early Paleozoic age, collectively referred to as the "Pan-African-Braziliano" orogenic system, which separate the cratons and represent the scars of the convergence and collision of these former separate continents, and for an area of small cratons and complex structure encompassing part of northeastern Brazil, Cameroon, and Nigeria. Trompette envisions that Gondwana was formed about 650 to 500 Ma by early amalgamation of West Africa and Amazonia followed successively by the addition of Congo–São Francisco, Kalahari, and finally East Gondwana.

This dense, compactly written, stratigraphically oriented book is heavy going, even for the specialist. Many may disagree with some of Trompette's conclusions. Few nonspecialists will have the tenacity to get through it. However, it is hard to overemphasize the book's value for present and future discussions of tectonics. The reference list itself—approximately 1400 entries in four languages (Portugese, Spanish, French, English) is a major contribution. It alone should serve for years as a valuable research and teaching aid for stratigraphers, structural geologists, tectonicists, and petrologists interested in this vast and crucially important region.

E. M. Moores
Department of Geology, University of California, Davis, CA 95616, USA

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Zoological Ventures

Nature, the Exotic, and the Science of French Colonialism. MICHAEL A. OSBORNE. Indiana University Press, Bloomington, 1994. xviii, 216 pp., illus. $35. Science, Technology, and Society.

This is the first scholarly history of the Société Zoologique d'Acclimatation and its endeavor to introduce into France and its colonies foreign species deemed promising for agriculture. Though the episode is now largely forgotten, the society was in its time a broadly supported enterprise, gathering more than 2500 members during the first seven years of its existence, much more than most European scientific societies could then claim.

The Société Zoologique d'Acclimatation was founded in 1854 by Isidore Geoffroy Saint-Hilaire, then professor at the Faculty of Sciences of Paris and at the Muséum National d'Histoire Naturelle, where he was in charge of the menagerie. The son of Étienne Geoffroy Saint-Hilaire, Georges Cuvier's opponent in one of the most famous scientific debates of the century, Isidore was himself a respected scientist. Though mainly famous then, and still remembered for, his contributions to teratology, he was a man of broad interests, the author of a multivolume "general natural history," left incomplete at his death in 1861, in which he advocated the idea of limited species variability—a matter of obvious relevance for acclimatization. In the year in which the society was created, taking up a program originally conceived by the anatomist Jean-Marie Daubenton, he published a treatise, developed from a report prepared for the Minister of Agriculture, on the acclimatization and domestication of useful animals.

Illustration from a dinner menu of the Société d'Acclimatation, 1911. In addition to *filets de boeuf à la française* the menu featured seafoods from Mauritania, *croustades de foies gras de tortue marine, omelette au jambon végétal, graines de gingko grillées, germes de soja sautés, roquefort de soja,* and *popcorn à la sève d'érable.* [From *Nature, the Exotic, and the Science of French Colonialism*]

The society survived through the First World War. It had, however, an up-and-down history. The 1850s were years of success. The society's zoological garden, the Jardin d'Acclimatation, was opened in 1860. But Isidore died the next year, and during the 1860s the society began to lose audience and soon encountered acute financial difficulties. Moreover, after 1870, under the Third Republic, the society was unable to benefit from the sort of official patronage that the emperor, Napoleon III, had provided.

The society was, much more than any other institution of the scientific establishment such as the Académie des Sciences or the natural history museum, supportive of the colonial enterprise, and particularly of the program to settle Algeria (conquered in 1830) with French peasants. Napoleon III, uneasy with the factory system of labor and fearing the rise of syndicalism, was committed to *petite culture* in France and favored small landowners in his policy for the settlement of Algeria. As Osborne documents extensively and for the first time, the acclimatization society filled the vacuum left by more established institutions and, in the 1850s and 1860s, provided sustained informal expertise on the agricultural development in Algeria and encouraged research on the acclimatization of multifunctional animals that might be used by small landowners for traction and for food and other products of commercial interest, such as wool fibers.

Similar goals were pursued by some provincial organizations affiliated with the society. Osborne shows that the acclimatization movement was particularly strong in eastern France, in the Nancy and Grenoble regions. There sizable-scale experiments were conducted with yaks, llamas, angora goats, and ostriches (prized for their plumes, which were in great demand for fashion).

