The joint is opened and examined. Determine as far as possible the origin and extent of the disease. If the synovia is affected remove it with scissors and forceps. Follow it into every nook and pocket. See where it lies. Fig. 2. The bone is next attacked. How? With the sharp curette, chisel and gouge, not

the saw. The diseased area only is removed. It is scooped out, not sawn off. The bones are united by periosteal silk or catgut sutures. The wound is closed without drainage. The dressing is sterile gauze fixed by plaster-of-Paris.

Results: Primary union under one dressing in three weeks. Firm bony union in eight or nine months. The patient is well.

What is this operation called?

When the disease is limited, an erasion; when extensive, an arthrectomy.

What is its object?

To remove the disease thoroughly wherever it exists. It saves as far as possible the epiphyseal line. What does excision "so-called" do? It simply cuts out a joint.

Now what are the results of this method?

Here are the statistics; but I have time now for conclusions only. They are compiled from those cases alone whose condition I know to-day.

The mortality: It is nothing. No deaths. Eighty-six per cent. are well to-day, and fifty per cent. of the remainder have a fair chance for ultimate recovery.

The local condition: Recovery is in most cases without motion; bony ankylosis. In no case is there motion of any practical value.

Arrested developments: Atrophy and shortening are present in every case to a greater or less extent. The extreme is two and one-half inches. It is proportional to the age of the patient, the extent of the disease and the destruction of the epiphyseal line.

The leg is always straight or nearly so if the after-treatment has been properly carried out. If you want straight legs don't omit fixation as long as there is a tendency to contraction. The contraction can become extreme if neglected. Hence don't make the mistake of omitting fixation as soon as your operation wound is healed or there is apparently bony union.

Contraction can occur months afterward. Time is no criterion. We are continually correcting deformities at the Children's Hospital which have resulted from this cause.

To conclude: When you operate on a tuberculous knee operate so as to remove the disease. An erasion when limited; an arthrectomy when extensive. Reserve the typical excision operation to correct deformity from bony ankylosis.

If properly done the disease can be checked. Apparently cured. I say apparently, for no one can say when a tubercular patient is well.

There will result little or no motion. There will be more or less atrophy. There will be more or less shortening.

This result can occur even with marked coincident disease in other joints.

Operation is indicated: When the disease is unchecked by treatment; when it is extensive; when a patient cannot have proper conservative treatment; when the general condition demands it to save life; to correct deformity of the knee-joint.

THE TREATMENT OF CARIES OF THE ANKLE-JOINT.¹

BY CHARLES L. SCUDDER, M.D., BOSTON.

IN the five minutes at my disposal I will present to you the facts regarding the operative treatment of caries of the ankle-joint as accepted by the majority of the Continental, English and American surgeons.

By caries of the ankle is understood a more or less chronic tubercular inflammation, starting in the astragalus, tibia or fibula and occasionally involving other bones of the tarsus — that is, a localized tuberculosis.

The great value of the treatment of caries of the joints by absolute immobilization and fixation is demonstrated beyond any doubt.

All cases of caries of the ankle should be first treated by the mechanical method unless operative interference is indicated by two things:

- (1) A failure of the general health.
- (2) Rapid progress in the local disease.

The moment that the non-operative or mechanical treatment is found inefficient, then an *operation* is demanded. Partial operations are of little value. Curetting and the burr drill are contraindicated. Complete excision of the diseased part (the entire bone being removed) is the very best operative procedure.

This is proved by the statistics of Culbertson, Hodges, Connor, Koslowski, Neuber, and my own statistics of eighteen cases reported from the records of the Children's Hospital, Boston, together with the evidence obtained from the records of private operators.

All operators advise complete excision of the diseased bone in *childhood*, because the duration of the disease is shortened, there is no mutilation of the foot, the general health improves immediately, there is no risk of sepsis, the danger of infection is removed, it is a safe operation, it will end the disease, and it will leave a serviceable limb.

In the case of adults partial operations are not valuable. If the expectant treatment fails amputation is necessitated.

¹ Read before the Massachusetts Medical Society, June 9, 1896, and recommended for publication by the Society.

Methods of Excision.—The two lateral incisions are preferable—they expose the joint satisfactorily and no tendons are divided.

NOTE.—Two cases of caries of the ankle were exhibited which had been operated upon by excision of the astragalus four and five years previously. A perfectly useful ankle in each case exists to-day, with scarcely a perceptible limp.

THE MOBILITY OF THE NORMAL SPINE IN RECUMBENCY.¹

BY HERBERT J. HALL, M.D.,

Surgical House Officer at the Massachusetts General Hospital.

THE tracings about to be described are submitted because they show graphically and with a fair degree of accuracy the amount and kind of mobility possible in the spine of a child in the dorsal decubitus. A surprisingly great mobility is demonstrated, and it

tion of the bearing surfaces of the spine and back, and also that there was a corresponding variation in the height of the two arches or concavities, as measured from the table to the skin. Gradual and complete flexion of the head from a position of extreme extension was found in a typical case to change the upper limit of the dorsal area of contact from the level of the sixth dorsal spine to the level of the first dorsal, while the lower limit remained practically unchanged. In the same case, flexion of the thighs, up to ninety degrees varied the lower limit of the dorsal plane from the eleventh dorsal in extension to the second lumbar in flexion. The cervical arch, measured by caliper at about the third cervical spine, was found to be a full inch lower in flexion of the head than in extension.

In order to obtain an available record of a number of cases the following method was pursued: An assistant held the child's head strongly flexed on the

is hoped that the data obtained, besides adding to our general knowledge of the spine, may emphasize the necessity for better fixation than is generally attained in the bed treatment of Pott's disease.

The spinous processes of a child with a presumably normal spine were marked and numbered on the skin, from the sixth or seventh cervical down to the last lumbar. The child thus prepared was laid supine on a table which had been especially prepared with a plate-glass top. An observer looking up from below could plainly see the marked back through the glass, as well as the occiput (which appeared as a small, dark circle) and the buttocks (flattened out and blanched by pressure). There was, of course, another area of contact across the "broad of the back"; and this will be called for convenience the dorsal plane. The concavity of the neck, although not made up entirely of cervical vertebræ, will be termed the cervical arch; and that part of the spine not in contact between the buttocks and the dorsal plane will be mentioned as the lumbar arch.

It was observed that flexion and extension of the head and thighs caused marked variations in the loca-

tion of the bearing surfaces of the spine and back, and also that there was a corresponding variation in the height of the two arches or concavities, as measured from the table to the skin. Gradual and complete flexion of the head from a position of extreme extension was found in a typical case to change the upper limit of the dorsal area of contact from the level of the sixth dorsal spine to the level of the first dorsal, while the lower limit remained practically unchanged. In the same case, flexion of the thighs, up to ninety degrees varied the lower limit of the dorsal plane from the eleventh dorsal in extension to the second lumbar in flexion. The cervical arch, measured by caliper at about the third cervical spine, was found to be a full inch lower in flexion of the head than in extension.

A corresponding series of tracings were made of the back when the thighs were in extension and at ninety degrees flexion, the head being allowed to assume the most natural position, that is, half-way between flexion and extension. In each case caliper measurements were made of the cervical arch at about the third cervical spine. The lumbar arch was so low and so difficult of access that no accurate measurement of its height could be made.

The ten cases traced were children between the ages of two and ten, all convalescent from medical

¹ Presented by title at the May Meeting of the American Orthopedic Association, at Buffalo, 1896.