock have worn off the local pain continues and is increased on respiration. The pulse becomes sharp and rapid, the skin hot and feverish, the tongue furred, and there is nausea with vomiting. The complications are numerous and dangerous: (1) continuous and excessive extravasation of blood, (2) peritonitis, (3) inflammation and suppuration of the perinephritic tissues, (4) occlusion of the ureter, (5) traumatic nephritis, and (6) extravasation of urine. Of these, hæmorrhage is the most common cause of death.

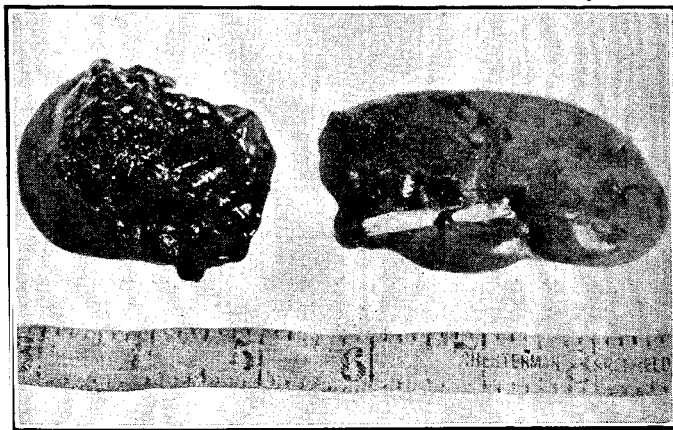
Treatment.—The effects of the shock must be combated by absolute rest, and the patient kept warm; stimulants and solid food avoided and fluids limited. The bowels should be well moved by enemata and morphia given to relieve pain. Ergot is sometimes given to relieve the hæmorrhage, but its use is of more than doubtful efficacy. No attempt should be made to at once remove the blood-clot from the bladder, as the urine has a solvent action on it. As regards operation, each case must be decided on its merits; but Morris advises early interference. In this connexion it is interesting to note that the first recorded case of nephrectomy for ruptured kidney was by the late Dr. Rawdon of Liverpool, on a boy of 12 years, who fell down steps, sustaining a bruise over the right ilium, when it was found that the kidney was almost completely torn across. He died later from cystitis due to attempts to remove the blood-clot from the bladder.¹

A schoolboy, aged 12 years, was admitted to the Royal Infirmary, Liverpool, on the evening of July 20th, suffering from injuries caused by a fall. While returning to school after dinner in crossing a field he slipped on the wet grass and fell, his side coming into contact with the ground and (perhaps) a small stone. He was shortly afterwards picked up and carried home, being unable to walk, and seen by Dr. G. Gunn, of Neston, who found him in a state of collapse, with a frequent pulse and cold sweats. Vomiting set in and he was put to bed and kept warm. Later a couple of ounces of urine were passed, darkly stained with blood, and a diagnosis of "injury to the kidney" was made, and he was transferred to the infirmary by a motor, a distance of ten miles.

On admission at 9.45 P.M. he was conscious, absolutely blanched, bathed in a cold perspiration, pulse 108 per minute, small and weak, temperature 96.8° F., and respirations 23 per minute. The only injury apparent on examination was a small abrasion on the right side in the anterior axillary line, corresponding to the eighth, ninth, and tenth ribs, and about half an inch wide. There was no hæmorrhage from the skin nor sign of fractured ribs, and the abrasion was evidently caused by the stone. The abdomen, but more especially on the right side, was absolutely rigid and tender, and he complained of pain if touched there, the symptoms being most pronounced in the right hypochondrium. The right flank was absolutely dull on percussion, but there was no swelling or distension. He only complained of pain on being touched. There were no symptoms of renal or ureteral cramp, no ecchymosis at the root of the penis or over the external ring, and no testicular retraction. His condition was so serious that operation was deferred to see if there should be any improvement and $\frac{1}{8}$ th grain morphia was administered hypodermically, while he was packed round with hot bottles and blankets. He complained of severe thirst. At 12 P.M. he was sleeping. At 2 A.M. the pulse had risen to 120 per minute and the temperature to 100.6°. At 3.30 A.M. he was in a critical condition, with symptoms aggravated; and Mr. T. C. Litle Jones being called, decided on immediate operative interference.

¹ Vide THE LANCET, May 26th, 1883.

An anæsthetic (open ether) was administered and an incision was made 1 inch below and parallel to the twelfth rib through the muscles, and on cutting through the transversalis fascia the kidney was found buried in an enormous blood effusion invading the pelvis, diaphragm, and neighbouring organs. On turning out this clot the lower half of the kidney was found completely torn off and lying loose in the clot. (See figure.)



Reproduction of photograph of the specimen after removal.

