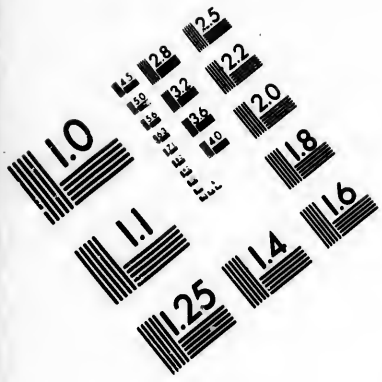

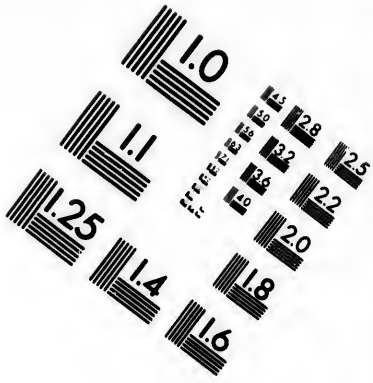

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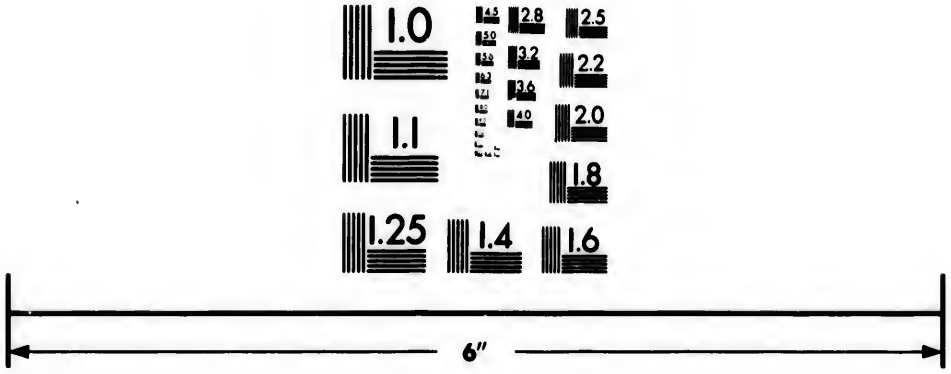

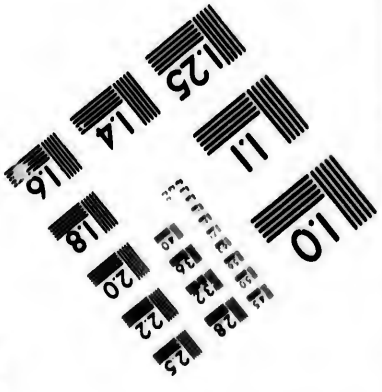

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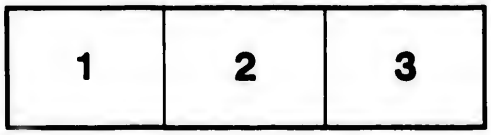

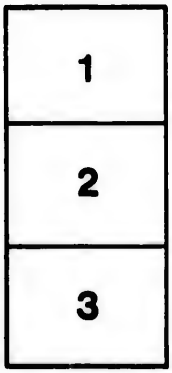

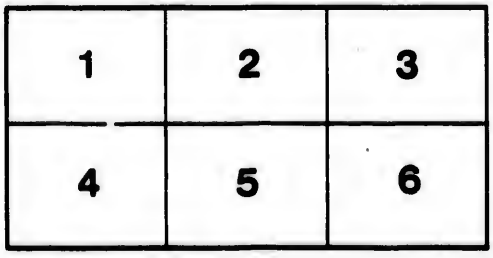

NOTES OF ABNORMALITIES

OBSERVED IN THE DISSECTING-ROOM OF McGILL UNIVERSITY,

FROM OCTOBER, 1875, TO MAY, 1879,

BY

FRANCIS J. SHEPHERD, M.D., M.R.C.S., Eng.,

DEMONSTRATOR OF ANATOMY,

Surgeon to the Out-Door Department of the Hospital.

(From the Montreal General Hospital Reports, Vol. I., 1880.)

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From October, 1875, to May, 1879, more than 130 subjects have been dissected in the dissecting-room of McGill University. The following paper is compiled from notes taken on the spot, and does not profess to be a complete account of all the abnormalities which occurred, but only of those which attracted notice at the time, and were not injured too much by dissection to render the account inaccurate.

I have tried various materials for preserving subjects, such as chloral and glycerine, arsenic, carbolic acid, camphor, &c., but find none succeed so well as chloride of zinc. For every subject I use three-quarters of a pound dissolved in one pint and a half of water; I also add a little nitrate of potash, to keep the muscles a good colour.

OSSEOUS SYSTEM.

Parietal Bone.—In a female subject, aged about 40, there were distinct depressions on the outer surface of the parietal bones. These depressions were about 7·5 cm.

long by 6 broad, and were symmetrical, reaching on each side to within a finger's breadth of the sagittal suture. These depressions made the bone very thin, and had the appearance of having been scooped out with some sharp instrument. Prof. Humphry [1] has described this variation very fully as occurring in man, and in the skull of an ourang, which he had examined. I saw a skull, in which this peculiarity was well marked, some years ago in a museum attached to one of the medical societies in Boston, U. S. It was labelled "Atrophy of the Parietal Bones." These depressions have been wrongly described, according to Prof. Humphry, [2] as injuries received at birth from forceps, as due to sabre cuts, senile atrophy, &c. In one case "a patient narrowly escaped trephining after an accident by coming to himself and declaring that a depression on his head, which was exciting the apprehension of the surgeons, had existed since childhood." [3]

