there is no true angular deformity as in Pott's disease, but rather a rounded deformity develops. Occasionally thickening and other deformities of the spinous processes can be detected and are pathognomonic. The process extends into the nerve substance very slowly and never goes very far. The spinal nerves may become affected as a consequence of the involvement of the intervertebral openings. The nervous affection may be due only to compression, or it may be a true carcinomatous development. If there is a sudden movement of the vertebræ on one another, the spinal cord may become compressed by the resultant deformity. Slow compression is also possible, because of gradually produced deformity of the vertebral column. The carcinoma may affect the extradural fatty tissue and so compress the cord. In these cases a complete carcinomatous cylinder may surround the dural sac. The tumor is, however, soft in consistence, and so the compression symptoms are unimportant and the real cause of the nervous disturbances is often collateral œdema due to interference with the return blood supply of the cord. In cancer of the vertebræ it is very seldom that the nervous substance of the cord itself becomes malignantly diseased.

Primary sarcomata of the vertebræ are not so rare as primary carcinomata. Sarcomata, however, usually occur in the lumbar or the sacral region and the affection develops by continuity from a tumor in the neighborhood. The viscera in the pelvis particularly are likely to be the seat of the primary tumor. Sarcomata are more malignant than carcinomata. They readily involve the dura, and may even penetrate this membrane and infiltrate the cord itself. A long portion of the spinal column may be affected by a sarcoma before serious symptoms begin. Much more frequently than carcinomata of the spinal column, sarcomata involve the transverse processes, the spines, and the vertebral arches, and may, by pressure of the tumor thus formed, cause perforation of the skin. Sarcomata may occur in very early years, though they are more frequent in advanced age.

Exostoses and osteomata may grow from the transverse processes, or from the spinal arches, or from the bodies of the vertebræ. When they grow from the posterior part of the body of the vertebra, or forward from the arch, they cause compression of the cord and of the nerve roots. They seem to be somewhat more frequent in the lumbar and sacral regions. Usually when an exostosis is present in the spinal column, other portions of the skeleton present similar outgrowths. They should be looked for on the ribs, in the supra-orbital region, along the spine of the scapula, and on the clavicles. Their discovery usually makes the diagnosis of the variety of tumor in the spinal cord plain without more ado.

Echinococcus cysts are rather rare in the spinal column, but they have been noted in a number of reported cases. Sometimes they cause a sudden dislocation of the bodies of the vertebræ and may lead to acute compression symptoms.

Gummata of the spinal column occur most frequently in the upper part of the cervical region. Not infrequently, as has been pointed out by Gowers, they are associated with ulcers of the pharynx. It is always very difficult to differentiate this condition from tuberculous caries of the vertebræ. The differentiation is, however, extremely important, because of the success of therapeutic measures in the syphilitic process. In suspected cases the therapeutic test constitutes the best differential diagnostic sign that we have. When a suspicious symptom develops, especially in relation to the upper cervical region, the patient should be carefully questioned as to his history, as to syphilis, and in any case mixed treatment should be used.

If a vertebral tumor is diagnosed, then its nature can sometimes be determined. The most important element is to know the nature of the primary tumor. Sometimes this will be found to be a lympho-sarcoma, and in this case there is some hope that the use of arsenic for a long time, either internally as Fowler's solution or, better still, as sodium arseniate subcutaneously, may do some good.

When a tumor of the spinal cord is primary, it is more likely to be malignant than benign. The occurrence of vascular murmurs in the affected region speaks for sarcoma. Symptoms of osteomalacia make the diagnosis multiple myeloma. Osteomata run a very slow course, though it cannot always be said, as Bruns does, that they cause less pain than tumors which run a more rapid course. The echinococcus cysts may be recognized by puncture of the tumor and the finding of hooklets in the secretion. In a number of reported cases echinococcus cysts have been considered by very good authorities to be cold abscesses. In almost any case of vertebral tumor, one of the iodides, potassium or sodium, according to the preference of the physician in charge, should be employed. In most cases, unless the history is very clear and the condition absolutely sure, a mercurial inunction course should be given. The condition in malignant tumors is so hopeless that the erysipelas toxins, or the mixed toxins suggested by Coley, should be employed, and it will sometimes be found that they furnish relief, or even an absolute cure, in unexpected circumstances.

