BOOK REVIEWS

Gretchen Luepke Bynum, Book Review Editor

MANUSCRIPTS AND PUBLICATIONS OF H.-B. DE SAUSSURE ON THE ORIGIN OF BASALT (1772-1797)

(English/French bilingual volume). Albert V. Carozzi. 2000. Editions Zoé, 11 rue des Moraines, 1227 Carouge/Geneve, Switzerland. 769 p. Softcover, CHF 130, FF 520, US$75.00, Can.$155 (handling and surface postage included).

Dr. Carozzi has provided a great service to historians of geology in making these papers of Horace-Bénédict de Saussure (1740-1799) available, and most particularly in giving them to us in this form. While identified as a bilingual volume, it is far more than that. There are indeed both the original French and Carozzi's translations of the papers, but he has enriched the format considerably. The Introduction in English is followed by the same in French, but this is the last time there is that simple format. Instead, translation and commentary have been interwoven in a way that requires, but also rewards, serious attention, and ends by being far more informative than just translation.

Chapter One is a brief description in English of Saussure's grand tour of 1768-1769, a review of the work of Nicholas Desmarest (1725-1815), and of the basalt controversy, which sets the stage for what follows. Chapter Two, also in English, is concerned with Saussure's travels in Italy in 1772-1773. A description of the manuscript is followed by general comments about the translation, including a discussion of Saussure's methods and a report on the background and purpose of the trip. The itinerary is listed, and there is a discussion of Saussure's use of volcanic rock nomenclature. That is followed by the translation of some of Saussure's travel notes in this manuscript. Dr. Carozzi explains that, since much was not concerned with geology, he limited the translation to excerpts about major geological topics in the chronological order of the itinerary. The translation is followed by a short summary of the general geological conclusions drawn.

Chapter Three consists of a short introduction, then a translation of geological excerpts from Saussure's letter of 1774 to William Hamilton (1730-1803) about Italy. Dr. Carozzi then gives us an entire chapter of endnotes about the substance of the translations, in which he has compared observations from his own field trips to Saussure's, as well as to the geological map of Italy. We have here modern descriptions of the rocks of the localities, comparisons of interpretations then and now, background for Saussure's beliefs, and much more. There are also comments that are not strictly geological in nature, such as Saussure's opinion of the Prior Guiseppe Recupero (1720-1778) who apparently had no scientific education, but who nevertheless wrote about the eruption and natural history of Mt. Etna (p. 103). In this chapter we reap the full benefit of the years Dr. Carozzi has spent thinking about the ideas of early geology, as well as the field evidence and written materials that were drawn on. Chapter Five is a transcription in French of the appropriate parts of the manuscript of Saussure's travels in Italy in 1772-1773. The original spelling of technical terms has been retained, but geographic names have been updated. Verbs were modernized, but the common words and the style were retained so the reader could appreciate the flavor of the original document (p. 113).

Chapter Six essentially follows the above sequence with respect to Saussure's

travels to the volcanoes of Auvergne and Vivarais in 1776, starting with a description of the four notebooks that contain the records. Chapter Three showed several manuscript pages. This much longer chapter has far more illustrations, including a map of Saussure's time, modern photographs of localities he visited, his drawings, drawings by Saussure's contemporaries, as well as reproductions of manuscript pages including some of travel expenses. Several times (for example, pp. 183 and 233) Dr. Carozzi interrupts Saussure's report to give a modern summary of the volcanism Saussure was observing. This aids our mental picture of the area. Again, the next two chapters are the informative endnotes, followed by the transcription in French of the manuscript pages.

Chapter Nine, "The Complex Interlude," interleaves translation of and commentary about Saussure's thoughts on basalt and volcanism during 1777-1794. Basalts could clearly be seen as products of volcanism, but Saussure's experiments didn't bear out their projected origins from melted granites. Within this chapter Dr. Carozzi also discusses the influences of Abraham Gottlob Werner (1749-1817) and Dèodat de Dolomieu (1750-1801) on Saussure's thinking about the basalt controversy. Basalt origin was not an easy problem to solve, despite the slightly later claim of Huttonians that Sir James Hall (1761-1832) had proved igneous origin with his results from slow cooling of fused basalt. In fact, there were still many conundrums and igneous origin was not completely accepted for another twenty-five or thirty years. Saussure's many field observations, along with his experiments, demonstrate the complexity of reasoning required to accept igneous origin for all examples of basalt and rocks with similar chemistry.

Chapters Ten and Eleven are concerned with Saussure's last papers on basalt. In the "complex interlude" he had gone from endorsement of igneous origin to agreement with aqueous origin, especially for columnar basalts. Werner's arguments were persuasive and could not be easily disproved in the field or the laboratory. Much of the evidence for Saussure's position is in the unpublished manuscripts that Dr. Carozzi has made available.

This book is complex, and it is concerned with a complex problem. It is not a straightforward read-from-cover-to-cover book, although if one had the time to do so it would be rewarding. It is an indispensable guide to thinking about basalt origin in Europe, in the words of one of the greatest of geologists at the dawn of the science itself, along with the intercalated views of other major players. Because the book ends with Saussure's last paper on basalt, in 1797, the work of Sir James Hall is not referred to, and Hutton is mentioned only with reference to his (erroneous) belief in the identity of granite and basalt (p. 636). This is as it should be, consonant with Dr. Carozzi's objectives. Dr. Carozzi has brought a wealth of scholarship to an endeavor in which history and science play equal roles.

Sally Newcomb, 13120 Two Farm Drive, Silver Spring, Maryland, 20904; senewcomb@earthlink.net

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MASTERS OF ALL THEY SURVEYED: EXPLORATION, GEOGRAPHY, AND A BRITISH EL DORADO. *D. Graham Burnett. 2000. University of Chicago Press. 298 p. Hardcover, $45.00/£31.50.*

Guyana is, literally, a complicated place. Its boundaries, after two centuries of scrutiny and negotiation, are still hotly disputed. *Masters of All They Surveyed,* based on D. Graham Burnett's doctoral dissertation, is about how those boundaries came to be. It is a book about the role of science, exploration, and mapping in

the history of imperialism. Specifically, it concerns the work of Robert H. Schomburgk, an "anglicized Prussian geographer," in British Guiana (Britain's only colony on the South American continent) from the mid-1830s to the mid-1840s. Put briefly, Burnett's argument is that although Schomburgk's colonial boundary surveys allowed the British to believe that their territory was clearly and firmly defined, the reality from the surveyor's perspective was very different. The practices of exploration, including the traverse survey, meant that Schomburgk's routes on the ground could be nothing more than ambiguous, unstable boundaries when drawn on a map. Burnett's title is thus ironic: "masters" the British (and since 1966, the Guyanese) may well have thought themselves, but what "all they surveyed" represents is much more elusive.

Burnett's approach to this problem is wide-ranging, drawing on the histories of art, cartography, travel writing, publishing, surveying, and anthropology, and on theories of rhetoric, aesthetics, ethnohistory, and postcolonialism. As such, his introductory chapter should be helpful to specialists and newcomers alike, locating his work in various historiographical contexts, from the place of explorers in imperialism to the cultural history of cartography. In Chapter Two, Burnett examines the historical backdrop, pointing out that explorers and the British each had special reason to be interested in Guiana, the site of Sir Walter Ralegh's (1552?-1618) El Dorado, and the foundation of the first British Empire. By appealing to the Raleghian mythology, both Schomburgk and his colonial masters garnered credibility and legitimacy for their enterprises.

