Elementary Anatomy.

AS APPLIED TO NURSING.

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LECTURE I.

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THE form of the bones, wherever they are found, is identical, and consists of a hard outer case, the body—which, in the case of long bones, is termed the *shaft*—and which is coated with a fibrous sheath which is called the *periosteum*, and a hollow cavity which contains a fatty material that is popularly known as the "marrow." Through both the periosteum and marrow run the blood vessels which nourish the bone. There are two distinct parts in the constitution of bones; *compact* tissue which is dense and heavy, and *cancellous* tissue which is light, and takes its name from its resemblance to lattice work. The reason for these differences is very obvious in view of the objects for which the bones respectively are used. The compact tissue predominates in bones where great strength is required, as, for example, in the thigh bone and the hips; where lightness and mobility is required, the bone is chiefly composed of cancellous tissue, as for example, in the blade bone of the shoulder, or in the bones of birds. As we said before, the chemical composition of the bone varies very greatly at different ages of life; in infants we find —to use the popular expression—that the bones are all "gristle," that is to say, they are chiefly composed of cartilage, which has not yet become fully impregnated with earthy salts. In childhood and adult age, these mineral constituents gradually increase in amount, until, in old age, the mineral portion predominates over the animal tissue, that is to say, the earthy salts are in excess of the gelatine. The bones in infancy, in adult life and in old age have therefore been aptly compared to new wood, living wood, and dead wood. In infancy, the bones bend easily, but do not often break; in old age, the bones are abnormally brittle, and are therefore abnormally prone to fracture. This will explain facts which you will often observe in practice, that children suffer from what is called greenstick fractures, the bones bending but not breaking right across, and that in old age the merest slip will sometimes cause complete fracture of even the strongest bone in the body.

There are various diseases to which bones are prone, but one which especially concerns Nurses, is the affection popularly known as "Rickets." The peculiarity of this disease is abnormal softness of the bone tissue, and from what has been already said, you will easily understand that it is due chemically, to a deficiency of the earthy salts. It is, therefore, traceable to a deficiency of these constituents in the child's food, and is almost invariably found amongst children who have been improperly or insufficiently fed. In Hospital outpatient practice in large towns, these causes are often found combined, and the history of the diet of the child is almost identical in every case. Instead of milk, that is to say, the natural food which nature has intended that infants should have, it has been fed upon "anything going"—including gin—and suffers, in consequence, from bone starvation. The inevitable result of the weakness of the bones is that the weight of the body bends them, for these uncared-for children are usually permitted to walk, while happier children are still prevented from crawling; the tibia and fibula curve out, and the condition known as bow legs is produced; the ends of these bones become enlarged and thickened, and when they are examined it is found that the gelatine is often of unhealthy quality, besides showing the deficiency of earthy matter to which allusion has already been made.

So far as the nursing of these cases is concerned, prevention, of course, is a hundred times better than cure. No child should be allowed to walk until its bones are strong enough to bear its weight. The infant must be fed on nature's diet—milk—and if then any sign of weakness of the bones present themselves, and there are children in which there is an hereditary tendency to this form of disease—the deficiency of the earthy salts must be compensated for by lime and phosphates being administered as a medicinal addition to the diet. With care and proper feeding, few children ought to be affected with "Rickets," and the occurrence of the disease should therefore be generally looked upon as a disgrace to the mother or the nurse, or both.

The first, most common, and therefore most important, accident to which the bones of the human body are liable, is what is termed a *fracture*, that is to say, a breaking of the bone. Fractures may be either what is termed *incomplete*, such as the *greenstick* fracture already alluded to, or *complete*, when the bone is broken right across. The former variety is chiefly found in young children, and the reason for the bending rather than the breaking, we have seen to be explained by the comparative softness of the bones in early life. In fractures of the skull, where the bones are all tightly bound together, it is again very common to find the fractures incomplete, that is to say, fractures which do not separate the bones completely from one another. With regard to the greenstick variety, the treatment simply consists in straightening the bone as far as possible. When the skull

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