Character of Tumors.—The tumors that develop within the spinal canal are divided into those of the cord itself and those of the meninges. The most frequent are those of the meninges, the proportion being nearly two to one. Of the meningeal tumors, some are intradural and some extradural.

In contrast to the tumors of the vertebræ, most of the intraspinal tumors are primary. In the extradural space, the most frequent tumor is the lipoma, which develops in the extradural fatty tissues. Next after this in frequency is the sarcoma which often develops from the periosteum of the vertebræ, though it also sometimes grows on the outer surface of the dura. There may be tuberculous tumors that grow within the spinal canal without any connection with the vertebræ. Such tumors may extend in their vertical diameter and cover a large portion of the cord. Echinococcus cysts may develop in the extradural space, and a very rare form of tumor, the enchondroma, has been encountered here. In one or two reported cases teratomata have also been encountered.

When tumors begin in the extradural space they very seldom find their way through the dura. Practically all of the tumors that occur outside of the dura are single. Lately a few cases of multiple extradural tumors have been reported.

Intradural tumors spring from the inner surface of the dura, from the arachnoid membrane, from the pia mater, or from the ligamentum denticulatum. True neuromata having their origin in the nerve substance, or pseudo-neuromata springing from the sheath of the nerve, are not unusual in the intradural space. Bruns has reported a case in which the nerve root ran directly through the centre of such a tumor. The pathological anatomy of intradural tumors is more diverse than that of the tumors which occur in the extradural space. Practically any of the connective-tissue tumors may occur. Fibromata and fibrosarcomata, as well as genuine sarcomata and the sub-varieties, angiosarcomata and myxosarcomata, have been reported. In a few cases pure angiomata have been found.

In children particularly there are a certain number of tumors that occur in connection with congenital malformations, associated with patent or latent spina bifida. These tumors are apt to occur, especially in the lumbar region, though they may invade the lower dorsal region. The most frequent variety is the lipoma. Neuromata are especially apt to occur in the cauda equina. Not infrequently malignant degeneration takes place even in tumors which are really not malignant at the outset. Neuromata are apt to be multiple in the cauda equina. At times degeneration of tumors affecting the nerve substance causes the presence of what is known as brain sand. Such tumors are spoken of as psammomata.

Solitary tubercles occur not infrequently in the intradural space, though tuberculosis affecting the membranes is apt to be diffuse. Nearly the same thing is true of syphilitic processes. Perfectly circumscribed gummata

are not very frequent, but diffuse gummatous meningitis is not so rare. Echinococcus cysts are very rarely encountered in the intradural space. Some of them have been found free in the arachnoidal space. Aneurisms of the spinal arteries, theoretically, should be encountered occasionally, but as a matter of fact they are very infrequent.

In general it may be said that the pathological anatomy of tumors which occur within the spinal canal is not different from that of the same form of tumors when they occur in other parts of the body. The consistence of these tumors is rather hard, practically always harder than that of the cord itself; hence the compression symptoms that are produced. Only diffuse sarcomatous and carcinomatous new growths are soft in consistence, and such tumors are apt to be very vascular, making any question of their removal futile. As a rule tumors that grow within the dura are apt to be circumscribed in size, and seldom exceed that of a dove's egg. The limitation in size of spinal tumors is rather favorable for their removal by surgical procedures, and for this reason the prognosis of intradural tumors that are non-malignant is not as serious as it would otherwise be.

