stated that she had had pains in the abdomen off and on ever since she left, and that she had had only three fits. On the evening of the 9th she had crab for tea; and in the night woke up in severe pain. The pain was general over the abdomen, but worse on the left side, and had a "dragging" character. The abdomen became swollen and tender. The bowels had not been relieved since the 7th, and she had not passed water since the pain came on.

On admission (about noon) the patient was writhing in apparently great agony, groaning, and frequently retching. The legs were drawn up, and respiration was entirely thoracic. The abdomen was much and uniformly distended, and extremely tender to the touch, especially in the left iliac region. She was examined under chloroform, and had a fit while it was being administered, but nothing unnatural was discovered in the abdomen. Tongue dry; pulse 75, full; temperature 100°. She was anæsthetic throughout the whole of the right side. Water removed by catheter.

The next day (the 11th) she was much better. Her tongue was moister, her temperature was normal, and she passed water voluntarily. She had lost her sickness, and her abdomen was less swollen and less tender, and her breathing was more abdominal than it had been. The bowels had not been open since admission, and she had some headache. She improved rapidly; her bowels were moved by an enema on the 14th; and on the 15th she was discharged well, excepting that her anæsthesia continued. She had two fits while in the hospital.

On November 13th, 1889, she was admitted for the fourth time. She had continued to have fits at the rate of three or four a week ever since she left; but she applied for admission on account of violent jerky movements of the limbs, head, and trunk, and stammering, which had come on about a month previously. She looked fairly well, had no abdominal pains, and no anæsthesia. She presented irregular violent clonic movements coming on from time to time, and implicating her trunk and limbs. The muscles of the eyes and the respiratory muscles were not affected. The tongue twitched violently when protruded, and her lips partook in its movements. She had much hesitation in speech, and some stammering. She improved under treatment; and left apparently cured on the 17th. She had three fits while in the hospital.

The above two cases interested me very much at the time when they came in the hospital together, for they both appeared to me to be cases of peritonitis coming on in young fairly healthy women without obvious cause, but in which (from the results of former experience) I thought it not unlikely that the peritonitis was due either to perforative disease of the vermiform appendage, or to some ovarian mischief. The further progress of the former case during its first residence in the hospital confirmed my suspicions, and the further progress of the latter also I thought pointed, though not so conclusively, in the same direction; and, as I have already said, if I had never heard anything more of the patients, their cases would have been pigeon-holed in my memory as examples of the same pathological conditions. The unfortunate result of the former case put the exact nature of it out of the region of controversy. In regard to it, I can only say now that I wish I could have persuaded the patient to have an operation performed when she was first under my care, or that an operation had been thought advisable during her later fatal illness. I do not quote the case as one which we can look back on with much sense of satisfaction, but it has been outside the scope of my paper to enter into details concerning it, and I have not, therefore, given the grounds which determined those who watched over it to refrain from operative procedure.

When the second patient came into the hospital for the second time, I was still under the impression that she was suffering from peritonitis, and treated her accordingly. But the threatening abdominal symptoms soon passed away, and the epileptic fits which had accompanied the other symptoms from the beginning became the prominent feature in her case. Of course, it was quite possible that a person liable to epileptic fits should also suffer from typhilitis. But when, in the course of her case, it was discovered, almost by accident, that she had hemianæsthesia, and further examination showed that there was loss of taste on the same side of the mouth, and optical phenomena which are common as a feature of hysteria, a different explanation of her various maladies naturally presented itself for consideration.