Case of Para-mastoid Process and Epihyal Bone.—The skull of an Irish navvy, aged about 25, had the following peculiarities: The jugular process of the occipital bone, on the left side, was prolonged downwards and outwards to articulate with a depression in the transverse process of the atlas; the length of this process was 1·8 cm. and the diameter about 1 cm. This process is very commonly developed in the mammalian series, and occurs in the graminivora and in pigs. [4] In these animals this process seems to take the place of the mastoid, and has been called the "para-mastoid process." Holden [5] calls this process the paraoccipital tubercle, and considers it a rudimentary transverse process. In the skull I am

1 Journal of Anatomy and Physiology, vol. VIII.

2 Humphry on the Human Skeleton, p. 243.

3 Loc. cit.

4 Humphry on the Human Skeleton, p. 235.

5 Holden's Osteology, 3rd ed., p. 55.

describing (and which at present is in the museum of the Medical Faculty of McGill University) it was not a *rudimentary* transverse process, but a very fully developed one, and certainly gave to that portion of the occipital bone a strong resemblance to one of the upper cervical vertebræ. (See plate.) Toynbee,[1] Meckel, Ulide,[2] Gruber, and others, describe this process. In Ulide's case the head was set obliquely, on account of the process being one-sided. There is a good specimen of this variation in the Hunterian Museum, occurring in a Phillipine Islander, and in the museum of St. Bartholomew's Hospital. There are also two skulls in the Museum of Anatomy in Dublin, with this process, and one in the museum at Berlin.

Besides this "para-mastoid" process, there was, in the same skull, and on the same side, a prolongation of the styloid process down to the hyoid bone. This process was not in one piece, but, about 1·2 cm. down, there was a joint, with a capsular ligament. The styloid process proper measured 1·2 cm., and the part below extending to the lesser cornu of the hyoid bone, which might be called the *epihyal bone*, measured 6·2 cm. in length, and a little more than 3 m. in diameter. Between this *epihyal bone* and the above described *para-mastoid process* were distinct muscular fibres. In the horse these fibres are developed into a comparatively large muscle.

In *one* other subject there was an *epihyal bone*, which also articulated with the lesser cornu of the hyoid bone below and a short styloid process above. Both these skulls were of low type, with projecting teeth, prominent zygomatic arches, and well-marked temporal ridges. In the first-mentioned skull, the mastoid foramina were of huge size, the external occipital protuberance very pro-

1 Trans. Path. Society, vol. II., p. 93.

2 Archiv. f. Klin. Chirurgie, VIII.

minent, the hamular processes of the sphenoid of unusual length, and there was nearly total disappearance of the sagittal suture.

There is a skull cap in the museum of the University which is very remarkable. The thickness is rather greater than usual. The skull cap in shape looks like the roof of a house; length is 21·2 cm., and breadth is only 10 cm. There is no trace of a sagittal suture. In these cases of absence of the sagittal suture, according to Prof. Humphry,[1] the lateral expansion is prevented, and, in consequence, there is a great increase in the height and in the antero-posterior diameter of the skull. The two parietal bones are developed from a single ossifying centre, as in the crocodile.

Teeth.—In one subject the teeth of the upper jaw were rather peculiar; there was only one lateral incisor, the others being quite rudimentary, and only one bicuspid on each side. No teeth had been extracted.

Clavicle.—In one subject, on both sides, there was a partial ossification of the coracoid and trapezoid ligaments.

In another subject (male) a broad bony process, measuring about 3·1 cm. long and 1·2 cm. broad, extended downwards and backwards from the under surface of the acromial end of the right clavicle to articulate with the root of the coracoid process. (See plate.) The end of this bony process, which articulated with the coracoid process, was tipped with cartilage, and quite broad; it was bound down to the coracoid process by a capsular ligament. The coracoid process was more prominent than usual, and the supraclavicular notch was absent. In the Ai the clavicle is attached to the coracoid, and in fishes it is closely applied upon the coracoid. [2]

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1 Prof. Humphry—Journal of Anatomy and Physiology. Vol. vi.

2 Note.—Since writing the above I see this abnormality has been noticed by Prof. Gruber, of St. Petersberg. The scapula in his case had been lost and its

In one scapula I found partial ossification of the transverse ligament.

Humerus.—The great tuberosity was divided into two parts in one case, the lower portion seemed to have slipped away from the upper, and was separated from it by a deep groove 1·2 cm. wide. The upper portion was the largest, and had inserted into it the supra—and a few strands of the infra—spinatus muscle, into the lower portion was inserted the major part of the infra-spinatus and the teres minor. This separation of the tuberosity into two parts may have been due to violence in early life.

A *supracondyloid* process was found three times; in two cases on both sides of the same subject (female). In all three cases the process was connected with the internal condyle by a ligament. In two the median nerve alone passed under the arch thus formed, and in the third the median nerve and brachial artery. There was no high division of the brachial in any of the three cases. In two the pronator radii teres muscle had a high origin, and in two there was a deep groove in the bone leading to the foramen. This supracondyloid foramen corresponds to a similar foramen which exists in many of the carnivora, and more especially the feline tribe of animals; in these animals it is formed entirely by bone. Tiedemann describes this foramen as occurring in certain kinds of apes. In one of these cases the thin plate of bone, between the olecranon and coronoid fossæ, was perforated.

Ribs.—In two subjects the last two ribs, on both sides, were rudimentary, measuring each only 3·7 cm. in length and about as thick as an ordinary lead pencil. The 11th ribs in these cases were about the size of an ordinary 12th, and in both subjects three ribs on each side were floating. I think that this abnormality occurs more often than is supposed.

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articulation with this process was merely a supposition. Beobact. aus der mensch. u. vergleich. Anatomie. Hft. I. Berlin. 1879.

MUSCULAR SYSTEM.

I have already mentioned above the fact that in one subject a few muscular fibres passed between a paramastoid process and the styloid process.

The muscles of the *face* presented no variations of any interest, but they were occasionally developed to an extraordinary degree. In one (a Frenchman) these muscles were strongly developed, so that even the muscles of the nose could be easily dissected out. The platysma myoides was almost as largely developed as the corresponding muscle in the horse.

