AN ADDRESS ON PERNICIOUS ANÆMIA, WITH JAUNDICE, AND CASES SIMULATING IT.

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IN this paper I have no intention of attempting to throw any light on the etiology of pernicious anæmia, but I propose to myself simply to give the clinical history of two cases of the disease that have been under my care, to compare them with certain other cases of disease to which they present some resemblance, and to make such comments as suggest themselves.

It will be, perhaps, convenient that I begin by defining pernicious anæmia, as I understand it, and enumerating its more important and characteristic symptoms. Pernicious anæmia is an affection in which, without any organic lesion that has hitherto been discovered sufficient to account for it, without any recognised malarious or similar influence, without any apparent climatic or dietetic default, the blood undergoes progressive deterioration, especially in regard to the number and quality of its corpuscles, and in which the symptoms the patient presents are mainly such as depend on gradual increasing bloodlessness.

This definition, so far as I have gone with it, necessarily includes chlorosis or the anæmia of young women, which usually goes along with some derangement of the menstrual function, and which, almost without exception, if not always, is curable by the judicious administration of iron; and I must confess that it seems to me impossible at the present time to make any trustworthy distinction between the chlorosis of girls and pernicious anæmia, save such as depends on the age and sex of the patients and on the effects of treatment. Chlorosis occurs among young women, and is curable by iron; pernicious anæmia occurs among men and women, usually above the age of 30, and iron is generally without beneficial influence. Nevertheless, I believe, as most physicians believe, that there is a fundamental difference between them; and, moreover, I suspect that the affections now grouped together and labelled "pernicious anæmia" will hereafter be found to belong to several categories.

Pernicious anæmia, for the most part, comes on gradually. The patient progressively loses the warm tint of health, until at length not only his cheeks, but his lips and tongue, the inner surface of his eyelids, his ears, and his finger nails become almost white. Shortness of breath and liability to palpitation come on, phenomena which at first are slight and observed only when he is ascending stairs or undergoing exertion, but afterwards become more or less continuous, or at any rate induced by very slight causes. The action of the heart gets feeble, variable in rate, and sometimes irregular. A hæmic murmur usually develops over the pulmonic area. Venous *bruits* become recognisable in the veins of the neck. The patient complains of noises in the ears, more especially at night-time and when lying down. Dropsical effusions take place into the connective tissue, and mainly in the lower extremities. There is a marked tendency to hæmorrhage from the nose, the mouth, the stomach, the bowels, on the surface and into the substance of internal organs, and beneath the skin. And especially hæmorrhage takes place into or about the retina. The digestive functions commonly suffer; the appetite usually fails; dyspeptic symptoms, with sickness after food, are of frequent occurrence; and, as a general rule, the bowels are constipated. The urine is for the most part unaffected, but sometimes it presents traces of albumen. The patient gets more and more feeble, unable to bear exertion or exposure to cold; but usually there is no great degree of emaciation. He becomes apathetic and forgetful, yet often irritable and fidgety; and if death ensues (as probably it does sooner or later) he sinks from exhaustion, not infrequently preceded by coma, or from some intercurrent complication.