Chapter Three introduces the main themes of the book: the nature of the traverse survey, and the importance of landmarks. Unlike trigonometric surveys, which were collaborative efforts intended to cover a bounded territory comprehensively, the traverse was "solitary" (though often involving large groups of Amerindian guides, assistants, and laborers), and geared to the discovery of new and unknown lands. To be successful, a traverse survey depended on the establishment of local fixed points. Strict Humboldtian quantitative observations were one way to do this, but Schomburgk's initial expeditions proved that he was merely inspired by his Prussian compatriot, not a capable student of his methods. Moreover, a survey's reference points had to be identifiable on the ground, in order to demarcate territory physically, and so Schomburgk made use of natural features in the landscape, like waterfalls, mountain peaks, and unusual geological forms.

Just at this point in the text, the reader comes to the eighteen color plates, a highlight of the volume, depicting the watercolor illustrations of Schomburgk's landmarks, which represented the colonial interior to British society. Burnett devotes Chapter Four to an analysis of these images, published in *Twelve Views in the Interior of Guiana* (1841), which he claims allowed British audiences to conceptualize the South American landscape in familiar European terms. Some of the author's best arguments are here, showing how Schomburgk chose landmarks that were "saturated" with meanings (aesthetic, geological, historical, and Amerindian mythical), and that offered a commanding, imperial view of the surrounding terrain in addition to being highly visible themselves. Such strategies greatly increased the grip and impact of these illustrations on the metropolitan imagination.

In Chapter Five, however, Burnett returns to the surveyor's perspective, demonstrating that these particular landmarks had very different meanings to the people on the ground. Rather than representing fixed, familiar, safe places, they were sites of danger, uncertainty, and Amerindian spirituality, needing to be overcome if the explorer was to survive. When field data was transformed into printed maps and books, these ambivalent traces of interaction with an alien world were concealed, but could not be effaced completely, as Burnett shows in his analysis of

a death at a waterfall. This contrast between the imperial record and the surveying experience is central to Burnett's interpretation. In Chapter Six, he looks in detail at Schomburgk's official boundary surveys for the British government, observing time and again that Schomburgk's activities, values, and priorities did anything but define a stable boundary line. While high-level political maneuvering led to the "erasure" of imperial inscriptions from trees, Schomburgk's insatiable quest for new terra incognita ultimately gave way to his overriding need to escape with his life, leaving behind only a bizarre effigy of himself as a monument to failure.

In his concluding chapter, Burnett points out that the truly massive volume of legal argumentation, produced in intractable boundary disputes between Britain, Brazil, and Venezuela around the turn of the century, more than demonstrates the uncertainty of what Schomburgk's surveys represented. Yet at the same time the fact of his work, the maps, texts, and images it produced, fixed firmly in British and Guyanese minds the reality of their territory and its boundaries. The surveyor's dual purposes, explorer (on the ground) of unmapped territories and unknown cultures, and recorder (on paper) of imperial possessions, conflicted irreconcilably. Frustrated on multiple fronts, Schomburgk left Guiana permanently, disillusioned and depressed.

This brief synopsis does not do justice to Burnett's book. He has many auxiliary arguments, and observations in passing, not all of which follow the main structure of the narrative. Upon finishing the book, one is taken with the desire immediately to return to the beginning (or anywhere else, for that matter) and read it anew. Fortunately, the footnotes and index are uncommonly detailed, which makes further study inviting. Every reader will wonder, though, why the author or publisher did not decide to include a reference map showing the locations of the many rivers, mountains, and villages mentioned in the text, not to mention Schomburgk's routes. (Although many figures of historical maps are included, they are generally too reduced to be read clearly.)

Most of Burnett's points are persuasive, and more importantly they are interesting and provocative. This is due in no small part to his observational and expressive talents, which make *Masters of All They Surveyed* a pleasure to read and worth everyone's attention. It would be a shame if this work were not followed up by other scholars, to see if and how Burnett's suggestions about traverse surveys, the function of landmarks, and imperial responses to alien cultures and environments, can be extended beyond Robert Schomburgk and British Guiana.

Brian C. Shipley, Department of History, Dalhousie University, Halifax, Nova Scotia; bshipley@is2.dal.ca

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THE DINOSAUR HUNTERS. *Deborah Cadbury. 2000. Fourth Estate, London. 374 p. Hardcover, £15.99. Published in the U.S. as* **TERRIBLE LIZARD: THE FIRST DINOSAUR HUNTERS AND THE BIRTH OF A NEW SCIENCE.** *Henry Holt, New York, 2001. U.S. $27.50.*

Before I read this book, I was deterred from that reading by two circumstances. The first was that it so nearly borrowed the title of David Spalding's excellent and comprehensive review of the history of dinosaur discovery, *Dinosaur Hunters* (Key Porter Books, Toronto 1993)—a circumstance that raised anew hackles that had risen even more strongly when Michael Crichton unforgivably purloined Arthur Conan Doyle's title *The Lost World.* The second was the reading of a rather overblown British newspaper review, in which the book received what seemed to me excessive praise and its author was characterized as an "award-

winning TV science producer." Such a person might well produce a persuasively readable account of an event in scientific history, but would it be scholastically sound and scientifically accurate? I doubted it.

Yet, upon reading this book, my doubts were swiftly set at rest. Maybe the title *is* unfortunate, for this book treats only with discoveries in the earlier part of the 19th century; but it is a work of genuine scholarship, soundly researched and quite detailed, but highly readable nevertheless. There are a few errors, but not many—in part, no doubt, because Ms. Cadbury has profited by her discussions with such authorities as Hugh Torrens, John Cooper, Angela Milner, and David Norman, but in larger part because of the care she has clearly taken to ensure her sources were sound and her citations accurate.

The story begins, perhaps a little irrelevantly, with the carpenter's daughter Mary Anning's findings of fossils on the Dorset coast–though she made major discoveries, Mary found no dinosaurs. In particular, however, it focuses upon two persons of comparably humble origin and of high intellectual ability, but of sharply contrasting character and attainments. One of them is Gideon Algernon Mantell, the son of a bootmaker in Lewes, Sussex; the other is Richard Owen, the son of a Lancaster tradesman. Both became qualified in medicine, initially through apprenticeships to local surgeons and afterwards through study in a capital city—in Mantell's case, London, and in Owen's case, Edinburgh.

Thereafter, their paths and fortunes diverged. Mantell returned to Lewes, to practice as a local physician and surgeon and, in his very limited spare time, to develop an already existing interest in the rocks and fossils of his native county. Owen never went into practice; instead, he traveled south to London, where his skill and intense interest in dissections speedily gained him an appointment at the Hunterian Museum of the Royal College of Surgeons. There he courted, and ultimately married, the daughter of its Curator, William Clift. Moreover, through his combination of genuine ability, unusual persuasiveness and vaulting ambition, he built himself into the fabric of London science and speedily attained considerable influence. Indeed,

> . . . at the age of twenty-three, Richard Owen had positioned himself at the very centre of the scientific stage in London (p. 165).

The consequence was an increasing arrogance, matched with a jealousy of discoveries made by others. This caused him either to belittle those discoveries or to find ways of claiming the credit for himself. Like his scientific contemporary, Sir Roderick Murchison (who Hugh Torrens has vividly styled "the Victorian Mafia"), Owen was a bad man to cross, for

> . . . he was very aware of his own merit, and this abundance of self-confidence formed the bedrock of his personality, which to his rivals seemed like some unassailable cliff-face. His razor-sharp mind and raw energy were attuned not just to dissecting animals but to manipulating power within each institution he joined, all the while disarming any suspicions by his sheer youth. It took time for a pattern to emerge, for people to recognize the ruthless streak beneath the charming veneer. His enormous skill, even at this early stage in his career, was to build a power base in each institution he joined, so that his scientific ideas allied to his political astuteness ensured that he was always the man of the moment (p. 200).

