On examination there was nothing unusual to note about the child's development; there were no signs of puberty. The normal site of the clitoris was replaced by an oedematous swelling the size of a large walnut. The swelling was the exact size and shape of the glans penis in an adult male in a case of hypospadias; it was rounded and smooth, with a vertical groove on its ventral surface. Immediately behind the swelling was a constriction with a circular area of ulceration similar to that seen in

FIG. 1.

a neglected paraphimosis in the male; the area was so exquisitely tender that a complete examination was not tolerable.

The diagnosis of paraphimosis of the clitoris was confirmed by an examination under a general anaesthetic. An attempt to divide the constricting band and reduce the paraphimosis was unsuccessful, and as there was a tendency to haemorrhage the clitoris was ligatured off. A full examination of the genitals failed to disclose any abnormality.

A photograph of the child was taken, and Mr. S. A. Sewell has made a drawing from it (see Fig. 1). He has also drawn the specimen, which is the actual size when removed (see Fig. 2). It has been preserved by injecting gelatin into it.

FIG. 2.

It is impossible to say how the hood of the clitoris came to be displaced backwards. The mother said that she had never noticed any obvious deformity about the child's external genitals, so probably the prepuce was not of abnormal size. There is no reason to think that it

was due to masturbation; therefore, accepting this premise, I regard the "fairy cycle" saddle as the probable cause which displaced the prepuce backwards and gave rise to the condition.

The child was seen on November 1st, when she was fit and well. The wound was healed and the scar most satisfactory.

Having no knowledge of a similar case I applied to the librarian of the Royal Society of Medicine, who gave me permission to state that, despite a prolonged search, he is unable to find any reference to the condition in the literature. He showed me that there were numerous references to phimosis of the clitoris due to adhesions of the prepuce.

A CASE OF POST-PARTUM ANAEMIA.

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The following case shows how important the correct treatment is in this somewhat rare condition.

A woman, aged 35—who had had no former illnesses except appendicitis, cured by operation, at the age of 21—was delivered of her first child in 1918. Labour lasted for three days, and was followed by severe post-partum haemorrhage. The baby lived a few hours. The patient ran a temperature for several weeks after the confinement, was anaemic, and suffered from severe headaches and occasional rigors. *B. coli* were present in the urine. There was right iliac pain for three months afterwards, which was diagnosed as ovaritis. Her second confinement took place in 1920, and was uneventful, and the puerperium normal.

A few days before her last confinement, on November 3rd, 1926, she had a mild attack of influenza. A few *B. coli* were found in the urine during the last weeks of pregnancy, for which urotropine was administered. The delivery was a breech; the baby was born without difficulty, and there was no trouble with the placenta, which was normal in appearance. There was no post-partum haemorrhage.

On the following day the patient complained of severe frontal headache and looked alarmingly anaemic, as though she had had a severe haemorrhage during the night. Inquiries showed that there had not been any haemorrhage, and examination revealed nothing abnormal. The headache continued, and was accompanied by impairment of memory, general weakness, and progressive anaemia. The temperature began to rise in the evening up to 101° F., and the patient appeared to be very ill. There was no evidence of puerperal sepsis. The liver and spleen appeared normal; there was no history of sore mouth. The tongue, teeth, and gums were healthy. Subsequent x-ray examination showed no sign of apical sepsis. The heart and lungs were healthy except for a haemic murmur, which has since disappeared. Blood culture was negative. Report by one of us on blood examination on November 18th was as follows:

Haemoglobin	...	...	...	34 per cent.
Red blood cells	...	...	...	1,603,000 per c.mm.
Colour index	...	...	...	1.1
Leucocytes	...	...	...	6,500 per c.mm.
Differential count:				
Polymorphonuclears	...	...	...	70.3 per cent.
Lymphocytes	...	...	...	20.3 "
Large mononuclears	...	...	...	4.7 "
Eosinophils	...	...	...	4.0 "
Mast cells	...	...	...	0.7 "
				100.0

"Eight megaloblasts, six normoblasts, and one microblast were noted in counting 300 leucocytes. Poikilocytosis and anisocytosis were well marked, and there were many macrocytes and microcytes. Basophilia and basophilic stippling of red cells were very prevalent. Many of the polymorphonuclears showed immaturity and degenerative changes.

"The blood picture is that of pernicious type; such cases arising in the puerperium appear to be particularly amenable to treatment, especially by transfusion, and a high proportion of recoveries has been reported."

At this stage she was seen by Dr. J. R. Collins, who could find no evidence of puerperal sepsis or other focus of infection.

