

light which will be afforded by another specimen to the indulgence of any speculation regarding this bone ; in the meanwhile, I by no means wish to deny that appearances are strongly in favour of the interpretation which has been put upon it.

In conclusion, I may remark that I am unaware of the existence of any “law of correlation” which will enable us to infer that the mouth of this animal was devoid of lips, and was a toothless beak. The soft tortoises (*Trionyx*) have fleshy lips as well as horny beaks ; the *Chelonia* in general have horny beaks, though they possess no feathers to preen ; and *Rhamphorhynchus* combined both beak and teeth, though it was equally devoid of feathers. If, when the head of *Archæopteryx* is discovered, its jaws contain teeth, it will not the more, to my mind, cease to be a bird, than turtles cease to be reptiles because they have beaks.

All birds have a tarso-metatarsus, a pelvis, and feathers, such, in principle, as those possessed by *Archæopteryx*. No known reptile, recent or fossil, combines these three characters, or presents feathers, or possesses a completely ornithic tarsometatarsus, or pelvis. *Compsognathus* comes nearest in the tarsal region, *Megalosaurus* and *Iguanodon* in the pelvis. But, so far as the specimen enables me to judge, I am disposed to think that, in many respects, *Archæopteryx* is more remote from the boundary-line between birds and reptiles than some living *Ratitæ* are.

II. “Account of Experiments on Torsion and Flexure for the Determination of Rigidities.” By JOSEPH D. EVERETT, D.C.L., Professor of Natural Philosophy in Queen’s College, Belfast. Communicated by Sir WILLIAM THOMSON. Received January 13, 1868.

(Abstract.)

This paper describes a continuation of experiments related in two former papers, read February 22, 1866, and February 7, 1867,—the substances operated on in the new series being wrought iron, cast iron, and copper, and the mode of procedure being the same as in the latter of the two preceding series. The results obtained, along with those published in the former papers, are given below, the figures I., II., III. indicating the paper in which the results are deduced. The values of M, *n*, and *k* are in millions of grammes weight per square centimetre.

	M, Young's modulus.	<i>n</i> , Rigidity.	<i>k</i> , Resistance to compression.	σ, Poisson's ratio.	Specific gravity.
Glass, flint, I.	614.3	244.2	423.0	.258	2.942
Do. II.	585.1	239.0	353.3	.229	2.935
Brass, drawn, II....	1094.8	372.9	5701 (?)	.469	8.471
Steel, cast, II.....	2179.3	834.1	1875.6	.310	7.849
Iron, wrought, III.	1999.4	783.8	1484.1	.275	7.677
Iron, cast, III.....	1374.1	542.3	982.2	.267	7.235
Copper, drawn, III.	1255.8	455.6	1716.4	.378	8.843