

ACCOUNTS of CHEMICAL RESEARCH®

MARCH 1995

Registered in U.S. Patent and Trademark Office; Copyright 1995 by the American Chemical Society

Holy Grails in Chemistry

Reference works¹ define a Holy Grail (“usually capitalized”) as an “eminently desirable and ultimate object of extended effort”, a “knightly quest”. This issue contains examples in chemistry selected by us and the Editorial Advisory Board from a far longer list of exciting and deserving topics. Holy Grails are also said to be “achievable only by those chaste in thought, word, and deed”; we leave judgment in this regard to our readers.

Linus Pauling’s career epitomizes such quests in chemistry. When a student asked if his proposed research could possibly work,² Pauling quoted an old physics text problem: “If you are walking through a forest and come upon a cube of gold that is one foot on each side, should you try and pick it up? Answer: No, you should not, because the cube would weigh about 1200 pounds.” Smiling, Pauling said, “But of course you should try and pick it up. Any fool would!” Quite fortunately, Prof. Pauling had replied to our invitation for this issue with the letter shown next, one of the last of his published writings before his death this last August. This issue is dedicated to him because of the breadth, importance, and number of Holy Grails that he identified, provided with form and substance, and even achieved. In his 1984 Priestley Medal address,³ he said, “Every aspect of the world today—even politics and international relations—is affected by chemistry.” Re-

flecting this, his Nobel prizes were in chemistry and in peace.

These articles represent a tiny fraction of the goals in chemistry deserving critical study, chosen to illustrate a variety of viewpoints concerning high professional goals. Although many of these goals may not be achieved, at least in the way set forth, unusual efforts for such goals will almost surely pay unusual rewards in some way. Alchemists sought to turn base metals into gold; crude oil is now black gold, turned into a cornucopia of uniquely useful materials by sophisticated chemistry. We hope that our readership will find these descriptions informative, enjoyable, and even inspiring.

Allen J. Bard

*Department of Chemistry and Biochemistry
The University of Texas, Austin, Texas 78712-1167*

George M. Whitesides

*Department of Chemistry, Harvard University
12 Oxford Street, Cambridge, Massachusetts 02138*

Richard N. Zare

*Department of Chemistry, Stanford University
Stanford, California 94305-5080*

Fred W. McLafferty

*Department of Chemistry, Baker Laboratory
Cornell University, Ithaca, New York 14853-1301*

AR950182F

(1) Gove, P. B., Ed. *Webster's Third New International Dictionary*; Merriam-Webster: Springfield, MA, 1981.

(2) Banaszak Holl, M. M. Ph.D. Thesis, Cornell University, 1991. We thank Professor Peter Wolczanski for this reference.

(3) Pauling, L. *Chem. Eng. News* **1984**, Apr 16, 54.