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The colour of the skin is usually such as might be caused only by extreme bloodlessness, but not infrequently there is a distinct yellow tinge (affecting also the conjunctivæ), which may be so intense as to be mistaken for that of ordinary hepatic jaundice. But it is unassociated with any disease of the liver; no biliary pigment (at any rate as a rule) finds its way into the urine; and it is due, no doubt, not to the absorption of bile, but to the destructive changes going on in the blood corpuscles and the escape of their colouring matter into the blood serum. The blood becomes thin and watery; and under the microscope there is found considerable and for the most part proportionate diminution of both white and red corpuscles. The blood in several of my own cases was very carefully examined by my pupil, Dr. Copeman, whose observations are published in the last volume of the *St. Thomas's Hospital Reports*, and partly confirm those of previous writers, but present a few additional items of information. He shows that the red corpuscles may be diminished to 30 or 40 per cent. of their proper number—other observers have found them still more largely diminished; that they are mostly smaller, paler, and less consistent than usual, and tend to alter in shape, and especially to become elongated, and to break down; that they do not usually run into *rouleaux*; that mixed up with them are other corpuscles of very small size, and usually of deeper tint than even healthy corpuscles; that the blood-serum has, in some cases, an amber-yellow hue, and that in some, crystals of hæmoglobin (which in healthy blood are hard to obtain) appear spontaneously when the blood is undergoing desiccation. The breathlessness is no doubt mainly cardiac, depending on feebleness of circulation, the effects of which are necessarily exaggerated under the influence of exertion or excitement; but dyspnoea may be partly due also to cedema of the lungs occurring as a part of general anasarca. This general dropsy, though not always present, is a common incident of the disease, and may become very considerable. Both dropsies and hæmorrhage seem to depend partly on poverty of the blood, partly on weakness of circulation, and on thrombosis, which both of these conditions tend to produce. Noises in the ears, which are sometimes rushing, sometimes steam-engine like, sometimes musical, almost always come on sooner or later. They are more or less continuous, and evidently venous. They are sometimes the chief source of complaint on the part of the patient, and frequently prevent him from sleeping. They are related, causatively, to the co-existent venous murmurs in the neck and the hæmic murmurs at the base of the heart, and are, I am inclined to think, the product of a flaccid condition of the vascular walls and relative emptiness of vessels.

I have already pointed out that the urine is sometimes of normal quality and of normal colour to the last, a point of some interest, inasmuch as it implies a continuous and relatively increasing drain on the red corpuscles. In addition to the restlessness and irritability not infrequently observed, and the coma which occasionally supervenes towards the close, patients sometimes have delusions and become maniacal, occasionally suffer from temporary blindness, and occasionally also lose voluntary power and feeling, more especially in the lower extremities. The temperature for the most part is either normal or subnormal, but not infrequently patients present febrile rises which may be either occasional or more or less persistent, but are rarely high.

Finally, although in a large proportion of cases the disease is progressive, and proves fatal in the course of a year or two, undoubtedly there are many cases in which more or less perfect recovery takes place, a recovery attended, however, with liability to relapse.

The first case of what is now generally termed pernicious anæmia which I ever saw—at any rate, to pay it special attention—came under my care in my out-patient practice at St. Thomas's in October, 1857, and was brought by me under the notice of the Pathological Society exactly thirty years ago. The patient was a clerk, 26 years old. During the previous five or six years he had been dyspeptic and fanciful; and during the last two his temper, naturally placid, had been getting irritable and peevish. In 1852 he had had what he termed a "stomach attack," which lasted two or three months, and was followed by some impairment of vision. A few months afterwards he had had a similar but slighter attack; and during the next three or four years he had suffered from two or three relapses, in the last two of which he stated that he had been slightly jaundiced.

His present illness had come on gradually during the preceding six months, with depression of spirits, vertigo, loss of appetite,

trembling in the knees, and pains in the jaws and face. Slight jaundice had been added to the other symptoms after about two months, and latterly occasional matutinal vomiting of bilious fluid. There had been no epigastric uneasiness or vomiting after food; the bowels had been variable, but generally constipated.

He was spare, anxious-looking, and universally though not deeply jaundiced. There was neither general dropsy nor ascites, no fulness or increased dullness in the region of the liver, and no uneasiness or tenderness in that situation. The heart's sounds were normal, the pulse rapid, small, and weak, and the functions of the lungs were healthily performed.

He continued attending as an out-patient until January 19th, up to which date there was certainly no improvement in the symptoms. The jaundice was much the same at the end as at the beginning; the vertigo and occasional headache, the morning bilious vomiting, with feelings like those of sea-sickness, and the condition of his nutritive functions, of his evacuations, and of his physical powers remained unaltered. On two or three occasions he had complained of weight at the chest after food, and for a week of a dull pain to the right of the umbilicus.

On January 19th he was admitted under my care, and died on February 4th. From the 19th to the 2nd there was not much variation in his symptoms. He was extremely weak and somewhat emaciated, with a rapid, feeble pulse. He complained generally of a feeling of giddiness, and of pain about the eyes, especially when he moved. His tongue was pale, and occasionally furred; his appetite was variable. He suffered much from thirst, and frequently vomited bilious fluid. The bowels were generally constipated, and the motions pale, though not wholly untinged by bile; and his urine was high-coloured. The skin was dryish, and both it and the conjunctivæ were very decidedly jaundiced. He complained occasionally of dimness of sight and deafness. His sleep was generally undisturbed.

