Atropine acts on the uterus in the same way that it acts on the intestine—namely, it arrests only certain abnormal violent forms of contraction without interrupting the path of nervous impulses from the spinal cord to the uterus.⁷ It therefore aids normal uterine polarity by making the contraction of the fundus more smooth, and at the same time relaxing the spasm of the sphincter muscle at the internal os. In severe cases it is often advisable to combine the antispasmodic with an analgesic and a sedative in the following cachet: luminal 1/2 grain, pyramidon 5 grains, ext. hyoscyamus 1 grain.

In cases where these measures prove unavailing to arrest the complaint there are several others at our disposal. Subtotal hysterectomy must be mentioned only to be condemned as an admission of failure. The recent French work on resection of the presacral nerve is interesting. Binet,⁸ in a report on thirty-two cases of pelvic pain, claims that relief is usually secured. He removes the whole of the tissue, including the sympathetic fibres lying between the common iliac arteries. He says it is "a simple operation, easy, and, above all, efficacious." In Germany, Bloss⁹ has treated dysmenorrhoea by the injection of alcohol. He believes that dysmenorrhoea is due to increased sensitivity of the ganglia governing the uterus. At each side of the cervix is injected 5 c.cm. of 70 per cent. alcohol, containing 5 per cent. novocain. He says that the treatment has given excellent results for ten years, with no harmful effects even on child-bearing.

GROSS PATHOLOGICAL CONDITIONS

Lastly, there are those cases of dysmenorrhoea which are due to some gross pathological condition. The lesion may be anything from a simple cervical erosion to generalized pelvic cellulitis or new growth. The age of the patient will give no indication whether the pain is due to some functional or endocrine derangement or to organic change. There is only one way in which a correct diagnosis can be made—by a thorough examination of the patient. If the patient is a young woman, often even if she is older, it is necessary to examine her under an anaesthetic. The lithotomy position, and a visual examination of the vaginal vault with speculum and terminal mirror, followed by a careful palpation of the uterus and adnexae, are the minimum necessities. The following case is of interest:

A young woman, aged 15, recently presented herself. She was remarkably developed for her age. The secondary sex characters were those of a well-developed woman. She complained of right iliac pain accompanying her periods; indeed, so definitely was the pain localized that her appendix had already been removed. She first menstruated at 11 years of age, her periods occurring every twenty-one days. The pain began the day before the period; it was spasmodic in character, lasted for two days, and then gradually subsided. On examination under an anaesthetic, the left ovary was found to be replaced by a cyst the size of a cricket ball, while the right ovary was enlarged and prolapsed into the pouch of Douglas. At the operation, the cyst was removed, and the right ovary (which was very congested and more than twice its normal size) was stitched into a pocket in the peritoneum. There has been no return of the disability. I quote this case to illustrate the absurdity of attempting to treat dysmenorrhoea from a symptomatic point of view. The patient had already been treated with an oestrin preparation, though it was quite obvious that she was sexually over-mature, and that endocrine treatment could do nothing but harm.

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MINOR SURGERY OF INFANCY*

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As we treat children until the age of 5 years in this hospital the following remarks are only applicable up to that time of life. There are many minor surgical conditions with which one is faced during the period of infancy. I have chosen a few of these conditions, and will describe a simple method of dealing with each.

HERNIAE

Hernia is very common in infancy. Large numbers of children are born with inguinal and umbilical herniae. The treatment of umbilical herniae has, in the past, usually been carried out by physicians. These learned gentlemen took great pride in strapping halfpennies, suitably covered with lint, over the protuberant umbilici

FIG. 1.

FIG. 2.

FIG. 1.—Aneurysm needle being passed subcutaneously round the neck of the hernia.

FIG. 2.—The ligature in place before it has been tied.

of the stream of infants constantly passing before them in the out-patients' department. Given patience, persistence, and perseverance, this method eventually leads to the disappearance of most umbilical herniae. I have recently ligated the neck of the sac of these umbilical herniae subcutaneously, with the result that the hernia is cured in five minutes instead of the more usual five months. The procedure is simple in the extreme. A local or general anaesthetic is administered and a small stab is made through the skin at the base of the hernia. A blunt aneurysm needle is passed through the stab wound, and, subcutaneously, round the neck of the sac. It is brought out at a diametrically opposite point on the skin through another stab incision. The needle is threaded with a piece of No. 2 catgut and is withdrawn. The needle is inserted through the original stab incision and worked round the base of the sac in the opposite direction, brought out at the second incision, and threaded with the remaining end of the catgut. When the needle is withdrawn a catgut loop surrounds the base of the hernial sac, which is then grasped and squeezed to make certain that it is empty. The ligature is tied. The stab wounds are so small that it is not necessary to stitch them, and they are sealed off with a dressing of Whitehead's varnish. I am indebted to Mr. Boyd for suggesting this method of dealing with these herniae, and I have successfully treated a number of infants by the technique described above.

Inguinal herniae in infants are treated by operative means. The operation for inguinal hernia in an infant, provided that the testicles have descended, is no more than a subcutaneous ligation of the neck of the sac of

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the hernia. The operation is undertaken as soon as the hernia is diagnosed; the earlier the better. It is performed in the out-patients' department, and the infants are sent home afterwards. Before these infants are operated on, conditions tending to produce increased intra-abdominal tension are remedied. A phimosis or a pinhole meatus is rectified and allowed to heal before the herniotomy is attempted. A temperature, diarrhoea, or rash upon the skin contraindicates operation. The child is neither purged nor starved, but is given an anaesthetic two hours after its last feed. A small incision is made through the skin over the external abdominal ring of the affected side. The coverings of the cord are incised, the sac isolated, and the vas deferens separated from it. This latter procedure requires care, and the vas must not be touched with the forceps. It is often closely adherent to the posterior wall of the sac. When the sac has been isolated it is opened and a probe passed down it into the abdomen. The sac is then twisted, its neck ligated, and the redundant portion removed. The stump drops back from view. The skin incision is closed by means of two silkworm-gut sutures and the wound sealed with gauze and Whitehead's varnish. Only one side is operated on at a time if the child is to be treated as an out-patient.