That she was distinctly hysterical was further shown when, at a later period, she came under treatment for spasmodic muscular movements, and for stammering. I came to the conclusion, after

reconsidering the facts of her case, that all her attacks suggestive of the presence of peritonitis were really hysterical, and of the nature of the more localised abdominal pains and tenderness which are common in hysteria; and that she had never had any abdominal inflammation at all—a conclusion which seemed to me fortified by the facts that there was no discoverable starting point for the successive attacks; that the temperature, with few exceptions, was normal or subnormal; and that on the third occasion her symptoms, though beginning with equal severity, subsided without special treatment in the course of three or four days. Were the fits also hysterical? The convenient term "hystero-epilepsy" as their designation, of course, suggests itself. The fits were certainly not hysterical in the ordinary sense of the word. They were often ushered in with a cry, the patient's breath ceased for a time, there were tonic convulsions, followed by characteristic clonic convulsions, she lost consciousness absolutely during their presence, and she occasionally bit her lips or tongue, and passed her water.

It must not be forgotten that patients suffering from epilepsy not infrequently present symptoms indistinguishable from those of hysteria, and that the use of the term hystero-epilepsy of epileptiform fits occurring in hysterical patients does not settle the true nature of such fits. I incline to the belief that the fits were epileptic. There is room for difference of opinion with respect both to the nature of the abdominal affection and of the epileptic fits, and with this remark I conclude my paper, and leave the subject to be discussed.

REMARKS ON SCLEREMA & ŒDEMA NEONATORUM.

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SCLEREMA and œdema of the newborn infant are affections concerning which great confusion reigns not only in the minds of medical men, but also in a majority of the textbooks devoted to the description of the diseases of infancy and childhood. It is my wish in this communication in the first place to show the manner in which this confusion has arisen, and, secondly, to demonstrate that the two diseases are pathologically quite distinct from each other. I shall first give brief clinical notes of two cases which occurred at the Edinburgh Maternity Hospital three winters ago and which were examples, the one of sclerema, and the other of œdema neonatorum.

Case of Sclerema Neonatorum.—On December 27th, 1885, an unmarried woman of 19 years of age was delivered at the Edinburgh Maternity Hospital of a premature male infant. The mother was a primipara, and was in apparently perfectly good health. The labour was not a long one, the first stage lasting 12 hours, the second half an hour, and the third ten minutes. The vertex presented in the O.D.P. position. The child was small; it weighed only 4lbs. 12ozs., and had a length of 18 inches. The placenta, which was normal, weighed 1lb. 3ozs., and the cord was 23 inches in length. The child, at the time of birth, had a premature appearance, and its breathing was with difficulty established, and, even when established, was shallow and weak. On the second day after birth it was noticed that the skin on the thighs, back, and buttocks, was hard and tense, and had a dirty yellowish appearance. Pressure with the finger did not cause any pitting of the skin. The child took the breast very badly, and the cry was weak and whining. The scleremic condition of the skin had, on the third day, spread to the neck, chest, and limbs, and was indeed almost universal. The body of the child felt cold to the touch, resembling the sensation given by contact with a half frozen corpse. The child died on the evening of the third day after birth. Through the kindness of Professor A. R. Simpson I was enabled to make a *post-mortem* examination of this, and of the following case, and to the conditions found at the necropsies I shall again return.

Case of Œdema Neonatorum.—On January 4th, 1886, a married

3 para. of 31 years of age was delivered in the Maternity of a premature male child weighing 6lbs. 3ozs. The labour, which lasted for 16 hours, was complex, for the mother was at the time suffering from acute bronchitis and had pneumonic patches in both lungs. The vertex presented in the O.L.A. position. The mother was removed to the Royal Infirmary fourteen days after labour and there she made a tedious recovery. The child, which measured 18 inches in length, and had a wasted appearance, developed in a few hours after birth a markedly cedematous condition of the skin of the lower part of the trunk, of the external genital organs, and of the lower limbs, especially on their posterior aspect. The skin in these regions pitted readily on pressure, and had a bluish cyanotic appearance. The surface of the child's body felt cold, and the limbs hung limp and inert. The child was put in the incubator, friction was applied, and stimulants were given; but notwithstanding these therapeutic measures, death ensued two days after the birth. The child passed no urine. It may be stated that the placenta weighed 1lb. 6ozs., and that the cord measured 19 inches in length. Neither the placenta nor the cord showed any abnormality.