Differentiation of Vertebral Tumors.—In differentiating carcinoma of the spinal column from Pott's disease, it may be said in general that Pott's disease is an affection of youth or childhood. It must not be forgotten, however, that tuberculous caries of the vertebræ comes at a later age than any other form of bone tuberculosis. Carcinoma is quite rare, though sarcoma is not infrequent before adult life. It has been said that the intensity of the neuralgia caused by carcinoma is always greater than that due to caries. This must not be accepted as an absolute rule, however, according to the observation of Bruns and Schlesinger. The most important differential diagnostic point between caries and vertebral tumors is the kind of deformity present. Angular deformity is characteristic of Pott's disease. Carcinoma causes a rounded deformity, or else causes, as has been already noted, a shortening of the whole spinal column. If tumor-like masses can be felt alongside the spinal column, or in the pelvis, as is not infrequently the case in sarcoma, the differentiation from Pott's disease is easy. Evidence of the existence of tuberculosis in other organs, or of a cold abscess, makes the decision in favor of Pott's disease. It must not be forgotten, however, that as a consequence of the dyscrasia of cancer, myelitic processes may occur in the spinal cord, and Schlesinger has reported a case in which, notwithstanding the history of carcinoma of the breast, the affection of the spinal cord was a true caries.

Tumors of the upper part of the cervical cord begin usually with pain, and before long areas of anæsthesia develop. The pain is felt along the distribution of the cervical plexus in the area supplied by the supraclavicular nerve, the nervi occipitales minores, at times also the nervi occipitales majores, and practically always in the distribution of the great auricular nerve. Atrophic conditions and palsy of the sterno-cleido-mastoid muscles and the musculi circulares usually develop. The deep anterior cervical muscles, as well as the superficial and deep muscles of the neck posteriorly, are likely to be involved in the same process. After the neuralgia, hemiplegia involving the arm and leg on the side of the tumor gradually develops. In contradistinction from cerebral hemiplegia, there is no involvement of the facial or of the hypoglossal nerves. Anæsthesia occurs on the opposite side as a Brown-Séquard phenomenon. The paraplegic condition, as a consequence of a tumor in the cervical cord, never lasts long, as the involvement of the phrenic nerve soon causes death from respiratory failure.

Tumors of the cervical enlargement of the spinal cord present first a stage of the Brown-Séquard phenomenon. When the tumor is limited to one-half the cord, atrophy and paralysis with anæsthesia and neuralgic pains in the arm on the side of the tumor are soon noted. A spastic paralysis and a disturbance of muscular sensation in the corresponding leg are usual accompaniments; anæsthesia occurs in the leg on the other side and in the opposite side of the trunk, and on the ulnar side of the other arm when the tumor in its growth causes a transverse lesion, a spastic paralysis, and anæsthesia of both legs with palsy of the trunk muscles and anæsthesia of the trunk up to the second rib, are the usual results. In this case there is also paralysis of the arms. If the tumor involves all of the cervical enlargement, there is complete anæsthesia of both arms. If there should be direct involvement of the uppermost dorsal nerve root, myosis and immobility of the pupil occur. If the tumor is strictly limited, these symptoms occur only on one side, though usually they develop on both sides a little later.

Tumors of the dorsal spinal cord cause first the Brown-Séquard symptom, and later give spastic paraplegia of the leg and abdominal muscles, and anæsthesia of the trunk up to the level corresponding to the height of the tumor. The neuralgia occasioned is at first one-sided, but later it assumes the character of a complete girdle pain. The hyperæsthesia does not follow exactly the intercostal spaces, but is more horizontal in its reflexes. Atrophic paralyses of the intercostal muscles can usually not be demonstrated, though they are noted in the abdominal muscles.

