

abnormality of the cranial nerves was detected. There was anaesthesia to pain and thermal sense from the fifth thoracic segment downwards. Abdominal and cremasteric reflexes were absent, and the abdominal muscles were atonic. The lower limbs were not rigid; muscular power was diminished in the left leg and absent in the right. Superficial and deep reflexes were present on the left side and exaggerated on the right. Other findings were: left border of heart six and a half inches from mid-line and right border behind sternum; on auscultation diminished air entry in left axilla; bladder at level of umbilicus; cerebro-spinal fluid normal, no increase of pressure; Wassermann reaction negative. X-ray examination of the chest confirmed the displacement of the heart to the left, but failed to identify the cause.

From June 1st onwards the patient's condition rapidly deteriorated. He failed to regain bladder control, having to be catheterized daily, and, in spite of every precaution, cystitis and bed sores developed. He became incontinent of urine and faeces, and complained of tightness around his chest and of headache. He died on June 15th.

A post-mortem examination was performed, the findings of which were of the greatest interest. There were secondary metastatic deposits in the vertebral canal at the levels of the fifth and sixth thoracic segments, and again at the first and second lumbar segments; in the first situation there was haemorrhage into the growths. The right lung contained a large carcinoma growing from the outer wall of a branch of the right bronchus. It was two and a half inches in diameter, and, with a circumscribed surrounding area of acute congestion, involved the middle and lower lobes of the lung. There were dense pleural adhesions between the diaphragm, chest wall, and lung. The mediastinum was pushed over to the left, but the left lung showed no pathological changes other than collapse of portion of the lower lobe. The heart muscle, valves, and aorta were normal. There were secondary deposits in the liver, mediastinum, and abdominal glands. Microscopical examination of sections of the growth revealed an adenocarcinoma of the small-cell type.

It is rather surprising that such a large thoracic tumour should have grown so insidiously to such dimensions without giving rise to pulmonary symptoms such as cough, haemoptysis, sputum, pain in the chest, or dyspnoea.

I am indebted to Dr. Harold Wachter, honorary physician of this hospital, for permission to publish this case.

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## Reports of Societies

### FEMALE SEX HORMONES AND GONADOTROPIC SUBSTANCES

LECTURE BY PROFESSOR ASCHHEIM

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on December 8th, with Professor W. BLAIR-BELL in the chair, Professor S. ASCHHEIM of Berlin lectured on the presence and effect of female sex hormones and gonadotropic substances.

Professor Aschheim began by paying a tribute to British medicine, especially in the field of endocrinology. There were, he said, several ovarian hormones, two of which were known—namely, the oestrogenic hormone, which was formed in ripe and ripening Graafian follicles, and the hormone produced by the corpus luteum. The first of these was responsible for the occurrence of "heat" in animals, and was recognizable by a number of test methods which he described. By one principal test—that of uterine growth—the proliferation of the mucosa and of the musculature, the formation of new blood vessels, and the obvious hyperaemia all proved that the oestrous hormone was a substance capable of stimulating the development of the atrophic organ and of producing premature development of the infantile organ. On the basis of the test methods and of present knowledge of the occurrence of the oestrous hormone in the human body, it was possible to form a conception of the signi-

ficance of this hormone and of its share in physiological and pathological processes.

The chief site of production was the follicular apparatus of the ovary, and the amount of the hormone present in the blood increased from the time of maturation of the follicle until the commencement of menstruation, at which point it again fell. Its excretion in the urine ran parallel with its presence in the blood. According to Siebke, from 1,200 to 2,000 mouse units were excreted during a complete menstrual cycle. In pregnancy the hormone content of the blood rose, and an increased excretion in the urine might even be demonstrated from the eighth week onwards. In the third month some 3,000 mouse units were excreted daily, while in the last months of pregnancy 50,000 or even 70,000 units might be found in the urine in twenty-four hours. Although the hormone was demonstrable in the ovary during pregnancy, it was possible that the placenta was the chief site of production during this period, since in women who were castrated early in pregnancy the hormone continued to be present both in the blood and in the urine. At the end of pregnancy the placenta contained some 1,500 to 2,000 mouse units of hormone. It might safely be assumed that the growth of the uterus during pregnancy was partly due to the influence of the hormone, though whether that was the only factor responsible for the conversion of the small non-pregnant uterus into the powerful muscular organ present at the end of gestation was not yet certain. It seemed that other factors played a part in the further growth of the uterus. The question as to whether the hormone had still other functions to fulfil in pregnancy—whether, for example, it was a necessity to the embryo, into whose circulation it entered—was still unanswered.