On February 2nd he suffered more than usual from the deafness and dimness of sight, and occasionally rambled. During the ensuing night and the next day these symptoms, and especially the delirium, increased, and he was at times violent; but he understood what was said to him, and would answer rationally. He continued in the same state (gradually sinking however) until 4 A.M. on the 4th, when death took place.

Various plans of treatment were carried out, but none with obvious benefit; at one time he was dosed with nitric acid and cinchona, at another with iodide of potassium and gentian, at another with iodide of mercury, at another with alkalies.

The corpse was universally but slightly jaundiced, and very pallid. There was some oedema of the back parts of the lungs. The heart was rather large, its substance was pale and soft, and its inner surface especially pale and mottled. Several of the smaller branches of the pulmonary artery were filled with firm but unadherent fibrinous coagula. The liver was somewhat enlarged, but of normal consistence, and of a uniform yellowish-brown tint. The bile-ducts and the gall-bladder were entirely healthy. The spleen weighed one pound, but was normal in texture. All other organs were sound. The muscular tissue of the heart, and especially those parts that were mottled, presented well-marked fatty degeneration, and the liver cells contained for the most part a good many small oil globules. The blood was everywhere remarkably pale and watery, but did not display any preponderance of white corpuscles.

Among the remarks which I appended to my case are the following: "During the progress of this case the persistence of jaundice led me to regard the liver as the organ at fault." "It would be useless now to state the precise diagnosis at which I arrived, for the *post-mortem* examination showed that the liver was structurally healthy, and that there was no essential disease of any other organ."

"Was the case an example of that mysterious form of fatal jaundice" (I referred to so-called malignant jaundice) "which Dr. Alison first described? There may be some reasons for answering this question in the affirmative, but there is at least one important fact against it; the case under consideration was essentially chronic. But was the case really one of fatal jaundice at all? I must confess that on reviewing and comparing the history of the patient during life, and the results of the *post-mortem* examination, there seems greater reason to believe that his death was due to severe and progressive anæmia than to any affection of the liver; that the case was, in point of fact, one of anæmia, attended or followed by jaundice. I founded this opinion, partly on the fact that the patient was ailing, and probably anæmic be-

fore the jaundice made its appearance; partly on the symptoms which manifested themselves while he was under observation, and which, with the exception of the jaundice, were precisely those of anæmia, and partly on the state of the organs as revealed after death, none of them being positively diseased, but several being in such a condition as one ordinarily finds them to be after long-continued deterioration of the blood. If the view here suggested be correct, the case is allied to those examples of anæmia to which Dr. Addison alludes in the commencement of his work on *Diseases of the Suprarenal Capsules*."

That this case was a typical case of pernicious anæmia, and that the jaundice observed was the kind of jaundice not infrequently met with in this disease, I have long had no doubt.

The next case I shall venture to quote is one in which there was also well-marked jaundice, and in which, for several reasons, the true nature of the disease, at any rate what I am disposed to regard as the true nature of the disease, was for some time overlooked.

E. B., a young woman, 27 years of age, was admitted under my care on January 11th, 1886. She had been a patient of mine eleven years previously for rheumatic fever, and two years afterwards was again admitted with rheumatism and pericarditis. I have not looked up the particulars of her illness on these occasions; but I have a distinct recollection that in one of these attacks she was exceedingly ill, and for some length of time in considerable danger. Since that time she has been liable to rheumatic pains and to shortness of breath.

Her present illness was of nine months' duration. At its commencement she went into the Brighton Hospital, where she remained six months. While there jaundice seems to have come on gradually, and she seems also to have had an attack of acute pneumonia, in which her temperature rose to 105° F. In November she came for a short time into St. Thomas's, was jaundiced, and I believe was thought to be suffering from gall-stones. She was then sent to a convalescent hospital. While there the jaundice became more intense, and she suffered much from pain in the region of the heart and right hypochondrium, and from shortness of breath. The catamenia had been absent during the whole period of her illness.