Stylo-hyoid and Digastric.—There was one example of the posterior belly of the digastric with the stylo-hyoid, passing *behind* the external carotid artery. The stylo-hyoid passing behind the carotid is of no great rarity, but I have seen no mention made in the works I have been able to consult of the digastric muscle proper passing behind the external carotid artery. This variation tends to confirm Prof. Humphry's opinion [1] that the digastric is composed of two muscles, the posterior belly being derived from the deep stratum, and the anterior from a superficial one. The course of the external carotid in this subject was necessarily very superficial, and, perhaps, by some, this might be considered rather a variation of the artery than of the muscle, which, in every other respect, was quite normal.

The anterior bellies of the two digastrici frequently united in the middle line, and completely shut out from view the mylo-hyoid muscles.

In one subject, on both sides, a muscular slip from the body of the hyoid bone went to be inserted with the anterior belly of the digastric into the lower jaw. (Mento-hyoid of Macalister).

1 Loc. cit., p. 234.

Stylo-hyoid.—In two subjects, this muscle passed *behind* the external carotid artery; once it was double, the extra muscle arising high up from the styloid process and passing down behind the carotid artery to be inserted into the hyoid bone.

There were two examples of a muscle taking the place of the stylo-hyoid ligament. (Stylo-chondro-hyoideus, Douglass). In these two cases, there was, as usual, absence of the stylo-hyoid muscle. This arrangement is found in some of the edentata.[1]

The stylo-hoid was absent on both sides in one subject, the stylo-hoid ligaments being quite normal.

Styloglossus.—This muscle was altogether absent twice, and on both sides of the same subject. There were four examples of this muscle passing in front of the external carotid, once on both sides. This muscle, in one subject, arose on the left side by two heads, one from the usual place, and the other by a broad origin from the under surface of the angle of the lower jaw; the two heads joined each other at an acute angle, and went to be inserted, as usual. On the right side, the muscle had no origin from the styloid process but arose entirely from the angle of the inferior maxilla, being inserted as usual. (Myloglossus, Wood.)

On both sides, in another subject, this muscle arose from the stylo-maxillary ligament, passing in front of the external carotid on one side, and behind, on the other.

Omohyoid.—In one subject, there was absence of the anterior belly; the posterior ended in fascia about the usual place, and this fascia was inserted into the hyoid bone. This variation is somewhat rare, and has been fully described by R. Quain and Hallett.

There were three examples of this muscle having two anterior bellies. The extra belly, in the first case, was

1 Huxley—Anatomy of Vertebrate Animals.

inserted into the superior cornu of the hyoid bone; in the second, into the great wing of the hyoid; and in the third, it was blended with the sterno-hyoid muscle, about its middle. The anterior belly proper, in these cases, was inserted as usual.

In two subjects, the anterior belly blended with the sternohyoid, so as to form one broad muscle, bounded below by an arched tendon, as in the Seal. In one of these cases there were two posterior bellies, one of which arose from the clavicle. There were three examples of the omohyoid having two posterior bellies; in two, the supernumerary belly arose from the middle of the posterior border of the clavicle; and in the third, from the sterno-clavicular articulation. This arrangement is observed in the Scink, one of the Sloths.

The posterior belly was seen five times to arise solely from the middle of the posterior border of the clavicle. It occurred once on both sides of the same subject.

Chondro-scapular.—This muscle occurred once, and arose with the omohyoid from the transverse ligament and superior border of the scapula, and passed forward to be inserted by a round tendon into the cartilage of the first rib. This muscle was small, and quite distinct from the subclavius. It corresponds to the sterno-chondro-scapular muscle of Wood,[1] and in the Guinea-pig, Wombat, Norway rat, &c., this muscle exists as the sterno-scapular. In some animals without clavicles it is considered to be the homologue of the subclavius.

Sterno Mastoid.—There was one example of the clavicular origin of this muscle being divided into three slips, the outermost slip extended to the trapezius muscle. This occurred on the right side.

Pectoralis Minor.—This muscle was frequently seen to arise from the 2nd, 3rd and 4th ribs, and occasionally by

1 Pro. Royal Society, 1869.

five digitations from the five upper ribs. The insertion was frequently broader than usual, and was in two cases continuous with the coraco-brachialis.

Pectoralis Major was in a few instances connected with the aponeurosis of the external abdominal oblique. There is no case of a rectus thoracis noted.

Biceps Brachii.—This muscle arose by three heads in 18 cases, twice occurring on both sides of the same subject. The third head, in all cases, either had its origin near the insertions of the coraco-brachialis or pectoralis major.

In one subject, on the right side, a muscular slip was given off from the biceps which joined the pronator radii teres; this slip gave origin to the greater part of the bicipital fascia.

Pronator Radii Teres.—In two instances this muscle arose by three heads; in one the supernumerary head arose from the intermuscular septum between the brachialis-anticus and the internal head of the triceps, and in the other case the third head consisted of a small round muscular slip, coming from the outer edge of the brachialis, which joined the pronator teres by passing under the radial artery. In two of the cases where there was a supracondyloid process on the humerus this muscle had a much higher origin than usual, arising from the ligament attached to the process and the process itself.

Palmaris Longus.—The palmaris longus was frequently found absent. In one instance a broad muscular slip went from the tendon of this muscle to be inserted into the base of the first phalanx of the little finger. On both sides, in one subject, the palmaris longus was muscular down to the annular ligament, penniform in shape, resembling the flexor longus pollicis of the leg. In another subject it arose by a long tendon which reached to below the middle of the forearm, where it ended in a pyriform muscular belly about 11 cm. long, this again ended in a round tendon which was inserted into the palmar fascia in the usual way.

In one case the tendon near the annularligament gave off a muscular slip which went to be inserted into the palmar fascia.

The *Supinator Longus* in one subject, on the right side, was inserted into the middle of the outer border of the shaft of the radius as well as into the styloid process.