The lecturer next referred to the part played by the hormone in certain gynaecological disorders. In young girls with a severe form of menorrhagia, in association with a cystic hyperplasia of the endometrium as revealed by curettage, and in women with a similar condition at the commencement of the climacteric, there was not infrequently found an increased excretion of hormone in the urine, and it seemed likely that the condition was due to an excessive hormone production. Again, in the type of ovarian tumour known as a granulosa cell, in association with which a hypertrophic endometrium and enlarged uterus were found even in very old women, the presence of oestrous hormone had often been demonstrated in the tumours themselves, with an excretion of hormone in the urine, so that it seemed justifiable to attribute such uterine changes to a pathological hormone production. The hormone was formerly known as the female sex hormone, because it was first found in the ovary. Professor Aschheim, however, considered it better called the oestrogenic or oestrous hormone, for it had a wide distribution, and had even been extracted from plants, being also present in many flowers and fruits. Through a chance clinical observation he had been led, a few years ago, to the discovery that mineral oils contained oestrogenic substances. Certain petroleum oils were found to contain as much as 1,000 to 2,000 mouse units per kilogram, and substances found in bituminous material possessed all the biological characteristics shown by the oestrous hormone obtained from urine in pregnancy; whether there was chemical identity remained to be shown. Another property of the oestrous hormone was the production in infantile or castrated animals, on injection, of an increase in the metabolism of the uterus as measured with the Barcroft-Haldane or Warburg apparatus. The lecturer glanced briefly at the other known hormone—that produced by the corpus luteum. He mentioned that the hormone prepared by Corner and Allen from the corpora lutea of pigs had all the properties which could be demanded of a substitute for the corpus luteum.

#### THE GONADOTROPIC HORMONE OF THE ANTERIOR PITUITARY

The lecturer next turned to the gonadotropic substances. He pointed out that the dependence of the genital glands upon the hypophysis was recognized some time ago from

pathological, anatomical, and clinical observations. After long experiment it became possible to distinguish the pathological from the physiological changes, and to collect the chief findings in the ovary into three test reactions for the gonadotropic hormone of the anterior pituitary—namely: (1) formation of large follicles, sometimes with bursting of the follicle, and the formation of normal corpora lutea; (2) formation of follicles containing blood; (3) formation of corpora lutea enveloping ova. The first reaction represented a physiological process; the second and third were pathological. The anterior pituitaries of both men and women, young and old, and of the most various types of animals all acted in the same way, so that the anterior pituitary secretions were defined as a sexual non-specific hormone controlling the genital glands. It was true to say in all respects in the female, though only partially in the male, that the anterior pituitary was the motive power of sexual function. When the anterior pituitary was removed sexual function ceased, whereas after castration the hormone production in the anterior pituitary not only continued but actually increased. Some years ago he had endeavoured to ascertain whether gonadotropic substances, similar to those of the anterior pituitary, could be demonstrated in pregnant women, and he found that the placenta, decidua, and corpus luteum of pregnancy all gave the three test reactions in the infantile mouse. Further, the blood stream of pregnant women also gave the reactions, although after delivery the active substances rapidly disappeared from the blood. He was thus led to ask the question: What happened to the hormones? Were they destroyed in the body or were they excreted? He discovered the presence of the hormone in the urine of pregnant women; it was clearly demonstrable even a few days after the first period had been missed. On these observations he had based his test reaction for the diagnosis of pregnancy, and over a period of six years, in rather more than 13,000 cases, the original method had shown an accuracy of 98.25 per cent. These early investigations formed the starting point of systematic analysis of the urine for the presence of hormones. The question whether the placenta produced the hormone or merely stored it had been from the first an open one. It was surprising that the implantation of anterior pituitary fragments from pregnant women was inactive in animal experiments, whereas the hypophysis of, for example, a pregnant rabbit, was active. Amongst animals the hormones were only found in the urine in pregnant monkeys. The gonadotropic substances were found in man, in the amniotic fluid, and in the blood of newly born children, and were excreted in the urine in the first few days of extrauterine life. Of their significance in pregnancy in women nothing definite was known. It was possible that they assured continual function of the corpus luteum. He was led several years ago to wonder whether the various factors obtained in the ovary—that is, the maturation of the follicles on the one hand, and the formation of corpora lutea on the other—were due to different quantities of one and the same substance or whether two different substances were responsible. His investigations had led him to consider that there were two factors—the follicle-ripening factor and the luteinizing factor, the so-called prolan A and B. He gave a detailed account of his experiments in this connexion, and added that from work on which he was at present engaged there was no doubt in his mind that administration of the two factors in the proper sequence would give good therapeutic results in women suffering from amenorrhoea due to ovarian insufficiency resulting from a functional disturbance of the hypophysis. Therapeutic employment of a mixture of the two factors as obtained from the urine of pregnancy gave only purely fortuitous results.

In conclusion Professor Aschheim advanced some arguments in justification of the direct application of the results of animal experiment to human therapy. A further remark was that certain changes found in the ovaries of pregnant women could only be considered as a result of the presence of abundant quantities of these

gonadotropic substances; in this class was the marked overgrowth of the theca in atretic follicles. If the organism was flooded by excessive amounts of hormones, as was the case in hydatidiform mole, large lutein cysts were formed which corresponded to the ovarian changes found in animal experiments. He advised a cautious use of the available anterior pituitary hormone, but he was convinced that the chemists would ultimately succeed in preparing the hormones separately, so that they could be employed in proper dosage and sequence with good results and without causing any damage. In the field of hormone research investigators were obliged to select individual glands out of the whole endocrine system and to study them and analyse the various subdivisions of their action. There was still an enormous mass of work to be done in this direction, and the problem was further complicated by the close connexion of another branch of study on hormone research—namely, the study of the vitamins. It was already known that the function of the endocrine glands was very greatly dependent upon the presence of certain vitamins in the diet. Chemists, biologists, and clinicians had thus a great common task to carry out, and it would require the co-operation of the research workers of the whole world to solve these problems.