All in all, Owen's life after graduation was a steady upward progress. Mantell, in contrast, endured a life of vicissitudes. Its high spots—public praise for his lectures and writings, the creation of a museum in Brighton, the recognition of his scientific quality by election to the Royal Society—came only at a great cost and were recurrently undermined by subsequent disasters. Though gaining the respect of such great scientists as William Buckland, Charles Lyell, and Benjamin Silliman, Mantell never achieved anything approaching Owen's public eminence and private influence. Ms. Cadbury writes percipiently of

> . . . Mantell's painstaking struggle to understand a vanished world, a world so compelling that he sacrificed his marriage and his professional practice to this one compelling interest (p. 324).

The very fact that Mantell made astonishing new discoveries was enough for Owen to mark him down as a rival. Mantell was early and uneasily aware of this. His decision to move from Brighton to London was surely intended to gain him access to those scientific circles in which Owen was by then supreme—perhaps even to challenge Owen on his own ground. Instead, it provoked a further decline in Mantell's personal fortunes that became precipitate when, in October 1841, he suffered a carriage accident that caused severe and lasting spinal damage. After enduring intense pain for eleven years, yet still striving to continue his scientific work, he died in November 1852 from a self-administered overdose of opiate drugs. (Mantell's spine was so deformed that it was long exhibited in the museum of the Royal College of Surgeons until destroyed early in the Second World War by German bombing).

Even after Mantell's death Owen, who had done so much to harm him, was not satisfied, either writing or sponsoring an anonymous obituary notice in the *Literary Gazette* that called Mantell an inadequate scientist "in want of exact knowledge" (p. 291). As Charles Darwin was later to discover, Owen was indeed a powerful and unrelenting enemy. When Darwin had aroused a storm of opposition by publishing the *Origin of Species* in 1859, he was likewise targeted by Owen:

> 'It is painful to be hated in the intense degree with which Owen hates me', Darwin wrote to a friend, 'the Londoners say he is mad with envy because my book has been talked about' (p. 309)

Yet it was 'the Devil's Disciples'—Darwin's supporters—who were to bring Owen's scientific tyranny to an end. Particularly effective in opposition was Thomas Henry Huxley, who was not only as sound a scientist as Owen but also equally skilled in the manipulation of opinion:

> Hostility between the two men reached the point where Huxley used his power to oust Owen from key communities where he had reigned supreme for decades. In 1861, when Huxley was appointed on to the Zoological Society Council, Owen promptly stepped down. Within a year, Huxley took action to block Owen's move on to the Royal Society Council. Owen, for so long undisputed king of these establishment institutions, having used his power to blight promising careers such as Robert Grant's twenty years earlier, now found himself the hapless victim of similar maneuvers. At the Royal Society, Huxley claimed the Council should not admit Owen, since he was 'guilty of wilful and deliberate falsehood'. The change in fortunes was so fast that, by 1862, Owen's stronghold at the Royal College fell to the evolutionists, as Huxley himself was honoured with Owen's former title: Hunterian Professor. 'I don't know what our illustrious predecessor will say,' scoffed Huxley's friends.
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> Owen's gilded reputation tarnished rapidly, his downfall inextricably linked with Darwin's rise (p. 314).

This story of bitter scientific rivalries is told lucidly and forcefully. Scientists have long discarded Owen's non-evolutionary hypotheses of the history of life, but Owen is still remembered as the greatest comparative anatomist of his time, 'the British Cuvier.' That is not unwarranted, for much of his work was very good. However, if the history of science in Great Britain is to be properly understood, the harm that Owen wrought to his contemporaries—the unfortunate Robert Grant, the talented and tormented Gideon Mantell, and many figures of scientific history whose lesser status was a consequence, in part at least, of Owen's jealousies—must properly be accounted against him. This excellent study helps to clarify a picture that, if not edifying, is certainly fascinating.

There are a few errors. Sir Philip de Malpas Grey Egerton is miscalled "Sir Peter" (p. 199) and Adam Sedgwick's name consistently misspelled "Sedgewick"

(p. 239 and elsewhere). The Devonian was not just Murchison's creation (p. 239); instead, it was proposed jointly by Sedgwick and Murchison. The italization of the popular name "labyrinthodont" is unnecessary (pp. 315-316) and the idea that the spike-like thumb of *Iguanodon* was used for defence (p. 318) is not a fact, but merely a speculation. The distinguished Swedish botanist is named "Carl Linnaeus" (p. 49), an unfortunate fusion of born with Latinized name; and an all-too-frequent mistake is repeated when Archbishop James Ussher (properly 'Usher') of Armagh is credited with laboriously determining from the Bible that God

> . . . created the earth the night preceding Sunday 23 October, 4 004 years before the birth of Christ (p. 14).

Not so. Usher computed the year of creation, but it was John Lightfoot of Cambridge who refined that calculation by identifying the month and the day.

There are also some additions that might, with profit, have been made to the text. The Clapham Athenaeum gains brief mention. However, it is not made clear that Gideon Mantell was so respected a member of that group of amateur scientists that he was presented with a handsome microscope by his admiring fellows—a gift that greatly gratified him. Neither is it reported that Mantell made a major contribution to the proper understanding of the microfossils preserved in Chalk flints (see Sarjeant, 1992, *Archives of Natural History,* vol. 19, p. 91-100). In similar fashion Cuvier's Irish associate Joseph Pentland, though likewise mentioned, does not gain proper credit for his contributions to the understanding of the fossil marine reptiles (see Sarjeant and Delair, 1976, *Proceedings of the Dorset Natural History and Archaeological Society,* p. 12-16).

More surprising, in view of the extended discussion of Owen's hostility to Darwinian evolutionary concepts, is the fact that Owen's work on *Archaeopteryx* is not reported. It was one of the paradoxes of scientific history that, by persuading the British Museum (Natural History) to purchase from Germany the first good specimen of this crucial intermediate between reptile and bird (and having the honesty to describe it accurately), Owen was furnishing Darwin with one of the best of all evidences in support of his theory of evolution.

Well, these are all points that can be set right in future editions of Ms. Cadbury's book—and it is so good a book that there *should* be future editions. I recommend it heartily, not only to all persons interested in the early history of dinosaur discovery, but also to all who seek a better understanding of the forces controlling the development of science in the nineteenth century.

Dr. William A.S. Sarjeant, 114 Science Place, Department of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan, S7N 5E2, Canada; william.sarjeant@usask.ca

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THE MOON AND THE WESTERN IMAGINATION. *Scott L. Montgomery. 1999. University of Arizona Press, Tucson. xx + 265 p. Hardcover, $35.00.*

In his preface, Scott Montgomery, a geologist, author, and independent scholar, describes the Moon as a world with a "thousand expressions" and his book as a work of "cultural history, concerned with patterns applied to the Moon . . . ." And he adds that he has "pursued the lunar body" not only as drawn and mapped by astronomers, but also as it "appeared in literature, philosophy, and above all, art" (p. xii), but not "as it appeared in folklore, music, oral tradition, or religious ceremony." (p. 8) Montgomery's chronological coverage extends from antiquity

to the seventeenth century, with special attention to the period from the invention in 1608 of the telescope to 1651. One of the theses Montgomery develops in this thoroughly researched and engagingly written volume is that there was a continuity stretching over these centuries and among these diverse approaches to the Moon.

