

Corrections and Additions to "The Mechanical Foundations of Elasticity and Fluid Dynamics"

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Acknowledgement. I am grateful for the corrections supplied by a number of correspondents, especially Dr. Ericksen, Professor Kuerti, Mr. R. Toupin, and Professors Whaples and Wundheiler. Some portions which have proved slow reading are expanded a little. On this occasion the article (except for §32) is brought up to date, to the best of my knowledge, as of May, 1953. No further additions are to be published, but since the material is being reworked in a new form, I should be greatly obliged for notice of any remaining errors and omissions.

P. 127, l. 13, replace comma after "history" by semi-colon.

P. 127, l. 14, replace period after "history" by comma and add: except that there is a residual hydrostatic pressure appropriate to the density and temperature.

P. 129, footnote 1, insert: [1924, 8] [1925, 6] [1928, 8] [1948, 60] [1951, 22].

P. 131, l. 3 after (6.3), instead of a_i read a_r .

P. 131, replace ll. 1-3 above (6.4) by:

If the tensor a_{ij} is symmetric, i.e. if $a_{ij} = a_{ji}$, it does not generally follow that the matrix $\|a^i_j\|$ is symmetric; however, it does so follow in a rectangular Cartesian system, and we shall be concerned only with Euclidean three-dimensional space, where such a system is always available, so that, since the proper values a_r are scalars, we can carry over to symmetric tensors those properties of symmetric matrices which can be proved by use of the proper values only. For example, the proper values of a real symmetric tensor are real, and it is always possible to choose a set of three real orthogonal unit proper vectors n_r^i :

$$a^i_j n_r^j = a_r n_r^i, \quad g_{ij} n_r^i n_\Delta^j = \delta_{r\Delta}, \quad (6.3a)$$

where g_{ij} is the metric tensor. Since the vectors n_r^i are linearly independent, the matrix $\|n_r^i\|$ possesses a unique inverse, whose entries we shall write n^Δ_j , so