These two cases enabled Professor Simpson to demonstrate to the students in attendance the differences which existed in the symptomatology of the two diseases, and to these differences I shall make fuller reference in the course of this paper.

Historical Note.—The history of sclerema and of cedema neonatorum forms a curious chapter in the annals of medicine. Uzembezius in 1718 reported a case of what was no doubt sclerema, which was peculiar in being congenital, and which he attributed to maternal impressions, for the mother of the scleremic infant had, during her pregnancy, spent much time in the churches contemplating the marble statues therein! The most important early contribution to the subject of sclerema came from the pen of Underwood. This author gave a most correct and complete clinical picture of the disease, and indeed his description has since scarcely been excelled. The disease he described was true sclerema, an induration of the subcutaneous tissue. Andry read Underwood's paper at a time when he had under his care several cases of cedema neonatorum, and thinking that the disease with which he was acquainted was the same as that described by Underwood, he gave to it the name of "sclérème." Underwood pointed out this error in a later paper and described the differences between sclerema and cedema; but the confusion thus introduced was perpetuated by subsequent writers, and it was not till the time of Parrot that the matter was cleared up. Auvity, Chambon, Capuron, and Léger all confounded sclerema with cedema, and Denis did not make the confusion less by describing two varieties of induration, a serous and an adipose or concrete. Billard seems to have had a clear conception of cedema, but sclerema he regarded as a cadaveric phenomenon, or as a condition which supervened only in the last few minutes of life. Bouchut still further complicated matters by comparing sclerema to the adult skin disease scleroderma. Coley, West, and other writers in this country followed in the main the descriptions and mistakes of the French physicians, and this statement applies also to the majority of German authors. In 1873, Clementowaki, of Moscow, threw some light upon the subject when he clearly distinguished between cedema and adipose induration. The latter condition he regarded as due to inanition of the newborn infant and not as a cadaveric phenomenon. To Parrot, however, belongs the credit of most clearly differentiating between sclerema and cedema, even if one may not be able to go so far with him as to state that sclerema is one of the symptoms of athrepsia, whilst athrepsia or infantile atrophy is only one of the complications of cedema neonatorum. Depaul in the *Dictionnaire Encyclopédique des Sciences Médicales* t. xiii, f. 675 gives a very complete summary of the contributions to our knowledge of the two diseases, and Hensch in his work on *Diseases of Children* distinguishes clearly between sclerema and cedema; but in modern textbooks there is still great confusion concerning these two diseases, thus Lewis Smith in the recently published *American System of Obstetrics*, vol. ii. p. 761, evidently includes cedema under the description of scleroma, whilst Ashby and Wright in their *Textbook of Diseases of Children* (1889) do not even mention sclerema. A few contributions of value have appeared in recent medical literature, of which we may mention Dr. Stephen Mackenzie's cases of sclerema and cedema which he showed not many weeks ago to the Clinical Society of London, and Dr. Barrs's "Notes of a case of Sclerema Neonatorum" which appeared in the *BRITISH MEDICAL JOURNAL*, May 4th, 1889. In concluding this short historical sketch of the literature bearing upon sclerema and cedema, I may add that the diseases have had

many names given to them. Amongst the appellations which have been bestowed at one time upon sclerema and at another upon cedema, are scleroma, sclerisma, scleremia, cedemata, adipose induration, concrete induration, induration of the cellular tissue, and the skinbound disease.

This multiplicity of names has tended still further to complicate an already too complicated subject. I shall now pass in review the morbid anatomy, clinical features, etiology, diagnosis, prognosis, and treatment of sclerema and of cedema, noting the resemblances which exist between the two diseases, and at the same time calling attention to the marked differences which enable us to diagnose the one from the other.

Definition.—It is difficult to give a satisfactory definition of either sclerema or cedema, and in the present state of our knowledge an entirely correct one is impossible.