The *Flexor Profundus Digitorum* was frequently observed to have an extra head from the coronoid process, and in one case arose from the upper half of the inner edge of the radius and the whole of the interosseous membrane, in addition to its usual origin.

The *Extensor Carpi Radialis Longior* of the right side, in one subject, gave off a muscular slip about two inches long, this ended in a tendon which became muscular near the wrist and went to be inserted into the abductor pollicis muscle.

The *Extensor Ossis Metacarpi Pollicis* in another subject also gave off a slip which went to join the abductor pollicis. In several instances this muscle was observed to split into two or three tendons, the supernumerary tendons being inserted into the trapezium. Once this occurred on both sides of the same subject.

The *Extensor Secundi Interodii Pollicis* was double in one subject, and arose from the radius opposite the proper extensor, and was inserted with it into the second phalanx of the thumb. In this subject, on the same side, the *extensor indicis* had a much more extensive origin than usual, and the *extensor minimi digiti* was inserted into the annular ligament, the extensor carpi ulnaris sending part of its tendon to the little finger to join the common extensor.

Latissimus Dorsi.—There was one example of this muscle arising from the spines of all the dorsal vertebræ.

In six subjects a muscular slip was seen, varying in breadth from 1·2 to 6·2 cm., passing from the latissimus dorsi over the brachial vessels to be inserted into the pectoralis major muscle. In one case it

was inserted into the coraco-brachialis. This arrangement occurs normally in many of the lower animals, as the deer, horse, &c. In one subject the latissimus dorsi was blended with the trapezius.

Teres Major.—Once a muscular slip was seen going from the teres major muscle to join the subscapularis near its insertion into the lesser tuberosity of the humerus; a somewhat similar arrangement exists normally in the mole.[1]

The *Serratus Magnus* in one subject was attached to the inner surface of the whole superior border of the scapula as well as to the vertebral border, and a slip of muscle was sent up from this new attachment to join the scalenus posticus muscle.

Levator Anguli Scapulæ.—This muscle was often seen to be divided into two or more slips, which had a more extensive origin than usual, sometimes arising from as many as six vertebræ and sometimes not at all from the first.

In one subject this muscle gave a slip to the *serratus posticus superior*, and in the same subject another slip went from the 5th cervical transverse process to join the *serratus posticus superior*.

Superficial Iliacus Muscle.[2]—In one subject, on both sides, there was a superficial iliacus muscle; on the right side it was a flat broad slip arising from the posterior third of the crest of the ilium, this ended in a flat tendon which was pierced by the anterior crural nerve. On the left side the muscle was fusiform, and had its origin from the upper border of the sacrum and last lumbar vertebra; it ended in a round tendon which pierced the anterior crural nerve and joined the tendon of the iliacus, below Poupart's ligament.

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1 Prof. Humphry—Journal of Anatomy and Physiology. Vol. vi.

2 Wagstaffe and Reid have described a somewhat similar variation in St. Thomas's Hospital Reports. Vol. viii.—New Series.

Sphincter Ani.—In one subject, the superficial fibres of this muscle were continued up past the tendinous point of the perineum, as a flat muscular slip 6 m. broad and 5 cm. long, to be inserted into the dartos of the scrotum in the central line. (See plate.) This is the first example of such a variation I have seen, and I can find no record of it in any of the works which I have been able to consult.

Fusion of the *Pectineus* and *Adductor Longus* muscles was seen once on both sides of a very thin female subject, so that they had the appearance of being one muscle. In the hippopotamus the pectineus is not distinctly segmented from the adductors. [1]

Absence on both sides of the *Gemellus superior* occurred in one subject.

Gastrocnemius.—This muscle, when it does vary, generally has a supernumerary head, but in a subject which came to the dissecting-room in the winter of 1876, there was complete absence of the external head of the left gastrocnemius. This occurred in a well-developed female, about 35 years of age. On dissecting off the integument and fascia of the leg, the first thing that came into view was the little *plantaris* muscle; the usual place of origin of the outer head was quite bare of muscle, the bone being covered merely by a little fat. The internal head was of the usual size. As far as I know, no similar case has been previously recorded. (See plate.)

Supernumerary Muscle.—There was in one subject a supernumerary muscle arising by two heads and passing down to the foot, covering the posterior tibial vessels just above the inner ankle. One head was derived from the *flexor longus pollicis* muscle, and the other arose from the inner border of the tibia for two inches, just below the origin of the *soleus*; the muscle ended in a round tendon which

1 Prof. Humphry—Jour. Anat. and Phys., vol. vi., p. 348.

passed down behind the inner ankle, posteriorly to the vessels, and was inserted into the tendon of the *flexor longus digitorum* muscle about the middle of the sole of the foot. In this case the accessorius was inserted into the tendon of this supernumerary muscle (Tibio Accessorius), and not, as usual, into the deep flexor tendon.

The *Peroneus Tertius* was absent once on both sides of the same subject.

Flexor Brevis Digitorum.—This muscle was seen, in one instance, to arise by two heads, or rather it was composed of two parts which crossed each other; the superficial portion arose from the inner tubercle of the *os calcis* and divided into two tendons, which went to the 2nd and 3rd toes; the deep portion had its origin from the deep flexor tendon above the insertion of the accessorius, it then passed downwards and outwards, and also divided into two tendons, which went to the 4th and 5th toes.

The tendon of the short flexor going to the 5th toe has frequently been observed to be absent, or so small as to appear like a fine thread. When it is of small size it is seldom perforated by the long flexor. Several examples of the abductor ossis metacarpi quinti were met with.

The *Lumbricales* muscles going to the 4th and 5th toes were absent once on both sides of the same subject.

Thyroid Gland.—In one subject the middle lobe of this gland was prolonged upwards in the middle line, to be attached to the body of the hyoid bone. This slip was quite narrow, and was composed of glandular tissue. It is sometimes muscular or fibrous, and is called the Levator Thyroideæ. In this case the slip was distinctly glandular.

