pointed toward in this note. But if my view about the quantity-quality continuum is correct, that of itself disposes of the conclusion.

The sum and substance of my criticism is that Mrs. Gaskell's argument is a garment beautifully woven and patterned from ultra-modern materials (atomic physics) and draped upon a manikin of supernaturalism that is at least as old as the Pythagorean mysteries. Nor is there difficulty about so classifying this manikin as to bring out its kinship with others much more recent and, to biologists, much more familiar than its Pythagorean prototype. It will suffice to mention the Pangens of Darwin and the Determinants of Weismann. For these, each in its day, illumined the whole biological sky from horizon to zenith. Any biologist of forty years' standing will be able to enlarge the class to his heart's content.

Or if one's predilections whet his curiosity more toward the physical than the biological descendants of the Pythagorean system and precursors of Gaskellean system, the monads of Leibnitz modernized from those of Bruno should satisfy that curiosity. In fact the peculiar interiorness, so to speak, of Mrs. Gaskell's new unit is strangely reminiscent of Leibnitz's monad as a "purely internal principle." Mrs. Gaskell tells us, it should be noted, that the only space available for the new unit is "intraatomic space."[5]

There are two possibilities of real benefit from studying the ancestral line of units of this kind. One is in the chance afforded for seeing the particular ways in which the principle of quality-quantity can be violated. The other is in illustrations they furnish of the statement previously made that the super- or extra-natural can manifest itself in almost as great variety as the natural.

As I see the new theory it is only one more illustration of the self-defeat to which the imperialistic claims of atomism are bound to lead if pushed into the realm of mental life. And perhaps in this as in so many other situations self-defeat is the most effective kind of defeat and hence in a sense the surest promoter of truth.

Should the book before us contribute even in this negative way to the deliverance of mankind from bondage to all forms of supernaturalism, it would have rendered a great service. For all aspects of man's spiritual life—those to which are due his science, his philosophy, his ethics, his art, his religion, and all the rest—are subject in greater or lesser measure to this bondage.

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March 7, 1929.

[5] p. 128.

HERMAPHRODITISM IN ARBACIA

HERMAPHRODITIC sea-urchins are rare. One has been reported from Africa; two from Europe. That is all, or at any rate all I have been able to find in a hasty search of the literature.

Viguier in 1900[1] makes brief mention of a hermaphroditic specimen of *Sphaerechinus granularis* collected at Algiers. He gives no details. Herlant, 1918,[2] describes a *Paracentrotus lividus* from Villefranche with three large testes, one atrophied testis and one mixed gonad. Drzewina and Bohn, 1924,[3] report a *Strongylocentrotus* (=*Paracentrotus*) *lividus* with four ovaries and one testis. This was taken at Roscoff. In all three of the above cases, self-fertilization was possible; and in the last two, normal larvae were obtained.

In spite of the many thousands of *Arbacia* used at Woods Hole, there is apparently no record of hermaphroditism in this form. On June 25, 1928, at Woods Hole, I found an *Arbacia punctulata* with four typically red ovaries and one ovotestis. The ovotestis consisted of a red ovarian portion with normal ova, and a yellow testicular portion with normal spermatozoa. On finding this hermaphroditic sea-urchin, I was reminded of an earlier discovery of the same sort. In the summer of 1915, while working at Woods Hole, I came across a specimen of *Arbacia* with two testes, two ovaries and one ovotestis. The ovaries and testes were alternately placed, that is to say, neither the two ovaries nor the two testes were adjacent to each other. In this case, as in the one previously mentioned, the eggs and sperm were normal and gave rise to normal larvae following self-fertilization.

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MICROPHOTOGRAPH OR PHOTOMICROGRAPH?

AFTER observing for several times in close succession what seems to me to be inconsistent use of these terms, I am moved to register my views on the subject. A microphotograph is logically, and by derivation, "a microscopic photograph of a macroscopic object" (Century dictionary). The man who claims to have originated the term meant it to be used in this sense only. A photomicrograph is "a macro-

[1] Viguier, 1900, *Compt. Rend.*, Acad. Sci. Paris, 131: 63.

[2] Herlant, 1918, "Notes et Revue," *Arch. de Zool. exp. et gen.*, 57: 28.

[3] Drzewina and Bohn, 1924, *Compt. Rend.*, Acad. Sci. Paris, 178: 663.