he was displayed at the American Museum of Natural History and the Bronx Zoo until James H. Gordon, director of New York's Howard Colored Orphan Asylum, persuaded New York's cultural custodians to release Ota to his care. At the orphanage the conditions of Ota's life improved slightly, but when he was deemed a bad moral influence on other boys the orphanage, at Ota's request, sent him to a seminary in Lynchburg, Virginia—a seminary that served as an intellectual underwriter of pan-Africanism. For the last six years of his life, Ota "determined to translate an African lifestyle into an American context" (p. 208). He studied at the seminary and escaped when he could to the forests, where he tried to reconnect himself to a way of life he had left behind in Africa. One day, he carried a revolver with him, aimed it at his heart, and pulled the trigger.

Ota (or, as in the publisher's advertising, *Ota Benga*) tells several important stories. It details the intersection of turn-of-the-century anthropology, imperialism, and popular culture and underscores the centrality of race to the construction of American national identity. Though the authors do not emphasize sufficiently the long-standing importance of popular amusements for popularizing anthropology, dating at least to the exhibition in European capitals of the "Hottentot Venus" in the early 19th century, their attention to biographical detail is a notable contribution to this literature on science in the service of imperialism. More important, this book, by giving voice to Ota, raises issues that are only beginning to be explored in the scholarly literature, namely how individuals exhibited at fairs, zoos, and museums responded to efforts to degrade them. Ota, for instance, took matters into his own hands at a fund-raising dinner for the American Museum of Natural History. When the museum's director asked Ota to bring a chair for Florence Guggenheim, Ota lifted the chair and heaved it in Guggenheim's direction, barely missing her head. As this episode makes clear, Ota never stopped trying to give his own meaning to the conditions of his existence.

In sum, the authors have written a compelling book. Marred only—and this is a maddening omission—by the absence of footnotes, *Ota* is a revealing cultural biography that locates Joseph Conrad's "heart of darkness" in those persons who looked Ota square in the eyes and could never adequately respond to *his* question: "Who are you?" (p. 188).

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Products of Recombination

Transgenic Animals. F. GROSVELD and G. KOLLIAS, Eds. Academic Press, San Diego, CA, 1992. x, 277 pp., illus. $37.50.

The term "transgenic," coined by Jon Gordon and Frank Ruddle in 1980, originally referred to animals whose genomes were modified by injecting recombinant DNA (genes or gene fragments) into pronuclei of fertilized eggs. The definition now appears to be expanding to include animals (and plants) into which recombinant DNA has been introduced by any available technique and even seems to embrace eukaryotic organisms that carry "foreign" DNA introduced into specific sets of cells, as exemplified by somatic cell engineering. To date, the term does not seem to have been applied to human gene-therapy patients. However, the inclusion of a chapter on gene therapy in this book may signal a further broadening of its definition.

Research involving transgenic animals is being published at an astonishing rate. Over 2000 such papers were published in 1992 alone. It would therefore seem appropriate for someone to try to summarize what is going on in the field. As one quickly finds by skimming the table of contents, however, the focus of this book is not transgenic animals *per se*. Rather, the book is a compilation of chapters loosely woven together by the common thread of transgenic animal technology. This is not a "how-to" book, and those who want to learn how to produce transgenic animals or how to produce them more efficiently should look elsewhere. But readers who are interested in learning how this powerful tool has been exploited to address a wide variety of contemporary biological questions will be well served.

Practitioners (and wannabe practitioners) of transgenic animal technology have often sold this technology to administrators and granting agencies as an investigative tool without peer that can be used to address previously impenetrable questions. Though there is some justification for that view, which is well represented in this book, cumulating experience dictates a more cautious outlook. It is becoming clear, for example, that fusion genes (regulatory elements from one gene ligated to the structural elements of another), which are used extensively to produce transgenic animals, can exhibit unpredicted results. Fusion genes are particularly popular because they can be used to direct gene expression to specific tissues at particular times during development. It is left to the investigator to determine whether the unexpected observations are a consequence of molecular biological artifacts or result from perturbation of some physiological system, which may or may not have been the one under study. One can only infer the existence of such problems by reading between the lines of this book. However, the chapter on embryology and development by Rosa S. P. Beddington provides a good example of cautious interpretation of the results of transgenic animal research based on functional (as opposed to molecular biological) considerations.

The chapters in the book are of two sorts. The majority (seven of the 11) have a biological-system orientation and include topics such as gene domain organization, gene regulation, imprinting, immunology, neurobiology, and oncogenesis. These reviews generally provide an introduction to the system under consideration, an overview of past and present experimental strategies, with specific examples of the application of transgenic animal models, and a brief look toward the future. The other chapters focus on techniques such as homologous recombination (with an emphasis on its application to genetic engineering of stem cells), cell ablation, retroviral gene vectors (for use in human gene therapy), and application of gene transfer technology to livestock. As a result of the incorporation of these two approaches, there is some overlap in coverage.

The editors set out to compile a book that would give the reader a sense of the broad applicability of transgenic animal technology to addressing biological questions, and they have achieved their goal. The authors have made their topics accessible to the non-specialist without making the treatment superficial, and specialists are likely to find their subjects treated in adequate detail to make the book a useful resource.

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Medical Excesses

Spare Parts. Organ Replacement in American Society. RENÉE C. FOX and JUDITH P. SWAZEY. Oxford University Press, New York, 1992. xviii, 254 pp., illus. $29.95.

Transplantation of hearts, livers, and kidneys is now accepted therapy for a variety of end-stage organ diseases. Over 16,000 solid-organ transplants occur annually in the