ARTERIAL SYSTEM.

Aorta.—The variations of the aortic arch were comparatively few and unimportant. In eight subjects the left vertebral artery arose from the arch, and there were four

examples of only two branches being given off from the arch. The left carotid, as is usual, was given off from the innominate, as in the dog and other animals.

Double Subclavian (?)—In one subject there was rather a peculiar (and, so far as I know, hitherto undescribed) *aberrant* artery given off from the *thoracic aorta*, opposite the upper border of the 5th dorsal vertebra; from here it proceeded upwards and towards the right side, passing *over* the œsophagus and behind the ascending arch of the aorta to the right bronchus, where it gave off two small branches to the bronchial glands; it then continued on upwards, in a tortuous course, to the right side of the trachea, and ended by joining the lower border of the subclavian in its second part. This aberrant artery was about the size of a goose quill.

It is well known that the right subclavian sometimes arises from the descending portion of the arch of the aorta, owing to atrophy of the 4th right arch and persistence of the right aortic root.[1] In this case the branches from the aortic arch were quite normal. So this aberrant artery seems to be a case of persistence of the right aortic root without complete atrophy of the 4th right vascular arch. (See plate.)

Thyroidea Ima occurred seven times, arising, in every instance, from the innominate. In one of these cases the left vertebral arose from the arch of the aorta.

Vertebral.—As mentioned above, the left vertebral artery arose in eight cases from the aortic arch. In these cases the right vertebral was, as a rule, smaller, and the left larger than usual. In several instances the vertebral artery was seen to enter the transverse process of the 5th cervical vertebra instead of the 6th. In one subject, the

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1 Turner. Med. Chir. Rev., 1862.

2 An account of this variation appeared at the time in the *Canada Medical and Surgical Journal*, 1877.

left common carotid gave off the vertebral about an inch from its origin; the vertebral, in this case, entered the transverse process of the 4th cervical vertebra, and was of large size. In another subject the left vertebral, as it passed over the medulla oblongata, divided into two branches, which again united a quarter of an inch higher up, thus forming a loop, through which passed several filaments of the 9th nerve.

The vertebral in one case, on both sides, gave off the inferior thyroid; the internal mammary and transverse colli being given off from a common trunk; the left vertebral in this subject arose from the arch of the aorta.

Posterior Scapular.—This artery was most frequently given off from the 3rd part of the subclavian, and it was rather the exception than the rule to see it arise from the thyroid axis. In one case it arose from the 2nd part of the subclavian. In four cases, where the posterior scapular was given off from the 3rd part of the subclavian, it pierced the fibres of the scalenus medius muscle; and in one case this artery gave off the profunda cervicis.

The *Left Subclavian*, in one instance, pierced the fibres of the scalenus anticus muscle.

Carotid.—In one subject, on both sides, the common carotid divided opposite the cricoid cartilage, and in another opposite the hyoid bone.

The *Superior Laryngeal* artery was frequently given off from the external carotid.

The *Lingual* and *Facial* were frequently seen to arise by a common trunk, and once a common trunk was seen to give off the *superior thyroid*, *lingual* and *facial* arteries.

In one subject, on both sides, the *ascending palatine* artery, which is very constant and is always given off from the facial, arose from the external carotid.

A large *transverse facial* was several times seen to take the place of the facial. In these cases the facial ended in the inferior coronary or mental branches. Twice the place

of the *facial* was taken by a large branch from the *internal maxillary*.

The *Posterior Cerebral* artery in four cases came from the internal carotid, the posterior communicating artery being the terminal branch of the basilar.

Axillary.—A great many anomalies of this artery were noted, in fact it rarely was found normal.

There were 10 examples of the axillary dividing into two trunks, one of which gave off most of the branches; this latter trunk was frequently embraced by the two heads of the median nerve; in five cases this trunk gave off the acromial thoracic, long thoracic, anterior and posterior circumflex and subscapular; in three it gave off the anterior and posterior circumflex, subscapular and superior and inferior profunda arteries. In two, all the last mentioned branches with the exception of the inferior profunda; in one of these cases the anastomotica magna arose from this trunk.

In several subjects the anterior and posterior circumflex and subscapular arose together, and in others the superior profunda, posterior circumflex and subscapular. In these latter cases the *superior profunda* passed down behind the tendon of the teres major muscle, and the posterior circumflex did not pass through the quadrilateral space, but wound round to the deltoid muscle, below the tendons of the teres major and latissimus dorsi muscles. There was one example of the dorsalis scapulæ artery arising from the posterior scapular, which in this case arose from the 3rd part of the subclavian.

Aberrant Arteries.—In one subject there was a large trunk given off from the 3rd part of the axillary, which divided into the posterior circumflex, superior and inferior profunda, and an *aberrant artery*, which went down the arm superficially, passed over the bicipital fascia, then dipped down between the pronator radii teres and the supinator longus muscles and joined the *interosseous artery*.

In addition to the above described aberrant artery, there was one given off from the axillary in another subject, which passed down the arm superficially, parallel to the brachial, and went over the inter-muscular septum at the elbow; about the middle of the forearm it followed the course of the median nerve and was connected with the radial artery by a transverse communicating branch, then passed on with the median nerve under the annular ligament at the wrist, and joined the ulnar artery to complete the superficial palmar arch, apparently taking the place of the superficialis volæ branch of the radial. (See plate.)

Another *Aberrant Artery* arose from the 3rd part of the axillary, passed down superficially, and joined the brachial just before its division. This artery gave off the inferior profunda.

The *Supra-Scapular* artery, in one case, arose from the 1st part of the axillary on the right side and passed between the outer and inner cords of the brachial plexus to the supra-scapular notch.

In three cases a *long thoracic artery* passed down on the serratus magnus muscle in company with the nerve of Bell; in these cases the subscapular was of small size.