When the tumor begins to compress the cord, and before the compression is so severe as to cause an interruption of the flow of nervous impulses, the skin and tendon reflexes are all exaggerated. Patellar clonus and ankle clonus are present. At times even a slight touch upon the lower extremities causes a distinct tremor clonus which was described originally in this country by Brown-Séquard, and designated by him as spinal epilepsy. As the transverse lesion of the cord becomes complete the tendon and skin reflexes decrease. As a rule, however, the skin reflexes remain even after nervous communication through the cord has been completely interrupted. In the so-called Brown-Séquard palsy the paralysis on the side of the tumor is mostly of the spastic variety, and the tendon reflexes are exaggerated. Sometimes when the lesion is very high in the cord an atonic palsy with loss of reflexes is established. Severe trophic disturbances and even a qualitative change of the electric excitability, sufficient to constitute a reaction of degeneration, does not occur as a rule in these cases of paralysis. There are, however, a considerable emaciation and a distinct quantitative reduction of the electrical excitability of the muscle. Sometimes there is, because of a readily produced œdema of the skin, a lowering of the electrical excitability of the paralyzed muscles which simulates the loss of electrical reaction. In these cases, however, while the faradic current may fail to produce any effect, the galvanic current, if strong enough, will always produce quick muscle contraction.

The condition of the bladder and of the rectum, when tumors of the cervical or dorsal cord exist, depends entirely on the extent of the interference with cord functions. At the beginning there is usually only some slight difficulty at the commencement of urination, though the call to urinate is more frequent and more imperative. After a time, voluntary urination becomes impossible and urinary retention sets in. Somewhat later the bladder sphincter loses its power and incontinence results. This takes the intermittent form, so that the bladder empties itself every now and then without the will of the patient, and sometimes the anæsthesia is so marked that he does not notice the flow of urine until he becomes wet. If the whole spinal cord becomes affected, all the bladder reflexes disappear, and its muscles become palsied. Nearly always, when paralysis of the bladder occurs, cystitis develops, and this leads to pyelitis and nephritis, and hastens the fatal termination.

The rectum goes through nearly the same functional disturbances as the bladder. At the beginning there is constipation and then later emptying of the rectum becomes impossible by will power. After a time a paralytic condition sets in, though the sphincter maintains enough contractility to retain fæcal material for some time. At intervals of several days, the rectum empties itself spon-

taneously, especially if there has been the slightest increase of peristalsis or any tendency to diarrhœa.

With regard to the sexual functions, in tumors of the dorsal and cervical region there are certain characteristic symptoms. They occur, of course, only in men. At the beginning of the affection potency remains, and it may even happen that there is an increase of sexual desire. In tumors of the cervical cord priapism may become an annoying symptom. This may not persist constantly, but the slightest manipulation of the penis, as, for instance, for purposes of catheterization, may cause an erection, and this may interfere with the necessary insertion of the catheter in these cases. When there is a complete transverse lesion of the dorsal cord, impotence is inevitable.

Interference with the vaso-motor nervous mechanism and the absence of movement may lead to œdema of the affected leg or legs. In these cases there is dry scaliness of the skin that resembles ichthyosis very closely. The joints may suffer from trophic disturbances, and it must not be forgotten that contractures set in and ankylosis may develop. Bedsores are not frequent in tumors of the cord high up, but when the transverse cord lesion is complete, then skin ulcerations occur as easily as in affections of the lower part of the cord.

Tumors of the lumbar enlargement of the cord cause at first pain in the region of the lumbar plexus. This is usually one-sided, and is referred to the anterior and inner side of the thigh, the knee, and the leg. Next in order comes paralysis of the ilio-psoas muscle, the quadriceps, the adductors, and the tibialis anticus. The Brown-Séquard phenomenon may occur in one-sided affections of the upper part of the lumbar enlargement. When the whole cord is affected, complete paralysis and anæsthesia of the lower extremities develop; at first only in the region of the lumbar plexus, later in the whole leg. Ankle clonus may be present when the knee-jerks are absent; bladder and rectal disturbances and sexual impotence are not so common in lumbar tumors as in those in the sacral region.