The first five of Montgomery's fourteen chapters treat the Moon as represented in ancient and medieval times. After sketching the views of the Moon held by the pre-Socratics and by Plato and Aristotle (but not the Epicureans), he turns to the literary approaches taken by Plutarch and Lucian. In discussing the Middle Ages, he gives attention to the Moon in liberal arts learning, in writings by Arabic philosophers and scientists (e.g., Ibn Al-Haytham, 965-ca. 1040), and especially to its representations in Christian artists (e.g., Giotto, ca. 1267–1337) and poets (e.g., Dante). This section concludes with claims that a growing sense of naturalism in both medieval science and art was opening the way for a more modern treatment of the Moon.

Chapter Six begins with the question: who deserves credit for having created "the first true image of the lunar surface"? (p. 87) Setting aside the traditional answer that it was Leonardo da Vinci (1452–1519), who made three impressive but unpublished sketches between 1503 and 1514, Montgomery attributes this achievement to Jan Van Eyck (ca. 1390–1441), who included a representation of the Moon showing a number of lunar maria in his *The Crucifixion,* painted nearly a century earlier than da Vinci's drawings. To the question who made the first lunar map, including naming various features, Montgomery's answer is William Gilbert (1544– 1603), whereas to the question who made the first telescopic drawing of the Moon, his answer is Thomas Harriot (1560–1621).

Chapter Eight, on Galileo (1564–1642), can be seen as the centerpiece of this book and possibly its most skillful presentation. According to Montgomery, Galileo's most significant achievement regarding the Moon was not his sighting mountains on the moon, but rather his interpretation of various visual clues in a manner that made a convincing case for lunar mountains, and more generally, arguing effectively that the Moon should be seen as fundamentally earthlike. Galileo conveyed these messages both by the impressive (but far from fully reliable) drawings he made of the Moon and by the textual commentary that accompanied these drawings, which adorned Galileo's *Sidereus Nuncius* of 1610. Montgomery locates the sources of Galileo's lunar achievements in both science and art, in his successful marrying "once and for all the convincing powers of artistic naturalism to the long-term preference in astronomical science for the written text." (p. 117) Or to put it differently, Galileo very effectively employed "certain conventions of pictorial rhetoric in late Renaissance mapmaking" (p. 125) to defeat the Aristotelian and Scholastic image of the Moon. Moreover, Galileo's hurriedly-made drawings with his newly constructed telescope turned out to be the best lunar representations published until the 1630s.

To suggest the sensation created by Galileo's lunar observations and to amplify his thesis that Galileo turned the Moon into an "alter ego of the Earth" (p. 150), Montgomery devotes his ninth chapter to the literary explorations of lunar geography that followed in the wake of Galileo's observations. Among authors he treats in this chapter are Ben Jonson, Johannes Kepler, Francis Godwin, Cyrano de Bergerac, John Wilkins, Samuel Butler, and John Milton.

The central characters in Chapters Ten, Eleven, and Twelve are, respectively, Michael Van Langren, Johannes Hevelius, and Jean-Baptiste Riccioli. Van Langren, a Belgian Catholic cartographer and engraver whose efforts were motivated in part by a concern for the problem of determining terrestrial longitude, published in 1645 the finest annotated lunar map that had appeared until that time. Its attractiveness, however, was severely limited by Van Langren having named most

lunar features after living or recent Catholic kings, princes, prelates, or persons prominent for learning or virtue, including a number of saints. Van Langen's great rival was Hevelius, a wealthy Protestant brewer resident in Danzig and equipped with arguably the finest telescopes of the period. In 1647, Hevelius published his *Selenographia,* the first "true lunar atlas" (p. 169), which included many careful drawings made at intervals of two days so as to capture the changing appearances of the lunar surface resulting from variations in the angle of incidence of the solar rays. Hevelius enhanced his careful drawings by about five hundred pages of text. Regarding nomenclature, he chose to use classical names of terrestrial locations. This, as well as his claims for inhabitants of the Moon, reinforced the conception of the Moon as very similar to our Earth. The third figure, the Italian Jesuit Riccioli, entered the scene in 1651 with the publication of his *Almagestum Novum,* a defense of the geocentric theory in a variation somewhat similar to that of Tycho Brahe. Another Jesuit, the physicist Francisco Grimaldi, drew the two excellent lunar maps appearing in this volume. Banishing Hevelius's lunar inhabitants, Riccioli also departed from his system of nomenclature, choosing instead to name features after ancient and modern contributors to astronomy. Although Riccioli's system of nomenclature lost out to that Hevelius for a time, it ultimately prevailed.

In the first of Montgomery's final two chapters, he develops the thesis that these seventeenth-century patterns of mapping and naming lunar features strongly influenced later efforts to map planets, for example, Mars and Mercury. In his final chapter, he surveys the developments discussed in the earlier chapters. He also makes the salient suggestion that the history of lunar observation and mapping in the scientific revolution period shows that not only mathematics and experimentation, but also visual representation played a key role in that great change. He concludes by restating one of his central themes about the influence of lunar observations on astronomy and on our image of the heavens: "Our first and nearest vision of the heavens shall always be our closest companion." (p. 226)

Readers contemplating the purchase of Montgomery's volume may wish to compare it to a well regarded and somewhat similar book published almost simultaneously: Ewen Whitaker's *Mapping and Naming the Moon: A History of Lunar Cartography and Nomenclature* (Cambridge University Press, 1999), which carries the story nearly to the present. Both volumes are effectively illustrated and backed up by useful bibliographies and indexes. Montgomery's text covers a shorter time period and is less attentive to technical detail, but presents far more of the cultural history of lunar observation and is more successful in evoking the sense of wonder with which humans throughout history, but especially in the seventeenth century, saw the Moon.

Michael J. Crowe, Program of Liberal Studies, University of Notre Dame, Notre Dame, Indiana, 46556; crowe.1@nd.edu

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PTOLEMY'S GEOGRAPHY. AN ANNOTATED TRANSLATION OF THE THEORETICAL CHAPTERS. *J. Lennart Berggren and Alexander Jones. 2000. Princeton University Press, Princeton, N.J., and Oxford. xii + 192 p., £24.95.*

Most scientific writings have a short life. Following publication, they are read and consulted for a while, either by a wide audience of scientists or a more restricted array of specialists. After that, they may either serve as a lode to be mined for data utilizable in later publications or else vanish quickly from the memory of all but the most devoted scientific historians.

Yes, there are exceptions. The classic works of Linnaeus and Darwin will forever be reprinted and continue to attract a widespread readership, because of their historical importance. Certain textbooks also are regularly republished in updated versions, each thicker than the last. (Gray's *Anatomy,* first published in 1858, and Rutley's *Elements of Mineralogy,* first published in 1874, are examples). A very few others, though no longer being updated, have remained important as practical handbooks for decades or for centuries. (Agricola's *De Re Metallica,* first published in 1555, was still in active use by miners at the beginning of the nineteenth century).

I wonder, however, whether any other work can match the record of Ptolemy's *Geography*? Written in the second century A.D., it was still being consulted as a source of topographical information a full fifteen centuries later. Moreover it continued, throughout that long time, to instruct readers how to use mathematics to determine geographic location, how to draw maps, and how to gather and present geographical information. Arguably, it has been the most lastingly influential of all works in the earth sciences.

