protects the wound from the irritation of the antiseptic. When used it must be well over-lapped by the antiseptic dressing, and where this cannot be done it had better be dispensed with. A great advantage is that it prevents the dressing sticking to the surface of the wound; its bland, smooth, unirritating surface certainly favours the healing process. The drawback to its use is, that it keeps the wound moist, thus favouring putrefaction if germs gain an entrance. The moist condition causes irritation of some sensitive skins, especially of the feeble skin in the neighbourhood of ulcers. I have recently endeavoured, by using a perforated protective, to keep the dressing from sticking to and irritating the surface of the wound, and at the same time to keep it in as dry a state as possible.

Drainage.—The opening for the escape of discharges should be provided, when possible, at the most dependent part; if not, a certain amount of fluid must accumulate to the level of the opening before it runs off. For large wounds or large cavities indiarubber tubes provide the best drainage; in some cases they should be as large as one's finger. For smaller wounds, strands of horsehair or a strip of protective are sufficient. We must always bear in mind that either of these materials is a foreign body, and should be dispensed with as soon as possible. Retention of discharge is, however, a much greater evil. Each case must be judged on its own merits. As a rule, in a clean-cut wound in healthy tissues, ample drainage is required for the first day; it can gradually be lessened, and entirely dispensed with on the third or fourth. In other cases—as, for instance, a large abscess cavity communicating with diseased spine—the tube may not require to be shortened for nine months or a year. In these cases the indications for shortening a tube are its extrusion by the granulation or contraction of the cavity, combined with signs of repair of the part, and no evidence of accumulation of discharges, such as pain, pyrexia, increased pulse, the formation of a fluctuating swelling, or purulency of the discharge. In some cases special tubes made of metal are required.

To arrest hæmorrhage, torsion or forcipressure should be used for small vessels; for those of the size of the radial or larger arteries catgut had better be employed. The best is the sulphurous acid gut, prepared according to Sir Joseph Lister's directions, by first soaking in chromic acid solution and then in sulphurous acid solution. This is very strong and reliable, and a fine strand can be used for large vessels. If large-sized chromicised gut is used just under the skin, the knot is apt to cause irritation and possibly suppuration. The sulphurous acid catgut is also useful for buried sutures, the object of which is to bring together and keep in apposition the deeper parts of a wound; this prevents the effusion and accumulation of discharges, and sometimes accelerates the healing process. For large pedicles, as in ovariectomy, Chinese twist, a pure silk, may be used after soaking for a quarter of an hour in 5 per cent. carbolic. Strong catgut is also used.

Sutures.—Silk impregnated with 10 per cent. carbolic in bees'-wax is generally employed. Silver wire is non-absorbent and unirritating. Catgut may also be used, and can be left *in situ* until the inner parts of the suture are absorbed. For small wounds, carbolicised but otherwise unprepared catgut had better be employed, the external parts can be brushed away in a few days. The sulphurous acid gut will not be absorbed for a month or six weeks. The button suture is extremely useful in bringing the widely separated edges of a wound together; being placed at some distance from the edges, it does not interfere with the healing process. Sutures should never be used to drag the edges of the wound together; the skin contained within them should not be puckered, or that outside them furrowed; both are indications of undue strain, and both retard healing, besides causing pain to the patient as well as the risk of exciting inflammatory disturbance in the neighbourhood. Especial care is required in introducing sutures into damaged or unhealthy tissues; the slightest tension must be avoided; better leave the wound widely gaping.

All dressings should be kept in tin boxes. This prevents any risk of their contamination, and retards evaporation of the more volatile ingredients. It is a good plan to keep a wide-mouthed bottle filled with a volatile antiseptic inside the box with the dressings. The jaconet mackintosh is a convenient application outside the dressings. It prevents the discharges coming directly in contact with and being contaminated by the air, and makes them traverse a long line of the antiseptic before doing so. It also keeps the

deeper dressings nicely in place. The drawback to its use is that it confines the perspiration and the more watery parts of the discharges, and thus keeps the wound moist. The elastic bandage fastened lightly round the edges keeps the dressings in contact with the skin, and prevents a large quantity of air being sucked directly into the wound by the movements of the patient. If the elastic bandage is applied tightly it causes pain, and possibly œdema of the distal parts.

