

AN  
INAUGURAL DISSERTATION  
ON

*The Hand,*

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BY

*W. H. Rumbrow,*

OF

*Georgia,*  
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## The Hand

In the beginning God created  
The Heavens and The earth - and  
pronounced every thing then in  
very good - The former of which  
He should be ruler - The latter  
of which man should be  
ruler - The alwise creation  
making every thing as he did  
first the earth - then the organ-  
ic Kingdom - The animals of the  
fields - And the birds of the air  
He then created man - and  
pronounced him ruler over  
all things upon this earth,  
But in order to make him  
superior to the animals of the  
field - The Almighty endowed  
him with a mental faculty,  
and a hand - The former of  
which the brute Kingdom is



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entirely void of, the latter of which the brute has one some what resembling that of man but a much less complicated organ - It is the part which terminates the upper extremity in man - It extends from the fold of the wrist to the extremity of the fingers, Being connected to the remainder of the upper extremity by means of muscles ligaments, tendons, blood vessels and nerves - They all run through and over the hand in order to sustain it in its natural position.

The hand is sustained by a bony skeleton composed of a number of pieces movable on each other - The internal surface



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of the hand is concave to facilitate flexion of the fingers that the grasp might be firm. The external surface is convex laterally - and is nearly straight antero-posteriorly - According to anatomists the hand is divided into three parts - the carpus, metacarpus and phalanges -

The hand has twenty nine bones *viz.* The carpal bones which are eight in number - the Metacarpal bones are five, and the phalanges are fourteen & two sesamoid bones -

The bones of the carpus commence from the radial side - the first row is the scaphoid, lunate, triquetrum, pisiform and the second row is the



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Scapulum trapezoides os magnum  
and un os form

The metacarpal are five in number and those bones which are situated between the carpus & the phalanges, they are clasped among the long bones, and are divided accordingly—

The phalanges are named from their arrangement in rows and are fourteen in number, three to each finger and two to the thumb— they from their shape have likewise been clasped among the long bones, and are divided according to their class—

The carpal bones articulate with the radius above forming a ginglymoid joint. Its ligaments are four in number—



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The Synovial membrane lines the articulating surface of the radius and the first row of the carpal bones below. The bones of the carpus form by their articulations amphiarthrodial joints except the conjoined head of the os magnum and uncariform which is received into a cup formed by the scaphoid lunula and cuneiform bones and formed by their articulations an enarthrodial joint. The metacarpo-phalangeal articulations form synovial joints. Their ligaments are four in number. The joints formed by the phalangeal articulations are of the same class. Three ligaments



W. H. H. H.

only belongs to these joints—

### The Muscles—

The Radial region.

Abductor pollicis— Flexor ossis metacarpi— Flexor brevis pollicis—

Adductor pollicis— The Abductor pollicis, arises from The trapezium and annular ligament, It is inserted into The base of The first phalanx of The thumb—

Flexor ossis metacarpi arises from The trapezium and annular ligament, and is inserted into The whole length of The metacarpal bone of The thumb— Flexor brevis pollicis— Arises by two heads— The external portion arises from The trapezium and annular ligament.



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The internal portion from the trapezoides and os magnum, they are both inserted into the base of the first phalanx of the Thumb, leaving a sesamoid bone in each tendon for the protection of the joint. Adductor pollicis is a triangular muscle in shape: it arises from the metacarpal bone of the middle finger, its fibres converge from the broad origin to be inserted into the base of the first phalanx of the Thumb.

### Ulna region

Palmaris brevis. Abductor minimi digiti. Flexor brevis minimi digiti. Adductor ossis metacarpi.

Palmaris brevis is a thin plane



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of muscular fibres about an inch in width, which arises from the annular ligament and palmar fascia and passes transversely inwards to be inserted into the integuments of the inner border of the hand.

Abductor minimi digiti, is a small tapering muscle which arises from the pisiform bone where it is continuous with the tendon of the flexor carpi ulnaris, and is inserted into the base of the first phalanx of the little finger, and into the expansion of the extensor tendon.

Flexor brevis minimi digiti is a small muscle it arises from the trapeziform bone & annular ligament, and is in



## <sup>mus</sup>The Hand

serted into the base of the first phalanx. <sup>mus</sup>This muscle is sometimes wanting.

Adductor ossis metacarpi: arises from the ulnariform bone and annular ligament and is inserted into the whole length of the metacarpal bone of the little finger—

### Palma Region.

<sup>mus</sup>Lumbricales Interossei palmaris, Interossei dorsales—

The Lumbricales four in number are merely accessory to the deep flexors. They arise from the tendons of the deep flexors and are inserted into the aponeurotic expansion of the extensor tendons on the radial side of the hand. The Palma Interossei



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are three in number and are placed upon the metacarpal bones rather than between them - They arise from the base of the metacarpal bone of one finger and are inserted into the first phalanx and an aponeurotic expansion of the same finger - The first belongs to the index finger the second to the ring finger - and the third to the little finger - the middle being excluded -

<sup>2<sup>d</sup></sup> The dorsal interossei are four in number - They are bipinniform & arise by two heads from the adjoining side of the base of the metacarpal bones - They are inserted into the base of the first <sup>phal</sup>alanx and an aponeurotic expansion



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of the extensor tendons - The action of these muscles are expressed in their names - Those of the radial side belonging to the Thumb - and provide for three of its movements (viz)

Abduction Adduction & flexion

The *adna* group in like manner are subservient to the same motions of the little finger -

The *interossei* are abductors and adductors to the several fingers.