It is surprising, therefore, that this prime sourcework has been so long unavailable to interested readers. As the translators of this edition note (p. xi):

> No complete edition of the Greek text has appeared since C.F.A. Nobbe's of 1843-1845; and while good translations of parts of the *Geography* have been produced in German and French, the only version in English has been the nearly complete, but in all other respects very unsatisfactory, translation by E. L. Stevenson [1932].

To account for the recognizably incomplete character of the present translation, they explain (*idem*):

> The centerpiece of Ptolemy's book is an enormous list of place names and coordinates that were intended to provide the basis for drawing maps of the world and its principal regions. A reliable translation of this part, and of another long section consisting of descriptions (or, as we prefer to call them, captions) of the regional maps, is unattainable in our present defective state of knowledge of the manuscript tradition of the *Geography.* These passages are in any case not designed for continuous reading, and we believe that most readers will not be disappointed to find them represented here by a description and a representative excerpt.
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> The remaining chapters of the *Geography,* which we have translated in their entirety, may be read as a series of essays of varying length dealing with aspects of scientific cartography. The work has, however, a unity of purpose and design that is possibly easier to grasp when these theoretical sections are not overshadowed by the geographical catalogue.

This work presents a helpful account of "What Ptolemy expected his reader to know" (pp. 5-20), a summation of "Ptolemy's Evolving Conception of the World" (pp. 20-22) and a discussion of his sources (pp. 23-31). His map projections and his use of geographical co-ordinates are explained (pp. 31-34) and the question of which maps were truly Ptolemy's productions, and which might have other sources, is considered at length (pp. 35-56). The early readers and translators are thereupon reviewed and assessed (pp. 50-54).

The translation itself occupies the ensuing sixty-five pages (pp. 57-122), while the latter part of the volume comprises illustrations. There are seven colour plates, each reproducing a map published prior to the sixteenth century. Eight outline maps follow, portraying in simplified fashion the geography of the continents, and of the various regions of Europe, as determined from Ptolemy's work; these are modified from the earlier work of Nobbe (1843-1845) and Cuntz (1923, 1929). Six appendices (A-F) treat in detail with various matters arising from Ptolemy's text; another (G) presents detailed textual notes and an eighth (H) furnishes a useful geographical index. All these are satisfactory; the "Bibliography", however, is less so since it provides neither the names of publishers of books nor their pagination.

That, however, is the only feature with which I can find fault. Printing, binding, and dustwrapper each appeal well to the eye. All in all, this is a most useful volume, destined to be a primary source for classical scholars as well as for historians of science.

Dr. William A.S. Sarjeant, 114 Science Place, Department of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan, S7N 5E2, Canada; william.sarjeant@usask.ca

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TOWARD A HISTORY OF MINERALOGY, PETROLOGY, AND GEOCHEMISTRY: PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON THE HISTORY OF MINERALOGY, PETROLOGY, AND GEOCHEMISTRY, *Munich, March 8-9, 1996. Bernhard Fritscher and Fergus Henderson, eds. 1998. Institut für Geschichte der Naturwissenschaften, Munich, Germany. Heft 23. 424 p. Softcover, € 20.35.*

This volume contains the Proceedings of the International Symposium on the History of Mineralogy, Petrology, and Geochemistry, which was held in March 1996 at the Museum Reich der Kristalle of the Bavarian State Mineralogical Collection in Munich. The organizers of the symposium included the Institute for the History of Science of the Ludwig-Maximilians-University of Munich, the Institute for Applied Mineralogy and Geochemistry of the Technical University of Munich, the Bavarian State Mineralogical Collection, and the German Working Group for the History of Earth Sciences. Fifty-six scholars from ten countries (Austria, Great Britain, Italy, Norway, Czechoslovakia, Germany, Poland, Portugal, Russia, and the United States of America) participated in the symposium.

The principal idea of the symposium was to provide a forum for an interdisciplinary discussion of the history of the earth sciences, especially the history of mineralogy, petrology, and geochemistry. Twenty-three papers are included in this volume, which were grouped into the following sections: Outlines of a history of mineralogy and petrology; Fundamentals of modern mineralogy and geochemistry; Methodological and instrumental developments in mineralogy and petrology; Mineralogical knowledge in antiquity, the Middle Ages, and early modern times; Mineralogy/geochemistry and mining; Mineralogical and geochemical analysis in eighteenth and early nineteenth-centuries; Towards modernity: Philosophy and sociology of mineralogy and geochemistry. The papers were written in either English (fifteen papers) or German (eight papers).

N. P. Yushkin in his paper on mineralogy noted that at the turn of the nineteenth century the number of mineral species was less than one hundred. Now over two thousand species are known, plus thirty-five hundred varieties. José Lima-de-Faria presented the history of the classification of minerals dating back to Pliny (~77 A.D.) and Nicoletta Morella explained mineralogical classifications in sixteenth-century Italy. H. M. Nobis discussed the major medieval theories on the origin of minerals, rocks, and especially metals. Andreas Köhne related the early history of crystallography, and Sally Newcomb explained equipment–including furnaces, containers, reagents–and methods for collecting and analyzing laboratory variables.

Biographies of mineralogists are those of B. F. J. Hermann (1755-1815) by Peter Schmidt; W. von Goethe (1749-1832), A. G. Werner (1749-1817), and Karl von Raumer (1783-1865) by Hugh Torrens; C. G. Bischof (1792-1870) and C. W. Gombel (1823-1898) by Peter Schimkat; M. F. Heddle (1828-1901) and P. D.

Cargen (1817-1895) by B. M. Hamilton; Paul Groth (1843-1927) by Ruppert Hochleiter; and Woldemar Voigt (1850-1919) by S. L. Wolff. The history of crystallography, mining, and related mineralogy are the topics of Ezio Vaccari, H.-W. Schott, Fergus Henderson, and R. J. Howarth. Geochemistry as an evolving science is traced by Martin Guntau, Geir Hestmark, Henning von Philipsborn, Bernhard Fritscher, and Peter Kroger. Wolfgang Czegka reports on geochemical methods in early research on meteorites, and Robert Wiesheu and Ulrich F. Hein summarize the history of fluid-inclusion studies.

Gerald M. Friedman, Department of Geology, Brooklyn College and Graduate School of the City University of New York, Brooklyn, NY, and Northeastern Science Foundation, affiliated with Brooklyn College, Rensselaer Center of Applied Geology, 15 Third Street, P.O. Box 746, Troy, NY 12181; gmfriedman@juno.com

ESSAY REVIEW

PILGRIMS ON THE ICE. **ROBERT FALCON SCOTT'S FIRST ANTARCTIC EXPEDITION.** *T. H. Baughman. 1999. University of Nebraska Press. 334 p. Hardcover, $45.00.*

National and private expeditions usually provide a wealth of data that are of interest to science historians. Information sources on polar expeditions, particularly those of the 1850-1950 era, are well represented in national archives and offer a feast of well-curated documentation that invites repeated mining, sifting, distillation, and re-evaluation. Biographical and historical treatment of Antarctic personalities and exploration changed dramatically in the 1980s with the publication of Englishman Roland Huntford's penetrating and often controversial analyses of expedition leaders Robert Scott, Roald Amundsen, and Ernest Shackleton (Huntford, 1980, 1985). Huntford digested a considerable body of archival material in critically analyzing the heritage and character of these three prominent English and Norwegian polar explorers of the early twentieth century.

