

demonstrated the presence of a myoplasm or muscle forming substance.

In the forearm the extensor and supinator group differentiate before the flexor and pronator set. As the muscle formation follows closely upon the definition of the skeleton, if the growth suppressing influence which acted on the skeleton lasted long enough to influence the muscles it is to be expected that the extensor group would exhibit the greatest amount of damage. Such is actually the case. Only four extensor muscles are present as against seven flexors and pronators plus one palmar muscle. Only one extensor muscle reaches as far as the lower end of the radius, nearly all the flexors reach that level. No extensor tendon reaches the digit, a flexor tendon passes right out to the terminal phalanx, in addition to bearing a lumbrical muscle to the digit. It is to be noted that in the members of the extensor group here present the muscle masses are of about normal proportion, covering half of the length of the radius but in only one case is a long tendon developed, the other muscles inserting at once on the middle of the shaft of the radius. This failure of the long tendons to differentiate out after the appearance of these muscles is a further example of the greater suppression of growth in this region. Gräfenberg ('11) describes the musculature in a case of absence of the radius and the thumb. Here the radial musculature is present as a common mass high up in the forearm, possessing no tendons, and so appearing very much like the extensor muscles I have described. The other muscles both flexors and extensors, in Gräfenberg's case are present and normal in extent.

Regarding the muscle that I have called the common superficial extensor mass, as separation into separate portions begins at the carpus after the appearance of the tendons, it is not possible here to have such a division into its component muscles, because its tendon is entirely absent.

Absence of the thumb is not enough to cause disappearance of the abductor pollicis longus and extensor pollicis brevis, the radial members of the deep extensors, for there is still opportunity for the muscles to develop over the radius. The triceps