Sclerema may be provisionally defined as a rare disease, occurring most commonly in the newborn infant, characterised by induration of the subcutaneous tissue, and being little amenable to treatment. Until the pathology of sclerema and the nature of the physiological processes underlying its pathology are more fully understood, a more scientific definition than that given above is, I think, impossible.

Cedema neonatorum may be defined as a disease of the newborn infant, characterised by serous infiltration of the subcutaneous tissue, due in most cases to infantile cardiac, renal, or pulmonary disease. Cedema neonatorum is, therefore, manifestly more truly a symptom of several diseases than a distinct pathological entity; but until we have a fuller acquaintance with the symptomatology of cardiac, renal, and pulmonary disease in the newborn, and until we are better able to diagnose one variety of cedema from another, we must be content to study under one designation the characteristic features common to all.

Morbid Anatomy.—I was able to make a *post-mortem* examination of the scleremic infant within twenty-four hours after death and I then found, in addition to the conditions of the heart, vessels, and viscera peculiar to the newborn infant, the following pathological appearances. The lungs were in a state of partial atelectasis, their posterior and lower portions being undistended with air; the abdominal viscera, especially the spleen, liver, and kidneys, were markedly congested; and the brain and its membranes were also congested. The thymus gland appeared to be normal. It was in the skin and subcutaneous tissue that the most marked pathological changes were to be found. The skin over the back, shoulders, thighs, and to a less extent over nearly the whole of the body was firm and tense, could not be pinched up between the fingers, and could not be made to pit on pressure. On making a section of the skin and subcutaneous tissue with a knife a sensation was conveyed to the hand like that which one gets when one cuts bacon rind; and, on looking at the cut surface, one noted that the subcutaneous cellular tissue had a peculiar white glistening aspect quite unlike the yellowish appearance of the subcutaneous adipose tissue in the healthy infant. No serous fluid could be expressed from the cut surface, and to the naked eye the part did not appear to be congested.

In figure 1 are represented the microscopic appearances of the skin and subcutaneous tissue from the back of the scleremic infant. The outstanding feature in this drawing is the presence of a large quantity of brightly stained connective tissue which forms a network in the meshes of which lie the fat corpuscles. This connective tissue is very abundant and subdivides the subcutaneous adipose tissue into numerous patches of varying size. Not only are the bands of connective tissue increased in number, but they are also in many cases much thicker than is normal. In the true skin are seen the roots of a few hairs, and one or two sweat glands with slightly convoluted ducts. Such are the appearances noted with a magnifying power of eighteen diameters. Under a higher power it is seen that the fat cells have in some cases lost all their fat, and that in no case is the normal amount of oil present. The nucleus in all is clearly visible, and there is often also a rim of protoplasm underlying the cell wall. The cells making up the bands of connective tissue can be very clearly differentiated, and here and there are seen small vessels, surrounded by numbers of leucocytes, and pushing their way, as it were, into the clumps of fat cells. The papillae are not well marked, and the outlines of the cells of the rete Malpighii are ill defined. The horny layer appears to be normal. The blood vessels in the papillae are very small, but those in the adipose tissue are relatively large and have, as has been noted, a small cell infiltration surrounding them. Parrot, whose description of the skin agrees in the main with that

given above, considers the lesion to be a drying up of the skin with a consolidation of its layers and an atrophy of the adipose tissue. I believe that there is something more than a consolidation of the layers of the skin and atrophy of the fat cells, and am of opinion that there is an increase in the number and thickness of the connective tissue bundles, and that these bundles of fibres subdivide the masses of fat cells into smaller clumps and by pressure cause their atrophy. The starting point in the process is, I believe, the penetration of a capillary into a mass of fat cells, this capillary being accompanied by leucocytes which give rise to fibrous tissue

Fig. 1.—Sclerema neonatorum (section of skin of back $\times 18$). *a*, bands of connective tissue; *b*, clumps of atrophied fat cells; *c*, epidermis; *d*, rete Malpighii.

which subdivides the mass of fat cells into smaller islands. The primal pathological factor may be, and probably is, a trophic lesion of the nervous system. This is a matter of hypothesis; but the hypothesis is strengthened by the fact that in three cases of sclerema reported by Dr. Angel Money¹, there was an accompanying paralysis, and by the resemblance which exists between sclerema and myxoedema.