The vessels attached to the upper portion were at once clamped and ligatured with Van Horn No. 1. catgut and the remainder of the kidney removed. The peritoneum covering it was found intact, and the blood effusion extending behind it over the diaphragm and down into the pelvis was removed as completely as possible, the cavity packed with dry sterile gauze, the muscle layers sutured with Van Horn catgut and the skin with silkworm gut, leaving an opening for the packs. He was then returned to bed, $\frac{1}{8}$ th grain of morphia was administered hypodermically and 4 oz. of salines hourly per rectum. The temperature and pulse-rate dropped immediately after the operation, but later steadily rose till 6 P.M., when they reached a maximum of 101.6° and 156 per minute. He was given small quantities of fluid by the mouth, and first passed urine (4 oz., deeply blood-stained) at 2 P.M. Morphia was again administered at 2 P.M. and at 7 P.M., and the saline continued hourly for 48 hours. The packs were removed 36 hours after operation, under gas, and the wounds repacked.

The after-history was uneventful. The wound healed without any sign of sepsis, and the boy quickly recovered his loss of blood; as the other kidney improved in tone more food was administered. He was discharged from hospital a month later apparently quite strong and well, and since then his progress has been good.

I would like to express my indebtedness to Mr. Litle Jones for permission to publish this case, and his kind assistance and advice on these notes.

Liverpool.

SALVARSAN IN SYPHILIS.

BY DUDLEY KENNARD, F.R.O.S. EDIN.,
HONORARY SURGEON, WESTMINSTER GENERAL DISPENSARY;
AND
W. HENRY GORDON, L.P.S.I., M.P.S.

WE have been using salvarsan, "606," in the treatment of syphilis for over a year, and we think that a short account of our experience may be of value. We have treated and followed up 200 cases which were in the primary, secondary, and tertiary stages.

A Wassermann reaction was always taken before commencing treatment, and again in six months, nine months, and a year. All cases under treatment have given a negative reaction, the reaction having been positive previous to the first injection. Two intravenous injections of salvarsan, "606," have been given in all primary and secondary cases, the injections being at an interval of three weeks, because if "606" injections are given at shorter periods there is great danger, as has been recorded in the French journals (Gaucher, Caravan, and others).

The urine has been examined daily in 20 cases, and this

has shown that arsenic is eliminated after intravenous injection for four days, and in cases of intramuscular injection arsenic is still present up to the twelfth day. Between the first and second injections of salvarsan the patients have been ordered a mercurial inunction, this being continued after the second injection for 20 days in each month for a period of six months. The preparation prescribed is "crème de mercure" (Gordon), as it is easily absorbed and is more cleanly than the official ointment.

None of the cases so treated has had a relapse or has shown symptoms of syphilis, but although at present their Wassermann reaction is negative it is impossible until further time has elapsed to regard them as cures.

We have had no serious accidents to report. In one case soon after the second injection there was an eruption of herpes round the chin and lips and on the tongue, which yielded to the ordinary treatment. Some of the cases presented slight induration at the site of the injection which soon disappeared.

In women we observed that the regular period following the injection appeared a week earlier than usual, and was sometimes profuse in character. In one patient with severe ulceration of the leg iritis occurred, but it was not due to the treatment. The dose administered has varied from 0.4 to 0.6 gramme, according to the condition of the patient.

The injections were done in three ways:—(1) *Subcutaneous*.—This method was quickly discarded as it proved too painful. (2) *Intramuscular*.—(a) In neutral solution; this method also proved painful and caused a good deal of induration. (b) In the form of an oily emulsion; this proved more satisfactory. (3) *Intravenous*.—This method if properly performed is much the best way of administering salvarsan, except in those exceptional cases where it is impossible to find a suitable vein.

The apparatus we used in the intravenous method consisted of a glass cylinder of a capacity of 300 c.c. To this is attached indiarubber tubing fitted with two glass windows. The whole having been sterilised by boiling, a cannula and needle (previously sterilised in oil) are then attached. The apparatus having been filled with saline solution, it is impossible for air to enter at any time during the operation. The salvarsan solution must be prepared *immediately* before use and kept at a temperature approximating blood heat during administration. Chemically pure sodium chloride and caustic soda must be employed for the solutions. The technique is as follows.

Into a narrow-necked graduated glass cylinder of a capacity of 250 c.c., containing about 40 sterile glass beads, 40 c.c. of distilled water at a temperature of 104° F. are measured. The salvarsan, 0.6 gramme, is then gradually added, the tube being vigorously shaken to aid solution. The solution must not show (even when examined by transmitted light) any drop-like or gelatinous particles. To this are added 20 drops of a 15 per cent. caustic soda solution. A precipitate forms which redissolves on the addition of a few more drops of caustic soda solution. The clear yellow liquid is then filled up to 240 c.c. with a 0.5 per cent. saline solution prepared from sterile freshly distilled water. Each 40 c.c. of the solution now contain 0.1 gramme of salvarsan, 200 c.c. contain 0.5 gramme, so the dose required may be accurately ascertained.