Brachial,—High division of this artery occurred 15 times; once in the axilla, six times near the tendon of the latissimus dorsi, six times near the insertion of the coraco-brachialis muscle, and twice a little above the bend of the elbow. In these cases the radial was most frequently given off on the lower side, and *vice versâ*; when this occurred, the ulnar gave off radial recurrent, and the radial gave off the ulnar recurrent and sometimes the interosseous.

Low division of the brachial occurred once only, and at the lower border of the pronator radii teres. The ulnar in this case was, of course, superficial, and the interosseous, radial and ulnar recurrents were given off from the brachial.

In one subject the *brachial artery* divided, opposite the insertion of the coraco-brachialis, into two trunks of equal size; the inner one passed down to about half an inch above the bicipital fascia, where it divided into the radial and ulnar; the ulnar pierced the bicipital fascia and passed down the forearm quite superficially, having only the palmaris longus muscle in front of it. The outer trunk, after giving off the inferior profunda and anastomotica magna, passed down between the tendon of the biceps and the median nerve, and ended by dividing into the *anterior* and *posterior interosseous*; the anterior interosseous gave off a large branch which accompanied the median nerve down the arm; and the posterior interosseous gave off the ulnar recurrents.

Ulnar.—In six cases this artery was superficial; in five of these cases there was a high division of the brachial, and in one a low division. In all these cases the ulnar recurrents were either given off from the radial or the interosseous arteries.

There were five examples of a *Comes Nervi Mediani*. Three were given off from the ulnar, one from the interosseous, and one from the brachial. In one case the artery pierced the median nerve. In all the cases the artery followed the distribution of the median nerve, supplying the thumb and $2\frac{1}{2}$ fingers, the superficial palmar arch not being complete. In one case the median artery communicated by a large branch with the deep arch.

The *Radial*, in two instances, gave off a very large superficialis volæ, which went between the abductor and opponens pollicis muscles to join the ulnar.

In one subject the deep *Palmar Arch* was formed almost entirely from the deep branch of the ulnar; the radial artery ended in three large branches:—(1.) the *superficialis volæ*, of large size, which completed the superficial arch; (2.) a *dorsalis pollicis* artery, which gave a small communicating branch to complete the deep arch formed by the ulnar;

(3.) a large branch which passed over the back of the hand, between the 2nd and 3rd metacarpal bones, and ended by winding round the radial side of the hand between the thumb and forefinger to the palm, where it joined the superficial arch.

Hepatic.—In three subjects the artery supplying the right lobe of the liver came off from the superior mesenteric.

The *Renal* arteries were several times double; the right kidney in one instance was supplied by two arteries, one of which entered at the extreme upper end and the other at the extreme lower; no artery entered at the hilum; the vein and duct were quite normal.

The *Spermatics* in one subject on the right side were double, and in three cases the spermatic came off from the renal.

Obturator.—This artery arose 28 times from the deep *epigastric*, and twice only did it pass to the inner side of the femoral ring. In six (6) subjects it was given off abnormally on both sides. In one case the *epigastric*, *obturator*, and *internal circumflex* on the right side were given off from a common trunk, and in another the *obturator* arose from the *external iliac*, one inch from its origin.

The *Epigastric*, besides arising once as above, arose in another subject in common with the *internal circumflex*, about one inch below *Poupart's ligament.*

In one subject the *external circumflex* gave off the *deep circumflex ilii.* I have noticed that the *sciatic* artery occasionally is wanting, its place being supplied by branches from the *gluteal.* In one case the *gluteal* supplied the muscles, and the *internal pudic* gave off the comes nervi ischiadici and the coccygeal.

In several instances the *internal pudic* was a branch of the *sciatic.*

Femoral.—There was one example of the *deep external pudic* branch of the common femoral taking the place of

the dorsal artery of the penis. The *external circumflex* or some of its branches, arose nearly as often from the common as the deep femoral. The *deep femoral* in several subjects was noted as arising just below Poupart's ligament, and in two cases 6·2 cm. below.

In one subject, a large branch from the superficial femoral was given off at the lower angle of Scarpa's triangle; this branch followed the course of the tendon of the adductor longus to its insertion, then passing behind the internal condyle it wound round to the front of the knee-joint and there divided into two branches, one of which became cutaneous, and the other piercing the ligamentum patellæ supplied the interior of the joint.

Popliteal.—There was only one example of high division of this artery; the division took place at the upper border of the posterior ligament of the knee-joint. In this case the *peroneal* artery was given off from the anterior tibial. This occurred in another subject without, however, high division of the popliteal.

Peroneal.—In one case this artery was of large size, and, after supplying the peroneal muscles, pierced the interosseous membrane, and appeared in the anterior portion of the leg, between the extensor proprius pollicis and extensor longus digitorum muscles, and continued on as the dorsalis pedis artery; the anterior tibial was of small size and ended a little above the middle of the leg. In two cases the peroneal artery arose from the anterior tibial, just before it pierced the interosseous membrane.

Dorsalis Pedis.—This artery was once absent, the anterior tibial ending immediately below the annular ligament.

The deep *Plantar Arch* was occasionally seen to be formed by a continuation of the dorsalis pedis artery, which pierced through between the bases of the 1st and 2nd metatarsal bones, the external plantar artery in these cases generally terminating near the accessorius muscle and sending a small branch on to complete the arch.

VENOUS SYSTEM.

Few important abnormalities of the veins were noted. There was one example of a double *Superior Vena Cava*, or rather, persistence of *Cuvier's duct* of the left side ; in this case it was smaller than the right superior vena cava, and the left vena innominata was not much reduced in size. This left superior cava opened, as is usually the case, into the coronary sinus and thence into the right auricle by a very large opening. [1]

In one subject the left *renal vein* passed, to join the ascending cava, *behind* the abdominal aorta at a level higher than the renal artery.