State on Admission.—She was a well-nourished woman, complaining mainly of weakness, shortness of breath, and pain in the præcordium and both hypochondriac regions. She was somewhat anæmic, and presented a general saffron-yellow tint of skin and conjunctivæ. The lungs were healthy. The cardiac dullness was somewhat extended; and the apex-beat in the fourth interspace in the mid-clavicular line. The sounds were healthy, but for the fact of a rough, scratchy systolic murmur in the pulmonary area. There was a rounded lump (apparently part of the liver) to be felt just below the tips of the eighth and ninth cartilages on the right side. Otherwise the abdomen was normal. The tongue was coated; the bowels were confined, but the motions were normally stained with bile, and the urine presented copious urates, but no trace of biliary colouring matter or of bile acids.

During January and February her condition varied, and was by no means satisfactory. She suffered from pains, sometimes persistent, sometimes paroxysmal and severe, referred chiefly to the right hypochondrium, but sometimes to the left, sometimes to the præcordium, and sometimes to the loins. The nature of these pains was not clearly made out; but they were occasionally thought to be due to the passage of gall-stones; occasionally thought to be connected with old adhesions (which undoubtedly existed) of the pericardium; occasionally—and perhaps, on the whole, more commonly—were attributed to congestion of the liver secondary to the cardiac affection. But no gall-stones were found, the motions were always bilious, and the urine never contained any bile-pigment.

She had pains and throbbing in the head, and a sound as of rushing water in the right ear. She suffered also from time to time from slight but obvious rheumatic inflammation of some of the joints. Her pulse was feeble, variable in rate, sometimes irregular, and rarely over 80. Her respirations were often quick and laboured, and occasionally were at the rate of 48 in the minute. She suffered from pretty constant nausea, and occasional attacks of sickness, and twice had epistaxis. During all this period the temperature was almost always slightly above the normal, and not infrequently rose to 100° or 101°, and on two successive days, when the patient felt specially ill, and was complaining of considerable præcordial pain, it rose to 103.2° and 103.4°.

During all this time the patient's symptoms were assumed to be due directly or indirectly to the maladies from which she had so long suffered; namely, embarrassed action of heart, dependent on adherent pericardium, secondary engorgement of the liver, and recurrent attacks of very slight rheumatism, and it may be added that the right lobe of the liver became more obvious than it was at first below the ribs, and that some enlargement of the spleen also was detected. But she was steadily becoming more and more anæmic, and, early in March, I began to suspect that her symptoms might be largely due to this progressive anæmia. Her eyes were then examined, and it was found that the optic discs were reddened and swollen, the veins were pale and scarcely differing from the arteries in colour, and there were a few choroidal hæmorrhages. The blood (examined by Mr. Copeman) was pale, coagulated rapidly, and contained an excess of fibrine; the red corpuscles were only 36 per cent. of the normal, and on drying broke down with the formation of hæmoglobin crystals. She was now treated with liquor arsenicalis, at first five and later ten minims, three times a day. For the first week or two the anæmia seemed to increase; then manifest improvement took place. She gradually lost her pains and discomforts, and her sense of nausea; she became stronger, and some degree of rosiness returned to her cheeks and lips and finger-nails. On March 19th her eyes were re-examined, and the hæmorrhages were found to have increased considerably in number; but a further examination, on April 3rd, showed that the retinitis had largely subsided and the hæmorrhages almost disappeared. On the same dates the blood also was tested and found improved in quality. The report on April 3rd was to the effect that the blood-corpuscles were larger, more uniform in size, of better shape and colour than they had been a month previously, and that they now formed 60 per cent. of the proper number. Moreover, though they did not run into *rouleaux*, they did not break down when a drop of blood was dried; and hæmoglobin crystals could not be obtained.

She was discharged fairly well on April 21st. She had then lost all her abdominal and thoracic pains, her headache, her nausea and sickness; her yellowness had diminished, though it had not actually disappeared; she had become rosy; her strength had greatly improved, and she had been getting up indeed every day for the last month; her temperature had become normal; she slept well and ate well, and expressed herself as feeling far better in health than she had been for twelve months; but the hæmic cardiac murmur remained, and there was still enlargement of the liver and spleen.

It is important to note that no improvement took place in this patient during the first seven or eight weeks of her residence in the hospital, but that during the last seven or eight weeks, while she was kept under the influence of arsenic, her recovery was progressive and rapid.

