tendon of this muscle passes across, and is united with, the posterior part of the capsule of the shoulder-joint.

Variations.—It is sometimes inseparable from the Infraspinatus.

The Teres major (Fig. 412) is a thick but somewhat flattened muscle, which arises from the oval area on the dorsal surface of the inferior angle of the scapula, and from the fibrous septa interposed between the muscle and the Teres minor and Infraspinatus; the fibers are directed upward and lateralward, and end in a flat tendon, about 5 cm. long, which is inserted into the crest of the lesser tubercle of the humerus. The tendon, at its insertion, lies behind that of the Latissimus dorsi, from which it is separated by a bursa, the two tendons being, however, united along their lower borders for a short distance.

Nerves.—The Supraspinatus and Infraspinatus are supplied by the fifth and sixth cervical nerves through the supraspinacular nerve; the Teres minor, by the fifth cervical, through the axillary; and the Teres major, by the fifth and sixth cervical, through the lowest subscapular.

Actions.—The Supraspinatus assists the Deltoid in raising the arm from the side of the trunk and fixes the head of the humerus in the glenoid cavity. The Infraspinatus and Teres minor rotate the head of the humerus outward; they also assist in carrying the arm backward. One of the most important uses of these three muscles is to protect the shoulder-joint, the Supraspinatus supporting it above, and the Infraspinatus and Teres minor behind. The Teres major assists the Latissimus dorsi in drawing the previously raised humerus downward and backward, and in rotating it inward; when the arm is fixed it may assist the Pectorales and the Latissimus dorsi in drawing the trunk forward.

IV. THE MUSCLES AND FASCIA OF THE ARM.

The muscles of the arm are:

Coracobrachialis.

Biceps brachii.

Brachialis.

Triceps brachii.

Brachial Fascia (fascia brachii; deep fascia of the arm).—The brachial fascia is continuous with that covering the Deltoid and the Pectoralis major, by means of which it is attached, above, to the clavicle, acromion, and spine of the scapula; it forms a thin, loose, membranous sheath for the muscles of the arm, and sends septa between them; it is composed of fibers disposed in a circular or spiral direction, and connected together by vertical and oblique fibers. It differs in thickness at different parts, being thin over the Biceps brachii, but thicker where it covers the Triceps brachii, and over the epicondyles of the humerus: it is strengthened by fibrous aponeuroses, derived from the Pectoralis major and Latissimus dorsi medially, and from the Deltoid laterally. On either side it gives off a strong intermuscular septum, which is attached to the corresponding suprapcondylar ridge and epicondyle of the humerus. The lateral intermuscular septum extends from the lower part of the crest of the greater tubercle, along the lateral suprapcondylar ridge, to the lateral epicondyly; it is blended with the tendon of the Deltoid, gives attachment to the Triceps brachii behind, to the Brachialis, Brachioradialis, and Extensor carpi radialis longus in front, and is perforated by the radial nerve and profundus branch of the brachial artery. The medial intermuscular septum, thicker than the preceding, extends from the lower part of the crest of the lesser tubercle of the humerus below the Teres major, along the medial suprapcondylar ridge to the medial epicondyly; it is blended with the tendon of the Coracobrachialis, and affords attachment to the Triceps brachii behind and the Brachialis in front. It is perforated by the ulnar nerve, the superior ulnar collateral artery; and the posterior branch of the inferior ulnar collateral artery. At the elbow, the deep fascia is attached to the epicondyles of the humerus and the olecranon of the ulna, and is continuous with the deep fascia of the forearm.
Just below the middle of the arm, on its medial side, is an oval opening in the deep fascia, which transmits the basilic vein and some lymphatic vessels.

The Coracobrachialis (Fig. 411), the smallest of the three muscles in this region, is situated at the upper and medial part of the arm. It arises from the apex of the coracoid process, in common with the short head of the Biceps brachii, and from the intermuscular septum between the two muscles; it is inserted by means of a flat tendon into an impression at the middle of the medial surface and border of the body of the humerus between the origins of the Triceps brachii and Brachialis. It is perforated by the musculocutaneous nerve.

Variations.—A bony head may reach the medial epicondyly; a short head more rarely found may insert into the lesser tubercle.