Fig. 2.—Oedema neonatorum (section of skin of back $\times 18$). *a*, Loose bands of connective tissue separated by serous fluid; *b*, groups of atrophied fat cells; *c*, cuticle; *d*, rete Malpighii; *e*, hair.

The pathological appearances found in the infant with oedema differed in many respects from those which have been described

in the sclerema case. Whilst the heart, liver, and spleen were normal, the kidneys showed on section an enormous degree of congestion, more especially of the cortex. The lungs, as in the sclerema case, were in a state of partial atelectasis. The skin of the back, abdomen, external genitals, and legs was of a bluish colour, had a soft feeling, and pitted readily on pressure. On making a section of the skin and subcutaneous tissue a somewhat congested surface was revealed, and a large quantity of watery serum drained away from the tissue. The microscopic appearance of a section of the skin of the back is represented in figure 2. The masses of fat cells are seen to be held together in a loose manner by thin bands of connective tissue, and so loose is the connection that in many places the fat cells have fallen out of the section. It was very difficult to obtain a satisfactory section of the subcutaneous tissue in this case, a circumstance which contrasted very forcibly with the ease with which perfect sections of the skin, and underlying tissue were obtained in sclerema. In the oedema section the tissue is opened out from the presence of the serous fluid, whilst in the sclerema case the tissue is indurated, and the fat cells held in position by the hypertrophied connective tissue framework. The fat cells in oedema as in sclerema are atrophied, and the appearances of the cuticle and rete Malpighii are similar in the two diseases. The difference, then, appears to be in the subcutaneous adipose tissue layer.

The microscopic examination of the kidneys in the oedema case revealed the cause of the subcutaneous serous infiltration, for both kidneys were enormously engorged, the congestion being especially well marked in the cortex, and in both kidneys was there cloudy swelling of the cells of the tubules, and small cell infiltration of the Malpighian bodies. There was, therefore, evidence of the presence of tubular and glomerular nephritis, and this fact, taken in conjunction with the suppression of urine which was noted clinically, leads me to the conclusion that in this case of oedema neonatorum, the disease and the death were due to the kidney lesion. The infant died two days after birth, and the renal changes found might quite well have arisen in that time, so that I do not think there was here any foetal nephritis, at the same time the fact that the mother was suffering from bronchitis and pneumonia at the time of her confinement is noteworthy. No doubt there occur cases of oedema neonatorum in which the disease is due to lesions other than nephritis, such as cardiac and pulmonary diseases; but in this case the nephritic process was evidently the starting point of the pathological state. Oedema neonatorum I regard as a subcutaneous oedema, quite comparable to that which occurs in the adult and due to the same causes, whilst sclerema must, I think, be regarded as a disease peculiar to the newborn infant or young child, and most probably of the nature of a trophoneurosis.

Clinical Features.—In both sclerema neonatorum and oedema neonatorum the patients are weakly, often prematurely born, and in both diseases the body temperature rapidly falls below the normal. In sclerema the peculiar condition of the skin and subcutaneous tissue is found most markedly on the back, shoulders, and thighs, whilst in oedema the area of distribution corresponds with the lower part of the abdomen, the genital organs, and the back and legs. In sclerema the skin is firm and tense, cannot be raised in folds, and does not pit on pressure; in oedema, on the other hand, the skin is soft and boggy, can be pinched up between the fingers, and pits readily on pressure.