In *Pilgrims On The Ice, Robert Falcon Scott's First Antarctic Expedition,* American historian Timothy Baughman also provides us with an in-depth examination of early twentieth century, Antarctic exploration, but chooses to concentrate only on Robert Falcon Scott's 1901-1904 National Antarctic Expedition to the Ross Sea sector of the continent. As was the case with Huntford's two works, *Pilgrims* is a major contribution to historical scholarship.

The National Antarctic Expedition was also known as the *Discovery* Expedition, a name taken from the ship used during the 1901-1904 visit to Antarctica. The expedition became trapped in ice off Hut Point Peninsula at the southern end of Ross Island for two winters and the party lived aboard the ship during the entire enterprise. This was a British Navy expedition of six officers and twenty-six other ranks, and also included a small civilian staff of five scientists. The official history and events of the *Discovery* Expedition are well-chronicled in books by the ship's officers (Armitage, 1905; Scott 1905; and Doorly, 1916). Summaries of expedition exploits have been incorporated into numerous polar history syntheses over the past century. These early accounts are noted for their loyalty to the expedition leader (Robert Falcon Scott) and their comrades, and in most instances they avoided discussions of personal conflicts and disagreements.

Major exploratory and scientific expeditions have a distinct four-part history. There is first a lengthy organizational period, then a relatively brief time on site in some remote locale, followed by a post-expedition period of recovery, highlighted by autobiographical and scientific publication, and finally, historical and scientific re-assessment, a process which may extend over a period of many decades. These past national and private endeavors left a rich trial of correspondence, committee minutes, professional society records, press statements, books, reports, and research publications. This was certainly the case with the *Discovery* Expedition. Why then, has yet another book on the so-called heroic era (1901-1922) of Antarctic exploration appeared almost a century after the event, when an apparently comprehensive published record already exists. Tim Baughman provides us with a number of reasons. Foremost, the *Discovery* Expedition introduced a number of important British figures in the persons of Robert Scott, Ernest Shackleton, Edward Wilson, and others to polar careers, and their personalities and leadership capabilities continue to attract biographers and historians. Further,

Baughman argues that to fathom the events and personalities of the entire polar heroic era, one must understand the background to the *Discovery* Expedition preparations during the 1890s and the influence these had on other early twentieth-century expeditions to Antarctica.

In *Pilgrims* Baughman concentrates principally on the inner workings of the *Discovery* Expedition over a three-year period between 1901-1904, including the two winters spent in Antarctica. The style and manner in which the expedition was administered, both before and during its sojourn in Antarctica, are discussed at length but can only be fully comprehended by reference to the culture from which it emerged. If the serious scholar of history and psychology craves more nineteenth-century pre-expedition history than provided in *Pilgrims,* this is available in the author's earlier book, *Before The Heroes Came, Antarctica in the 1890's* (Baughman, 1994). In the latter book, we find a very thorough treatment of polar expedition politics and relationships between English and other European science communities, as well as their science priorities, during the span of time between the James Clark Ross's *Terror* and *Erebus* expedition of 1840-1843 to the Ross Sea and the departure of *Discovery,* also for the Ross Sea, in August 1901.

In the first three chapters of *Pilgrims* Baughman provides valuable insights into late nineteenth-century exploration, the personalities and social relationships amongst leading polar exploration proponents, the British Navy, and the politics of learned societies such as the Royal Geographical Society and the Royal Society. As was the case in Huntford's research, Baughman deals thoroughly with the indomitable Sir Clements Markham, President of the Royal Geographic Society, self-appointed father of the *Discovery* Expedition, and the governing hand behind the selection and many of the actions of expedition leader Robert Falcon Scott. Markham both successfully and at times unsuccessfully manipulated an assortment of quarreling, joint Royal Geographical Society-Royal Society committees during the preparatory phases of the *Discovery* Expedition. In Chapter 3 ("Old Men Bicker") Baughman provides an entertaining glimpse of the English learned scientific geritocracy during the two years before *Discovery* sailed, complete with accounts of their theatrics, arguments, resignations, personal agendas, and vendettas. Baughman notes, that in many respects, turn-of-the-century Great Britain represented the end of one era and the beginning of a new one. This applied to relationships between the British Empire and its colonial minions, to foreign policy, to the state of industrial Great Britain, and to British naval governance and supremacy, to mention several areas. This also applied to developments in the sciences.

Science, including the earth sciences, was caught in the transition between the declining days of the old guard of Victorian geologists and the emergence of a new crop of young scientists who were to provide major impacts on science during the first two to three decades of the twentieth century. The science plan of the *Discovery* Expedition was the product of end-of-century and end-of-era Victorian events and history, and in most instances reflected little awareness of new and exciting developments in all sciences in the last few years of the 1890s. The reviewer notes that the launching of Shackleton's *Nimrod* Expedition (1907-1909) and Scott's *Terra Nova* Expedition (1910-1913) to the same areas of Antarctica and only a few years apart, were characterized by an obvious improvement in science planning, selection and preparation of larger and better qualified scientific staffs, and the eventual execution of more advanced science programs. In contrast to the *Discovery* Expedition, scientists of the *Nimrod* and *Terra Nova* expeditions played much more prominent roles and the publication record was much more extensive.

In the final eleven chapters of *Pilgrims On The Ice,* Baughman recounts the journey of *Discovery* from England to New Zealand, its journey to and from Antarctica, and day-to-day life of the expedition aboard *Discovery,* while the ship

was moored at the southern tip of Ross Island, near a site occupied today by the United States Antarctic Program's McMurdo Station. He also treats the exploratory and scientific sledging journeys to the Western Mountains (present-day Transantarctic Mountains and South Victoria Land), Inland Ice Plateau (present-day East Antarctic Ice Sheet), and the Great Ice Barrier (present-day Ross Ice Shelf). Much of his information is marshaled from the published autobiographical accounts of Armitage (1905), Doorly (1916), Scott (1905), and Wilson (Savours, 1966), and from the biographical and historical analyses of Huntford (1980), Quartermain, (1967, 1981), and other historians. Because some of these published sources are no longer readily available, Baughman's synthesis, opinions, and detailed references to specific issues and events are particularly valuable.

Perhaps the greatest contribution made in *Pilgrims* is Baughman's extensive reference to the unpublished diaries of Michael Barne, Charles Royds, Robert Scott, Reginald Skelton, and others, and to correspondence and reports in the archives of the Scott Polar Research Institute (Cambridge University), Royal Geographical Society (London) and other repositories. The endnote section for each chapter provides a wealth of referencing to obscure published and unpublished documents, again often supplemented by Baughman's personal observations and opinions. The author uses these data to paint a full-fleshed picture of the *Discovery* Expedition's cast of characters and the major events that shaped their isolated existence. The use of diary-based material allows the reader to better understand the frailties of human nature, their personal interactions and relationships, to focus on the personalities of key expedition members through several sets of eyes, and to understand how significant issues, decisions and events were viewed from several perspectives. This book also provides numerous insights into the world of late Victorian-Edwardian society, the functioning of naval and civilian hierarchies, and British attitudes to polar technology, rank, manliness and suffering. As Baughman notes, painful and costly lessons learned in the course of the *Discovery* Expedition went unheeded, and many of the same basic operational mistakes were to be repeated with tragic consequences during British expeditions later in the heroic era of polar exploration.

While Baughman did not set out to analyze the scientific objectives and results of the *Discovery* expedition and the subject is given only passing attention in this book, he does provide a clear picture of intellectual and physical environment in which scientific activities were attempted during the expedition. The reader is referred to *Before The Heroes Came,* where some aspects of late nineteenth Antarctic science are discussed.