The Biceps brachii (Biceps; Biceps flexor cubiti) (Fig. 411) is a long fusiform muscle, placed on the front of the arm, and arising by two heads, from which circumstance it has received its name. The short head arises by a thick flattened tendon from the apex of the coracoid process, in common with the Coracobrachialis. The long head arises from the supraglenoid tuberosity at the upper margin of the glenoid cavity, and is continuous with the glenoidal labrum. This tendon, enclosed in a special sheath of the synovial membrane of the shoulder-joint, arches over the head of the humerus; it emerges from the capsule through an opening close to the humeral attachment of the ligament, and descends in the intertubercular groove; it is retained in the groove by the transverse humeral ligament and by a fibrous prolongation from the tendon of the Pectoralis major. Each tendon is succeeded by an elongated muscular belly, and the two bellies, although closely applied to each other, can readily be separated until within about 7.5 cm. of the elbow-joint. Here they end in a flattened tendon, which is inserted into the rough posterior portion of the tuberosity of the radius, a bursa being interposed between the tendon and the front part of the tuberosity. As the tendon of the muscle approaches the radius it is twisted upon itself, so that its anterior surface becomes

1 A Cross-section Anatomy, New York, 1911.
lateral and is applied to the tuberosity of the radius at its insertion. Opposite
the bend of the elbow the tendon gives off, from its medial side, a broad aponeu-
rosis, the laceratus fibrosus (bicipital fascia) which passes obliquely downward
and medialward across the brachial artery, and is continuous with the deep fascia
covering the origins of the Flexor muscles of the forearm (Fig. 410).

Variations.—A third head (10 per cent.) to the Biceps brachii is occasionally found, arising at
the upper and medial part of the Brachialis, with the fibers of which it is continuous, and inserted
into the laceratus fibrosus and medial side of the tendon of the muscle. In most cases this additional
head lies behind the brachial artery in its course down the arm. In some instances the third head
consists of two slips, which pass down, one in front of and the other behind the artery, concealing
the vessel in the lower half of the arm. More rarely a fourth head occurs arising from the outer
side of the humerus, from the intertubercular groove, or from the greater tubercle. Other heads
are occasionally found. Slips sometimes pass from the inner border of the muscle over the brachial
artery to the medial intermuscular septum, or the medial epicondyle; more rarely to the Pronator
teres or Brachialis. The long head may be absent or arise from the intertubercular groove.

The Brachialis (Brachialis anticus) (Fig. 411) covers the front of the elbow-joint
and the lower half of the humerus. It arises from the lower half of the front
of the humerus, commencing above at the insertion of the Deltoideus, which it
embraces by two angular processes. Its origin extends below to within 2.5 cm.
of the margin of the articular surface. It also arises from the intermuscular septa,
but more extensively from the medial than the lateral; it is separated from the
lateral below by the Brachioradialis and Extensor carpi radialis longus. Its fibers
converge to a thick tendon, which is inserted into the tuberosity of the ulna and
the rough depression on the anterior surface of the coronoid process.

Variations.—Occasionally doubled; additional slips to the Supinator, Pronator teres, Biceps,
laceratus fibrosus, or radius are more rarely found.

Nerves.—The Coracobrachialis, Biceps brachii and Brachialis are supplied by the musculo-
cutaneous nerve; the Brachialis usually receives an additional filament from the radial. The
Coracobrachialis receives its supply primarily from the seventh cervical, the Biceps brachii and
Brachialis from the fifth and sixth cervical nerves.

Actions.—The Coracobrachialis draws the humerus forward and medialward, and at the
same time assists in retaining the head of the bone in contact with the glenoid cavity. The
Biceps brachii is a flexor of the elbow and, to a less extent, of the shoulder; it is also a powerful
supinator, and serves to render tense the deep fascia of the forearm by means of the laceratus
fibrosus given off from its tendon. The Brachialis is a flexor of the forearm, and forms an impor-
tant defense to the elbow-joint. When the forearm is fixed, the Biceps brachii and Brachialis
fix the arm upon the forearm, as in efforts of climbing.

The Triceps brachii (Triceps; Triceps extensor cubiti) (Fig. 412) is situated on
the back of the arm, extending the entire length of the dorsal surface of the humerus.
It is of large size, and arises by three heads (long, lateral, and medial), hence its
name.

The long head arises by a flattened tendon from the infraglenoid tuberosity
of the scapula, being blended at its upper part with the capsule of the shoulder-
joint; the muscular fibers pass downward between the two other heads of the
muscle, and join with them in the tendon of insertion.