There were several examples of the left *spermatic* vein, emptying directly into the *vena cava inferior*.

NERVOUS SYSTEM.

The *descendens noni* was noted as occasionally coming off from the *pneumogastric* instead of from the hypoglossal.

The *hypoglossal* in several instances was noticed to hook round a small sterno-mastoid artery, given off from the external carotid just at its origin ; this caused the nerve to descend lower than usual.

Median.—There were twelve cases of this nerve passing behind the brachial artery. In two subjects this occurred on both sides. This nerve was also seen frequently to embrace with its two heads a large trunk given off from the axillary, and in one case it embraced the *superior profunda* artery, which in this subject was given off high up.

In one subject the outer head was pierced by the brachial artery, the nerve itself passing behind the artery.

External Cutaneous.—There were two cases in which this nerve was given off from the median, below the insertion of the coraco-brachialis muscle. In one case this

[1] This specimen is in the Museum of the Medical Faculty of the University.

muscle was supplied by a few filaments from the outer head of the median, and in the other by a special branch from the outer cord of the brachial plexus, given off high up. In both cases the biceps and brachialis anticus were supplied as usual.

In two subjects the left *external cutaneous* nerves, after piercing the coraco-brachialis and supplying the biceps, joined the median; this latter nerve gave the branch to the brachialis anticus, and also the cutaneous branch to the outer side of the arm.

In several cases the outer head of the median received a large branch from the external cutaneous after that nerve had pierced the coraco-brachialis.

There was one example of division of the musculo-spiral into radial and posterior interosseous, as high up as the subscapularis muscle.

Ulnar Nerve.—On both sides of the same subject this nerve arose by two heads—one from the outer and one from the inner cord of the brachial plexus. This nerve was frequently seen supplying the whole of the ring-finger.

The great *sciatic nerve* frequently divided high up, and in all the cases the external popliteal divided the pyriformis muscle into two parts. In one subject a nerve accompanied the coccygeal artery, piercing the great sacro-sciatic ligament and supplying the skin over the coccyx.

The *internal saphenous* was once seen to pierce the sartorius muscle below Hunter's canal.

The *external saphenous* nerve, in one case, supplied 2½ toes—the 5th, 4th and half the 3rd, the others being supplied by the musculo-cutaneous. In one subject the *posterior tibial* at the inner ankle passed down in *front* of instead of behind the artery. The nerve crossed under the artery, about the middle of the leg.

INTERNAL ORGANS.

The variations noted in the internal organs were few. There was no case of transposition of the viscera.

Kidney.—There was one example of horse-shoe kidney of the usual character—concavity upwards and two ureters passing down in front of the kidney, the left one being made up of three branches. There were two renal arteries and two renal veins. Each half of the kidney had a distinct pelvis, and the union consisted of true cortical substance.

In one subject there was a diverticulum from the ileum about two feet from the ileo-cœcal valve. The diverticulum was three-quarters of an inch in diameter and three inches long; it floated quite freely. In this subject the appendix vermiformis measured 15 cm. in length.

The descending colon was occasionaly found to have a meso-colon; in one instance it measured 3·7 cm., and in another 7 cm., in the latter case the descending colon was 25 cm. longer than usual.

In one subject the descending colon crossed the spinal column to the right side, about the 4th lumbar vertebra; it then descended to the right sacro-iliac synchondrosis, where the rectum commenced, passing from right to left instead of from left to right. The transverse portion of the bowel was covered in front only by peritoneum, and was bound tightly down over the abdominal aorta.

The *rectum* commenced on the right side in five subjects. In all these cases the sigmoid flexure was continued across from about the middle of the left iliac fossa to the right sacro-iliac synchondrosis, where the rectum commenced. This transverse colon, in all the cases, with the exception of one, was provided with a meso-colon, and in two cases this transverse colon measured two feet in length.

There was one example of undescended testicle—the testicle was arrested at the internal abdominal ring.

EXPLANATION OF PLATE I.

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Fig. 1.—A.A. Aberrant artery from axillary to superficial palmar arch.

D.A. Deep palmar arch.

S.A. Superficial palmar arch.

Fig. 2.—A.A. Artery connecting descending Aorta with the Right Subclavian.

R.S. Right Subclavian artery.

R C. Right Carotid artery.

Fig. 3.—S.A. Abnormal Styloid process which articulated with the lesser cornu of hyoid bone.

P.M. Para-mastoid process.

Fig. 4.—G. Gastrocnemius muscle having only the inner head or belly.

S. Soleus muscle.

P. Plantaris muscle which was exposed in removing the integument and fascia.

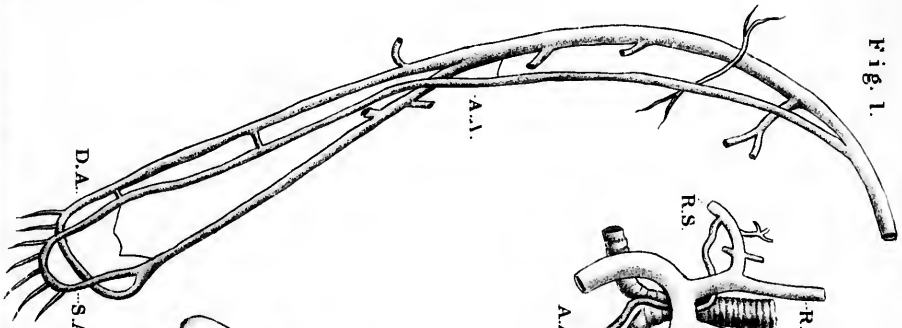


Fig. 1.