There can be no reasonable doubt, I think, that both of the above cases were true examples of pernicious anæmia, and that the light jaundice present was due not to hepatic disorder, but to decomposition of the blood. That the cases were misinterpreted (the former during the whole of the patient's lifetime, the latter during the greater part of her illness) admits, I think, of reasonable excuse. The former case occurred at a time when idiopathic anæmia (apart from chlorosis) had scarcely been studied, and in the latter case the anæmia became engrafted, as it were, on the presence of lesions, which were themselves competent to produce jaundice. I have quoted them, indeed, in preference to other cases which I might have quoted, largely on account of the difficulties they presented in the way of correct diagnosis, but also because of the close relationship there appears to be between the variety of pernicious anæmia they illustrate and the anæmia present in the cases which I now proceed to narrate.

A. T., a girl of 15, was admitted under my care on June 29th, 1887. She had, on the whole, enjoyed good health, excepting that for nearly five years she had been jaundiced, and three years ago was my patient in the hospital with much the same symptoms as those she was now suffering from. Her present illness was of three months' duration, and during all the time she had complained of pains in the side, especially on walking, and latterly of feeling drowsy. She had been laid up for the last week.

State on Admission.—She was a well-nourished, and not specially anæmic girl; but she presented a general saffron-yellow tint, the conjunctivæ being coloured as well as the rest of the surface. She complained only of weakness, and of pain in the right side and in the abdomen. The thoracic organs were perfectly healthy. The spleen was much enlarged, extending down

to the umbilicus; it was freely movable, and presented the usual notch. The liver did not descend below the ribs. In other respects the abdomen was normal, presented no tumour or fluid, and there were no enlarged veins in its walls. There had been no hæmorrhages, and there were none now. The appetite was fair; the bowels were somewhat confined, but the motions were coloured with bile. The urine had a specific gravity of 1015, presented a mere trace of albumen, and was quite free from bile-pigment. The blood contained what appeared to be a fairly healthy proportion of red corpuscles, but there was a slight increase of white. The red corpuscles did not form definite *rouleaux*, but ran into irregular masses. They were of normal shape and colour.

She was in the hospital seventeen days, during which time she was restored to her usual state of health; but the jaundice, the spleen, and the condition of the blood underwent no change. Her temperature was always normal; her pulse varied from 64 to 86. There was no further record of the presence of albumen in the urine.

For some two or three months she continued to visit me as an out-patient, but no further improvement was noted. She was treated during the time she was under my care with iodide of potassium and mercury.

A. R., single, aged 22, came under Dr. Ord's care on September 21st, 1886. She had been a patient of mine in 1879, and of Dr. Ord's in 1884 and 1885. She had complained mainly of weakness, shortness of breath, headache, and pains about the body. She does not seem ever to have had rheumatism or any other serious acute illness; but ever since she had been under observation she had presented a loud systolic murmur, most marked at the left base, which Dr. Ord (I believe) regards as due to some congenital cardiac defect. She has been jaundiced for some years.

State on Admission.—She was a dark-haired, well-nourished girl, markedly anæmic, and at the same time presenting slight but unmistakable jaundice, both of the skin and of the conjunctivæ. The cardiac dullness was not unduly extensive, and the apex of the heart impinged in the fourth interspace, an inch within the nipple line. A well-marked systolic murmur, loudest at the left base, was audible over the whole cardiac area. A venous hum was audible in the neck. The lungs were healthy. The liver extended for an inch and a half below the ribs, but was smooth and free from tenderness. The spleen was very large; its anterior edge (which presented a deep notch) approached the umbilicus; its lower end reached the anterior superior spine of the ilium; it was quite smooth and free from tenderness. There was no ascites, and no enlargement of the superficial abdominal veins. The blood was unduly pale; the red corpuscles were irregular in form, many being oval, and did not form *rouleaux*; there was no excess of white corpuscles. The urine had a specific gravity of 1012, was acid, free from albumen, sugar, bile-acids, and bile-pigments, but presented many uric acid crystals and amorphous urates. The stools were of natural colour. Her pulse was quick; her temperature a little above the normal. She was treated with 5 minims of liquor arsenicalis three times a day.