Professor Aschheim, who addressed the section in English for an hour and a half, illustrated his theme by means of the most excellent lantern slides—mainly of microscopical sections.

#### DISCUSSION

Professor E. C. DODDS said that the only criticism of Professor Aschheim's lecture was that he had unduly minimized his own part in these investigations. But for the original investigations of Aschheim and Zondek none of the chemical work which had been done on the oestrus-producing hormone would have been possible at all. Prior to the discovery of this hormone in the urine the only source was the ovary, the follicular fluid, and the placenta, and the hormone was made by a process of extraction with volatile solvents from these sources. This resulted in the extraction of a large quantity of material with similar properties to the hormone, with the result that no idea of the composition of this compound could be arrived at. The compound excreted in the urine was not contaminated with similar bodies, and following the contribution of Aschheim and Zondek the organic chemists were able to attack the problem at once. Professor Aschheim had referred to the source of the hormone, and had said that he had studied a case of ovariectomy in early pregnancy. The speaker had also been able to study such a case, investigating the excretion of both oestrin and prolan in this patient. The ovaries had been removed for a bilateral cystic condition about the third month of pregnancy. The patient went to term, and it was found that the amount of oestrin and prolan excreted in the urine differed very little from that in a patient with ovaries; therefore he thought the ovaries could be disregarded as the source of oestrin in pregnancy. With regard to the question of the specificity of the oestrous test, or even the study of the vaginal or the uterine changes, this must be regarded as rather doubtful. Observations had shown that a great many compounds were excreted in the urine of pregnant animals, many of which were capable of producing oestrus, and whilst they possessed the same type of structure chemically they did differ in some important respects. With Dr. Cook of the Cancer Hospital he had been able to demonstrate that some compounds differing markedly from the chemical structure of oestrin were able to produce all the reactions of oestrus. He thought that caution should be shown in the study of oestrogenic agents before any biological action was regarded as specific. This applied particularly to Professor Aschheim's important observation that coal, and oils extracted from coal, contained this oestrus-producing agent. Professor Dodds added that he had never been convinced that there were two prolans—prolan A and prolan B. He thought it dangerous to argue on histological evidence

for two separate factors. Personally, as a biochemist, he would never be convinced until two solutions in two entirely separate and unconnected bottles had been produced, one which would produce luteinization and the other maturation of the follicles. Until this could be done it was, he thought, very unwise to specify prolan A and B.

Dr. A. S. PARKES said that as one whose job it was to carry out full-time research on this subject he could appreciate even more than most people the extraordinary industry and fertility of ideas which characterized the work in Berlin. With regard to the source of oestrus-producing hormone in the non-pregnant animal, there could be little doubt that the Graafian follicles represented one side of production, but the substance was undoubtedly produced in animals which had been deprived of the Graafian follicles. Was there a possibility of other tissues in the ovary producing this particular substance? Then there was the question of the possible identity of the gonad-stimulating substances found in the urine of pregnancy and those found in the anterior lobe of the pituitary body and the placenta. It was known that there were certain slight differences in the biological action of preparations made from these various sources, but at the same time the main action—that of stimulating the resting gonad to some form of activity—was the same, and it did seem probable that the substances, if not identical, were closely related chemically. The importance of this point, of course, was quite obvious, particularly since the urinary substances were far more easily come by than those in the anterior lobe itself.

Professor BLAIR-BELL also expressed scepticism as to the presence of two distinct bodies—prolan A and prolan B. He had always held, as Professor Dodds had so convincingly argued, that there might only be one. One had always to take into account the fact that the corpus luteum and the follicular cells of the granulosa were to a certain extent antagonistic. Professor Aschheim had thrown a flood of light upon what it was that caused rupture of the follicle. In thanking him very warmly he added, however, that there was still a great deal in this subject that was hypothetical, and the Aschheim-Zondek test must not be regarded as the alpha and omega. The chemical nature of prolan must be identified before there could be positive proof. Professor Blair-Bell showed and described a number of histological sections bearing on the subject.

In reply, Professor ASCHHEIM reiterated his belief in the presence of the two substances prolan A and B. His experiments, he thought, had proved that they must be different substances. As to the source of production of the ovarian hormone in castrated animals it was very difficult to say. It might be that substances from the food taken into the blood had a bearing on the problem, and that other organs contained or produced the same substance.

### SPINAL ANAESTHESIA

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine, held on December 1st, Mr. ETHERINGTON WILSON read a paper on "Intrathecal Nerve Root and Rootlet Block: Some Contributions and a New Technique," illustrated by films.

