ages of one and eight or ten years, and have seen it very largely used by others. In many instances of disease in the dorsal region, the patients, while wearing the jacket, have complained of no pain (but this has seemed to prove nothing, for children often do not complain though they are entirely without apparatus), and their general health has remained good; but the deformity has, in the majority of the cases, steadily though slowly increased. Here and there I have met with cases in which recovery, with more or less deformity, has ensued; but the result has been limited, I believe, mainly to instances in which the disease after a time shows a tendency to undergo spontaneous repair, brought about, perhaps, by ankylosis between the articular processes, laminae, and neighbouring parts of the column, which, by arresting further caving-in, has relieved the bodies from pressure. In disease of the lumbar spine, also, I have on many occasions seen the deformity steadily increase, and at last a large iliac abscess form; but I cannot say I have ever seen any instance in which, even when the jacket was applied in the early stage, the arrest of the disease, and finally its cure, could be attributed to this method of treatment. In watching these cases, it has always seemed doubtful whether the jacket, instead of supporting the parts above the disease—which, let it be noted, include all the trunk and the head and upper extremities—does not simply add to the weight which the diseased column already has to bear.

As to the jury-mast for the treatment of disease in the upper part of the spine, I have not myself succeeded in rendering it useful; and, in cases under the care of other surgeons, its action has appeared clearly defective. In the cervical, as in the other regions of the spine, the scale of extension is graduated to a fraction of an inch; and an efficient action of the suspending straps is counteracted by the alteration of their tension which results whenever the position of the head is changed. There is the same difficulty in keeping the straps tight as that which is met with in the perineal band, and which has led many surgeons to discard its use. Whenever I have examined a case in which the jury-mast was in use, I have, I believe I may say, invariably found that, after a few hours, the straps have become so loose as to produce no extension.

In venturing on an estimate of the value of the jacket, I do not forget that children are sometimes much relieved by its application. This fact must not, however, be allowed too much weight. A number of instances might be cited in which, though a method of treatment is acknowledged to be inefficient, it will yet to some extent control pain and other symptoms. The jacket often gives relief, not because it so completely removes intervertebral pressure and keeps the spine at rest that the disease is placed under the most favourable conditions for repair, but because it steadies the spine, and restrains both sudden and extensive movements either forward or laterally. This effect of the jacket is often seen when, in caries affecting one or more of the upper dorsal vertebrae is applied to the trunk below the disease, but does not extend above this level. Here, obviously, it can have no direct influence in supporting the part of the spine above the caries, and yet it nevertheless affords the patient considerable relief.

Having formed these views respecting the jacket, I am left to the conclusion that the best method at present known for the treatment of spinal caries is that by complete recumbency. This plan, if carefully carried out for the necessary time—extending, it may be freely allowed, from six to eighteen months, or even longer—will generally effect a cure; and it will also prevent the occurrence or increase of deformity. It is now well known that the means are at our disposal by which the distressing deformity that used to result in the course of hip-disease can be prevented, so that the patient recovers with a straight though it may be a shortened limb; and the lamentable distortions which now commonly ensue in the course of spinal caries can assuredly be prevented by the recumbent treatment, if it be applied in the early stages of the disease. I know it is objected that this method interferes with the general health, leads to bed-sores, and is very tedious. It is tedious no doubt; but this is a feature inherent in the nature of the disease, which, in this respect, resembles caries of the tarsus, disease of the joints in childhood, and gland-enlargements slowly tending towards suppuration. As to bed-sores, they are never met with in children who are fairly well attended to, however long they may be kept recumbent, except in cases of extreme exhaustion and wasting. In ordinary instances of spinal disease, they may be avoided by the use of moderate care and the maintenance of cleanliness. And, as to the failure of the general health from mere confinement to the recumbent posture, this has assuredly been very greatly exaggerated. I have seen numerous instances in which children have remained robust and fat, even though they have been recumbent for as long as two or even three years. The causes of wasting and failing health are usually either pain or prolonged suppuration; and both these may be generally avoided if the recumbent treatment is adopted early and carried out thoroughly.

I believe it is very advisable to combine the use of some firm apparatus with the maintenance of recumbency. For this, the plaster jacket may sometimes be usefully employed, though the poroplastic felt cases invented by Mr. Cocking of Plymouth are, I think, decidedly preferable. These cases are very readily applied; they can be easily removed and remoulded; they are very light, durable, comfortable, and by no means expensive. I have used them very largely for patients at the hospital, and have found them very satisfactory, both for acute disease during the period of recumbency, and also in the convalescent stage of the affection, when the patients are allowed to move about.

THE EARLY DIAGNOSIS OF SPINAL CARIES.

By WILLIAM RUSSELL, M.B. Edin.,
Honorary Physician to the Carlisle Dispensary.

THE early recognition of diseased conditions is of so much interest and importance to the profession, that I am induced to record briefly the following cases of spinal caries, as a supplement to Mr. Marsh's able and suggestive paper in the JOURNAL of June 11th.

