Since the objectives of the symposium were not stated, the reader can assume them. The volume, in any case, does provide a considerable amount of interesting and new material and some more recent approaches to concentration of radionuclides in biological systems. It should prove to be a useful reference to studies in this field carried out in many parts of the world. A nuclide index is included which may be helpful to many.

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Light on a Clouded Hypothesis

Set Theory and the Continuum Hypothesis. PAUL J. COHEN. Benjamin, New York, 1966. 160 pp., illus. Cloth, $8; paper, $3.95.

In 1939 K. Gödel showed that the Zermelo-Fraenkel axioms of set theory were not strong enough to refute Cantor's continuum hypothesis. Gödel's attack on set theory had the startling feature that it made essential use of the properties of language: it was the nature of the language of the axioms of set theory, rather than the intended meaning of those axioms, that made it impossible for them to refute various hypotheses of set theory. In 1963 P. J. Cohen completed Gödel's linguistic attack on set theory by introducing the immensely valuable, syntactic notion of forcing, and by using it to demonstrate that the axioms of set theory were not powerful enough to prove Cantor's continuum hypothesis. Thus the presently existing axioms of set theory leave the most celebrated hypothesis of set theory shrouded in uncertainty.

This book, as its jacket indicates, is intended for those who are not specialists in mathematical logic. I believe that specialists too would benefit from a perusal of it, for it avoids the dense clouds of dirty details that fog up most books on mathematical logic and thereby obscure all the shining ideas. Mathematical logicians, as a class, seem more afraid than most other kinds of mathematicians of making mistakes. Cohen seems to have no such fear, and consequently he succeeds in presenting in the first two-thirds of his book a delightfully clear and intuitive account of Gödel's work on undecidable sentences of formal number theory and on the irrefutability of the continuum hypothe-

sis, an account that can be readily comprehended by nonlogicians. It is true that the beginner will experience difficulty in filling in details, but he can, if he wishes, extract them from other books and, more important, he can take comfort in the fact that a truly modern mathematician does not require a detailed understanding of the ideas he uses before he uses them.

Section 3 of chapter 3 contains the most penetrating exposition of Gödel's notion of absoluteness that I have seen in print. It is also good to see (section 4 of chapter 3) in print at long last a precise version of the well-known observation that the power set axiom can be proved to hold in L without using the full power of the replacement axiom. Incidentally, line 9 of section 4 of chapter 3 demonstrates that the author, despite the solemnity of his undertaking, is not without humor.

The final section of the book touches, as is fitting, on philosophical matters connected with the continuum hypothesis. The author conjectures that the mathematicians of the future will see clearly that the continuum hypothesis is false. He seems to base his conjecture on the idea that the iterative principle needed to form aleph-one is

less "bold" and less "rich" than the iterative principle needed to form the power set of aleph-null. Before he states his conjecture and the grounds on which it rests, he notes, quite rightfully, that most mathematicians hold the idealist view concerning the existence of sets, and that as a consequence they regard discussions of the truth or falsity of the continuum hypothesis as meaningful. One must wonder if mathematicians of the future will regard such discussions as meaningful. After all, there was a time when most deep thinkers regarded the following kind of talk as sensible: "Now being is predicated absolutely and primarily of substances; it is predicated secondarily and as in a qualified sense of accidents. For this reason essence is truly and properly in substances. . . ." I conjecture that the number of present-day mathematicians who find Aquinas's discussion of being and essence meaningful will equal the number of mathematicians of the future who will find discussions of the truth-value of the continuum hypothesis meaningful.

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A Challenge to Those Who Would Avert Starvation

Famine—1975! America's Decision: Who Will Survive? WILLIAM PADDOCK and PAUL PADDOCK. Little, Brown, Boston, 1967. 286 pp., illus. $6.50.

From its title, one might infer that this book is an attention-seeking potboiler, on one of today's ever more gripping and therefore popular subjects. It is not. It is deadly serious, a solemn analysis of things to come in the food domain, together with a proposed plan for action in a field where others have none. The brothers William and Paul Paddock are unusually qualified to write on the subject of food, population, and related problems in underdeveloped countries. Paul Paddock has served in the U.S. Foreign Service for over 20 years, almost entirely in underdeveloped countries. William Paddock is an agronomist, and has spent most of his professional life in the underdeveloped countries of Latin America. They have written one earlier book—*Hungry Nations* (1964)—devoted to the analysis of how food production might be in-

creased in underdeveloped countries. The present volume is incomparably better—sparkling and gripping in style, closely reasoned, inexorably logical. It is to be recommended to all those interested in the shape of our world in the next ten years.

The basic thesis of the brothers Paddock is that famine must inevitably come to the underdeveloped nations, beset as they are and have been in recent years by unprecedentedly rapid rise in population and unforeseenly slow rate of increase in food production. All serious students of the plight of the underdeveloped nations agree that famine among the peoples of the underdeveloped nations is inevitable. The U.S. Department of Agriculture, for example, sees 1985 as the beginning of the years of hunger. I have guessed publicly that the interval 1977–1985 will bring the moment of truth, will bring a dividing point at which the human race will split into the rich and the poor, the well-fed and the hungry—two cultures,