An elastic band having been placed on the upper part of the arm the most prominent vein is selected at the bend of the elbow. The site of the puncture is then painted with iodine solution. The apparatus being filled with saline solution care must be taken that all air is expelled. The needle is then run into the vein, when blood will be seen to flow back by the glass window. The elastic bandage is then removed and the saline solution allowed to pass into the vein. If this takes place readily with no swelling at the site of the injection, the salvarsan solution is then slowly added to the saline until the required amount is given. Saline solution is again added until the liquid entering the vein is quite clear.

If swelling occurs at the site of injection it is caused by the needle having pierced the side of the vein; in that case it is advisable to remove the needle and select another vein. The presence of salvarsan solution in the tissues will cause painful induration and sloughing might occur. It may happen that the liquid does not flow freely, the point of the needle having come in contact with the wall of the vein;

this is obviated by either raising or depressing the point of the needle.

There should be no local reaction. A general reaction nearly always occurs and varies in intensity according to the condition of the patient and the amount of salvarsan given. During the injection the cheeks generally become pink and some patients complain of a metallic taste in the mouth. An hour or two after the injection there is likely to be a rigor and the temperature may rise to 101°–102° F., with, perhaps, headache and vomiting. This condition quickly passes and the patient feels well soon afterwards. During the last few months we have observed that cases of vomiting have occurred less frequently. Whether this is due to an improvement in technique or the salvarsan supplied by Ehrlich being purer we cannot say. It is hoped by the particular combination of salvarsan and mercury to attain a means of preventing the development of tabes and paralysis.

There can be little doubt that Professor Ehrlich by his recent work has added a most valuable drug to our Pharmacopœia.

CLASSIFICATION IN GYNÆCOLOGY.¹

BY W. E. FOTHERGILL, M.A., B.Sc., M.D. EDIN.,
HONORARY ASSISTANT GYNÆCOLOGICAL SURGEON, ROYAL INFIRMARY
AND ST. MARY'S HOSPITALS, MANCHESTER; CLINICAL LECTURER
IN GYNÆCOLOGY, UNIVERSITY OF MANCHESTER.

CLASSIFICATION marks the transition of any subject of inquiry from being a mere collection of observations and theories into being a science. In other words, no subject becomes a science until it is sufficiently well known to admit of the logical and orderly arrangement of its details. If this test be admitted, gynæcology is still a very young science, if, indeed, it has yet reached the scientific stage. As an art it has, of course, reached a high level.

The first attempts to give an orderly account of the diseases of women in this country seem to have been made in the later third of the nineteenth century. Thus the third edition of West's "Lectures," published in 1864, and the third edition of Grailey Hewitt's book, published in 1872, both contain traces of arrangement into diseases of the vulva, vagina, uterus and other organs. In 1877 Lawson Tait published a small book with a definite anatomical classification, and the same arrangement was used by Barnes, whose second edition appeared in 1878. From this date until the present time most books on the diseases of women have been arranged on the same plan, though some are conspicuously free from any attempt at logical classification. The object of the present paper is to examine the nature and results of this anatomical classification, and to find out if it is the best that can be made now, as it doubtless was when it came into use.

Though it may have been useful as a "preliminary effort," it is not only an artificial division, but a bad one of its kind, and it has been made worse by faulty application. For a number of conditions which are not conditions peculiar to women have been brought in. Such are the various skin diseases described under the headings "Vulva" and "Mons Veneris"; symptoms like pruritus, and affections of the bladder, urethra and rectum. Naturally the gynæcologist has to treat them; but when he is trying to give a scientific account of diseases of the female reproductive organs he might at least relegate other matters to an appendix. Conditions do not always appear in the appropriate anatomical division. Thus cystocele and rectocele are often-called diseases of the vagina, prolapse and retroversion being placed amongst diseases of the uterus, while all four are really abnormalities of the pelvic connective tissue. These are all avoidable errors in the application of the system.

But the division itself is to blame for splitting up and multiplying diseases. Gonorrhœa, for example, is one condition; but in books it is described in different sections under vulva, urethra, vagina, cervix, uterus, tubes and ovaries. Thus facts which should be together are scattered abroad. Further, local pathological processes are made into separate diseases, and names are given to them such as

¹ A paper read before the North of England Obstetrical and Gynæcological Society on Feb. 17th, 1912.