To recapitulate the antiseptic or aseptic treatment of wounds: 1. Arrest all hæmorrhage, thus preventing the accumulation of blood clot, the nidus for development of micro-organisms. 2. Remove all foreign bodies, such as dirt, detached pieces of bone or tissue. 3. If foreign bodies or micro-organisms have gained an entrance, purify thoroughly with an efficient antiseptic. 4. Provide very free drainage, in the most dependent part if possible. 5. Bring the parts into accurate apposition, like to like; but carefully avoid tension, especially of the edges of the wound or in damaged or unhealthy tissues. 6. Apply a large dressing sufficiently impregnated with a reliable antiseptic, and very absorbent and elastic. 7. Bandage firmly and evenly to get elastic compression. 8. Elevate the part to lessen the blood pressure and effusion while the vessels are weak from the injury. 9. Give absolute rest; change the dressing as little as possible. Visible discharge is the indication if the dressing is reliable. 10. Attend to the general health and give a free supply of good food and fresh air, in this way promoting the resisting and healing power of the tissues. Recognition of these principles, their study and adoption, are of as much or more importance to a surgeon than a knowledge of anatomy or manual dexterity. By them you take surgery out of the region of chance and make it much more an exact science. If you happen to have an infectious case, let me impress upon you, gentlemen, not to look on it as an unavoidable accident, but recognise it as being due to some mistake in your chain of treatment, to be found out and in the future guarded against. None of us are free from mistakes or accidents; the best surgeon is he who has the least number, who recognises that he is not infallible, but strives to discover his mistakes, and from them learns lessons for his future guidance.

A CASE OF PERNICIOUS ANÆMIA.

APPARENT RECOVERY; RELAPSE; DEATH.

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MRS. G—, aged thirty-eight, came as an in-patient to the Radcliffe Infirmary, Oxford, on December 27th, 1884. She gave the following account of her illness: About twelve months ago she began to lose blood from the anus. The hæmorrhage only occurred when she went to stool, and the blood was of a bright colour. Until this hæmorrhage set in she had been a strong healthy woman, possessing a good colour, and she attributed the onset of her illness to the loss of blood. The hæmorrhage continued for at least three months, and rendered her very weak. During this time menstruation was regular, but very scanty. She became gradually weaker, and in March, 1884 (i.e., four months after the date of the first hæmorrhage) vomiting set in. The vomiting continued until her admission into the infirmary, ceasing at intervals, but she had not been free from vomiting for longer than four or five weeks at a stretch. No other symptoms were noticed by the patient except gradually progressive weakness and pallor. Menstruation continued regular, but the flow was very scanty.

The woman presented herself for admission complaining of great weakness and of troublesome vomiting. She appeared to be well developed, with an exceedingly pale, sallow complexion. Her conjunctivæ were quite blanched, and her lips of a peculiar light-blue tint. Her general appearance gave the impression of a person who had suffered from profuse hæmorrhage. Though anæmic, she was not emaciated, being, in fact, well covered and inclining to *embonpoint*. There was not any evidence of cardiac enlargement, except, perhaps, slight dilatation. At the apex of the heart and at the third left costal cartilage there was a faint systolic murmur. The pulse was regular, small, and

frequent (120 per minute). There was a well-marked venous murmur at the root of the neck. Respiration was frequent (26 per minute), but easy, and dyspnoea occurred only on exertion. The chest was very tender on percussion, and she complained especially of great tenderness over the sternum. There was not any evidence of disease of the lungs. The blood was pale, the red corpuscles diminished in number, and devoid of their tendency to run together into rouleaux. There were many red corpuscles of an abnormal shape, some of which appeared more or less flask-shaped. The white corpuscles were not markedly increased in number. The area of splenic dulness was increased, and measured in the mid-axillary line four inches and a quarter, and extended forwards to the anterior axillary line. The area of liver dulness was increased, and extended in the right mammary line from the sixth rib to two inches below the costal margin, whilst in the median line its lower edge reached to within one inch and a half of the umbilicus. The surface of the liver felt quite smooth. The urine was of sp. gr. 1015. The reaction was acid, and there was no albumen. There was not any general anasarca, and no swelling of the feet; but there were distinct hæmorrhages beneath the skin over the dorsal surfaces of the feet. The largest hæmorrhages were about the size of half-a-crown, and there were abundant smaller petechiæ. On ophthalmoscopic examination the fundus oculi presented several distinct hæmorrhages, apparently of recent date. There was not any evidence of neuritis, and the edges of the disc were clear and well defined.

On admission she was treated with ten-minim doses of the tincture of the perchloride of iron, but after a few days it was found that the iron set up considerable irritability of the stomach, and for that reason it had to be discontinued. Shortly after admission petechiæ appeared over both knees, and it was elicited from her that six months before her knees had been black, as though badly bruised. The temperature varied, and was usually normal in the morning and 100° in the evening; occasionally, however, it rose to 101° or 102° at night. She vomited at irregular intervals a yellowish fluid, but rarely any quantity of food. Her tongue was clean and her bowels confined. The menstrual flow was scanty, but regular. Ten days after admission she was placed on five-minim doses of liquor arsenicalis, and on the fourth day after taking this a note was made to the effect that she felt and appeared better. The blood, however, on examination still showed a large number of flask-shaped and other irregular corpuscles, and there was a considerable number of red corpuscles of small size, though of normal shape. A pill containing three grains of sulphate of iron was ordered, in addition to the arsenic mixture, but it had to be discontinued owing to the gastric irritation which it set up. The dose of liquor arsenicalis was increased to eight minims, and after a few days fifteen minims of dialysed iron were added. Shortly afterwards a note was made to the effect that she appeared much better, and that there was more colour in her mucous membranes. The dose of liquor arsenicalis was gradually increased to thirteen minims, and the dialysed iron to twenty-five minims, and on these she was kept until February 25th (i.e., two months from the date of her admission). During the interval the woman had changed for the better in a rapid and striking manner. From being bedridden, she was able to get about the ward, and later on the infirmary grounds. She felt much stronger and could walk without fatigue. Her colour deepened, until she was to all appearance normal in this respect; and the temperature, which for the first four weeks of her stay in the infirmary had usually risen in the evening to 100° F., remained at normal both morning and evening during the remaining four or five weeks before her discharge. The splenic dulness diminished, and on her discharge on February 25th, 1885, the lower limit of liver dulness did not exceed the costal margin. On examination of the blood, the red corpuscles were found to have increased in number and to have a tendency to run together into rouleaux; there were, however, a few flask-shaped corpuscles still to be seen, but these were many fewer in number than on admission. On leaving the infirmary she was sent to the Wingfield Convalescent Home for a few weeks, and she left there apparently in perfect health to return to her home in Staffordshire.