Tumors of the sacral cord, if they leave the lumbar enlargement unaffected, cause characteristic symptoms of their own. These are paralysis and wasting of the muscles of the lower leg and of the foot and of the posterior portion of the thigh, especially the gluteal and perineal muscles. At first this may be one-sided, and later, as the tumor develops, it may affect both sides. Anæsthesia is noted first in the foot and then at the back of the leg and thigh, and finally in the perineum and the genitals. Total paralysis of the bladder and rectum occurs, and impotence is a marked feature from the beginning. The Achilles reflex is often absent, though the knee-jerk is present. Bedsores and cystitis occur early in the case.

Tumors of the Cauda Equina.—The lumbo-sacral cord is commonly considered to run from the upper border of the twelfth, or from the lower third of the eleventh dorsal vertebra, to the lower border of the first lumbar vertebra, or at the very most to the middle of it. The lumbar enlargement lies usually beneath the twelfth dorsal vertebra. The sacral portion of it corresponds to the first lumbar vertebra. Below the middle of the second lumbar vertebra, then, there is no longer any cord substance, but only a thick bunch of nerves, the so-called cauda equina. As certain of the nerves that come from the lumbar enlargement of the cord run in the spinal canal, it is easy to understand that the same symptoms may occur as a consequence of a tumor in the lumbar enlargement as when the cauda equina is affected by a similar lesion. There are some differential diagnostic peculiarities, however, which make it possible to draw a distinction at times with complete assurance as regards tumors of these two regions. The first and most important distinction is that tumors of the meninges, when they begin to affect the spinal cord itself, usually cause unilateral symptoms. Tumors in the caudal region, however, usually cause from the very beginning bilateral symptoms. It is possible, however, for a tumor of the cauda equina to cause unilateral symptoms at first. Tumors of the lumbar cord usually cause completely symmetrical paralyses and areas of anæsthesia. This symmetry is apt to be lacking in tumors of the cauda. Caudal tumors are apt to cause very severe pains that persist in spite of treatment and that are very extensive. The pain is apt to be especially severe and obstinate in the sacral and coccygeal region. Tumors of the lumbar cord exceptionally cause very severe pain, so that this distinction is not very important. Friedrich Schultze claims that very marked and extensive fibrillary tremors are a sign that the cord itself is affected, rather than the nerves of the cauda. Bladder and rectal disturbances and trophic lesions of the skin follow both kinds of tumors.

The possibility of more than one tumor developing at the same time within the spinal canal must not be forgotten. In a certain number of reported cases the presence of more than one tumor has been recognized by the definite symptoms produced by each of them, and especially by the successive development of symptoms pointing to more than one localized area of irritation or pressure. Gowers calls attention to the fact that the greatest difficulty exists in the cases in which an intracranial tumor precedes the growth within the vertebral canal, and the symptoms of the spinal tumor are overlooked in the presence of the severe manifestations of the intracranial growth.

There is one form of disease which closely simulates a tumor in the symptoms which it produces. This is hypertrophic pachymeningitis. It always affects the cervical region, and hence the question of its exclusion must always be considered before an absolute diagnosis of the presence of a cervical spinal tumor is made. The differential signs are that the manifestations of hypertrophic pachymeningitis are usually bilateral, while in the case of a tumor the initial symptoms, at least, are unilateral; and that the manifestations produced by pachymeningitis, instead of being very localized, show an involvement of a considerable portion of the cord in vertical extent.

The symptoms of extradural and intradural tumors of the spinal cord are very similar. There are certain slight differences which with care can be utilized in determining the localization of a tumor. The first symptom in any case is almost sure to be pain. In general, the first mechanical effect of the presence of the tumor is compression of the nerve roots, and then of the spinal cord itself. In this matter, tumors within the spinal canal differ but very little from those which spring from the vertebræ. For a considerable time, at the beginning of the symptomatic course, an irritative condition is noted, which affects especially the sensory nerve roots, causing neuralgias. The reason for this is not far to seek. Intradural tumors occur more frequently in the posterior part of the cord, or posteriorly and laterally. As a consequence, irritation of the motor roots occurs less frequently and seldom leads to recognizable localizing symptoms.