The *Lumbricals* are accessory to the deep flexors - They were called by the earlier anatomist *fidicini* from an idea that they might effect the fractional movements by which the performer is enabled to produce the various notes on that instrument.



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The hand is supplied with blood by branches of the Brachial artery - viz the ulna and radius. The former passing downward on the outer and front portion of the arm meets one of the branches of the radius, the superficialis volae, and forms by their union the superficial palmar arch - which gives off principally the digital branches. The radial <sup>artery</sup> passes down the arm on the radial side to the thumb - there it enters the hand forms the deep palmar arch - and terminates by intercommunicating with the superficial palmar arch. The fingers are supplied with the blood by branches from the superficial palmar



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arch, there are four in number of these branches, The first and smallest is distributed to the inner side of the little finger— The other branches are short trunks which divide between the heads of the metacarpal bones, and forms the collateral branch of the little finger— The collateral branches of the ring and middle fingers— and a collateral branch on the ulna side of the index finger— The blood is returned from the hand by the venae comitae, The anterior and posterior ulna veins and the radial vein— These veins unite and form the two great veins— Basilic and Cephalic, which convey it to the great organ of circulation,



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The hand the great organ of prehension and touch is supplied with nerves, by branches of the ulna radial and Median nerves—

### Physiology.

In order to appreciate accurately the shape and size of objects, it is necessary that they should be embraced by a portion of the body, which can examine and be applied to them in every direction.

In man the organ well fitted for this purpose is the hand— which is situated at the free extremity of a long and flexible member— which admits of its being moved in every direction— and renders it not only well adapted to touch but that of prehension also— man alone possesses a true hand— although



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Other animals have organs of prehension some what resembling the hand - They are much less complete. The chief Superiority of the hand consists in the strength and size of the thumb - Standing of as it does from the fingers can be brought in apposition to them so as to enable us to grasp bodies <sup>execute</sup> and various mechanical processes under the guidance of the will or intellect. The thumb was esteemed by (Aldinus) such an important organ that he called it the lesser hand assisting the greater. (*Manus parva majori adiutrix*) It was likewise an ancient notion to ascribe the chief superiority of man over animals, and his preeminence in the universe - his intelligence in short to the hand, some say that man



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is the wisest of all animals because he possesses a hand - But whether this be true or not - I can not say - But am somewhat inclined to doubt it. While this is the opinion of many Metaphysicians others have considered the hand the source of mechanical capabilities - others again say it can only be regarded as an instrument by which information of particular kind is conveyed to the brain - by which other functions are executed according to the direction of the will.

In addition to the advantages referred to the hand is furnished with the sensible integument - the papillae are largely developed, especially at the extremity of the fingers, where they are arranged in concentric circles - and rest upon a spongy tissue, considered by many phys



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biologists erectile. Serving as a cushion - At the posterior extremity of the fingers the nails are situated - which support the pulp of the fingers behind - and render the contact with objects more immediate. This happy organization of the soft parts of the hand alone concerns the sense of touch directly - Metaphysicians have differed widely regarding services that should be attributed to the touch - Some have greatly exaggerated them considering it the sense par excellence, or the first of senses. Buffon in particular assigns so much importance to the touch that he believed the cause why one person has more intellect than another is his having made more prompt and repeated use of his hands from infancy - Hence he recommends that infants should be allowed to use them



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freely from the moment of birth.  
Touch can <sup>be</sup> cultivated to an enormous  
extent. For instance look at the blind  
man - He by cultivating the touch  
it becomes so acute, that by running  
his hand over the his book - he becomes  
so well acquainted with the <sup>different</sup>  
forms of letters, he reads with as much  
facility as if he was glancing it  
over with the eye - The touch may  
also be so acute as to enable him  
to tell the different colors from each  
other without the aid of vision  
Again, the accoucheur, without the  
aid of vision, by means of the learned  
touch, is enabled to tell the <sup>different</sup>  
presentations, what stage of labor,  
whether every thing be normal or  
abnormal. Showing conclusively that  
The hand might and does answer in the place of



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The eye to some extent.  
I might further add that this is the organ by which all instruments are accomplished. From Herschell's Microscop down to the simplest instrument. Taking the subject in this point of view there is room for some one to immortalize himself by writing a monograph on the Subject. There being only one on it (Bell).