Another blood culture was negative. She was put on iron and arsenic and hypodermic injections of adrenaline, and dilute hydrochloric acid 1 drachm three times a day. In spite of treatment she continued to go downhill, and on November 26th the report on her blood was:

Haemoglobin	...	...	...	25 per cent.
Red blood cells	...	...	...	1,270,000 per c.mm.
Colour index	...	...	...	1.0
Differential leucocyte count:				
Polymorphonuclears	...	...	...	60 per cent.
Lymphocytes	...	...	...	30 "
Large mononuclears	...	...	...	4 "
Eosinophils	...	...	...	5 "
Mast cells	...	...	...	1 "
				100

Owing to the paucity of cells in the extremely thin films which the watery blood afforded, only 100 leucocytes were counted. There were three megaloblasts, five normoblasts, and one microblast to 100 leucocytes.

The blood picture is that of the most grave degree of pernicious anaemia: poikilocytosis, anisocytosis, basophilia, and basophilic stippling are seen in every field. The most favourable reading possible of the haemoglobin content has been given; there is always some personal element to be allowed for in this estimation. The patient has lost 9 per cent. of haemoglobin and 330,000 red blood cells per cubic millimetre since the last examination eight days previously. This needs no further comment. The vomit is devoid of free hydrochloric acid.

The patient's condition was then very grave, and after consultation with Dr. Collins she was given a transfusion of 470 c.cm. of citrated blood by Keynes's method, her husband, who was of the same group, acting as donor. This was followed in a quarter of an hour by a severe reaction, and a temperature of 104°F ., which lasted for four hours. No haemoglobinuria followed the injection. Her clinical condition steadily improved after the transfusion; her temperature became normal in two days, her appetite returned, and her headaches disappeared. The regeneration of the blood is shown in the accompanying graph. The loss of cells and stationary curve for haemoglobin between December 16th and December 30th corresponds to a pyrexial attack, during which the iron and arsenic were stopped. A gastric analysis (which was not complete, as the patient vomited the tube at the end of an hour) showed achlorhydria.

She is now, twenty-three months after the confinement, apparently in perfect health, taking hydrochloric acid regularly.

This case illustrates the importance of blood examination in puerperal anaemia, and the necessity of blood transfusion when the examination reveals an anaemia of pernicious type. There is no doubt in our minds that had it not been given the case would have ended fatally.

DISCUSSION.

We consider that the case described above fulfils the conditions necessary for a diagnosis of pernicious anaemia: colour index above unity, accompanying a profound anaemia, the presence of numerous macrocytes and some megaloblasts in the blood, paucity and abnormally large size of blood platelets, and absence of free hydrochloric acid from the gastric contents. Macrocytocytes (Cooke, 1927) were not found in this case, though we have seen them in other cases of pernicious anaemia.

Indications of a possible septic cause for the anaemia were entirely lacking. The uterus involuted in a normal manner. Moreover, the clinical signs of a serious anaemia were detected on the day following that of delivery. Pyrexia, which is usually observed in acute cases of pernicious anaemia progressing unfavourably, was present and showed an upward tendency until transfusion changed the whole aspect of the case.

It is admitted that there is some difference of opinion both as to the diagnostic importance and criteria of megaloblasts. Naegeli considers that large nucleated red cells, named by him "macroblasts," are seen in various forms of anaemia and have not the significance of the megaloblast of pernicious anaemia, the former being distinguished by a basophil cytoplasm. The megaloblasts observed in the case we describe all showed, to a greater or less degree, basophilic cytoplasm. But if, with most authorities, we regard the character of the nucleus as the criterion and basophilia of the cytoplasm to be an indication of immaturity, then the large nucleated red cells of our case were true megaloblasts.

There appears to be a difference, not yet clearly defined, between the pathogenesis of pernicious anaemia occurring in connexion with pregnancy and the puerperium and that of the disease arising apart from these states. Larrabee (1925) has directed attention to the striking effect of a transfusion, an effect well illustrated by our own case. Larrabee reported seventeen cases of severe anaemia arising in the course of, or shortly after, pregnancy, not attributable to other complications. In eight of these the blood picture was that of the pernicious type: four were transfused and recovered; three of the remainder, who were not transfused, died. He considers that one transfusion suffices to check the progress of the disease, an opinion substanti-

ated by our experience. Other writers have, on occasion, found repeated transfusions necessary.

