

**References to nerves : being tabular views of the motor nerves to muscles, the nervous supply of the principal articulations and of the skin, the deep and superficial origins of the cranial nerves, with the most important effects following solution of continuity of nerves.**

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# REFERENCES TO NERVES:

BEING TABULAR VIEWS OF

The Motor Nerves to Muscles,

THE

NERVOUS SUPPLY OF THE  
PRINCIPAL ARTICULATIONS AND OF THE SKIN,

THE

DEEP AND SUPERFICIAL ORIGINS OF  
THE CRANIAL NERVES;

WITH THE MOST

Important Effects following Solution of Continuity of  
Nerves.

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ONE SHILLING.

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## PREFACE TO SECOND EDITION.

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IN the Preface to the First Edition, I stated that the main portion of this Table was compiled for my own use while a student. The absence of any such Table in a separate form, or in the Text-books, which caused me to compile the present one for myself, led me also to publish it, in the hope that it might prove useful to others. That hope has been fully realised in the speedy exhaustion of the First Edition.

The changes in the present Edition are chiefly in the order of the arrangement of the Muscles. Formerly, they were copied down as they stand in QUAIN and SHARPEY'S ANATOMY, and the Nerves supplying them placed in the opposite column. But while this plan rendered the Table a sufficient dictionary of reference, it failed to give any knowledge of the physiological grouping of the muscles around their nerves of supply. In the present Edition, I have endeavoured to combine these two desiderata by a slight alteration in the order of the Muscles, and by the use of brackets in place of the "ditto ditto's" which disfigured the former Edition.

I have also added the Muscles of the Larynx and Internal Ear.

My cordial thanks are due to those gentlemen who kindly favoured me with suggestions relative to the former Edition. They will see that, in most cases, I have availed myself of their hints in the present



## PREFACE TO THIRD EDITION.

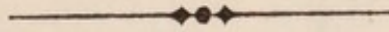
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THE MOTOR NERVES OF THE MUSCLES, by Mr Hughes, had been out of print for a long time, and as the former publishers declined to supply it, we were compelled to purchase the copyright, in order to satisfy the requests made by our friends. This furnished an opportunity for revisal, and for adding the Nerves to Muscles of the Eyeball and Heart. It was also thought desirable, in the interests of students and practitioners, to give the nervous supply of the principal Joints, the deep and superficial origins of the Cranial Nerves, with an outline of the nervous supply of the Skin. A very brief notice of the effects of Section or Palsy of the most important Nerves has been included. It is hoped that these changes will increase the utility of the work, while adding little to the bulk.

E. & S. LIVINGSTONE.

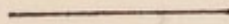
THE

MOTOR NERVES OF THE MUSCLES.



MUSCLES OF THE EXTERNAL EAR.

Anterior Auricular .....	} Branches conveyed along	} Facial		
(Attrahens Aures) ...			} Auriculo-Temporal of	} of 7th
Superior Auricular .....				
(Attollens Aures) ...	} Posterior Auricular of...			
Posterior Auricular .....				
(Retrahens Aures) ...				



MUSCLES OF THE HEAD AND FACE.

Occipito-Frontalis.		
Occipital portion .....	Posterior Auricular of...	} Facial.
Frontal portion .....	} Temporal of.....	
Corrugator Supercilii ...		
Orbicularis Palpebrarum	{ Temporal & } Temporo-	} Facial of
	{ Malar of... }	



Tensor Tarsi .....	}	Infra-orbital of Temporo-Facial of .....	}	Facial.
Pyramidalis Nasi.....				
Levator Labii Superioris Alæque Nasi .....				
Compressor Naris .....				
Depressor Alæ Nasi.....				
Levator Proprius Alæ Nasi (Dilatator Naris)				
Levator Labii Superioris Proprius .....				
Levator Anguli Oris ...				
Zygomaticus Major.....				
Zygomaticus Minor.....				
Buccinator .....				
Orbicularis Oris .....				
Depressor Anguli Oris...				
Depressor Labii Inferioris (Quadratus Menti).....				
Levator Labii Inferioris (Levator Menti) .....				
Risorius (Santorini).....				
Masseter .....	}	Inferior Maxillary of 5th Cranial.	}	
Temporalis .....				
External Pterygoid.....				
Internal Pterygoid .....				