The patient's symptoms varied somewhat while she was in the hospital. Her pulse was generally rapid and at times irregular; she generally had more or less cedema of the legs and ankles; she had attacks of pain in the sides and in the back, and she felt weak. On one occasion she had epistaxis. The blood was examined on several occasions, and the examinations in the main confirmed the description above given; the red corpuscles, however, were found to be diminished by about one-fourth. The urine never presented any bile-pigment or bile-acids, albumen, or sugar. Her jaundice continued, but on the whole she improved, and she left the hospital on November 10th.

She was again admitted under Dr. Ord's care on July 25th, 1887. She had then been getting poorly for a couple of months, suffering from short breath, nausea and debility. On admission she was practically in the same state as before. There was great anæmia, and light but well-marked jaundice. The blood had undergone no change. The red corpuscles were generally oval or irregular in form, and did not run into distinct *rouleaux*; but the white corpuscles were thought to be relatively increased in number. The urine still contained no trace of bile, and was otherwise healthy in composition. The cardiac murmur persisted, the liver still just emerged from beneath the ribs, and the spleen still extended down to the anterior superior spine of the ilium. She was treated with hypophosphite of soda (ten grains three times a day), to which was subsequently added five grains of the citrate of iron and ammonia.

Again she improved in health; but left the hospital still anæmic, still jaundiced, and with a large spleen, on August 26th.

That the last two cases were of the same nature there can scarcely be a doubt; and that they presented many characters in common with the first two is also obvious. The identity between the last two is implied by the association in both of chronic enlargement of the spleen, chronic yellowness of conjunctivæ and skin, simulating hepatic jaundice, and deterioration in the quality of the blood. It is true that in one of the patients there was a loud cardiac murmur, venous *bruits*, and marked bloodlessness, with such changes in the blood as are found in advanced pernicious anæmia; and that in the other the heart's sounds were healthy, no venous hums were observed, the anæmia was scarcely noticeable, and the microscopic changes in the blood were only slight. But I confess I have a suspicion that the cardiac murmur was hæmic, and, at any rate, all the other differences just enumerated are only such as might be explained by the different stages of anæmia the cases had severally attained.

The resemblances between the last two cases and the quoted cases of pernicious anæmia were mainly the presence, in both series, of jaundice without discoverable disease of the liver, alteration in the quality of the blood with loss, or tendency to loss, of red corpuscles, and the kind of weakness which attends progressive anæmia. Indeed, it might, I think, be argued that they were all four cases of pernicious anæmia, or, at any rate, of the same form of disease; inasmuch as, in addition to the resemblances above enumerated, enlargement of the spleen was present in all. It will be recollected that in my first case, although enlargement of the spleen was not observed clinically, the organ weighed a pound at the necropsy; and that, in the second case, some enlargement both of the liver and of the spleen was detected during life. But, on the other hand, the long duration of the last two cases, and the fact that the patients were both girls, of an age at which ordinary chlorosis is common, pernicious anæmia rare if not unheard of, render this view of their nature improbable. I believe, although I do not pretend to adduce adequate proof of the correctness of my belief, that the first two and last two cases really belonged to different categories.

It may be asked, To what was the large spleen in these cases due? In the last two cases there was no reason to believe it was of malarial, of syphilitic, or of ricketty origin; there was nothing that could have induced lardaceous degeneration; there were no tumours of lymphatic glands or disease of other organs to suggest the presence of lymphadenoma; neither the symptoms nor the condition of the blood was compatible with leucocythæmia; and, lastly, there were no sufficient grounds to attribute the splenic enlargement to portal obstruction. In the first case the structure of the enlarged spleen seemed to be healthy; in the second case it is of course possible that the enlargement of the organ was consequent on portal congestion.

The fact, however, that the spleen was enlarged in all four cases suggests the inquiry whether there was any relation between the presence of jaundice and this enlargement. It is admitted, I believe, by physiologists that one function of the spleen is to cause the disintegration of effete red corpuscles, and that the serum of the blood in the splenic vein is tinged with the dissolved hæmoglobin derived from this source. It seems not unlikely, therefore, that (whatever may be said as to the first two cases) in the last two cases the enlargement of the spleen was connected with an undue destruction of red corpuscles in this organ, and the discharge into the blood-stream of a larger amount of dissolved hæmoglobin than could be got rid of by normal physiological processes, and hence the general staining of the blood-serum and the general yellow tint of the body. But, at any rate, the jaundice in no case presented the characters of jaundice from obstruction of the hepatic ducts, and there is no sufficient ground for attributing it in any one of the cases to disease or disorder of the liver.

