

Washington, D.C., area, and spent his final years in New Orleans.

In 1807 Ewell married Elizabeth Stoddert, the daughter of Benjamin Stoddert, first Secretary of the Navy. They had four daughters and five sons, two of whom - Benjamin Stoddert Ewell and Richard Stoddert Ewell - were distinguished Confederate officers. Thomas Ewell died on 11 May 1826 at the age of 41. Unfortunately, no portraits or other likenesses of him appear to have survived.

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BOOK NOTES

A Science of Impurity: Water Analysis in Nineteenth Century Britain. Christopher Hamlin, University of California Press, Berkeley and Los Angeles, 1990. xiii + 342 pp. Cloth (Type-set). \$45.00.

This is an extremely interesting case study of a little explored aspect of the rise of the professional chemist - the role of chemists - or, indeed, of scientists in general - as expert consultants on matters of public health. Beginning with the analysis of mineral waters in the 18th century and extending through the debates on the relative roles of bacteriology versus chemistry in water purification and management at the end of the 19th century, Hamlin gives a disturbing picture of chemists willing to assume the role of public expert, both for reasons of enhancing the public status of their profession and in order to financially supplement their often none too remunerative academic and industrial positions, while at the same time admitting within the chemical literature that the analytical procedures they employed in making their expert pronouncements were lacking a sound scientific basis.

The problems plaguing scientific water analysis were of two kinds. The first of these, and the only one which properly fell within the province of the chemist, was the problem of destructive versus nondestructive methods of analysis. Were the ingredients reported by the chemist actually present as such in the water or were they generated from other ingredients by the process of chemical analysis?

In modern terms, this reduces to the question of whether one is using chemical or physical methods of analysis. Classical chemical analysis, which was the only kind available for most of the 19th century, basically consists of synthesizing known compounds from unknown compounds and is decidedly destructive. Though it can be used to infer unambiguously the elemental composition of the unknown, inference of its molecular composition and structure requires additional, and often highly questionable, assumptions.

A very suggestive theoretical analysis of these problems had been given by Berthollet early in the 19th century, and the implications of Berthollet's theory for water analysis were clearly spelled out by the Scottish chemist, John Murray, in 1815. Nevertheless, many chemists concerned with water analysis continued to ignore these difficulties throughout the rest of the century. Writers on the history of analytical chemistry have frequently commented on the fact that an explicit