Mr. Etherington Wilson stated at the outset that his paper dealt with percaine as the anaesthetic agent, and that the experiments to be described were concerned only with that drug. He defined the levels of anaesthesia to be obtained, and classified them into three zones: (1) including the lower limbs to the groins, (2) extending up to the umbilicus, and (3) reaching to the nipple line. The films showed numerous experiments he had performed with glass tubes representing the spinal canal, and demonstrated the rate of ascent of the percaine solution injected in the canal. The rate of the ascent of the percaine solution in the "canal" was shown to vary according to the angle of the spine, the amount injected, the method of injection, and the temperature and specific gravity of the fluid injected. Mr. Etherington Wilson then gave the deductions he drew from these

experiments. He kept his patients sitting upright for the lumbar puncture, and for a given number of seconds afterwards, the exact number varying according to the level of the anaesthesia required. Films illustrating this technique in the operating theatre were shown.

In the discussion that followed numerous questions were asked, and the technique was criticized and compared with existing methods.

### CONSTIPATION IN CHILDHOOD

At a meeting of the Medical Women's Federation on November 28th, with Professor M. F. LUCAS KEENE in the chair, Dr. JEAN SMITH read a paper on constipation and colic in childhood.

No one, Dr. Smith said, could fail to be impressed with the extreme frequency of these complaints. The stamp duty on patent medicines, many of which were purgatives, had increased in Great Britain from £43,692 in 1860 to £360,377 in 1914, representing no less than £2,000,000 spent by the public on patent medicines in that year. Intestinal peristalsis, although partly dependent on nervous control, was largely independent of extrinsic nerves, and the movements continued in excised portions of bowel placed in oxygenated Locke's solution. The vagus and the pelvic nerves stimulated peristalsis by their action on Auerbach's plexus, and the sympathetic fibres inhibited peristalsis. Intestinal contents, thyroid gland secretion, and various emotions such as excitement or fear, stimulated Auerbach's plexus and caused increased peristalsis; excessive stimulation produced abnormal peristalsis with colic and spasm. Colic might follow fright, emotional upset, or severe cold; and measures which lessened the irritability of the vagus, such as warmth, rest, and quiet, would alleviate colic. Stimulation of the sympathetic might explain the constipation said to result from the use of adrenaline in asthma.

In the healthy breast-fed infant there should be two to three golden-yellow, homogeneous, inoffensive stools in the twenty-four hours; the usual times of action were after the first morning feed, in the early afternoon, and again in the evening. In the bottle-fed baby, the more closely the food resembled breast milk the more closely did the stools resemble those of the breast-fed infant. The higher the protein content the more alkaline and formed were the stools; hence constipation almost invariably resulted when an infant was taken off the breast and put on artificial food, especially on cow's milk mixtures. Sugar and fat were laxatives and might properly be used to correct constipation due to an ill-balanced diet. Constipation in childhood might be divided into (1) colonic constipation, and (2) dyschezia. Colonic constipation might be due to food poor in mechanical and chemical excitants. Although few people would risk putting a child of under 4 months on undiluted cow's milk, many infants were given dried milk mixtures made up in the same concentration as undiluted cow's milk, or even stronger, and this was one of the commonest causes of constipation at this age. Older children were often given a diet deficient in roughage and consisting largely of white bread, potatoes, and sugar. Anyone who had tried to work out an adequate diet for a family living on unemployment pay knew what a heart-breaking problem it was to include sufficient foods providing roughage. In all the carnivora the intestinal tract was relatively short, the caecum was never large and often absent, while the hind-gut might be absolutely straight; in the herbivora the hind-gut and caecum were capacious, and in the African monkey, which was chiefly vegetarian, the gut approximated to the human pattern, the capacious colic loop indicating the need for a supply of roughage. In nearly all cases of constipation in childhood due to inadequate roughage the deficiency could be made good by giving extra fruit and vegetables, especially prunes, apples, oranges, and green vegetables; and by substituting whole-meal for white bread. Colonic constipation might also be due to deficient ductless gland secretion, as in cretinism. Thyroid extract increased the frequency of bowel action in this condition, but it was irrational and dangerous to give gland extracts for constipation in cases

which did not exhibit signs of hyposcretion. Deficient excitability of the intestinal mucosa was another cause of constipation, and resulted from the prolonged use of purgatives, or followed in the wake of acute enteritis. Weakness of the intestinal musculature might result from lack of bowel training, or follow rickets, anaemia, or fevers. Inhibition of motor activity occurred temporarily, in association with painful conditions of the abdominal viscera, and prolonged inhibition occurred in Hirschsprung's disease. The diagnosis in Hirschsprung's disease was made by giving a barium enema, when the enormously dilated colon could be observed radiographically. Mild cases were relieved by massage and enemata, but in severe cases ganglionectomy offered the best hope of improvement. Other cases of colonic constipation were those in which excessive force was needed to carry the faeces to the pelvic colon. Extreme bulk of faeces due to a heavy protein content, and insufficient water to drink, were common causes, and congenital strictures were sometimes responsible for the condition in the early weeks of life. Kinking of the colon was sometimes regarded as a cause, but the sigmoid colon was very large in the young child, and might take up a variety of positions. In a recent investigation of a large number of healthy children under 3 years of age no case of constipation was found, although 87.5 per cent. had a kinked type of colon.