CASE I.—A man, aged about 30, was admitted into the General Hospital, Wolverhampton. Some months before admission, he received a severe blow on the back, followed by progressive loss of power in the lower limbs, and ending, some time before admission, in complete paraplegia. There was no curvature; there was pain on lateral pressure along the bodies of some of the lumbar vertebrae; and pain was elicited in the same region by pressure through the abdomen and upon the shoulders. He was, unfortunately, seized with pneumonia, and died. The *post mortem* examination, which was made in my absence, revealed caries of the bodies of some of the lumbar vertebrae, and formation of pus. The precise cause of the paraplegia was not sufficiently investigated; but the case, while imperfect in this respect, verified the diagnosis of caries made on the strength of signs I shall state more distinctly at the end of this article.

CASE II.—A man, aged 29, was admitted into the Wolverhampton General Hospital under Dr. Millington. There was marked curvature in the middle of the dorsal region, with tenderness on pressure. There were abnormal sensations in the lower limbs; and the sensation of a tight cord round the waist. Hyperaesthesia was marked below the line of curvature; and a hot sponge carried down the spine became unbearable on reaching this point. After a month of absolute rest in bed, combined with general treatment, all evidence of irritation disappeared. He then had a plaster-of-Paris jacket applied; and left hospital a month afterwards able to walk perfectly and feeling strong.

In this case, the application of a hot sponge along the spine demonstrated very markedly the presence of hyperaesthesia to heat, which was, I believe rightly, regarded as an evidence of myelitis. In caries it is most misleading to expect this hyperaesthesia, for it is neither present in the stage preceding curvature, nor after curvature has developed, unless the cord has become secondarily affected.

CASE III.—A lady, about 50 years of age, had suffered long from pain in the right side; and, for some months before I saw her, had been able to walk short distances only. The case was supposed to be one of pleurodynia coupled with hysteria. There was a slight angular curvature in the dorsal region, with pain on lateral pressure and pressure on the shoulders. There was pain on stooping, and during the act of assuming the erect posture. Rest in bed was enjoined until a rigid jacket could be applied. She persisted in sitting up until complete paraplegia compelled her, in the course of a few days, to remain in bed. She, unfortunately, could neither tolerate a plaster-of-Paris nor a poroplastic jacket; we were therefore compelled to be satisfied with the dreary prospect of prolonged rest.

This case is an example of the misfortune of not recognising caries before curvature has developed; and also of the fact, insisted on by Mr. Marsh, that pain in these cases may be distant from the seat of lesion, and that peripheral pain not uncommonly points to central irritation, and can only be explained by reference to the nervous supply of the part.

CASE IV.—A seamstress, aged about 20, complained of pain in the stomach and back, which was felt most when walking or stooping. Pain had been experienced for a considerable period, but lately both the pain and fatigue of walking to and from work had greatly increased. There was no curvature; but pain was felt on lateral pressure in the lumbar region, and in the same region by pressure through the abdomen and on the shoulders. She was ordered absolute rest until a plaster-of-Paris jacket could be applied. I lost sight of this case by leaving the neighbourhood, but had no doubt it would speedily recover under the treatment adopted.

CASE V.—A female teacher, aged about 20, was a healthy-looking and well-nourished girl. The commencement of her illness dated from about three months before I saw her, and the first symptoms observed were pain in the pit of the stomach and in the left side. During school-hours she taught standing, and had lately experienced greatly increased fatigue and backache from it; and had further noticed that, for some weeks past, the pain in the back was brought on by stooping to put her boots on. She was in bed when I saw her, and unable to move the lower limbs; the inability seemed, however, to be partly due to dread of the effort bringing on pain. There was tenderness on deep pressure over the left half of the epigastrium and adjoining hypochondrium. A lateral curvature was present in the upper part of the lumbar region, with tenderness on pressure over it, pain being also caused by pressure on the shoulders. She was kept in bed until the legs could be moved without pain. She then had a plaster-of-Paris jacket applied, after Dr. Walker's method, and made an uninterrupted recovery; and has now for months past performed her duties as usual.

While heartily accepting most of Mr. Marsh's statements, I am inclined to place greater diagnostic value than he does on the production of pain by pressure on the shoulders. Pressure has never failed with me in eliciting pain when I suspected caries; but the pressure should not be downwards only, but also downwards and laterally, so as to explore in this way both sides of the vertebral column. The absence of pain over the spinous processes is of little value, and is frequently noted; but I have seldom failed to elicit it by pressure along the side of the spine and towards the bodies of the vertebrae. If the lumbar vertebrae be affected, pain in the "stomach" is frequently complained of, and pain can be produced by pressure through the abdomen. Pain on inspiration or coughing I have not noted; but I have known the pain, in lumbar caries, brought on by a full meal. Pain on stooping is, in my experience, an early and a valuable diagnostic point.