The different characters of the cases I have brought forward and the different kinds of treatment adopted in them make it impossible to deduce from their clinical history any valuable information as to the effects of treatment. If my paper had been devoted to the subject of pernicious anæmia alone, I should have been able to confirm the general belief that cases of this disease are in large proportion fatal under any kind of treatment; but I should have been able to show that many cases which appear to be of the same kind undergo great improvement or get well, and that (as is now generally held) arsenic seems to have in a large number of cases a strikingly beneficial influence over the progress

of the disease. Of this beneficial influence my second case is a good illustration.

A CASE OF EXTRA-UTERINE GESTATION CURED BY ABDOMINAL SECTION TWO HOURS AND A HALF AFTER RUPTURE.

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THE following case has more than one point of interest. First, I believe it is unique in the shortness of the interval between rupture and operation. Very few cases of extra-uterine gestation have been operated on while the patient was in collapse from the first hæmorrhage; in most of the published cases hæmorrhage had stopped, and the patient had rallied before the operation was done. I do not know of any case in which the operation was done so soon as two hours and a half after rupture. This promptness of interference was due to the patient's good fortune in being in hospital at the time of rupture.

Secondly, the case is unusual in the lateness of rupture. Tubal gestations usually rupture before the end of the third month, while this one went on for about four months.

Thirdly, if the diagnosis of the first illness be correct, the case is an instance of two successive extra-uterine pregnancies in the same patient, first in one tube, then in the other. There may have been an identical morbid condition of the right and left tubes which occasioned the failure of the ovum to reach the uterus.

Fourthly, the uterine *souffle* was distinctly heard. This is so rare in extra-uterine gestation that it has even been maintained that the presence of a uterine *souffle* justifies the conclusion that a pregnancy is uterine. The case now reported shows that this general rule is not without exception.

H. N., aged 24, admitted December 16th, 1885. (The notes on this occasion were taken by Mr. H. J. Hawthorn.) Until the present illness she had always had good health. She began to menstruate at 15, and was regular every month, the flow being scanty, and only attended with slight pain. She was married at 18, and had two children, the last ten months ago; labours easy; no miscarriages. During the whole of the last pregnancy, and for a month after delivery, she had a copious yellow discharge, and her womb seemed to come down. After the last confinement she was regular, without pain, till September 4th. From this date till October 20th, she saw nothing. She then had a slight discharge of blood, and this recurred every week till five weeks ago, since which time she has been losing continuously and copiously. About five weeks ago, on getting into bed after passing water, she was seized with faintness and a cramp-like feeling at the bottom of the stomach; she broke out into a cold sweat, shivered, and her husband said she looked very white. This cramp-like pain continued severe for about three days and then improved, but soon recurred, and has continued on and off ever since, often preventing her from sleeping. For two or three days after the first attack of pain micturition was painful and the urine scanty. There was no trouble in defæcation.

On admission patient complained of pain in the back and lower abdomen, and was losing blood. The abdomen was tender, and the muscles held very rigid. *Per vaginam* a hard, convex, very tender swelling was felt, occupying the left posterior quarter of the pelvis, and pressing the uterus forwards and to the right. The sound entered 3½ inches. Temperature was 100° F.

A week after admission the hæmorrhage became slight, but it continued until January 6th. After this date, throughout the patient's stay in hospital, there was no hæmorrhage. No decidua membrane was noticed in the discharge. The temperature, all the time the patient was in hospital, never exceeded 100°.

The pain continued much the same as on admission, generally severe, but with occasional remissions, for about six weeks. Then it improved, and at the beginning of February was only slight and occasional. The mass in the pelvis remained of about the same size for at least a month, and then began to gradually become smaller, harder, and less convex. Patient was discharged on February 14th, 1886.

March 23rd she came to report herself. She felt quite well. Swelling in pelvis smaller than when in hospital. Patient men-