

December 6, 1888.

Professor G. G. STOKES, D.C.L., President, followed by
Dr. W. POLE, Vice-President, in the Chair.

The President announced that he had appointed as Vice-Presidents—

The Treasurer,
Sir James Paget,
Dr. Pole,
Sir Henry Roscoe.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read :—

- I. "Description of the Skull of an extinct Carnivorous Marsupial of the size of a Leopard (*Thylacopardus australis*, Ow.), from a recently opened Cave near the 'Wellington Cave' locality, New South Wales." By Sir RICHARD OWEN, K.C.B., F.R.S., &c. Received October 12, 1888.

[Publication deferred.]

- II. "The Pectoral Group of Muscles." By BERTRAM C. A. WINDLE, M.A., M.D. (Dub.), Professor of Anatomy in the Queen's College, Birmingham. Communicated by Professor A. MACALISTER, F.R.S. Received October 25, 1888.

(Abstract.)

This paper is an attempt to explain the morphology of the pectoral group of muscles, and is based on the dissection of over fifty mammals, and on descriptions of others in various journals, &c.

The following are the chief conclusions :—

1. That portion of the lateral sheet of muscle, pushed outwards in the form of a cone by the growth of the anterior limb-bud, which belongs to the ventral region, may be divided by radial lines of fission into three segments, viz., an anterior or manubrial, a mesial or gladiolar, and a posterior or abdominal.

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2. That the radial division is of primary importance is shown by the fact that each of these segments has its own nerve, viz., the anterior, a nerve corresponding to external anterior thoracic of human anatomy; the middle, internal anterior thoracic; the posterior, lateral thoracic. The first is definite in its origin and distribution, and the third in its origin, the second is less regular, and in correspondence with this is a certain indefiniteness of the line of division between the second and third segments.

3. The anterior segment may be subdivided into clavicular or manubrial portions, and the posterior may also be in two divisions, but these are not regarded as of primary value.

4. Each segment may undergo a secondary lamination into superficial and deep parts, viz., anterior into superficial and deep manubrial, middle into gladiolar and costal, and posterior into superficial and deep abdominal.

5. *Superficial manubrial* is always present and generally covers the others at its expanded insertion; it may be distinct or fused with deep manubrial or gladiolar, or both.

6. *Deep manubrial* may be absent, or present and distinct, or fused with, or just separable from, superficial. It may be fused with costal or very rarely with gladiolar, if the plane of manubrial lamination is more superficial than usual. The relation of this muscle to the so-called "sterno-scapularis" is discussed, the author being of opinion that the latter is subclavian in its nature.

7. *Gladiolar* may be absent or nearly so. It may be distinct or fused with superficial or deep manubrial, or with costal or abdominal. It is very often fused at its posterior border only with costal, the two sheets being otherwise separate.

8. *Costal* may arise from the edge of the sternum and the costal cartilages, from the cartilages alone, or from the ribs. It has a tendency as it decreases in size to shift its origin farther outwards, and its insertion farther towards the shoulder. It may be fused with gladiolar or deep manubrial or abdominal. It may consist of two portions, anterior and posterior.

9. *Abdominal* may be absent or double, and the two parts may overlies one another, or one may be anterior to the other. It may be fused with gladiolar or costal. It may be connected by its entire outer border with the dorsal sheet, thus closing the axilla, or fasciculi may pass from one side to the other (*achselbogen*). The origin may wander outwards to the lower ribs (*pectoralis quartus*).

10. The parts above described are very variously arranged amongst mammalia. The conditions obtaining are discussed and exhibited in a tabular form.

11. The various factors are thus represented in man :—

Superficial manubrial: clavicular and anterior part of *pectoralis major*, sometimes separate from the remainder of the muscle.

Deep manubrial: occasionally present as the *pectoralis minimus* of Wenzel Gruber.

Gladiolar: posterior, non-reflected part of *pectoralis major*.

Costal: double (1) *pectoralis minor*, (2) deep reflected part of *pectoralis major*.

Abdominal: occasionally present as *pectoralis quartus*, or as some of the forms of *achselbogen*.

III. "Some Observations on the Amount of Light reflected and transmitted by certain kinds of Glass." By Sir JOHN CONROY, Bart., M.A., Bedford Lecturer of Balliol College and Millard Lecturer of Trinity College, Oxford. Communicated by A. G. VERNON HARCOURT, Esq., F.R.S. Received November 8, 1888.

(Abstract.)

The experiments were commenced in order to determine the amount of light lost by transmission through glass.

Plates of the same kind of glass, but of different thickness, were taken, and the amount of light they transmitted determined, and from these values the percentage amounts reflected and obstructed calculated.

The amount reflected from the first surface was also determined directly by measuring the relative intensities of the illumination produced by two argand flames, when the light from both fell directly on the photometric surfaces, and when the light from one fell directly whilst that from the other reached the photometer after reflection from the surface of the glass.

Experiments were also made to ascertain whether repolishing altered in any way the reflective power of the glass; and the polarising angles of the glass before and after repolishing were also determined.

Conclusions.

It seems probable that the amount of light reflected by freshly polished glass varies with the way in which it has been polished, and that, if a perfect surface could be obtained without altering the refractive index of the surface-layer, then the amount would be accurately given by Fresnel's formula, but that usually the amount differs from that given by the formula, being sometimes greater and sometimes less.