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February 11, 1976

Dear colleague, I think you would wish to see the review of NOLL's papers by RIVLIN. Since it appears in a journal mathematicians do not often read, I append a copy.

Yours sincerely,

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**The Foundations of Mechanics and Thermodynamics: Selected Papers.** W. Noll, 324 pp. Springer-Verlag, 1974. \$ 20.10.

For many years, NOLL has been the beneficiary – or perhaps the victim – of a propaganda campaign conducted on his behalf by TRUESDELL, his teacher and mentor. The present volume, a collection of 16 of NOLL's papers with a panegyric preface by TRUESDELL, is the latest thrust in this campaign. While it is undoubtedly true that NOLL's influence upon research in the foundations of mechanics and thermodynamics has been considerable, much of it has been a product of TRUESDELL's campaign. Moreover, the extent to which this influence has been benign or malign may well be considered. An overview of the work which might appear, at first sight, to have been influenced to a substantial extent by that of NOLL, leads one to the conclusion that much are recapitulations of earlier ideas and results of others. And the papers that appear to follow more closely NOLL's objectives (insofar as these are discernible) share with those of NOLL a cavalier lack of concern for physical reality and an intoxication with mathematical idiom, as distinct from genuine mathematical or physical content. In paper after paper of the collection under review, we find well-

known and well-understood concepts in continuum mechanics or thermodynamics presented – and sometimes misrepresented – in the idiom of elementary set theory. For example, on page 4 we read “A body  $\mathcal{B}$  is a smooth manifold of elements called *particles*. The configurations  $\phi, \theta, \dots$ , of  $\mathcal{B}$  are the elements of a set of one-to-one mappings of  $\mathcal{B}$  into a three-dimensional Euclidean point space  $\mathcal{E}$ . The vector space associated with  $\mathcal{E}$  will be denoted by  $\mathcal{V}$ . The mass-distribution of  $\mathcal{B}$  is a measure defined on all BOREL subsets of  $\mathcal{B}$ .” While few will find that these statements enhance their understanding of concepts of particle, configuration, and mass-distribution, the approach might be justifiable if significant new results emerged from the formalism. This is rarely, if ever, the case. Many of the postulates from which NOLL proceeds, while presented as having generality in a physical sense, are in fact quite arbitrary. For example, the lengthy paper with COLEMAN, *On the Thermostatistics of Continua*, erroneously postulates that the internal energy of an elastic material held at constant deformation is necessarily a globally-convex function of the entropy. The trivial predictions that follow from this postulate are invalid for many elastic materials. The same fallacy underlies much of the paper *Material Symme-*

*try and Thermostatic Inequalities in Finite Elastic Deformations.* Despite the many shortcomings of **NOLL**'s work, it is not without some redeeming value. There is to be found in it an occasional observation which may direct the attention of others, more concerned with physical reality, in more fruitful directions than those followed by **NOLL** himself. However, caveat lector!

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from American Scientist, January-February, 1976.