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### MUSCLES WITHIN THE ORBIT.

Levator Palpebræ .....	}	Superior Division of 3rd Cranial.
Rectus Superior .....		
Rectus Inferior .....	}	Inferior Division of 3rd Cranial.
Rectus Internus .....		
Obliquus Inferior .....		
Obliquus Superior .....		4th Cranial.
Rectus Externus .....		6th Cranial.

### MUSCLES WITHIN THE EYEBALL.

Ciliary Muscle.....	}	Ciliary nerves through Ciliary Ganglion from 3rd Cranial.
Sphincter of the Pupil...		
Dilator of the Pupil.....	}	Branches conveyed along Trige- minus (not through ciliary gang- lion) from Cervical Sympathetic in connection with Lower Cervi- cal and upper dorsal part of Spinal Cord, and so with Medulla Oblongata. Also branches from 5th Cranial.

### MUSCLES OF THE NECK.

Platysma Myoides .....	}	Superficial Cervical of Cervical Plexus.	}	Facial.
Stylo-hyoid .....				
Digastricus.		Branch from.....		
Posterior Belly .....		Branch from.....		



Anterior Belly.....	}	Mylo-hyoid of Infe- rior Dental of In- ferior Maxillary of	}	5th Cranial.
Mylo-hyoid .....				
Sterno-mastoid .....	}	Spinal accessory of 8th Cranial. Anterior Division of 2nd Cervical.		
Stylo-glossus .....				
Genio-hyoid.....	}	Branches from...	}	9th Cranial (hypo-glossal).
Hyo-glossus.....				
Genio-hyo-glossus .....				
Thyro-hyoid .....				
Sterno-hyoid .....	}	Descendens Noni of .....	}	2nd and 3rd Cervical.
Sterno-thyroid.....				
Omo-hyoid .....				
Rectus Capitis Anticus Major .....	}	Anterior branch of 1st Cervical.		
Rectus Capitis Anticus Minor .....				
Rectus Capitis Lateralis		Anterior branch of 1st Cervical.		
Scalenus Medius .....	}	Branches from 3rd and 4th Cervical. Branch from...		
Scalenus Posticus .....				
Scalenus Anticus.....	}	Branches from	}	Brachial Plexus.
Longus Colli .....				
Stylo-pharyngeus .....		Glosso-pharyngeal of 8th Cranial.		
Palato-glossus .....	}	Pharyngeal Plexus formed by Pharyngeal branch of Vagus, uniting with branches of Glosso- pharyngeal, Superior Laryngeal and Sympathetic.		
Palato-pharyngeus .....				
Constrictors of the Pharynx .....				



Constrictor Inferior	}	External Laryngeal.
(also) .....		Recurrent Laryngeal.
Levator Palati Mollis ...	}	Small Palatine of Meckel's Gang-
Azygos Uvulæ.....		lion (Facial).
Circumflexus Palati ...		Branch of Otic Ganglion (5th).

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MUSCLES OF THE BACK.

Trapezius .....	}	Spinal Accessory.		
		3rd and 4th Cervical.		
Latissimus Dorsi.....	}	Long subscapular from Posterior		
		Cord of Brachial Plexus.		
Rhomboideus Major ...	}	Rhomboid of 5th Cervical (in		
Rhomboideus Minor ...			}	Brachial Plexus).
Levator Anguli Scapulæ				
Serratus Posticus Super-	}	External of Posterior of Dorsal.		
rior .....				
Serratus Posticus Infe-	}	External of Posterior of Dorsal.		
rior .....				
Splenius Capitis .....	}	External of } 7 lower Cervical.		
Splenius Colli .....			Posterior of }	
		ditto } 5 upper Dorsal.		
Erector Spinæ.				
Sacro-lumbalis .....	}	External of Posterior of Dorsal		
Longissimus Dorsi ...			and Lumbar.	
Cervicalis Ascendens	}	External of } 4 lower Cervical.		
Transversalis Cervicis			Posterior of }	
		6 upper Dorsal.		
Accessorius ad Sacro-	}	External of Posterior of Dorsal.		
lumbalem.....				



