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Book Reviews

Rare Earth Research, II. Collected papers presented at Third Rare Earth Conference, April 21-24, 1963, in Clearwater, Florida. Conference sponsored by Purdue University. Edited by KARL S. VORRES. Published by Gordon and Breach, Science Publishers, New York (1964). xvi + 621 pages, price $29.50.

During the third week of April 1963 the third Rare Earth Conference was held in Clearwater (Pop. 15,581) on the west coast of Florida. A happy choice. Soon after the voyages of Columbus to the New World, thousands of hardy and venturesome Spaniards left their homeland—and the very comely but apparently otherwise uninteresting Spanish and Berber lasses—to explore and conquer the Americas, to search with insatiable passion for gold, and to chase the exotic, raven-haired Indian maidens around the circle of life. The Indian maidens paid the conquistadores the pretty compliment of becoming the mothers of their children. The descendents of these children have survived, and in respectworthy force, but the Spaniards fought with each other and have now almost vanished beyond the horizons of time. Florida was an early object of the sixteenth century conquest; she is now noteworthy as a source of fullers earth and pebble and rock phosphates. Florida is also alleged to be a truly wonderful place to live for anyone who is a tangerine, a crocodile, or who can do something to a sweater.

Now let us look at the well-printed book. It consists, mainly, of the fifty high-caliber papers presented at the Florida conference. There is a short, matter-of-fact preface by Dr. Vorres, a list of the 101 contributors or authors of the papers, and a table of contents. The papers are classified under five headings which range from preparation of rare earth compounds to magnetic studies and electrical measurements. The classification was certainly well intended, but it does remind one a bit of the cowboy who attempted to distribute, according to color, a band of cayuses among five corrals. While most of the contributors are Americans, there were some coming from such widely separated countries as Australia, England and Finland. Thirty years ago only a handful of scientists in the whole world were actively interested in the rare earths, and a conference on the subject would have been unthinkable.

One of the authors, Linda Lee, is apparently a girl, and although there is no definite evidence presented in the book that she actually attended the conference, she deserves special mention for her courage in entering the formidable rare-earth field.

All manner of laboratories are represented by the contributors to the book, videlicet universities, industries, and government. But missing are such places as Brookhaven, Harvard, Yale, and Princeton; one wonders about this.

It is clearly out of the question to cover the contents of the whole book in a brief review; it is a wilderness of scientific sweets for the specialists and for those who have a keen interest in the world about them. Suppose, then, that we glance at only a few of the papers in order to give some notion about the flavor of the book. The splendid work of Flotow and Osborne on the very low temperature heat capacities of pure dysprosium metal is of special interest because of the magnetic properties of this element. Equally interesting is the paper by Koehler, Wollan, Child, and Cable on the magnetic structure properties of rare-earth alloys. B. Bleaney of Oxford (England), who is well known for his researches on crystal fields and magnetic effects in rare-earth compounds, has two admirable papers in the book on these subjects. A paper on rare-earths in optical maser (laser) materials by Nassau is of more than passing interest. The abundance of the rare-earths in meteoritic, terrestrial, and solar matter is carefully treated in a long paper by Schmitt, Smith, and Haskin. Finally, we must make mention of the electrochemical experiments on the rare-earth metals reported by Linda Lee (plus coauthor Greene); we suspect that it was she who ground the specimens on emery paper and then washed them in acetone. Most of the remaining papers pursue their subject with unrelenting rigor to some definite conclusions, but there are some which are only able to bring the darkness into view.

None of the authors of the papers in the book tell the reader what their rare-earth metals or compounds look like, not even Linda Lee. This is a deplorable feature of such books; it is blithely assumed that everyone has a first-hand familiarity with the appearance of the materials discussed. The Rare Earth Establishment, like the Plutonium Establishment, no doubt knows what their working substances look like, but the rest of the world is left in a darkness that can lead to apathy.

Aside from their names and institutions the book tells nothing whatever about the individuals contributing to the conference. Were they Gringos, Visigoths, or Mestizos? Did they perchance slip over to Tampa and splice the main brace? Do they ever invite bankers, ecclesiastics, plumbers or humanists in to dinner? Does anyone of them drive a Rolls-Royce or ride at a queen's bridle? The book being a scholar's book abandons all such questions to philosophy and anthropology. Here one finds no tales of sin, spicy allusions, or even any goosebone prophecies. There is not enough bloodshed hinted at in the book to stain a stiletto.

But still the rare earths and the results of the authors' studies on them are now of critical importance to our daily life and culture. The authors' experiments are difficult to carry out and require almost infinite care and patience; but by some mystery of human nature a carefully completed research—to borrow a line from Shakespeare—"es como el pellizco de un amante, que hiere y se desea."

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About the Reviewer: Our consistent reader needs no introduction to our reviewer; our casual reader is referred to the April 1965 issue of Nuclear Science and Engineering, *and to earlier ones, for previous delightful reviews by Professor Yost. In the preparation of this one, he acknowledges the assistance of his helpful half-Irish wife and of their good non-Irish Montana friend, Señora Lupe de Sinaloa, even though one can't usually expect a girl to care much about reading a book such as* Rare Earth Research II. *Obviously a Californian, Professor Yost retired recently as Professor of Chemistry at Cal Tech.*