However, such attempts repeatedly proved to be utter failures. The animals died, markets vanished, and peasants showed little interest. None of the zoological ventures stimulated enduring industries in Algeria; only ostrich farming survived well into the Third Republic. In 1881, 20 years after the opening of the Jardin, its director admitted that it had not succeeded in diffusing a single new agricultural product. Moreover, as the French empire rapidly expanded at the end of the century, in the newer colonies of Asia and sub-Saharan Africa, it was not multifunctional animals or land tenure of small holdings that prevailed but factory-farm production, financial capital, and the cultivation for export of products such as peanut and palm oil.

Osborne writes that his main concern in writing this book has been to "elucidate the

Vignettes: Postal Services

1928: Dr. Mansfield Robinson, a London lawyer, believes that he has been in communication with Mars, and at his request wireless messages will be sent out from Rugby on an 18,500-metre wave-length on Wednesday morning in an effort to get official proof that "contact" has been established. "The Post Office has agreed to accept the message for Mars, not as a scientific experiment for which it is responsible but as a commercial proposition," an official explained. "Obviously we do not guarantee delivery. . . . We shall send the message in the same way that we send to ships in all parts of the world every day—and the charge will be the usual 1s. 6d. a word, which is admittedly a low cost for such a long distance! But it will cost no more to transmit than an ordinary message. At Dr. Robinson's request a watch will be kept for half an hour at St. Albans wireless station on a wave-length of 30,000 metres, and for this service of listening for a reply a special charge will be made."

1941: The first batch of photo-letters under the newly instituted airgraph service from the Middle East arrived in London yesterday morning. The mail contained 50,000 microfilm letters which had been flown from the Middle East. They weighed only 13lb., whereas 50,000 ordinary letters would have weighed nearly three-quarters of a ton.

As soon as they were received the films were sent to the Kodak works, where the staff began to enlarge the letters from the size of a man's finger-nail to 4in. by 5in. As fast as this was done the enlargements were rushed back to the post office to be placed in special envelopes, sorted, and sent to all parts of the country for delivery.

The airgraph service was begun last month, and the first batch of letters has taken about a fortnight to arrive. It is hoped that this time will be shortened as the scheme develops.

—*The* Times *of London*, as quoted in *Front Page Physics: A Century of Physics in the News* (A. J. Meadows and M. M. Hancock-Beaulieu, Eds.; Institute of Physics Publishing)

reflexive relationship between science and empire." There is no doubt that he has brilliantly succeeded. At times, however, the distinction between the exotic and the colonial is somewhat blurred in the analysis. There is no doubt that the colonial involvement of the society deepened toward the end of the century as the French empire expanded. From 1900 till 1921, the Lamarckian zoologist Edmond Perrier, who was also the director of the natural history museum, presided over the society and re-emphasized its colonial mission. It was under his leadership that the society developed a "conservation ethos global in scale" and played a key role in the establishment, in Algeria, of the first French national parks.

During the 19th century, however, the activities of the society and its Jardin were hardly restricted to colonial purpose. The society also organized dog and cat shows, promoted the consumption of horsemeat, and featured exhibits presenting the faunal resources not only of the French colonies but also of other non-European countries. The "ethnographic exhibitions" begun in 1877 included, for instance, Argentinian gauchos and Lapps; moreover, the llama, yak, and ostrich, which were the primary target organisms for the acclimatization experiments, were not indigenous to areas then colonized by France. Indeed, Isidore Geoffroy Saint-Hilaire makes no mention whatsoever of colonial purposes in the two editions of his treatise on acclimatization and domestication of animals, and as far as I know the obituaries following his death in 1861 are equally silent in that regard. Though the colonial involvement of the society that Osborne has for the first time documented certainly entailed sustained efforts even during the first decades of its existence, in the mind of most contemporaries it may not have been so prominent as it has become in the research program of historians of science.

Camille Limoges
Centre Interuniversitaire de Recherche sur la Science et la Technologie, University of Quebec, Montreal, Canada H3C 3P8

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