Trachelo-Mastoid.....	{ External of { 7 lower Cervical. Posterior of { 4 upper Dorsal.
Spinalis Dorsi.....	Internal of Posterior of Dorsal.
Spinalis Colli .....	{ Internal of } 6 lower Cervical. Posterior of }
Complexus (including Biventer Cervicis) ...	{ Posterior of Sub-occipital. Internal of } 7 lower Cervical. Posterior of } External of 5 upper Dorsal.
Semi-spinalis Dorsi.....	{ Internal of } 10 upper Dorsal. Posterior of }
Semi-spinalis Colli .....	{ Internal of } 6 lower Cervical. Posterior of }
Inter-spinales .....	{ External of } 6 lower Cervical. Posterior of } Lumbar.
Inter-transversales .....	External of Posterior of Lumbar.
Inter-accessorii .....	{ Internal of } 6 lower Cervical. Posterior of } Dorsal. Lumbar. 3 upper Sacral.
Multifidus Spinæ.....	External of Posterior of Dorsal.
Levatores Costarum ...	External of Posterior of Dorsal.
Rectus Capitis Posticus Major .....	} Posterior of.....1st Cervical. (Sub-occipital.)
Rectus Capitis Posticus Minor .....	
Obliquus Capitis Supe- rior .....	
Obliquus Capitis Infe- rior .....	



MUSCLES OF THE UPPER EXTREMITY.

SHOULDER AND ARM.

Pectoralis Major .....	}	External Anterior	}	Outer	}	Brachial Plexus.
		Thoracic from				
Pectoralis Minor.....	}	Internal Anterior	}	Inner		
		Thoracic from				
Subclavius .....		Branch from .....		} 5th and 6th		
Serratus Magnus.....	}	Posterior Thoracic	}			
		(External Respira-				
Supra-spinatus.....	}	tory) from .....	}			
Infra-spinatus .....		Supra-scapular from...				
Subscapularis .....	}	1st Subscapular from	}	} Posterior		
Teres Major.....		2nd Subscapular from			}	} cord of
Teres Minor.....	}	Circumflex from .....	}			
Deltoid .....						
Coraco-brachialis.....	}	Musculo-Cutaneous	}	Outer		
Biceps .....		from.....			cord of	
Brachialis Anticus ...	}	Musculo-Spiral	}	Posterior		
Triceps.....		from.....			cord of	

FORE-ARM.

Flexor Carpi Ulnaris ...	}	} Branches of Ulnar from Brachial	
Flexor Profundus Digi-			}
torum .....			
Ulnar origin .....			



Interosseous origin.....	} Anterior inter-	} Median from	
Flexor Longus Pollicis...			osseous of ...
Pronator Quadratus .....			us (outer and
Pronator Radii Teres .....	} Branches of...		inner cords).
Flexor Carpi Radialis.....			
Palmaris Longus.....			
Flexor Sublimis Digitorum			

Supinator Longus .....	} Branches of .....	} Musculo-Spiral	
Extensor Carpi Radialis			
Longior .....			Plexus (pos-
Extensor Carpi Radialis	} Posterior inter-		terior cord).
Brevior .....			osseous of.....
Extensor Communis Di-			
gitorum .....			
Extensor Minimi Digiti			
Extensor Carpi Ulnaris			
Extensor Ossis Metacarpi			
Pollicis .....			
Extensor Primi Inter-			
nodii Pollicis .....			
Extensor Secundi Inter-			
nodii Pollicis .....			
Extensor Indicis .....			
Supinator Brevis.....			

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HAND.

Abductor Pollicis .....	} Median.
Opponens Pollicis .....	
Flexor Brevis Pollicis	
Outer head .....	



Inner head .....	}	Deep Branch of Ulnar.
Adductor Pollicis .....		
Palmaris Brevis .....		
Abductor Minimi Digiti		
Flexor Brevis Minimi		
Digiti .....		
Opponens Minimi Digiti	}	Median.
Lumbricales.		
1st .....		
2nd .....	4th Digital of ...	
3rd and 4th .....	} Branches from	} Ulnar.
Interossei (Dorsal and		
Palmar) .....		

