PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A
MATHEMATICAL, PHYSICAL & ENGINEERING SCIENCES

Addenda: The Law of Error and the Combination of Observations

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Phil. Trans. R. Soc. Lond. A 1939 **237**, 566
doi: 10.1098/rsta.1939.0003

Corrigenda et Addenda

FLEXURE WITH SHEAR AND ASSOCIATED TORSION IN PRISMS OF UNI-AXIAL AND ASYMMETRIC CROSS-SECTIONS. *By* A. C. STEVENSON

On p. 195 (line 3 from bottom) of the paper with the above title (Stevenson 1938), in giving the distance $\bar{y}$ of the centre of flexure from the centroid of the cross-section the author stated "this gives $\bar{y} = 0{\cdot}8a$". This should have read "this gives $\bar{y} = 0{\cdot}1\dot{3}a$, or the distance from the vertex is $0{\cdot}8a$". In consequence of this initial misstatement, Duncan's formula on p. 196 (line 7) is regrettably made to give a result in disagreement with the author's. Instead of "the result for the circular sector of small angle and radius a is then $(0{\cdot}8 + 1{\cdot}6\sigma)\ a$" (line 8) this should accordingly read "the result...is then $(0{\cdot}1\dot{3} + 0{\cdot}2\dot{6}\sigma)\ a$, or the distance from the vertex is $(0{\cdot}8 + 0{\cdot}2\dot{6}\sigma)\ a$, this result being in exact agreement", and then the two sentences following this correction should be deleted.

The author is much indebted to Professor W. J. Duncan, who, in pointing out the error, emphasizes that the formula quoted (for thin cantilevers of "smooth" boundary of cross-section with uni-axial symmetry) is necessarily exact for the limiting case of the thin sections such as the one in question (see Duncan 1932, pp. 62–3).

Professor Duncan has also been instrumental in bringing to the author's notice a paper (in Russian) on "Some cases of an exact solution of the problem of flexural centre" (Zwolinsky 1936). The cross-sections treated are (i) circular sectors, (ii) sections bounded by two arcs of confocal parabolas, and (iii) sections bounded by two arcs and the common axis of two confocal parabolas. The flexure solution used for the load at right angles to the axis of symmetry of the circular sector, due to Galerkin (1927), is equivalent to that of Young, Elderton, and Pearson (1918). The digamma and trigamma functions are used by Zwolinsky to calculate the position of the flexural centre much as in the present writer's method for that cross-section. Incidentally the limiting case of the thin circular sector is explicitly treated and the result agrees with the above. The cross-section (iii) is asymmetric, and is the earliest example of a complete and exact solution for the Saint-Venant flexure problem for such a cross-section that has yet come to the author's notice.

The opportunity is taken to record the following corrections needed in the author's paper (Stevenson 1938):

p. 165 equation (2·15) for $(x+iy)^3/3$ read $(x-iy)^3/3$.
p. 169 equation (4·10) for $\chi_0 + i\chi_0$ read $\chi_0 + i\chi_0'$.
p. 173 equation (7·3) for $(EI\tau/W)$ read $(EIM_3\tau/W)$.
p. 178 equation (11·6) for $(\chi_2 - y^3/6)$ read $(\chi_2 - y^3/3)$.
p. 178 equation (11·11) for $\left(\frac{\partial \phi_3}{\partial x} + x\right)$ read $\left(\frac{\partial \phi_3}{\partial y} + x\right)$.

References

Duncan 1932 *Rep. Memor. Aero. Res. Comm. Lond.*, No. 1444.
Galerkin 1927 *Trans. Leningrad Inst. Eng.* **96**, 277.
Stevenson 1938 *Philos. Trans.* **237**, 161.
Young, Elderton and Pearson 1918 *Drapers Co. Res. Mem. Tech. Ser.* No. VII.
Zwolinsky 1936 *Trans. Central Aero-Hydrodynamical Inst. U.R.S.S.* No. 245.

THE LAW OF ERROR AND THE COMBINATION OF OBSERVATIONS. *By* H. JEFFREYS, F.R.S.

P. 237 for $\Sigma \frac{1}{2-(x-a)^2}$ read $\Sigma \frac{1}{\{2-(x-a)\}^2}$.

P. 261, third line from bottom, for 7·3 read 12·4.