*The common form of osseous tubercular infection is the focal or encysted, first described by Nélaton. On section of the diseased bone the first noticeable change consists of a local hyperæmia of the cancellous tissue, soon to be followed by a small, grayish, translucent spot, which increases in size, while, at the same time, the zone of hyperæmia extends, and the surrounding bone becomes boggy, or sodden, from the excess of fluid transuded. The deposits present two chief types: the main one is that of a distinctively degenerative ostitis, the osseous trabeculæ being almost entirely absent, and the deposit composed of a mass of cellular tissue containing tubercles usually undergoing caseation. There may, however, be a certain amount of formative activity, and a resulting sclerosis of the osseous trabeculæ with a mass of new bone of varying density, which constitutes a tubercular sequestrum.

The modes of termination may be arranged under four heads: (1) The absorption of the diseased focus is possible up even to a late stage, provided the disease is strictly local and no sequestra have formed. (2) The deposit may push its destructive work toward the surface and reach the periosteum outside the joint, and give rise to a peri-articular abscess. (3) The diseased part may break down into pus, which may become cheesy or calcified, and remain quiescent for an indefinite length of time. (4) The fourth mode of termination—probably the most common—is also the most destructive; it reaches the articular cartilage and breaks into the joint cavity, setting up a purulent arthritis, or what is probably more common, causing an exacerbation where an arthritis had already been present. It is quite certain that the joint proper often becomes inflamed before any direct communication has been established with the diseased focus within the bone.

Lannelongue, in an early autopsy in a case of hip-disease, found a focus the size of a pea in the epiphysis, two millimetres from the cartilage. The synovial membrane was reddened and fungous; the capsule thickened; and the round ligament vascular and softened, although there was no effusion and no connection with the focus of disease in the epiphysis. Volkman has found even more pronounced joint changes and swelling of the peri-articular structures before pus had entered the joint.† The extension to the joint in the manner indicated is in some measure dependent upon the relation of the synovial membrane to the line of epiphyseal junction. In the shoulder, ankle, and wrist, the disease remains a long time isolated, or gives rise to peri-articular infiltration and suppuration, while in the case of the hip, where the epiphysis and the upper end of the diaphysis lie within the joint, the destructive process, with greater frequency, becomes intra-articular.

Diagnosis.—There are no symptoms peculiar to tubercular affections of the bones—no pathognomonic signs. By consideration, however, of all the conditions of the patient, one may arrive at a strong presumption. A few symptoms and signs may be referred to as pointing very strongly to the existence of tuberculous infection of the bone in close proximity to a joint. In the domain of surgery, early diagnosis is never more urgently called for than when trouble threatens near a joint. It is not necessary to discuss cases that are far advanced; the evidence in them is so plain that an error can scarcely be made. If the products of disease can be obtained, bacilli may be found and a diagnosis established. Among the most reliable indications of incipient tubercular disease in the immediate vicinity of a joint are:

(1) *The history, family and personal.*—Concerning the former, nothing more need be said than that it is just as important as it is when chronic disease of the lungs is suspected. If the personal history is enquired into, it will, in a very large number of cases, be found that the onset of the affection has been preceded by some disease which has greatly lowered the general tone. It will often be found that the patient had recently suffered from whooping cough, scarlet fever, summer diarrhœa, typhoid fever, or other exhausting disease, and had made a poor recovery. It is doubtful whether the preceding sickness has any other relation to the tuberculosis following than that it simply lowers the vital powers and renders the tissues more vulnerable than they otherwise would be. Under such circumstances a predisposition, previously kept in check, is able to manifest itself.

*Cheyne: *Lancet*, Nov. 15, 1890. *Orthopædic Surgery*, Bradford and Lovett, p. 215.

†Bradford and Lovett, p. 217.