In cases of dyschezia—the second great group of cases of constipation in childhood—there was inability to defaecate completely; the condition was commoner than was usually supposed, and would be diagnosed more often if rectal examinations were more frequently made. Disregard of the call to empty the bowel was the usual cause, and was influenced by such factors as late rising, hurried departure for school, and inadequate lavatory accommodation. Constipation was almost unknown in India, China, and Japan. The Indian mother supported the buttocks of her child on her big toes, so that he could defaecate between her feet, and taught him regular habits in this way from a very early age. In China the mother supported the child's buttocks in her hands, and held him erect with his back firmly against her breast, pressing his thighs against his abdomen; the position forced the infant to strain. In a few infants the defaecation reflex was weak, and in these cases the soap stick beloved of the midwife found its justification. Some infants suffered from colic and constipation as a result of getting too little food, and symptoms disappeared when the feeds were augmented. Constipation was seldom a cause of other illnesses in childhood, but it was responsible for certain cases of vomiting in early infancy, and of flatulence and colic. A loaded colon and rectum might be the exciting cause of enuresis, and *B. coli* pyelitis was also associated with constipation. Before a line of treatment was adopted the training the child had received, his diet, and the character of the stools should be noted; pain on defaecation, or the presence of blood in the stools, suggested a tear of the anal mucosa, or a small fissure. In all stubborn cases a rectal examination was important. If there was any suspicion of Hirschsprung's disease a barium enema would help. In obstinate cases of long standing, when dietetic and hygienic measures were only partially successful, laxatives such as cascara and liquid paraffin might be given temporarily. Apart from acute febrile illnesses and renal disease there were few conditions in childhood which called for the use of purgatives. It was difficult to improve on the advice of a well-known physician, given almost a century ago:

"Everything in the shape of medicine ought to be given most sparingly, and only under professional advice, while even the medical adviser should consider twice before he gives a single dose of hyd. c. creta."

Dr. H. H. CHODAK GREGORY asked whether the "weekly dose"—her bugbear for thirty years—was as prevalent everywhere as in London. Mothers commonly gave their children a large dose on Friday or Saturday, but if the bowel was to act automatically why upset it once a week? In most poor homes there was limited lavatory accommodation, and in some cases it was easier for the children to form the habit of going to the closet after midday dinner. Some children had difficulty in spite of training,

and in these glandular deficiency or poor co-ordination between peristalsis and relaxation of the colon must be considered. Training must not be allowed to become a fetish. One child who had been brought up very strictly was in such terror of not passing a motion daily that she developed an inhibition, and became so severely constipated that she had incontinence of faeces and resembled a case of Hirschsprung's disease. She recovered with careful treatment and training in hospital.

Dr. ELIZABETH HUNT had also been impressed by the commonness of the weekly dose. She had found that almost every child with urticaria papillosa had been given syrup of figs, and she thought the commercial preparations must contain some drug giving rise to the skin condition. She did not approve the use of liquid paraffin: she had seen too many cases of pruritus ani associated with its administration, and she thought that a mineral oil which could irritate the skin could not be good for the mucosa.

Dr. OCTAVIA LEWIN had found that constipation often improved if children were put on a time-table: up at 7 o'clock, breakfast at 8, lavatory at 8.30, school at 8.45. Soap, she thought, should be used only as a last resource, if at all; it was bound to act as an irritant, and it would be better to dilate the baby's anus with some other lubricant. If an infant had a normal motion every second day he could be left alone to develop regular habits.

Dr. A. H. NICOLL said that she had found that if children were placed in the right position to defaecate they nearly always had a motion. She thought suggestion had an enormous influence; as she had once heard it oddly expressed, the physician should work side by side with the patient.

Dr. LETITIA FAIRFIELD mentioned the importance of a low lavatory seat; the child experienced considerable difficulty in defaecating if his legs were dangling. Children going off to school in the morning were liable to be fussed and anxious about their lessons, and some of them would be more ready to give their attention to defaecation at midday. A brick or a block of wood to be used as a foot-rest often helped them considerably, and in schools the lavatory seats should be low. Some mothers thought it indecent to talk about bowel action, and consequently the children had no vocabulary to tell the mother if anything was wrong.

In reply, Dr. JEAN SMITH said that the weekly dose was extremely prevalent, and when an attempt was made to keep records of its frequency in hospital cases there were found to be literally no exceptions. It was true that some children could acquire the habit of emptying the bowel at midday, but the gastro-colic reflex was more powerful in most people after the first meal of the day. She agreed that lavatory accommodation was often unsatisfactory, and small children were sometimes afraid of falling through the seat. She had never seen any evil results from the use of the soap stick, which was convenient and familiar to mothers.