In the remarks on Case II, I have referred to the true significance of hyperæsthesia to the hot sponge in caries; to regard it as a necessary, or even an ordinary sign, can only mislead; for, with curvature and paraplegia present, as in Case III, there was no such heightened sensibility.

SIX CARDIAC AND VASCULAR CASES: WITH REMARKS AND ENGRAVINGS.

By EDWIN RICKARDS, M.A., M.D.,
Physician to the General Hospital, Birmingham.

CASE VI. *Calcareous Pericardium*.—The specimen from which the engraving was made was taken from a patient named Martha S., who was thirty-five years of age when first admitted into the hospital, December 1875. She was not aware that she or any of her relatives had suffered from rheumatism. From her own and her mother's account (both intelligent witnesses), she was a strong child until she had a severe illness at the age of thirteen. This illness came on with pain in the chest, shortness of breath, cough, delirium, and vomiting, pain in the bowels, and swelling of the abdomen. There was no pain in any joint. She kept her bed for three weeks; and, after she had been up for a few days, her legs began to swell, the swelling lasting for a week. For two months she was unable to walk, from extreme weakness. For twenty years, dating from this illness, she performed all the ordinary duties of life without discomfort, and felt no ill effects from that illness beyond shortness of breath after severe exertion. For two years prior to her admission into the hospital, she experienced great anxiety and bodily hardships; and during this time dyspnoea, cough, coldness and lividity of the extremities, swelling of the legs, and distension of the abdomen, set in gradually. On admission into the hospital, it was found that the abdomen contained a large amount of fluid, and that the lungs were oedematous. On examining the heart, its area of dullness was somewhat increased transversely; its impulse was scarcely perceptible; its apex-beat, which was diffused and with difficulty felt, was midway between the left nipple and the sternum. The heart's action was feeble, irregular, and intermittent; its sounds were weak, but murmurless; the second sound was reduplicated. The radial pulses were very small, easily compressible, intermittent and irregular, 90 per minute. The jugular veins were distended, and pulsated, and, when emptied, rapidly filled from below. The urine was scanty and non-albuminous. She was much relieved in her general symptoms by paracentesis abdominis, the cardiac signs remaining the same. She was thereby enabled to walk about, and to leave the hospital in three weeks. During the following year and a half, she was an in-patient eight times for the repetition of the operation. At the end of that time, she died at her own home, where the *post mortem* examination was made under great difficulties.

The body was anasarca; the extremities livid. The pleural and peritoneal cavities contained a large amount of fluid. The peritoneum was everywhere thickened. The liver was enlarged and slightly cirrhotic. The kidneys and spleen were healthy. The lungs were congested. The pericardium was entirely adherent to the heart; that portion of it covering the auricles and large vessels was slightly thickened; the portion covering the ventricles was converted into a calcareous chamber, with the exception of two small spots corresponding with the apices of the two ventricles. The ventricles were abnormally small; their muscular tissue was sound. The auricles were dilated, and their walls were hypertrophied. The valves and large vessels were quite free from any morbid change.

Dr. Hill Norris was kind enough to make an accurate drawing of the heart with its calcareous pericardium. In the engraving, the fibrous pericardium has been removed from the auricles and large vessels to which it was adherent; the auricles have shrunk by being dried. A A mark the calcareous pericardium; B B the spots of the pericardium not calcareous.

REMARKS.—Hitherto, in text-books and systems of medicine, calcareous pericardium has received but a sparing notice, and that under the heading of adherent pericardium. The cases on record are few and variously denominated; some are imperfectly described, and without history, so that their value for statistics is thereby much diminished. By considering the foregoing case in conjunction with others scattered throughout medical literature, I arrive at the following conclusions.

1. Calcareous pericardium is the result of pyopericarditis, rather than, as is often held, the calcareous degeneration of the fibrous medium uniting the parietal and visceral layers of the pericardium formed during pericarditis; the pus in pyopericarditis undergoing caseation, and ultimately calcification.

2. The amount of calcification depends upon the amount of pus formed. In non-rheumatic pericarditis, the inflammation may stop short of suppuration, or the pericardial sac may contain a small or large quantity of pus. Hence, in adherent pericardium from non-rheumatic pericarditis, the pericardium may be free from calcareous matter, or may contain calcareous plates, or may be converted into a calcareous chamber. My experience in the *post mortem* room does not tell of any case of rheumatic pericarditis where the pericardium contained pus, or where the pericardial adhesions were calcareous.

3. The calcareous matter situated between the visceral and parietal layers of the pericardium is almost exclusively confined to that part of the pericardial sac surrounding the ventricles; and, while having the consistency and chemical composition of bone, wants the structure peculiar to the latter.

4. Atrophy of the ventricles is more frequently associated with calcareous pericardium than hypertrophy. The two causes which appear chiefly to determine hypertrophy in adherent pericardium are adhesion