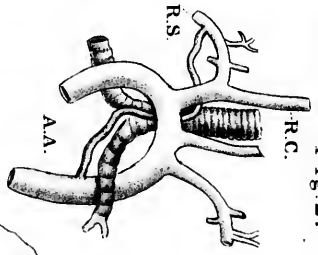
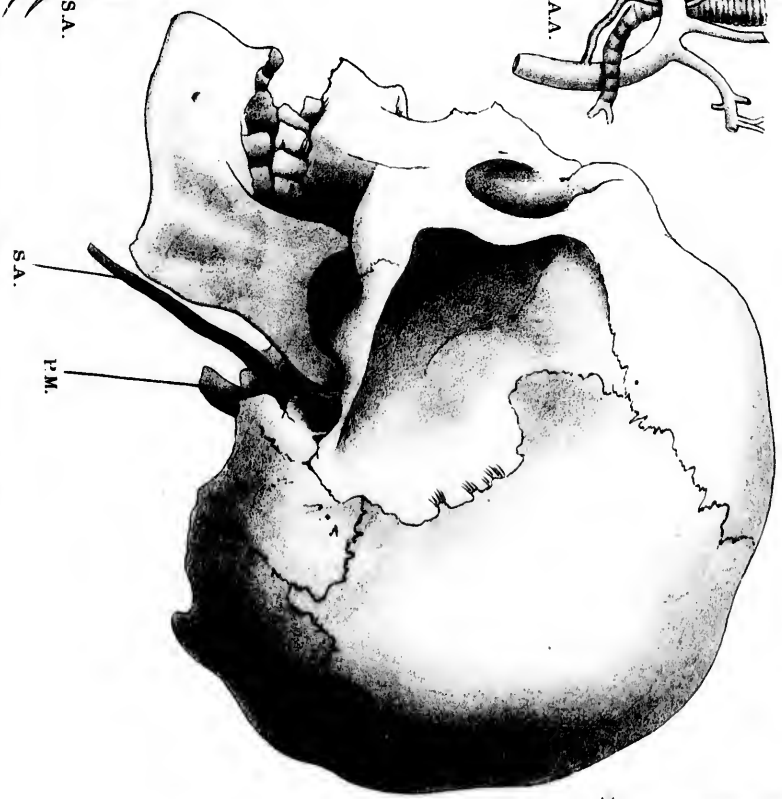


Fig. 2.



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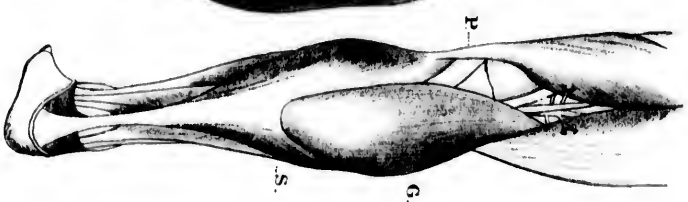

Fig. 4.

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EXPLANATION OF PLATE II.

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Figures 1 and 2.—Shewing peculiar bony process passing from the under surface of acromial end of clavicle to articulate with the base of the coracoid process.

Fig. 1.—Posterior view of clavicle and scapula.

Fig. 2.—Anterior view of " "

A. Acromion process.

C.l. Clavicle.

C. Coracoid process.

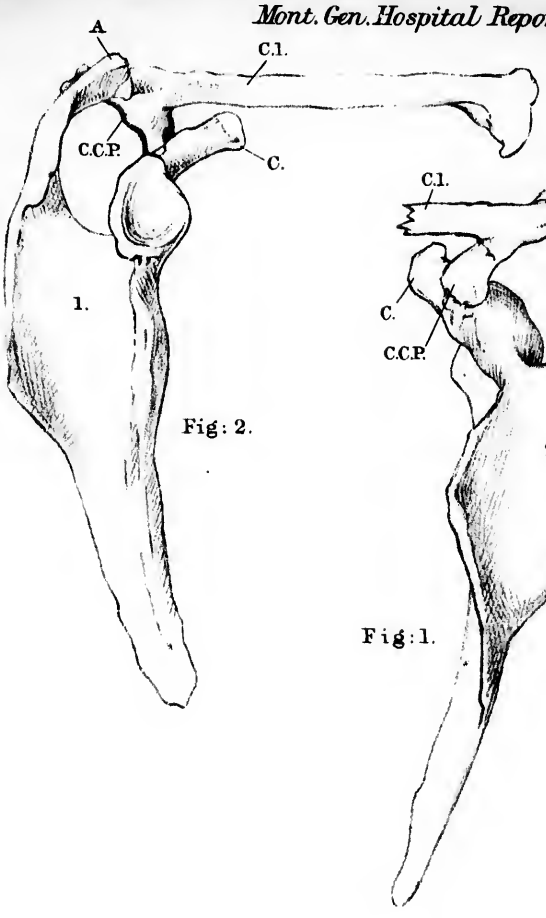
C.C.P. Coraco-Clavicular process.

Fig. 3.—Abnormal Spincter ani muscle.

A. Muscular slip running from Spincter ani to dartos of scrotum.

F. Deep layer of superficial perineal fascia.

S. Spincter ani muscle.



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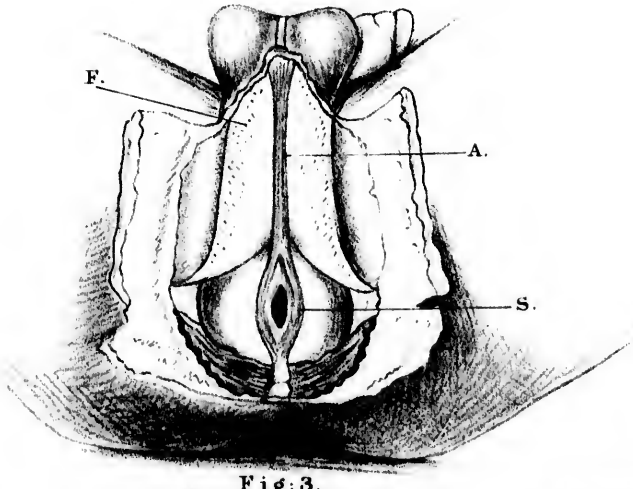

Fig: 3.

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