

lower three inches of the shaft. Though the epiphysis as a whole appeared to be quite firmly attached to the shaft, it was found upon making a thin longitudinal section through both epiphysis and shaft, that the former was so nearly separated that its remaining attachments were scarcely able to sustain its own weight. It is evident that if life had been prolonged for a few days, complete separation of the epiphysis—epiphysiolysis—would have occurred.

Though an examination of the viscera was not permitted, the clinical signs of pericarditis and pleurisy were unmistakable, and every analogy would lead us to believe these inflammations were purulent in character. In a case of which I saw the *post-mortem* in University College Hospital, London, there was present ulcerative endocarditis, with numerous small abscesses in the spleen and kidneys, illustrating the intense virulence of the causative germ in this disease.

The phenomena of this disease point clearly to the view that it is an acute infective disease of a specific character, occurring exclusively among those in whom growth has not ceased. Ollier of Lyons, however, states (*) that he has seen cases of suppurative osteo-myelitis with separation of the epiphyses of tibia, humerus, etc., in patients between 30 and 40 years of age. He points out that throughout life the position of the epiphyseal cartilage is represented by an ossified line, which keeps its direction accurately, and separates the longitudinal system of lamellæ of the epiphysis from those of the diaphysis. He asserts that the juxta-epiphyseal portion of the shaft is more vascular than the epiphysis itself, and attributes to this circumstance the fact that the ends of the shaft are the favorite seats of osteitis and necrosis.

The subjects of the disease are usually children, most frequently males, who are generally strumous or in feeble health, the result of a recent attack of some specific disease, as scarlet fever, measles, etc. The immediate exciting cause is now known to be the fungus, designated *staphylococcus pyogenes aureus*. This germ flourishes in many conditions, and is the most common organism found in all forms of acute suppuration. It is met with in boils, acute mammary abscess, thecal abscess, and suppurating wounds, yet we do not look upon any

of these conditions as excessively virulent or immediately dangerous to life. What is the reason then that when this coccus lodges in the growing end of a long bone it produces a train of symptoms that are exceedingly alarming, and not infrequently gives rise to processes which destroy life in a few days? The answer to this inquiry is perhaps found in the peculiar anatomical structure of growing bone. During its growth bone is traversed by large numbers of new, and imperfectly developed capillaries. Neumann (*), has also pointed out that the capillaries of medullary tissue are not less than four times as large in calibre as the arterioles which supply them. These giant capillaries moreover communicate freely with the large and thin-walled veins of the part. This arrangement, it will be observed, is admirably suited to the implantation of floating micro-organisms, and the growth and multiplication of these is further fostered by the abundant supply of pabulum carried to them, and by the facility with which their waste products are got rid of through the large veins of the medulla. Moreover, leucocytes laden with the germs as the result of their phagocytic action, are easily swept into the stream and carried to all parts of the body, and if the germs are deposited in favorable soil they multiply and give rise to abscesses, and thus a condition of pyæmia is established.

The exact point of commencement of the disease has been the subject of much dispute. German and French surgeons assert strongly, that the primary focus of the disease is in the medulla, whereas English pathologists are quite as positive that it commences in the periosteum over the bone. Tubby,* following Ollier, of Lyons,† places the initial focus in the juxta-epiphyseal portion of the shaft, and has done much to establish his contention by experiments upon rabbits. It must be borne in mind that the medullary canal does not by any means reach the epiphyseal cartilage, and that the bulk of the growth takes place in that portion of the bone immediately adjacent to the shaft-side of the epiphysis. Moreover, the beneficial results of early incisions down to this point, tend to confirm the view that the disease com-

* Principles of Surgery, Senn. p. 235.

*Guy's Hospital Reports, Vol XVII, p 92.

†International Encyclop. of Surg., Ashurst, Vol., III p. 766.

* International Cyclopædia of Surgery, Ashurst, Vol. III. p. 769.