Piney (1927) classifies the pernicious anaemia of pregnancy under the heading of "metabolic cases," and suggests that a congenitally defective haematopoietic system is unable to withstand the strain of pregnancy. Were this hypothesis sound, the first pregnancy would be expected to induce the disease. Our patient had successfully passed through two previous pregnancies, one of which, moreover, was followed by severe (post-partum) haemorrhage—an additional strain which would surely have overwhelmed a congenitally defective haematopoietic system.

Evans (1926) states that Faust and Talquist claim to have isolated the haemolytic substance from the body of the worm in dibothriocephalus anaemia, and to have identified it as cholesterol oleate, but he says that no foreign haemolysin has ever been demonstrated in the blood of cases of pernicious anaemia, and that increase of the normally present haemolytic agents (unsaturated fatty acids) is not proven. We are not aware whether the pernicious anaemia of pregnancy came within the scope of these investigations.

Rowland (1924) states that Hofbauer showed that a syncytial haemolysin in the ectodermal cells of the chorion is the source of the haemolysis of early pregnancy and of

the iron synthesis in foetal blood formation. The urine of pregnant women contains more iron than usual. According to Hofbauer an antihemolysin is formed, during the second half of pregnancy, in the maternal blood, and consequently the physiological anaemia of early pregnancy is overcome, a normal blood count being established by the ninth month. If antihemolysin formation fails, active haemolysis continues and progressive anaemia results. Rowland reports two cases; his paper contains a valuable discussion of

the disease. One of his cases died on the twelfth day after parturition, owing, in his opinion, to delay in resorting to transfusion until the disease was too far advanced.

The distinctive features of pernicious anaemia in pregnancy make Hofbauer's theory an attractive one. Cholesterol acts as an antihemolytic agent against many haemolytic substances; an increase in blood cholesterol occurs in pregnancy, and a diminution in pernicious anaemia. We regret not having made a blood cholesterol estimation in our case.

Pernicious anaemia in pregnancy is usually considered to be extremely rare in England. Lovell Gulland (1927), however, says "it is not very uncommon and, in my experience, is not usually fatal, though it may be so." He does not state whether his cases were transfused.

Green-Armytage (1927) states that anaemia of the pernicious type is not uncommon in pregnant women in India, and has a high mortality. Facilities for transfusion were not, it appears, available at his hospital. There are so many causes of anaemia in the tropics that his cases may be of a different nature to those reported from Europe and America.

Hoskin and Ceiriog-Cadle (1927) have recently reported a case in the *Lancet*. Their patient had suffered in India from a disease resembling sprue—a possible etiological factor which makes one hesitate to accept their case as a true pregnancy pernicious anaemia. Our patient had not been out of England, and at no time had suffered from symptoms suggestive of sprue. Hoskin and Ceiriog-Cadle transfused their patient, but a gain of 6 points in

haemoglobin and of 380,000 red blood cells per cubic millimetre had taken place in the seven days following admission to hospital, and before transfusion was resorted to. The colour index in their case was below unity until the red blood cell count and haemoglobin value had become approximately normal—some ten weeks after admission to hospital.

The question arises whether a genuine cure—security from relapse—has been attained in our case. We venture to think that it has, and have delayed reporting the case for more than twelve months to afford stronger grounds for our belief. The blood now shows no indication of pernicious anaemia, and the patient is in excellent health. Twenty-three months after her confinement she still takes hydrochloric acid regularly.

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WELSH PHYSICIANS AND THE RENAISSANCE.*

BY

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IN Wales, in the sixteenth century, there existed two distinct medical traditions. The one tradition clung to the soil and the peasantry; the other was a scholarly tradition, nurtured in the older universities of Western Europe and imbued with the spirit of the new learning.

The popular tradition was, of course, the older. It had its origins in folk beliefs and superstitions, many of which must have been as ancient as the *meini hirion* and the *cromlechau* which are dotted over the bare hillsides of Cornwall and North Pembrokeshire. Mingled with these folk beliefs were survivals of the more bizarre and more purely superstitious elements in mediaeval Welsh leechcraft.

The vogue which this tradition must have enjoyed in the sixteenth century may be inferred from the fact that many usages typical of it still survive among the Welsh peasantry in remote, old-fashioned districts. Let me give some instances of such survivals.

Even a casual perusal of the old Welsh Leech Books of the Middle Ages leaves no doubt as to their preoccupation with sheer filth and ordure as therapeutic agents. That kind of belief you may meet with to-day in out-of-the-way districts of Carmarthenshire or Pembrokeshire, where human urine is still used occasionally as a lotion for itching eczemas, and cowdung poultices are not unheard of. Quite a short while ago, too, in Pembrokeshire, a colleague, called in to attend to a shotgun wound of the buttock, discovered that pig manure had been lavishly applied as a styptic and first-aid dressing pending his arrival.