Etiology.—Very little is known concerning the etiology of sclerema. The disease occurs usually in prematurely born and weakly infants, which have been placed under bad hygienic conditions as to food, clothing, etc. It is, therefore, easy to understand how illegitimate foundlings are specially liable to it. It is most common in the winter months; but it is a rare disease in this country at any time of the year. It may occur in syphilitic infants, but any direct connection between the two diseases remains to be proved. With regard to oedema it may be said that in many points the etiology is similar to that of sclerema. It occurs also in premature infants placed under bad hygienic conditions, and most probably cold has a powerful effect in leading to the renal, cardiac, and pulmonary states which are so often associated with it. It will be noted that both the cases recorded in this paper occurred during the winter months.

Diagnosis.—If attention be paid to the clinical features which have been enumerated, the diagnosis between sclerema and oedema ought not to be difficult. The possibility of sclerema being mistaken for tetanus neonatorum is not very great, for the rigidity of the limbs is never so great in the former disease, and the

temperature curve in the latter disease will also serve to distinguish the two diseases.

Oedema and erysipelas might possibly be mistaken for one another, and indeed oedema may occur during the course of erysipelas, but here also the condition of the temperature will serve as a diagnostic guide.

From syphilitic roseola oedema may be quickly differentiated by the result of antisyphilitic treatment.

It is possible that oedema neonatorum and general dropsy of the foetus may be confounded; but the confusion is more likely to arise in medical literature than in medical practice. General dropsy is a disease of the foetus and not of the infant, and the observations of Smith and Birmingham², seem to show that the disease is due to absence of the thoracic duct and of the lymphatics of the mesentery and skin. I saw one case of general foetal dropsy three years ago, and, although I am unable to speak certainly with regard to the thoracic duct, yet the appearances of the skin and mesentery I find to agree entirely with those figured by Smith and Birmingham.

Prognosis.—The prognosis is very grave in both diseases, very few scleremic or cedemic infants recovering; but occasionally a case of recovery is reported in the medical papers, for example, Barr's case in the JOURNAL, May 4th, 1889.

Treatment.—In both diseases the infant affected should be placed in an incubator. Friction with a stimulating liniment is indicated as is also "gavage." In cases of cedema where there is suppression of urine it would be well to try the effect of digitalis fomentations to the loins and of diuretics internally.

In conclusion, the hope may be expressed that with a fuller knowledge of the physiology and pathology of the newborn infant, these two diseases, at present so fatal, may become more amenable to treatment. At the same time it is well to remember that probably the diseased process is in both affections initiated *in utero*.

ON THE SUCCESSFUL TREATMENT OF CASES OF CONGENITAL DISPLACEMENT OF THE HIP-JOINT BY COMPLETE RECUMBENCY WITH EXTENSION FOR TWO YEARS.¹

By WILLIAM ADAMS, F.R.C.S.,

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At the meeting of our Association held at Brighton in August, 1886, I read a paper in the Surgical Section on The Treatment of Congenital Displacement of the Hip-joint by long-continued Recumbency and Extension.² In that paper, after passing in review the chief points in the pathology and clinical history of this affection which are now well established, I brought prominently before the members the treatment adopted by one of the leading American surgeons, Dr. Buckminster Brown, of Boston, who had carried out the recumbency and extension treatment more thoroughly and for a longer period than had hitherto been done. Dr. Brown had in 1885³ published the account of a very successful case, with photographs taken two years and three months after the commencement of treatment, which had been continued strictly for thirteen months. The child then began to walk in a go-cart for five months longer. To all appearance in this case, one of double displacement in a girl aged 4 years, there was a complete restoration of the natural form of the hips, and the lordosis was also completely removed. The walk was said to be natural, and the patient's health not in any way injured.

This success encouraged me to give the treatment a fairer trial than I had hitherto done. At the time of reading the paper I had commenced the treatment in two cases, and since then have applied the same method to four other cases. Two of the six cases were double, that is, both hip-joints affected, and four single; in three of the latter the right hip-joint was affected, and in one the left hip-joint. In two of the cases, both examples of single

displacement occurring in girls of about 2 years of age at the commencement of treatment, recumbency with extension has been carried out to the full period of two years in one, and two years and seven months in the other case; and they have been now some months walking about with a steel support on the affected limb.