#### FUNCTIONAL UTERINE HAEMORRHAGE

At a meeting of the North of England Obstetrical and Gynaecological Society at Sheffield on November 24th, with the president, Mr. LEYLAND ROBINSON, in the chair, Dr. A. LLOYD POTTER (Liverpool) read a paper on functional uterine haemorrhage.

He said that there was a large group of cases in which profuse uterine bleeding occurred in the absence of any obvious reason, and it was to this group that the term "functional haemorrhage" was applicable. Dr. Potter referred to the work of Dr. Wilfred Shaw, who had found that the elastic tissue content of the uterus increased after each pregnancy and varied directly with the parity of the patient. He had thought it necessary to confirm this work, and for this purpose had taken a series of sections from uteri of varying parity. The specimens included uteri from cases of functional bleeding, fibromyomata, endometriomata, and chronic salpingo-oophoritis, and a normal uterus removed at post-mortem examination. He had stained throughout by Werlhoff's method with a counterstain of Van Gieson. His observations had amply confirmed Wilfred Shaw's work; he thought that it could

be stated definitely that the elastic tissue content of the uterus bore a direct relation to the parity thereof, that it was in no way a sign of subinvolution, and that it was not associated with the causation of functional bleeding. Discussing the pathology of functional uterine bleeding, Dr. Potter said that it was possible to classify the majority of the 165 cases he had examined into two groups—metropathia haemorrhagica and epimenorrhoea. Of his cases 34 per cent. could be included in the group metropathia haemorrhagica. In these the enlargement of the uterus had been due to true hypertrophy of the muscle fibres, and not to an increase in the amount of elastic tissue. The endometrium was thickened and polypoid formation was common, the microscopical appearance being similar to that of the premenstrual phase. Almost all the available ovaries showed follicular cysts and a singular absence of active luteal tissue. Forty-eight per cent. of his cases were of the epimenorrhoeal type. The most striking feature in these was oedema of the stroma of the endometrium and an increase in the number of thin-walled capillaries in the endometrium. In the ovaries available for examination the general picture pointed to hyperactivity of the follicular mechanism and an increase in the amount of active luteal tissue. A few cases he described as being of the hypomenorrhoeal type, in which the patients complained of excessive loss at infrequent intervals, and in this group there were no characteristic pathological findings. Another small group included cases of post-menopausal bleeding of functional origin and without any gross lesions. He thought the haemorrhage in these was due to the continuance of the pituitary action for some little time after the menopause. There remained 8 per cent. of the total number of cases, which he was quite unable to classify. He considered that in these some ovarian or pituitary dysfunction was responsible for the altered menstrual cycle.

#### Case Reports

Mr. GLYN A. DAVIES (Sheffield) showed a specimen of an interesting foreign body in the bladder.

The patient, a multiparous woman aged 43, had been treated by radium for carcinoma of the cervix. After the third application of radium it was found necessary to catheterize the patient, and on withdrawing the instrument the nurse had discovered that it was broken and that the top end of the catheter was missing. Cystoscopic examination revealed the presence of a portion of catheter in the bladder with the jagged end downwards. It was decided to perform a suprapubic cystotomy in order to remove the foreign body, but in the early morning, before operation, the piece of catheter was passed spontaneously. Mr. Davies raised the question as to whether glass catheters should be employed at all, and if they were used and broken off whether or not one should wait, and if so, how long. Mr. Davies also described a case of ectopic gestation. The patient, who had been married five years, had had no children. She was admitted as an emergency because of pain in the right iliac fossa and vaginal bleeding, and she had said that ten days previously she had felt something burst inside. Two days before admission she had had right shoulder-tip pain. On admission, laparotomy was performed, and a right ruptured isthmal pregnancy, with tubal mole almost extruded, was found. A right partial salpingectomy and partial oophorectomy was done, followed by uneventful recovery. Eighteen months later the patient returned with a history of seven weeks' amenorrhoea, and with the presentiment that she might again be suffering from a pregnancy outside the womb. Examination revealed a slightly enlarged uterus and movable cystic swelling on the right side. She was kept under observation, and a positive Aschheim-Zondek test was obtained in the urine. Eighteen days after admission to hospital she passed a decidual cast, and the following day collapsed with severe abdominal pain, worse on the left side, and referred to both shoulder tips. Laparotomy revealed a large quantity of free blood in the peritoneal cavity, a fairly large right ovarian theca lutein cyst, and a ruptured isthmal pregnancy in the left tube. This was excised and the cyst wall in the right ovary was also removed.

Mr. A. A. GEMMELL (Liverpool) reported a case of uterine prolapse in a newborn child.

The confinement had been normal, but the child was born with a large spina bifida in the lumbar region. On the fourth day, after a long bout of crying, a lump was noticed at the vulva, and examination showed the cervix to be protruding from it for about a quarter of an inch. The prolapse could

be reduced, but immediately recurred, so it was kept in position by means of a pad on the vulva. Twelve days later the prolapse spontaneously disappeared, and never reappeared up to the time of the child's death some two months later.