Another stock feature of folk medicine and mediaeval leechcraft was the fantastic employment of "drugs of animal origin."

"Eye of newt, and toe of frog,
 Wool of bat, and tongue of dog,
 Adder's fork, and blind-worm's sting,
 Lizard's leg, and howlet's wing"

—all had their place in that strange endocrinology which derived its origin from the "doctrine of signatures." A few such simples still linger in use as domestic remedies in the Principality. Bear's grease, so much lauded as a remedy in the Middle Ages, and a relic perhaps of the therapeutic theories of the hunter stage, may no longer be

fashionable, but few rural practitioners in Wales will have failed to observe the esteem in which goose grease is still held as an unguent for wheezing chests and sore throats. Spider's web has still some vogue as a styptic for cuts, and salt bacon is quite a favourite dressing for boils and whitlows. Even more primitive medicinal practices may be met with in Wales to-day. Students of the mediaeval *Welsh Book of the Myddfai Physicians* will have frequently encountered in its pages a ritual in which some small animal, such as a toad, is directed to be incinerated, pulverized, and administered to a patient in food or drink. I am credibly informed that such a procedure was carried out in Cardiganshire a little over a year ago, when, on the advice of a "wise woman," a mouse was roasted alive and the pulverized ashes were administered in porridge to a small boy who suffered from enuresis. Charms and spells are hardly to be met with nowadays, but during the last century they were still sometimes hung in stables to ward off diseases from animals.

Since its survivals are so numerous in this our own time it may safely be inferred that this older tradition had a very great hold upon the mind of the ordinary man in sixteenth century Wales; and it is by contrast with those deep-rooted beliefs and practices of an older day that we may best realize how profoundly the new learning of the Renaissance influenced the practice of medicine in Wales.

It is true that the new tradition which grew up in Tudor times was empirical: its limitations and its errors are very obvious when looked down upon from those lofty peaks of scientific attainment which have been climbed since. But, viewed historically, it reflected quite worthily the mentality of a nation which had newly passed through the flame of a great intellectual revolution. Those who upheld it made no account of charms, magic, or the merely bizarre; they strove, within the limitations of the age which engendered them, to be scientific, temperate, and sane in their deductions and practice. But that which above all characterized these newer practitioners, and which stamped them especially and vividly as products of the Renaissance, was the breadth of their cultural outlook and the way in which they laboured to extend the boundaries of learning in other subjects besides medicine, while pursuing their everyday vocation as practising physicians.

There was a converse to that also. For, just as the physicians made excursions into other domains of learning, so did divines and the better educated country squires also invade the realms of medicine. Quite considerable collections of medical books were to be found in the libraries of some of the country houses; such was the case at Gwydir, the seat of the Wynn family. There is preserved among the Wynn papers a catalogue of twenty-one medical treatises which formed part of the Gwydir library in 1647. Most of these works belonged to the previous century, and had probably been acquired in Tudor times.

William Salesbury of Llanrwst, a distinguished theologian and philologist (acquainted, it is said, with nine languages besides Welsh and English), also had medical interests. To him is attributed the authorship of one of the medical "herbals" of the period.

The most interesting figure amongst the divines who practised medicine was Sir Thomas ap Williams, curate of Trefriw about 1573, who had a very considerable reputation in North Wales as a physician. Several of his letters of advice to Sir John Wynn of Gwydir are preserved among the Wynn papers. His prescriptions, written some in Welsh and some in English, were richly sonorous of the pulpit, and liberally punctuated with *amens* and benedictions. "God be praised," he once wrote to Sir John, "that your worship hath had stools, otherwise it had been necessary to clyster. *Protegat te nomen Dei Jacobi.*"

Sir Thomas ap Williams's medical activities were a bugbear to at least one of Sir John Wynn's more orthodox advisers, Alexander Read, who wrote indignantly to the baronet in 1610 protesting against the curate's presumption in posing as a physician, and pouring scorn on "his ineffectual old simples."

Read was a Scotsman by birth, and became one of the most popular and skilful general practitioners of his day. Before he became lecturer in anatomy to the Barber Surgeons in 1632 he lived at Holt on the Welsh border,

* Read in the History of Medicine Section of the Annual Meeting of the British Medical Association, Cardiff, 1928.