

of the paralysis *per se* as because of the deformities which are its direct result. In recent years there have been numerous epidemics of anterior poliomyelitis, and this is the disease for which our advice is sought most frequently in this connection.

An important characteristic of this form of paralysis is that muscles are paralyzed in functional groups, and as a consequence there results a condition of disability to perform certain actions, and one which is well described as the "unbalanced joint." In normal conditions every joint should present a condition of balance; for example, at the knee the extensors should be able so to act as to produce complete extension, notwithstanding the influence of the flexors. If, however, the extensors be greatly disabled and the hamstring muscles either not disabled, or disabled to a much less extent than that of their opponents, then there is an unbalanced condition of the knee joint, and the flexors will contract so as to flex the joint, and will soon present a condition of contracture, which will not permit normal extension; thus a consequent deformity results, which can be remedied only by surgical means. The existence of such a state of lack of balance presents a mechanical problem which is really in itself sometimes of more importance than the paralysis.

In any such case the part of the limb distal to the joint where deformity exists will be so far out of its normal relations that in the case of the lower extremity the body weight cannot be borne, except at a great mechanical disadvantage. The angle formed at the knee will shorten the limb and cause the weight to come in such a way as to present a constant strain at the knee, or the foot will be pushed outward or inward so as to be out of the direct line of transmitted body weight, and consequently turn over in one or other abnormal direction.

Similarly groups of muscles at the foot may be so disabled that they are not in a condition to counterbalance their opponents, and the consequence may be any simple deformity or compound deformity of the foot, talipes equinus, talipes varus, talipes valgus, etc. Any or all possible deformities which may exist about the foot may result from paralysis. Similar remarks might be made about other joints in the body, but these will serve best to illustrate the point which we seek to establish.

If a limb at any part assumes an abnormal position because