### MUSCLES OF THE THORAX AND ABDOMEN.

Diaphragm .....	Phrenic of 3rd, 4th, & 5th Cervical.	
Triangularis Sterni .....	} 3rd, 4th, & 5th Intercostals of .....	
External Intercostals ...		
Internal Intercostals ...		
External oblique .....		
Internal oblique .....	} Ilio-inguinal from .....	} Lumbar
Transversalis .....		
Rectus .....	} 6 lower Intercostals of Dorsal.	
Pyramidalis .....		} Ilio-inguinal of 1st L. in
Cremaster .....	} Genital branch of genito-crural of 2nd & 1st L. in	
Quadratus Lumborum ...		} Branches of Anterior Divisions of
	Lumbar.	



MUSCLES OF THE PERINÆUM.

Coccygeus .....	Anterior branches of	{ 4th & 5th Sacral.
Levator Ani.....	Branches of lower part of Sacral Plexus.	{ Anterior superficial Perinæal of Pudic.
External Sphincter Ani .....	Anterior Division of 4th Sacral.	
Erector Penis .....	Inferior Hæmorrhoidal of .....	{ Pudic of Sacral Plexus.
Accelerator Urinæ ...	Perinæal of .....	
Transversus Perinæi		
Compressor Urethræ		

MUSCLES OF THE LOWER EXTREMITY.

PELVIS AND THIGH.

Psoas Magnus .....	{ Branches from Anterior Divisions of Lumbar.
Psoas Parvus .....	
Gluteus Maximus .....	{ Direct branch from ... } Sacral Plexus.
Gluteus Medius .....	{ Inferior Gluteal of Small Sciatic of ... }
Gluteus Minimus.....	{ Superior Gluteal of Lumbo-sacral from 5th Lumbar & 1st Sacral.
Tensor Vaginæ Femoris	
Pyriformis .....	{ Branches from upper part of .....
Obturator Internus .....	
Gemellus Superior .....	{ Branches from lower part of .....
Gemellus Inferior .....	
Quadratus Femoris .....	



Obturator Externus.....	}	Posterior Division of		}	Lumbar Plexus.
		Obturator of .....			
Iliacus Internus .....	}	Anterior Crural of ...		}	
Sartorius .....					
Rectus .....					
Vastus Internus .....					
Vastus Externus .....					
Crureus .....					
Pectineus .....	}	Anterior Division of		}	Obturator of
Gracilis .....					
Adductor Longus .....	}	Posterior Division of		}	
Adductor Brevis .....					
Adductor Magnus ...	}	Great Sciatic of Sacral Plexus.		}	
Biceps Femoris .....					
Semi-tendinosus .....					
Semi-membranosus .....					

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LEG.

Gastrocnemius.....	}	Branches from		}	Internal Popliteal of	}	Great Sciatic.
Soleus .....							
Plantaris .....							
Popliteus .....							
Flexor Longus Digitorum	}	Posterior Tibial of ...		}			
Flexor Longus Pollicis							
Tibialis Posticus .....							







## HEART.

Accelerating Influence	} Conveyed through Fibres of Cardiac Plexus from 1st Thoracic Ganglion, from Cord of Sympathetic, from Nervi Communicantes, from Spinal Cord, from Medulla Ob- longata. Also some fibres of Vagus.
Inhibiting Influence ...	
Regulation of rhythmical action .....	} Intra-cardiac ganglia.

## MUSCLES OF THE INTERNAL EAR.

Tensor Tympani .....	Branch from Otic Ganglion.	
Laxator Tympani .....	Chorda Tympani of.....	} Facial.
Stapedius.....	Branch from.....	

## MUSCLES OF THE LARYNX.

Crico-thyroid .....	} Superior Laryngeal of	} Pneumo- gastric.
Arytenoid.....		
Posterior Crico-Arytenoid	} Inferior Laryngeal of..	
Lateral Crico-Arytenoid..		
Thyro-Arytenoid.....		