The lateral head arises from the posterior surface of the body of the humerus,
between the insertion of the Teres minor and the upper part of the groove for the
radial nerve, and from the lateral border of the humerus and the lateral intermus-
cular septum; the fibers from this origin converge toward the tendon of insertion.

The medial head arises from the posterior surface of the body of the humerus,
below the groove for the radial nerve; it is narrow and pointed above, and extends
from the insertion of the Teres major to within 2.5 cm. of the trochlea: it also
arises from the medial border of the humerus and from the back of the whole
length of the medial intermuscular septum. Some of the fibers are directed
downward to the olecranon, while others converge to the tendon of insertion.

The tendon of the Triceps brachii begins about the middle of the muscle; it con-
THE VOLAR ANTIBRACHIAL MUSCLES

sists of two aponeurotic laminae, one of which is subcutaneous and covers the back of the lower half of the muscle; the other is more deeply seated in the substance of the muscle. After receiving the attachment of the muscular fibers, the two lamellae join together above the elbow, and are inserted, for the most part, into the posterior portion of the upper surface of the olecranon; a band of fibers is, however, continued downward, on the lateral side, over the Anconeus, to blend with the deep fascia of the forearm.

The long head of the Triceps brachii descends between the Teres minor and Teres major, dividing the triangular space between these two muscles and the humerus into two smaller spaces, one triangular, the other quadrangular (Fig. 412). The triangular space contains the scapular circumflex vessels; it is bounded by the Teres minor above, the Teres major below, and the scapular head of the Triceps laterally. The quadrangular space transmits the posterior humeral circumflex vessels and the axillary nerve; it is bounded by the Teres minor and capsule of the shoulder-joint above, the Teres major below, the long head of the Triceps brachii medially, and the humerus laterally.

Variations.—A fourth head from the inner part of the humerus; a slip between Triceps and Latissimus dorsi corresponding to the Dorsal-epibrachialis.

The Subanconeus is the name given to a few fibers which spring from the deep surface of the lower part of the Triceps brachii, and are inserted into the posterior ligament and synovial membrane of the elbow-joint.

Nerves.—The Triceps brachii is supplied by the seventh and eighth cervical nerves through the radial nerve.

Actions.—The Triceps brachii is the great extensor muscle of the forearm, and is the direct antagonist of the Biceps brachii and Brachialis. When the arm is extended, the long head of the muscle may assist the Teres major and Latissimus dorsi in drawing the humerus backward, and in adducting it to the thorax. The long head supports the under part of the shoulder-joint. The Subanconeus draws up the synovial membrane of the elbow-joint during extension of the forearm.

V. THE MUSCLES AND FASCIA OF THE FOREARM.

Antibrachial Fascia (fascia antibrachii; deep fascia of the forearm).—The antibrachial fascia continuous above with the brachial fascia, is a dense, membranous investment, which forms a general sheath for the muscles in this region; it is attached, behind, to the olecranon and dorsal border of the ulna, and gives off from its deep surface numerous intermuscular septa, which enclose each muscle separately. Over the Flexor tendons as they approach the wrist it is especially thickened, and forms the volar carpal ligament. This is continuous with the transverse carpal ligament, and forms a sheath for the tendon of the Palmaris longus which passes over the transverse carpal ligament to be inserted into the palmar aponeurosis. Behind, near the wrist-joint, it is thickened by the addition of many transverse fibers, and forms the dorsal carpal ligament. It is much thicker on the dorsal than on the volar surface, and at the lower than at the upper part of the forearm, and is strengthened above by tendinous fibers derived from the Biceps brachii in front, and from the Triceps brachii behind. It gives origin to muscular fibers, especially at the upper part of the medial and lateral sides of the forearm, and forms the boundaries of a series of cone-shaped cavities, in which the muscles are contained. Besides the vertical septa separating the individual muscles, transverse septa are given off both on the volar and dorsal surfaces of the forearm, separating the deep from the superficial layers of muscles. Apertures exist in the fascia for the passage of vessels and nerves; one of these apertures of large size, situated at the front of the elbow, serves for the passage of a communicating branch between the superficial and deep veins.

The antibrachial or forearm muscles may be divided into a volar and a dorsal group.

1. The Volar Antibrachial Muscles.

These muscles are divided for convenience of description into two groups, superficial and deep.