Details of the science program finally executed by the *Discovery* scientists deserve the attention of future science historians and in the following paragraphs the reviewer takes the liberty of discussing a few of the more salient points. As early as 1886, John Murray, one of the architects of the *Challenger* Expedition (1872-1876), argued strongly for a new phase of southern high latitude and Antarctic exploration. Eighteen months before *Discovery* sailed from England, Murray published a comprehensive essay. In this essay he enumerated and elaborated upon the major elements of a meaningful science plan, one that included extensive dredging of the high-latitude sea-floor, oceanographic studies, marine biology, oceanography, paleontology, paleoclimate, meteorology, glaciology, marine and terrestrial geology, and other topics (Murray, 1898). In the case of the geological program, reconnaissance information on Ross Sea coastal outcrops was already available from the work of the James Clark Ross's *Erebus* and *Terror* Expedition of 1840-1843 (Prior, 1899).

In February 1900, the *Discovery* executive committee appointed experienced geologist Professor John W. Gregory as the director of the expedition civilian scientific staff. In April 1901 he published what must be considered for the times,

a masterful and prophetic synthesis of opportunities for research in Antarctic earth science, including geography, geology, terrestrial magnetism, geodetic science, seismology, meteorology, oceanography, and biology (Gregory, 1901). The scientific leadership provided by Murray and Gregory boded well for the *Discovery* enterprise. Unfortunately, in late April 1901 and only four months before the departure of Discovery from England, Gregory disputed expedition and science leadership procedures with Sir Clements Markham and resigned. Baughman paraphrased comments made in *Nature* (May 1901) by the Royal Society representative on the governing committee and Oxford University zoologist Edward Poulton, that "with Gregory's resignation, science would give way to adventure." Baughman commented (p. 47) "If one looks at the British involvement in Antarctica in the Heroic Era and concludes that it twice took a wrong turn, this episode [i.e., Gregory's departure] was one of those two false steps." It transpired that the *Discovery* scientific program was poorly defined, very modest and undermanned, staffed by scientists who were ill-prepared for high latitude Southern Hemisphere science, and who, like the rest of the expedition, were initially very unskilled and inefficient in polar field techniques. Although the small science staff did recover very valuable data and published new information in some subdisciplines, this was often a by-product of general sledging excursions. Despite the availability of *Discovery* and two relief vessels, little oceanography, bottom sounding, or marine biology was undertaken during the three years of the expedition. The expedition had no glaciologist or glacial geologist and was unable to fully capitalize on the fact that they occupied a glaciated terrain, were surrounded by ice, and frequently traveled across sea, glacier, and shelf ice.

With Gregory's participation lost to the expedition, the situation with the *Discovery* geological program was particularly unfortunate. Following the resignation of Gregory, Clements Markham replaced him with Hartley Travers Ferrar, a twenty-two year old Cambridge University geology graduate. Ferrar reported to the *Discovery* only two weeks before the expedition departed England. Baughman notes that Ferrar received his training for the expedition from H. R. Mill (inorganic chemist by training, librarian at the Royal Geographic Society, and famed historian) during the eight days the *Discovery* was in passage from England to Madeira. Despite his youth and inexperience, Ferrar performed well as a geologist during the expedition and valuable new maps and geological data emerged from his efforts. These included descriptions of Paleozoic crystalline basement rocks, Paleozoic-Mesozoic Beacon Sandstone, Mesozoic Ferrar Dolerite intrusives of the Taylor Glacier and Dry Valley region, Cenozoic volcanic geology of McMurdo Sound and Ross Island, and late Cenozoic to present-day glacial geology and glaciology (Ferrar, 1905, 1907). Laboratory analyses of Ferrar's rock collections were published by Prior (1907). This important pioneer work was the basis for later expedition activity in this region of Antarctica and as late as the International Geophysical Year (1958-1959) the 1901-1904 *Discovery* Expedition (or National Antarctic Expedition) reports were still regularly cited.

From a reading of Gregory's *Nature* article of April 1901, it is clear that he had already developed some very original views on Antarctic geology and its geological and structural relationships with Australia, New Zealand, and South America. He cited and was clearly cognizant of Eduard Suess's four-volume, global, structural syntheses and hypotheses, published as *Das Antlitz der Erde,* between 1883 to 1904 (and translated into English by Hertha B. C. Sollas under the title of *The Face of the Earth* between 1904 and 1924). Gregory went so far as to propose a broad, hypothetical, continental, land bridge between southern Australia and Wilkes Land, and also discussed the Andean-New Zealand fold-belt linkage through present-day West Antarctica. Regrettably, Ferrar appears to have been unaware of Suess's southern continent Gondwanaland and hypotheses about

a shrinking Earth and evolution of mountains, as well as other prominent and often contentious earth-science issues and debates of the 1880s and 1890s. He may have simply chosen to adhere steadfastly to purely descriptive Antarctic field geology. Knowledge of this literature would have proven very useful to him when confronted with Antarctic Gondwanan geology. If the *Discovery* had called at Melbourne *en route* to New Zealand in 1901, as had been originally planned, Ferrar might have encountered John Gregory (by then a professor at University of Melbourne) and discussed these and other thought-provoking issues, before proceeding to Antarctica. Sadly, this was not to be. The reviewer is left pondering how Antarctic geology might have progressed in these days before the emergence of Wegener's continental drift hypothesis, had the *Discovery* Expedition been staffed by both the experienced and all-knowing Gregory and the enthusiastic, but inexperienced, young Ferrar. Science and earth science in particular, suffered at the hands of Scott's pole-seeking and geographic, adventure-driven priorities.

Pilgrims On The Ice, Robert Falcon Scott's First Antarctic Expedition is a very thoroughly researched and engaging historical statement. It should (must) be read in tandem with Baughman's *Before The Heroes Came, Antarctica In The 1890's*. The two volumes represent essential sources for future history of science scholars bent on comprehending the political and cultural intricacies of the late-Victorian science fraternities, debates, power struggles, and the science that emerged from this particular expedition. Both of Baughman's books provoked the reviewer to delve deeper into the still uncharted waters of Antarctic, earth-science history. Author Tim Baughman promises a third volume, one that provides analyses of later expeditions during the heroic era of Antarctic exploration. I hope he perseveres with this threat and we look forward to the fruits of these efforts.

REFERENCES

Armitage, Albert B., *Two Years In The Antarctic* (London: Edward Arnold, 1905).

Baughman, Timothy H., *Before The Heroes Came, Antarctica In The 1890's* (Lincoln: University of Nebraska Press, 1994).

Doorly, Gerald S., *The Voyage Of The "Morning"* (London: Smith, Elder, and Co., 1916).

Ferrar, H. T., Summary of the geological observations made during the cruise of the S.S. "Discovery," 1901-1904, Appendix 1 (in Scott, R.F., *The Voyage of the "Discovery,"* London: MacMillan, Co., Ltd., 1905), 437-468.

Ferrar, H. T., Report on the field-geology of the region explored during the *Discovery* Antarctic Expedition, 1901-1904, *National Antarctic Expedition, Natural History, Volume I (Geology),* 1907, 1-100.

Gregory, J. W., The work of the National Antarctic Expedition, *Nature,* 1901, 63:609-612.

Huntford, Roland, *Scott and Amundsen* (New York: G. P. Putnam's Sons, 1980).

Huntford, Roland, *Shackleton* (New York: Fawcett Columbine, 1985).

Murray, John, Facts and arguments in favour of an Antarctic expedition, *Geological Magazine,* 1898, 5:268-276.