## NERVES OF ARTICULATIONS.

Occipito-atloid.....	Anterior Branch of Sub-occipital.	
Temporo-maxillary .....	{ Auriculo-temporal of Inferior Maxillary of 5th Cranial.	
Shoulder .....	{ Circumflex from Posterior Cord of .....	} Brachial Plexus. <i>musculo- spiral.</i>
	{ Supra-scapular from 5th & 6th Cervical in	
Elbow .....	{ Ulnar from Inner Cord of .....	
Joints about Wrist .....	{ Posterior Interosseous of <del>Circumflex</del> from Posterior Cord of... Ulnar from Inner Cord of .....	
Hip .....	{ Nerve to Quadratus of... Great Sciatic from .....	} Sacral Plexus.
..... Branches from	{ Trunk and Anterior Division of Obtura- tor from .....	
	{ Accessory Obturator from .....	} 3rd & 4th Lumbar in Lumbar Plexus.
Knee .....	{ 3 Branches from Internal Popliteal and 2 from External Popliteal of Great Sciatic.	
	{ Deep Division of Obturator of Lumbar Plexus.	
Ankle .....	} Anterior Tibial	
Joints of Foot.....		



## ROOTS OF CRANIAL NERVES.

### SUPERFICIAL ORIGIN.

### DEEP ORIGIN.

Olfactory from Olfactory Bulb of Olfactory Tract or 1st.

*External or Long Root.*  
 Along Outer part of Anterior perforated space to Posterior border of Sylvian fissure .....

*Middle or Grey Root.*  
 From grey matter of Anterior Lobe and perforated space at the back of the Sulcus lodging the nerve.

*Internal or Short Root.*  
 From Inner and Posterior part of Anterior Lobe ...

Island of Reil. Optic Thalamus. Nucleus in front of Anterior end of Hippocampus in Temporo-Sphenoidal Lobe.

Corpus Striatum or fibres of Inner root.

Front of Gyrus Fornicatus or opposite hemisphere.

Optic or 2nd.

Posterior part of optic Thalamus and Corpora Geniculata externa and interna, also fibres from Tuber Cinereum and Lamina Cinerea

Same in words as Superficial origin. Also from Anterior of Corpora Quadrigemina.

Motor oculi or 3rd.

Inside of Cerebral peduncle in front of Pons .....

Fibres go through Locus niger and C. Quadrigemina to *Nucleus* of large multipolar cells near middle line beneath the grey floor of aqueduct of Sylvius, and below Corpora Quadrigemina.



Trochlear or 4th. } Upper part of Valve of Vieussens. {

(a) Anterior group of fibres from Posterior part of Nucleus of Third nerve.

(b) Descending fibres from neighbourhood of Nucleus of 5th and Locus Caeruleus.

(c) Decussating fibres pass transversely inwards in velum to opposite nerve.

Trigeminal or 5th. } Side of Pons Varolii nearer Upper than Lower border, arising by two roots. {

(a) *Large Root.*

1 Nucleus of small Cells in outer part of floor of 4th Ventricle, outside the Motor Nucleus and continuous below with grey Tubercle of Rolando.

2 *Descending fibres* from Lower Part of Medulla Oblongata.

3 Middle peduncle of Cerebellum.

4 Decussating fibres passing beneath floor of 4th Ventricle to opposite side.

(b) *Small or Motor Root.*

Group of large Cells in the back of the Pons, close to outer angle of 4th Ventricle, prolonged down as far as the Olivary bodies.

Abducent or 6th. } Between Pons Varolii and Anterior Pyramid of Medulla..... {

*Nucleus of Facial and 6th, a grey column of large Cells beneath Eminentia Teres in floor of 4th Ventricle.*



Facial  
or Portio Dura  
of 7th.

{ Between Lower  
border of  
Pons and Res-  
tiform Body.

- (a) Common Nucleus  
of Facial and 6th  
nerve.
- (b) Nucleus outside Su-  
perior Olivary Body,  
and which is con-  
nected with it and  
with Motor Nucleus  
of 5th.
- (c) Fibres decussating  
across Median Raphe  
of Pons.

Auditory  
or Portio Mollis  
of 7th.

{ Lower Border  
of Pons out-  
side Facial ...