As a rule the pains are intense and typically neuralgic in character, but lack the tender points of true peripheral neuralgia. The pains are described as lancinating or tearing, and are not infrequently accompanied by causalgia—that is, a burning pain in the skin of the region supplied by the irritated nerve. Very often there is an accompanying hyperæsthesia of the skin which makes even the slightest touch unbearable. The pains are always increased when the spinal column is moved, or when there is any shaking of the body, as in coughing or sneezing. The pains may last for days and weeks without any intermission, though there may be intervals of comparative painlessness. The complete destruction of a nerve root causes a stoppage of the pain, and it may take some time for the tumor in its growth to reach another nerve root.

As in the case of vertebral tumors, herpes zoster may occur in the painful hyperæsthetic part. While in vertebral tumors the pains are from the beginning usually bilateral, in intradural tumors they are much more likely to affect only one side. It is easy to understand, however, that tumors of the meninges may affect both sides of the spinal cord, or both nerve roots at a given level, and so cause bilateral neuralgia. At times there are evidences of irritation of the motor roots, though these are seldom present. Painful cramps or tonic contractions of the abdominal muscles, for instance, or of the cervical muscles causing torticollis, have been noted. In these cases the lesion usually affects the sensory roots and the motor symptoms are reflex.

With regard to paralyses and anæsthesia, it must be remembered that the destruction of one nerve root seldom causes the development of such a condition. At least three or more nerve roots must be affected before anæsthesia, or muscle paralysis, will be a prominent feature of the case.

Pain is the most prominent feature of the early history of tumors interfering with the function of the spinal cord. It is prone to occur in attacks that are described as stabbing or tearing in character. It is not unusual, however, for the patient to suffer from dull aches between the severe attacks, or the initial stage of the affection may be characterized by a more or less persistent dull aching discomfort in certain muscles. The result of this is, that not infrequently the diagnosis of chronic rheumatism is made and the patient is treated for that disease. It is not an unusual thing to find that several physicians in attendance upon a given case have spoken of a spinal tumor as muscular rheumatism. As Gowers has pointed out, the pain produced by spinal tumors is intense, and at times so hopelessly obstinate to medical treatment that it has more than once led the unhappy sufferer to attempt suicide. This must be borne in mind by the medical attendant.

The diagnosis of neuralgia is not infrequent in the primary symptomatic stage of a spinal tumor. In contradistinction to true neuralgia, however, there is, as was pointed out by Dr. Starr, an absence of tenderness, as a rule, in the nerves along the lines in which the pain is felt. When the tumor is within the spinal canal, movement does not usually increase the pain; though this is apt to be the case when the tumor is in the bones. Pain is greatest when the tumor is situated so as to compress the cord directly laterally or posteriorly—that is, when it affects directly the sensory nerve trunks.

It must not be forgotten, in diagnosing tumors of the spinal cord, that the irritation of the sensitive nerve substance may give rise in predisposed individuals to symptoms of functional disorder of the spinal cord. Hysterical manifestations are not an unusual accompaniment of the initial stage of tumors of the cord, and often make the diagnosis more difficult than it would otherwise be. The physician's fear is always lest he should exaggerate the significance of neurotic symptoms. As a matter of fact, however, there is more danger of his minimizing the significance of the symptoms of the organic disease present, and so wasting precious time in the initial stage of the affection, when operation may save the spinal cord from lasting injury due to long-continued pressure.