HYDROCELES

Infants are subject to many types of hydrocele. But in so far as the injection treatment of this abnormality is concerned there are three types: the open hydrocele—that is, one which communicates with the abdomen and which therefore gets larger by night but tends to disappear when recumbency is assumed; the closed hydrocele—that is, one which does not communicate with the abdomen; and, lastly, the hydrocele associated with a hernia. The closed hydrocele is the only type suitable for injection treatment. The open hydrocele is not injected on account of the possibility of some of the injection fluid escaping into the abdominal cavity and producing adhesions there. The hydrocele associated with a hernia is dealt with when the herniotomy is performed. Hydroceles in infancy have very thin walls, and the vas deferens is very closely applied to the outside of the hydrocele. If an irritant is injected into the interior of a hydrocele with the object of producing a mild aseptic inflammation, it is not unreasonable to suppose that the inflammation might spread to the closely adjacent vas deferens and produce stenosis or stricture of it. It has therefore been my practice never to inject both hydroceles in bilateral examples of this condition. The procedure is simple. The apparatus consists of a 10 c.cm. syringe with a hypodermic needle, a sterile 1 c.cm. syringe, a sterile 5 per cent. solution of sodium morrhuate, and of swabs and iodine. The 1 c.cm. syringe is filled with sodium morrhuate and the needle attached to the 10 c.cm. syringe. The scrotum is painted with iodine and the needle plunged into the upper and front part of the hydrocele. The contained fluid is aspirated. The 10 c.cm. syringe is detached from the needle and the loaded 1 c.cm. syringe substituted. The sodium morrhuate is injected and the needle withdrawn. No anaesthetic is required, and the operation takes only a couple of minutes. The hydrocele disappears without discomfort or any other noxious effects.

MINOR DISORDERS OF THE FEET

When an infant commences to walk perhaps the most frequent fault found by its mother is that it turns in its toes. This is in itself not a bad sign. When an infant stands it does so on a broad base, with its feet widely separated. The arches of the foot are undeveloped and the toes are pressed firmly downwards on the ground. As the child discovers its balance it brings its feet nearer together, and eventually walks, placing one foot in front of the other. Its weight, which originally was transferred to

the ground along the inside of the foot, now passes mainly through the outer side. The child who thus starts walking by stumping along soon develops a spring in its gait and rises on its toes as it takes a step. From the moment the toes are used in this way the internal longitudinal arch of the foot commences to develop.

The minor disorders of the feet in infants are a failure or delay either in the development of the longitudinal arch, the apposition of the feet, or in the presence of a hypermobile foot. When the development of the longitudinal arch is delayed the child walks flat-footed. In its unconscious attempt to throw its weight on the outer side of its feet, it turns in its toes. This in-toeing is a sign that the child is compensating for the tardiness of the development of the arches of its foot, and therefore this should be encouraged. A wedge of one-sixth of an inch should be inserted between the heel and the upper on the inner side of the shoes. The shoe itself should measure at least two sizes larger than the foot, should have a flexible sole, and must have a heel. Wedges and stiffening should not extend into the sole, for the object of treatment is to get the child to rise on its toes in walking and thus develop its longitudinal arch. A stiff sole not only prevents this but tends to throw the child's weight on to the inner border of its foot, thus defeating the objects of the treatment. Most patients react to these simple measures. In severe cases, a valgus insole may be required, together with re-educational exercises. The exercises must not take the form of a ritual to be performed for ten minutes before the child says its prayers each night, but must be directed towards altering a habit. The mental atmosphere created by a skilled masseuse is as important as the physical manifestations of her energies.

Delay in bringing the feet into apposition will result in the development of knock-knee. In these children there is usually an underlying rickety condition which must receive attention. If the knock-knee is mild in degree—that is, if the internal malleoli are one inch or less apart when the internal condyles of the femur are touching, and the legs are extended, then a one-sixth-inch wedge on the inner side of the heel should be prescribed. For more severe degrees of this condition splints suitably applied will usually remedy the fault.

Many infants have hypermobile feet, and this is a potential source of weakness. If an infant's foot can be dorsiflexed so that the dorsum of the foot touches the anterior aspect of its leg, then there will be delay in the development of the normal stance. These infants should have their feet splinted in inversion. A small malleable splint made of one of the light metals and covered is the measure we adopt here. The child should be watched during the period when it is learning to walk, so that supports may be ordered if required.

In older children a mild degree of shortening of the tendo Achillis will often produce a flat-footed gait. A normal foot can be dorsiflexed in the mid-line with the knee straight, so that a plumb-line dropped from the ball of the big toe will pass half an inch or more proximal to the plantar surface of the heel. To carry out this test the foot must be held absolutely median, and allowed neither to go into inversion nor into eversion. If the foot can only be flexed to the right angle there is a mild degree of shortening of the tendo Achillis, and in order to flex the foot further the child everts its fore-foot. This condition of pes valgus may be treated by raising the heel of the shoe half an inch, a measure which takes the strain off the tendon. The tendo Achillis should be passively stretched by the masseuse, and actively by the performance of suitable exercises. It is hardly ever necessary to tenotomize the tendo Achillis in this contracture in infancy. A masseuse can usually stretch the tendon sufficiently to overcome all symptoms.