- (a) *Inner Nucleus* forms  
a prominence in outer  
lower half of 4th  
Ventricle.
- (b) *Outer Nucleus* in Pos-  
terior part of Restiform  
Body to outside of  
Inner Nucleus.
- (c) Superior Vermiform  
Process of Cerebellum  
through Restiform  
Body.

The fibres are arranged in an *Anterior* and a *Posterior* set. The *Anterior* connected with all the origins, the *Posterior* only with the large *Inner Nucleus* and *Restiform Body*.



Glosso-pharyngeal or 1st Division of 8th	{	Half-a-dozen roots from Restiform Body, near Olivary Body, between 7th and Vagus .....	}	Column of big cells between Nucleus of Vagus and Inner Auditory Nucleus, beneath lower part of floor of 4th Ventricle.
--	---	--	---	--

Vagus or Pneumogastric or 2nd Division of 8th .....	{	A dozen roots from Restiform Body, near Olivary Body, in line with Glosso-pharyngeal.	}	Cells forming prominence on lowest part of floor of 4th ventricle. At point of Calamus Scriptorius Nuclei of opposite sides touch, but higher up Nuclei of Hypoglossal Nerves intervene.
---	---	---	---	--

The nuclei of Vagus and Glosso-pharyngeal are in series with grey posterior cornu of spinal cord.

Spinal Accessory or 3rd Division of 8th	{	Series of roots from Medulla below Vagus, and from lateral column of Spinal Cord down to 6th Spinal Nerve .....	}	Nucleus close to Central Canal, and continuous with that of Vagus above; also, grey matter of spinal Cord in Anterior Cornu.
---	---	---	---	--

Hypoglossal or 9th ...	{	Fine roots from groove between Anterior Pyramid and Olivary Body.	}	Column of cells projecting on floor of lowest part of 4th Ventricle near Median Furrow and in series with Anterior grey Cornu of Spinal cord.
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## NERVES TO THE SKIN.

### HEAD.

Forehead .....	} Supra Trochlear and Supra Orbital of the Frontal of ...	} Ophthalmic or 1st Divi- sion of 5th Cranial.			
Upper Eyelid .....			} Lachrymal from ...		
Inner Angle of Eye..... Dorsum and Tip of Nose				} Nasal from .....	
Ala of Nose.....	} Infra-orbital of.....		} Superior Maxillary or 2nd Division of 5th Cranial.		
Lower Eyelid .....				} Upper Lip and between them .....	
Malar region .....					} Orbital branch of...
Temple .....					
Chin .....	} Inferior Dental of	} Inferior Maxillary or 3rd Division of 5th Cranial.			
Lower Lip .....			} Auriculo-temporal of		
Side of Head above the Ear and Back of Temple	} Skin in Front of Ear ... Outside of Ear..... Meatus and Membrana Tympani .....				
Parotid Region .....				} Great Auricular of Anterior Divi- sions of 2nd and 3rd Cervical in Cervical Plexus.	
Region of Buccinator ...					} Back of Ear.....
Mastoid Region .....					



Lateral part of Back of Head .....	} Small Occipital of Anterior of 2nd in Cervical Plexus.
Back of Head .....	

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## NECK.

Front and Sides .....	{ Branches from Cervical Plexus of Anterior Divisions of first four Cervical Nerves.
Behind near Spine ...	

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## TRUNK.

<i>Front.</i> Above line of Mammae	{ Superficial descending of Cervical Plexus.	
Near mid-line .....		{ Anterior Cutaneous of Intercostals.
Below near mid-line .....		
<i>Behind.</i> Near mid-line .....	{ Internal of 6 upper, and External of 6 lower Posterior Divisions of Intercostals. External of Posterior of Lumbar and Sacral.	



Side of Trunk and Lateral part of Front and Back	}	Lateral Cutaneous of Intercostals.
Penis .....		
Scrotum .....	}	Ilio-inguinal of 1st Lumbar.
Perinæum .....		Long pudendal of Small Sciatic.
		Superficial Perinæal of Pudic.

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## UPPER EXTREMITY.

Upper Shoulder .....	}	Superficial Descending of 3rd and 4th Cervical in C. Plexus.
Deltoid Region .....		Circumflex of Posterior Cord of Brachial Plexus.

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## ARM.