At the present time I am enabled to report that the result of this treatment appears to be extremely satisfactory, and equally so in both cases. When these children are examined undressed on the table there is no apparent inequality in the length of the legs. Sometimes, by careful measurement, the affected limb seems to be an eighth, or from that to a quarter, of an inch shorter than the other, but we cannot always make as much. The ilio-femoral triangle of the affected limb corresponds pretty closely with that on the healthy side, so that the head of the femur is now retained very nearly in its natural situation, and there is no disposition to any spontaneous alteration. Nor is there any tendency to displacement upwards when gentle manipulation is tried by fixing the pelvis, and testing by a little movement directed upwards from the thigh. Of course this has only been tried gently, but the head of the femur seems to be fairly maintained in its improved position; and the contrast, as compared with the condition of parts before the commencement of treatment, is very great. All the movements of the joints are free, and the muscular nutrition has been well maintained.

The general health has not been in the least interfered with, and, indeed, in both instances the parents consider that the children have improved in health. During the whole period of recumbency these children have been drawn out in a spinal carriage in the open air, lying down on the movable plane forming part of the extension couch, the extension acting all the time. This extension couch I have also used with great advantage in two cases of hip-joint disease.

At the present time we can only hope that the improvement gained by the treatment will be permanently maintained, but at least another six months or a year will be required to test this, after the children have left off the steel supports they are now wearing. I will give a further report at the end of that time. The details of these cases are given below:

OBJECTS OF TREATMENT, AND DETAILS OF THE METHOD ADOPTED.

In reference to the pathological conditions which have now been shown to exist in these cases, the object of any method of treatment adopted must be, when the case is undertaken at a sufficiently early period—say 2 years of age or less—to prevent the gradual displacement of the head of the femur by the elongation of the capsular ligament, which takes place when the child begins to walk and throws the weight of the body upon the limb, or limbs, in which the congenital malformation of the hip-joint with imperfect development of the acetabulum exists.

This can only be accomplished by long-continued recumbency with extension, so adapted that the head of the femur is retained as nearly as possible in its natural position during a long period of active growth, say, from a year and a half to two years' duration. For this purpose I use the new extension couch, constructed for me by Mr. Ernst, and described in my paper at the Surgical Section of our Association at Brighton, in August, 1886, when it was exhibited at the meeting. Drawings of this couch, given me by Mr. Ernst, are now shown to the meeting.

At the end of this period the child should be gradually allowed to walk with a steel support, when one hip-joint only is affected, somewhat resembling the American hip-joint instrument, which allows of motion at the hip-joint and still maintains extension, whilst the weight of the body is removed from the affected limb. In Sayre's hip-joint splint the weight of the body is sustained by the perineal straps attached to the pelvic band, but in the apparatus Mr. Ernst has constructed for me not only are the perineal bands used, but the tuberosity of the ischium is made to rest upon the back part of the metal thigh trough, so that every care is taken to prevent the weight of the body being thrown upon the affected limb. A raised boot, one inch and a half in thickness, is worn on the healthy limb, and an iron ring-patten on the affected limb. To this ring-patten the boot is fastened by short straps, and the extension is made by a rack-and-pinion movement in the lever on the leg. As a part of this walking splint I have combined the use of the pelvic belt suggested by Dr. B. Brown, with a large pad placed just above the great trochanter to assist in preventing the head of the femur slipping upwards. With this apparatus

² *Journal of Anatomy and Physiology*, July, 1889.

¹ Read in the Section of Surgery at the Annual Meeting of the British Medical Association held at Leeds.

² *JOURNAL*, April 23rd, 1887.

³ "Double Congenital Displacement of the Hip." By Buckminster Brown, M.D. Boston: Cupples, Upman and Co. 1885.