In January, 1886 (not quite a year after her discharge), I learned of the death of the patient. She had remained in good health for some time, and then gradually lost colour and strength, and was one morning found dead in her bed.

I was not able to obtain any details of the treatment during the patient's second and fatal illness, but I learned from her friends that her symptoms had practically been the same as those which occurred prior to her stay at the Radcliffe Infirmary, and that the medical man in attendance had certified the cause of death as anæmia.

Remarks.—In recording a case of recovery from a disease the essential feature of which is its fatal termination, very strong evidence is required to demonstrate that the clinical observer has not been misled in forming his diagnosis of the disorder. Obviously, if we consider that pernicious anæmia is the fatal goal of simple anæmia, to speak of recovery from such a condition is nothing more than an Irishism. But however close the resemblance between simple and pernicious anæmia, the clinical distinctions between them are, I believe, sufficient to separate them from one another, and to point to the probability of their being distinct diseases. The record of a case possessing all the symptoms of pernicious anæmia in which there was apparently absolute recovery for a period of several months, but in which eventually relapse and death from the same disorder took place, forms a link in the chain of evidence of the existence of pernicious anæmia as a clinical entity, the termination of which, though frequently fatal, is not necessarily so. That this case presented the essential features of pernicious anæmia is, I think, evident. The patient was of middle age, of large frame, and well covered with fat. Her illness had come on gradually, and had been characterised by progressive debility and pallor which had not been accompanied by any wasting, though they had proceeded almost to extremities. She had had hæmorrhages, both subcutaneous and retinal. Her blood presented the characters which have been described in many, though not in all, cases of pernicious anæmia.¹ This derangement of the blood appeared to run a course somewhat parallel to the disease, the blood becoming more normal in its histological characters, with progression of the patient to convalescence, though even when the patient was apparently convalescent the blood still retained a certain degree of its abnormal character. There was enlargement of the liver, rare in cases of simple anæmia, but not uncommon in cases of pernicious anæmia, and this enlargement disappeared with the convalescence of the patient. There was an oscillating temperature, which fell to and remained at normal when the anæmic condition had been removed. There was marked tenderness over the sternum, which abated with convalescence. Finally, there is the fact that after apparent recovery the patient relapsed in the course of a few months, and died from a disease which all the evidence obtainable showed to be pernicious anæmia. The starting-point of the disease in this case was apparently the hæmorrhage which took place from the rectum, but the cause of the hæmorrhage was not apparent. It was not possible to discover any disease of the lower bowel or genito-urinary passages during the patient's stay at the Radcliffe Infirmary, nor did the history show that there were any symptoms of disease of the bowel or genito-urinary passages when the hæmorrhage first occurred. It is possible that the hæmorrhage was due to the altered condition of the blood, and was an early symptom rather than the exciting cause of the disease. It appears from the history of the case that she had subcutaneous hæmorrhages over the knees about six months after the first occurrence of the hæmorrhage from the bowel. The treatment pursued in the case shows the inefficacy of iron as a remedial agent in the advanced stage of pernicious anæmia, though after the patient had progressed towards convalescence iron was given and tolerated by the patient. Dr. Byrom Bramwell has pointed out that in these cases iron is often not only inefficacious but possibly injurious, and certainly in the stage of profound anæmia in this patient I found it to be so. It is to Dr. Byrom Bramwell that the credit of the successful treatment of pernicious anæmia is due, and from his cases the inspiration of the treatment of the present one was drawn. To Dr. Thomas Harris of Manchester, who was house-physician at the Radcliffe Infirmary during the time the patient was an in-patient there, I wish to offer my thanks for the careful notes made by him, and the deep interest he took in the case.

¹ These characters of the blood in pernicious anæmia have been described by Professor Eichhorst of Jena, Professor H. Quinke of Berne, Drs. Byrom Bramwell, Stephen Mackenzie, Padley, Carington, and others. Dr. Pye Smith relates a case in which the blood was apparently unchanged, and I have also had a case under my care which terminated fatally, in which there was not any change in the shape of the red corpuscles.