<i>Outside.</i> Front and Back .....	}	Cutaneous of Musculo-spiral of Pos- terior Cord of Brachial Plexus.
<i>Front.</i> Most Internally .....		Intercosto-humeral of 2nd Inter- costal. Nerve of Wrisberg of Inner Cord of Brachial Plexus.
More Externally along Inner surface of Biceps	}	Internal Cutaneous of Inner Cord of Brachial Plexus.
<i>Back.</i> Internal and highest part... Lower down .....		Intercosto-humeral. Nerve of Wrisberg.
More Externally towards mid-line .....	}	Internal Cutaneous of Musculo- spiral.



## FORE-ARM.

*Back.*

External and highest part .....	{ Lower External Cutaneous of Musculo-spiral.		
External and middle.....	Posterior of Musculo-Cutaneous.		
External and lowest.....	Radial of Musculo-spiral.		
Internal and highest part .....	} Nerve of Wrisberg of } Inner Cord.	}	
Internal and middle...			Internal Cutaneous of
Internal and lowest.....			Ulnar of .....

*Front.*

Externally .....	Musculo-Cutaneous of Outer Cord.	
Internal and upper part.	} Internal Cutaneous of } Inner Cord.	}
Internal and lowest.....		

## HAND.

<i>Palm.</i>		} Median of Inner and Outer Cords.
Outer $3\frac{1}{2}$ fingers .....	}	
Ball of Thumb.....		Musculo-Cutaneous and Radial.
<i>Dorsum.</i>		
Outer $3\frac{1}{2}$ fingers .....	Radial.	
Inner $1\frac{1}{2}$ fingers .....	Ulnar.	

INFERIOR EXTREMITY.

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BUTTOCK.

Upper part Trochanter.....	above	{	Lateral Cutaneous of Last Dorsal. Iliac branch of ilio-hypogastric of 1st Lumbar in L. Plexus. External of Posterior of first three Lumbar.
Internally .....			Posterior of Sacral.
Externally .....		{	Posterior branch of External Cutaneous of 2nd Lumbar in L. Plexus.
Below .....			Branches of Small Sciatic.

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THIGH.

<i>Externally</i> .....			External Cutaneous of 2nd Lumbar.
<i>Internally</i> —			
Above .....			Small Sciatic.
Below .....		{	Internal Cutaneous of Anterior Crural of Lumbar Plexus.
<i>Behind</i> .....			Small Sciatic.
<i>In Front</i> —			
Above .....		{	Ilio-inguinal of 1st Lumbar. Cru- ral of Genito-Crural.
Lower .....		{	Middle Cutaneous of Anterior Crural of 2nd, 3rd, and 4th Lum- bar in L. Plexus.



PATELLAR REGION.

Middle Cutaneous .....	} of Anterior Crural of	} Lumbar Plexus.
Internal Cutaneous .....		
Internal Saphena .....		
Obturator.....		

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LEG.

Behind.....	} Small Sciatic. External or Short Saphenous of External and Internal Popliteal of Great Sciatic.	
Outer Front.....		} Branch of External Popliteal. Musculo-Cutaneous of External Popliteal.
Inside .....	} Internal Cutaneous of } Anterior Internal Saphena..... } Crural.	

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DORSUM OF FOOT.

Inside .....	} Internal or Long Saphena of An- terior Crural.		
Outside .....		} Short or External Saphena of Internal and External Popliteal.	
Adjacent Sides of 1st and 2nd Toes .....	} Anterior Tibial of .....		} External Popli- teal of Great Sciatic.
Remaining Toes .....			

## SOLE OF FOOT.

Outside .....	{ External Plan- tar of ..... }	Posterior Tibial of Internal Popli- teal.
Inside .....		
Inner $3\frac{1}{2}$ Toes.....	Internal Plantar.	
Outer $1\frac{1}{2}$ Toes .....	External Plantar.	

## SECTION OF NERVES.

At first increases their irritability, which afterwards diminishes and finally disappears.

*Anterior Roots of Spinal Nerves* ..... { Paralysis of Muscles to which the Nerve fibres go.

*Posterior Roots of Spinal Nerves* ..... { Loss of sensibility in parts from which the Nerve fibres come.