Mr. JOHN CHISHOLM (Sheffield) gave an account of a case of chorion epithelioma after full-time pregnancy.

The patient, a primipara 31 years of age, had been delivered of a live infant at term after an uneventful pregnancy. The puerperium was normal and she got up on the fourteenth day after labour. One month after delivery she began to pass small clots, and when her doctor was called in thirty-seven days after delivery he found she had a temperature of 100° F., and as he considered her to be a case of puerperal sepsis he arranged for her admission to the special hospital. After admission her symptoms settled down, but six days later a bright red loss commenced, and the pulse rate rose and became of poor quality, necessitating transfusion with gum saline. Under anaesthesia a portion of tissue the size of a walnut was removed from the uterine cavity, and was found microscopically to be chorion epithelioma. Unfortunately, this was not reported, and as the symptoms continued exploration of the uterine cavity was again carried out some fourteen days later. More tissue was removed, and again definite chorion epithelioma was found. On the same day a report on the urine was received, the Aschheim-Zondek test being positive. Complete panhysterectomy was performed, followed by uneventful recovery, and three weeks later, as the Aschheim-Zondek test was negative, the patient was allowed to go home. There had been no return of symptoms and no evidence of recurrence.

#### THE ASCHHEIM-ZONDEK TEST

At the last meeting of the Section of Obstetrics and Gynaecology of the Royal Academy of Medicine in Ireland, with the president, Dr. T. M. HEALY, in the chair, Dr. BETHEL SOLOMONS showed a kymograph for use with Rubin's test. (Details of this were given in the *Journal* of December 9th, p. 1079.)

Professor DAVIDSON and Mr. A. A. MCCONNELL read notes of a case of hydronephrosis and pyelitis complicating pregnancy, and Dr. R. M. CORBET and Dr. T. J. D. LANE showed a specimen of a tuberculous kidney which had been removed from a patient at the fifth month of pregnancy.

Dr. N. M. FALKINER, in a paper on the Aschheim-Zondek test in early pregnancy, gave details of the case of a married woman, aged 23, who had attended him on September 18th. She had complained of indigestion and amenorrhoea, the date of the last menstrual period being August 10th. On September 19th a specimen of urine was sent to the Pregnancy Diagnosis Station, Edinburgh, the report on which was as follows: "While there is no indication of pregnancy, the urine contains small quantities of ovarian hormone and/or gonadotropic hormone of the first type. We inform you of this fact in case you should consider endocrine treatment." On September 20th the patient started to bleed, and a cast of the uterus was expelled after a good deal of pain and moderate haemorrhage. There was considerable shock, which seemed out of proportion to the amount of bleeding, so a ruptured ectopic gestation was suspected. On bimanual examination it was found that the vulva and vagina were nulliparous, the cervix was healthy, and the fundus retroverted; the appendages were not felt. Convalescence was normal. Macroscopical examination of the uterine cast showed that it was not complete; it measured 1½ inches in length and appeared quite fresh. It was fixed some sixteen hours after being passed. Microscopically the decidua was typical of the sixth week of pregnancy in that the compact layer was composed of well-formed decidual cells. Haemorrhage throughout the decidua was copious. At one point was seen a small aggregate of villi, which most probably only represented a portion of the constituents of the chorionic sac. At first sight this aggregation of villi appeared to represent a complete gestation of an early stage of development. All the components of the trophoblast were well shown: proliferating plasmodium, resorption plasmodium, Langhans's cells, and developing vascular core to the villi. A search for embryonic constituents had proved negative. Dr. Falkiner said that in view of the negative Aschheim-

Zondek reaction in association with the presence of active villi, it was pertinent to review their standpoint to this test and its use in guiding treatment with the female sex hormones at their disposal. Davis of Chicago had stated that it was usually possible to give a positive diagnosis of pregnancy in the first two weeks following the missed menstrual period. The actual source of the hormone or hormones concerned in the production of the Aschheim-Zondek reaction was still doubtful, and Greenhill, in a collective review of the literature of 1932, had said that most authorities, including Zondek, were uncertain whether to attribute it to the pituitary gland or to the chorionic villi. Certain facts pointed to the likelihood that the chorionic elements were directly responsible. For instance, the test was more definite when the chorionic elements of the placenta were active. It was also strongly marked in cases of chorion epithelioma, and if the anterior part of the pituitary gland could be shown by histological methods to be more active during pregnancy it would support the idea that the anterior pituitary liberated the gonadotropic hormones. However, no work as yet published had shown this to be the case. In the present instance, Dr. Falkiner said, the amount of chorionic tissue and its relative inactivity had combined in producing the negative result of the pregnancy test.

The PRESIDENT said it was time the physiologists in Dublin began to carry out the Aschheim-Zondek test in their laboratories and avoid the necessity of sending specimens away. The test would be of greatest value about six weeks after the first missed period. It was, however, of some use in menopause cases and in cases of "vague bleeding," which were so frequently seen. He was disappointed with the results he had obtained from giving theelin, and was not much impressed with the results obtained from antuitrin S. He had given it to two patients with severe dysmenorrhoea who up to the time of treatment had only complained of pain. After treatment with antuitrin S they had nausea as well.