The most characteristic feature for the diagnosis of a spinal tumor, its character and localization, is undoubtedly the course of the symptoms and the careful observation of the history of the case. The symptoms of tumor begin usually with unilateral pain, associated commonly with hyperæsthesia. A little later, one-sided cramps in the muscles are prone to occur, followed before long by paresis and atrophy in the affected muscles. This practically constitutes an index of a lesion involving half the cord. As the growth of the tumor progresses, the other side of the cord also becomes affected and paraplegia develops. A not infrequent accompaniment of this group of symptoms is localized pain, or, in some cases, deformity of the spinal column.

Treatment.—As we have already said, the most favorable form of spinal tumor, as regards therapeutics, is that of syphilitic origin. As Gowers says, syphilis can be excluded only when there has been no possibility of infection. In many cases of late syphilitic lesions there is no history of secondary syphilis, and in others there is no history of a primary sore. Hence it is certain that in some cases of late lesions of syphilis a history of both primary sore and secondary symptoms will be absent, and such cases are actually met with not infrequently in neurological practice. In practically all cases, then, antisyphilitic treatment should be tried for a period of from four to six weeks. The treatment of syphilitic conditions of the spinal cord should be prompt and energetic. The pressure must be lessened as soon as possible, otherwise degenerative changes and at times even hopeless destruction of nervous elements will take place. The influence of a few days' loss of time may make a difference of weeks in the duration of symptoms, and may even make the ultimate condition much less satisfactory.

In cases that are non-syphilitic very little can be accomplished by medication. Sedatives must be employed for the pain, and yet with the greatest care, since habits are so easily formed and anodynes lose their effect. Cocaine may be employed by subarachnoid injection to aid the action of morphine. The state of the bladder must be watched very carefully, it must not be allowed to become overdistended, yet the catheter must be used with every possible aseptic precaution, including especially the cleansing of the fossa navicularis before the introduction of the instrument; otherwise severe cystitis will be likely to develop in the lowered vitality of the vesical mucous membrane. Because of the diminished nutrition of all tissues, bedsores must be carefully guarded against, and if the patient shows early a tendency to their development, a water-bed must be secured without delay.

Spinal tumors that are not within the substance of the spinal cord itself may not infrequently be removed by surgical procedures. As we noted at the beginning of this article, at least fifty per cent. of all tumors are operable, and of these more than one-half may be practically cured or relieved completely of their annoying symptoms. It must be remembered that Gowers and Horsley insist that the early removal of a small growth in the spinal cord may possibly be followed by the regeneration of conducting fibres that are on the other side of the cord, and by the return of their function, lost only through the effects of pressure. As soon, then, as a definite diagnosis of the presence of a spinal-cord tumor is made, operation should be recommended and the state of the case, with the possibility of a complete cure, set before the patient. Delay in this matter can do no possible good, and a delay of even a few months may cause irremediable damage to the delicate nerve structures. In estimating the chances of a successful issue, it must be remembered that the effect of the operation upon the patient's general condition is distinctly unfavorable.

James J. Walsh.

SPINE, DISEASES OF THE.—Syphilis.—Syphilis, in either the inherited or the acquired form, may cause deformity of the spine with accompanying symptoms that can hardly be distinguished from those of Pott's disease. As compared with tuberculosis it is a very uncommon disease of the spine. Its manifestations are likely to be general in character, the local deformity being one of many evidences of disease.

Syphilitic disease of the spine, causing destruction of tissue and deformity, demands the same protective treatment as would progressive deformity from other causes. Appropriate medical treatment is of course indicated in addition.

Malignant Disease.—Malignant disease of the spine is uncommon, particularly so in childhood. Sarcoma is more common than carcinoma, and it may affect the spine primarily, while carcinoma is almost always secondary to disease elsewhere, as of the breast.

The symptoms of malignant disease are usually more severe than those of tuberculosis. The pain, for example, is often persistent and is not relieved by support or recumbency. The constitutional symptoms are more marked and the steady progress of the disease toward a fatal termination is soon apparent. Not infrequently the tumor may be palpated through the abdominal wall,