*1st Olfactory* ..... Loss of sense of smell.

*2nd Optic*..... { Loss of sight.  
No reflex contraction of Pupil by light.

*3rd Motor oculi.* { (a) Drooping of upper eyelid.  
(b) Rotation outwards of eyeball by the influence of 4th and 6th nerves.  
(c) Dilatation and insensibility to light of the Pupil.  
(d) A constant state of accommodation for long distances.



*4th Trochlear*  
*or Pathetic* { 1 Rotation upwards of inner side of eyeball.  
2 Pupil directed slightly upwards and outwards.

*5th Tri-*  
*geminus* { 1 Inflammation and degeneration of Eye.  
2 Atrophy of the Face. (These results do not follow if Sympathetic be cut at same time).  
3 Paralysis of motion and sensation in muscles and skin where the nerve is distributed.  
4 Loss of taste in Anterior two-thirds of Tongue.

*6th Abducens* ..... Internal Strabismus.

*7th Facial,*  
*or Portio*  
*Dura.* { 1 Eye permanently open.  
2 Food accumulates in the cheek.  
3 Palsy of all Muscles of expression.  
4 The Face is drawn to the sound side, and hangs down on the paralysed.  
5 Levator Palati and Azygos Uvulae are paralysed, and the Palate hangs down on that side, and is drawn to the sound one.  
6 Impairment or loss of taste in Anterior two-thirds of Tongue and dryness of mouth on the paralysed side.

*8th Auditory* (Portio Mollis of 7th of Willis) { *a* Deafness.  
*b* Diminished sense of rotation of head in any plane.



- 9th *Glosso-pharyngeal*  
(Part of 8th of Willis) {
- 1 Loss of taste on Posterior one-third of Tongue.
  - 2 Loss of sensibility in Internal Ear, back of Tongue, Pharynx, and Tonsil.
  - 3 Paralysis of Stylo-pharyngeus.

10th and 11th *Vagus or Pneumogastric*  
*and Spinal Accessory*  
(Part of 8th of Willis).

- Spinal Accessory. {
- |                   |   |   |
|-------------------|---|---|
| Spinal Portion    | } | Paralysis of Sterno-Cleido-Mastoid and Trapezius. |
| Medullary Portion | { | 1 Acceleration of Heart's action.                 |
|                   |   | 2 Aphonia.  |
|                   |   | 3 Dysphagia.                                      |

- Vagus in the Neck. {
- (a) Quickening of Heart's action.
  - (b) Paralysis of Laryngeal Muscles, and if both Nerves are cut Inaction of Vocal Cords and Passage of food into Trachea.
  - (c) Slowing of Inspiration.
  - (d) Abolition of reflex action following stimulation of Larynx, Pharynx, Stomach, or Great Splanchnic Nerve.
  - (e) Œsophagus becomes distended with food, the last act of swallowing being arrested; also Palsy of left end of Stomach, and Arrest of Gastric Juice for a time.



- Superior Laryngeal  
above External L.  
Branch.....
1. Loss of sensibility of Mucous Membrane of Larynx.
  2. Slight slowing of Inspiration.
  3. Paralysis of Crico-Thyroid.
- Recurrent Laryngeal
- { Paralysis of the Laryngeal Muscles,  
Loss of Voice, and Passage of food  
into Trachea and Lungs.
- 12th *Hypoglossal*  
(9th of Willis)...
- { Paralysis of the muscles to which it  
is distributed. If protruded, the  
Tongue is pushed to the paralysed side,  
and if retracted, the Tongue is drawn  
away from the paralysed side.
- Sympathetic in the  
Neck.* Effects  
above the cut  
point are .....
- 1 Dilatation of the blood-vessels of side  
of Head, Ear, Face, and Pia Mater  
on same side.
  - 2 Consequent increase of temperature.
  - 3 Increased growth is produced.
  - 4 Pupil becomes smaller.
  - 5 Eye sinks to some extent.
  - 6 Some internal strabismus.
- Splanchnic* .....
- a. Enormous dilatation of the blood-  
vessels of Abdominal Viscera.
  - b. Consequent fall of blood pressure  
over the body and Anæmia.