Dr. R. M. CORBET said that he had had an accurate positive result from the Aschheim-Zondek test in a specimen taken twelve days after the first missed period. He had used antuitrin S with occasional good results in the treatment of metrorrhagia, but had never prescribed it in cases of threatened abortion or repeated abortion. He thought that in order to get benefit from a luteinizing hormone the time to administer it was during the latter part of the period. The substance must be given before the ovum was embedded, and not after. If it was given after six weeks' pregnancy it was simply waste of time. He referred to three patients who, after several miscarriages, had gone to full term on the administration of corpus luteum. Professor A. H. DAVIDSON said he no longer employed antuitrin S. The chief difficulty about this drug was its expense. He had tried it in cases of metrorrhagia with very varying effects, while in cases of dysmenorrhoea he had got extremely good results. Many of the patients had been almost completely relieved of pain. He thought that it was a drug which was quite worth giving and from which very definite results could be expected.

Dr. BETHEL SOLOMONS said that he believed he had used most of the hormonal preparations which were available. He had obtained good results from some, none from others. He hoped that the future would bring forth more definite information.

At the December meeting of the Cork Clinical Society Dr. J. MURPHY brought forward a case of aortic aneurysm. The aneurysm was easily palpable as a tumour in the supra-sternal notch. There was a difference of 15 mm. in the blood pressure of the right and left brachial arteries, and with the usual other signs there was well-marked irritation of the left cervical sympathetic chain. Subsequently three short but comprehensive and highly interesting addresses were delivered: on hyperemesis gravidarum, by Professor KEARNEY; on eclampsia, by Dr. E. V. CANTILLON; and on the occipito-posterior position, by Dr. P. CAGNEY. A prolonged discussion on these obstetrical subjects followed.

## Reviews

### HYDATID OF THE LUNG

The monograph on intrathoracic hydatid cysts<sup>1</sup> by Drs. BRUN and DE BEAUJEU is based on their twelve years' experience in Tunis, where hydatid disease is endemic and fairly prevalent. The authors state that rarely a week passes without a case of hydatids coming under their observation or for operation, and though eight out of ten cases are hydatids of the liver, infection of the lung is of frequent occurrence. Clinically, even large pulmonary cysts may remain latent or present no physical signs, while symptoms may be absent. Haemoptysis is not common, and if it occurs one thinks more of pulmonary tuberculosis. Expectoration of portions of the hydatid cyst is the only real diagnostic feature.

The authors have not found the serological tests satisfactory; the complement-fixation reaction is, in their experience, unreliable, and the intradermal skin test of Casoni inconstant. Eosinophilia is of doubtful value in diagnosis in a country where intestinal parasites are common. Radiology offers, therefore, the most satisfactory means of demonstrating the presence of pulmonary hydatid cysts, and as a preliminary to operation it is invaluable in determining the size and exact situation of the cysts, for many cysts that are small and centrally placed should not be operated upon. From the nature of the cyst, which is filled with fluid of high salt content, a shadow is thrown on the x-ray screen, and this is usually circular, oval, or elliptical with regular contours. The early observers, among whom Bécclère may be cited, remarked on the rounded shadows with clearly marked contours "as if traced with a compass" which hydatid cysts throw, as do all pathological processes which compress the lung without destroying it. Authors in the Argentine, however, whose experience in this disease is very great, state that there is always a reaction in the surrounding lung, which produces a blurring of the shadow on the screen or x-ray film, and Escudero is quoted as saying that he would reject a diagnosis of hydatid if the contours of the shadow are clearly defined. The Australian authority, Dew, says that the unruptured cyst throws a characteristic spherical shadow, and the surrounding lung tissue appears remarkably clear in contrast, so that cysts one to two inches in diameter may be confidently diagnosed. Further, he says that adventitial changes round the parasite are very rare in lung cysts. The present authors agree that this is their experience also. An exception is sarcoma of the lung, which may give a clearly demarcated round shadow; but a second photograph taken in a month will show the rapid progress of a malignant condition. The authors recommend photographs in different planes for localization rather than stereoscopic pictures. A series of well-reproduced radiographs illustrates the various points.

In treatment the authors are conservative, though recognizing there is no medical treatment. They rightly point out that puncture is inadequate, and even dangerous, and by no means all hydatid cysts of the lung should be operated upon. Non-suppurating cysts smaller than a hen's egg should be left alone, especially if they are centrally placed. Much less risk is run by the patient if these small cysts are evacuated spontaneously through the bronchi than by surgical intervention. The indications for operation are large cysts with clear fluid which are compressing the lung to a great extent, and suppurating cysts. The former may be evacuated and closed without drainage, but suppurating cysts must have the cavity drained and

<sup>1</sup> *Les Kystes Hydatiques intrathoraciques centraux et pariétaux*. Par R. G. Brun et A. Jaubert de Beaujeu. Paris: N. Maloine, 1933. (42 figures. 50 fr.)