Prior, G. T., Petrographical notes on the rock-specimens collected in the Antarctic regions during the voyages of HMS *Erebus* and *Terror* in 1839-43, *Mineralogical Magazine,* 1899, 12:69-91.

Prior, G. T., Report on rock-specimens collected during the *Discovery* Antarctic Expedition, 1901-04, *National Antarctic Expedition, Volume I (Geology),* 1907:101-140.

Quartermain, Leslie B., *South To The Pole, The Early History Of The Ross Sea Sector Antarctica* (London: Oxford University Press, 1967).

Quartermain, Leslie B., *Antarctica's Forgotten Men* (Wellington: Millwood Press, 1981).

Savours, Ann, *Edward Wilson, Diary Of The "Discovery" Expedition To The Antarctic Regions 1901-1904* (London: Blanford Press, 1966).

Scott, Robert Falcon, *The Voyage Of The "Discovery"* (London: MacMillan and Co., Ltd., 1905).

Suess, Eduard, *The Face Of The Earth,* 4 volumes, translated from the original German text by Hertha B.C. Sollas (Oxford: Clarendon Press, 1904-1924).

Peter-Noel Webb, Department of Geological Sciences and Byrd Polar Research Center, The Ohio State University, Columbus, Ohio 43210 (webb.3@osu.edu)

INTERESTING PUBLICATIONS

Gerald M. Friedman, CONTRIBUTING EDITOR

Since the start of this journal, Founding Editor Gerald M. Friedman has prepared this column. Contributors wishing to list recent books and papers of interest to our membership are requested to send them to Gerald M. Friedman, Brooklyn College and Graduate School of the City University of New York c/o Northeastern Science Foundation, Inc., Rensselaer Center of Applied Geology, P.O. Box 746, Troy, NY 12181-0746 U.S.A.

ALTER, STEPHEN G., 1999, Darwinism and the Linguistic Image: Language, Race, and Natural Theology in the Nineteenth Century. New Studies in American Intellectual and Cultural History. Baltimore/London: Johns Hopkins University Press, 193 p.

AMBROSE-HAMILTON, B., 1998, John Wesley Judd (18.02.1840–3.03.1916), p. 9–20, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

ANHOLT, LAURENCE, 1999, Stone Girl, Bone Girl: The Story of Mary Anning. Orchard Books, New York, unpaged.

ANONYMOUS, 1994, Heribert M. Nobis—Lebensstationen, p. 1–18, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

ANONYMOUS, 1994, Verzeichnis der Schriften von Heribert M. Nobis, p. 19–28, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

ANONYMOUS, 1999, Birth of an industry: North America's first oil company: *Canadian Society of Petroleum Geologists Reservoir,* v. 26, issue 5, p. 17.

ANONYMOUS, 1999, Konrad Keilhack (1858–1944) -seine Promotion 1881 in Jena: *Nachrichten der Deutschen Geologischen Gesellschaft,* Heft 70, p. 20–24.

ARMS, MYRON, 1998, Riddle of the ice: a scientific adventure into the arctic. Anchor Books, New York, 267 p.

ATKINS, JEANNINE, 1999, Mary Anning and the Sea Dragon. Farrar, Straus, and Giroux. New York, unpaged.

AVÉ-LALLEMANT, EBERHARD, 1994, Zur Neubegründung einer Philosophischen Kosmologie im Werk von Hedwig Conrad-Martius, p. 37–60, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

AZZARO, R. and BARBANO, M.S., 1998, Analysis of seismicity at Mt. Etna in the period 1880–1892 (abstract), p. 21–22, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

BABICZ, JÓZEF, 1994, Der erste thematische Atlas des Königreichs Polen (1840) als Quelle und Dokument der Kartographie- und Wissenschaftsgeschichte, p. 255–268, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

BARBOUR, S., 1998, Nineteenth Canadian Geotechnical Colloquium: The soil-water characteristic curve: a historical perspective: *Canadian Geotechnical Journal,* v. 35, no. 5, 873 p.

BÄUMER-SCHLEINKOFER, ÄNNE, 1994, Die Entstehung der neuzeitlichen Botanik—Geburt oder Wiedergeburt?, p. 337–366, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

BECH, J., 1999, Knowledge of Soils in Ancient Greece: Memoirs of the Academy of Science and Arts in Barcelona, 120 p.

BENNETT, JAMES B., 1998, Guest Column: A Member (of the Houston Geological Society) Looks Back on the Oil Embargo: *Houston Geological Society Bulletin,* v. 41, no. 4, p. 23, 27, 29.

BIALAS, VOLKER, 1994, Der Fortgang der Kepler-Ausgabe an der Bayerischen Akademie der Wissenschaften in München, p. 53–68, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

BISHOP, WILLIAM F., 1998, History of the International Explorationists Group: *Houston Geological Society Bulletin,* v. 41, no. 4, p. 9.

BLAIR, C., BURY, S., GRIMWADE, A., HARDING, R.R., JOBBINS, E.A., KING, D., LIGHTBOWN, R.W., and SCARRATT, K., 1998, The Crown Jewels: the History of the Coronation Regalia in the Jewel House of the Tower of London. Volume 1: The History (812 p.) and Volume 2: The Catalogue (630 p.), London.

BONNER, JOHN TYLER, 1999, The Evolution of Evolution: *Natural History,* v. 108, p. 20–21.

BOOCKMANN, FRIEDERIKE, 1994, Das Josephsspiel. Einkleidungsformen und neue Textfunde aus Handschriften, p. 195–208, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

BÖWING, H., 1992, Leopold von Buch—ein Stolper, der Weltruhm erlangte: *Heimatkalender—Kreis Angermünder,* p. 95–101.

BRANAGAN, D.F., 1998, Stream of fire, burning mountains, pumice and volcanic activity at no-very remote period. Volcanism in the Australasian region: the search for understanding: to 1860, p. 23–45, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

BREIDBACH, OLAF and EIBL-EIBESFELDT, IRENUS, ed., 1998, Art Forms in Nature: the Prints of Ernst Haeckel. Prestel-Verlag, Berlin, 139 p., 100 plates.

BRICE, WILLIAM R., 1998, Petroleum Exploration: Pre-Drake Well: *American Association of Petroleum Geologists Bulletin,* v. 82, p. 1765.

BRICE, WILLIAM R., 1999, The World of Petroleum Before the Drake Well in 1859: *West Texas Geological Society Bulletin,* v. 39, no. 2, p. 3–9.

BROWN, DON, 1999, Rare Treasure: Mary Anning and Her Remarkable Discoveries. Houghton Mifflin Company, Boston, unpaged.

BROWNE, JANET, 1996, Charles Darwin: Voyaging. Princeton University Press, 622 p.

BRUCE, R.C. and RAYMENT, G.E., 1998, A Century of Soil Analysis in Queensland: *Communications in Soil Science and Plant Analysis,* v. 29, p. 1418–1419.

BUCHEIT, ANDREA K., HARGROVE, ULYSSES S., and DONOVAN, R. NOWELL, 1998, Hutton, thy theory is D. . .MD nonsense: *The Compass: Journal of Sigma Gamma Epsilon,* v. 74, p. 36–46.

BURKHARDT, FREDERICK, PORTER, DUNCAN M., HARVEY, JOY, and TOPHAM, JONATHAN R., 1997, The correspondence of Charles Darwin, volume 10, 1862. Cambridge University Press, 976 p.

BÜTTNER, MANFRED, 1994, Zur Bedeutung der Reformation für Mercator und dessen Neuausrichtung der Kosmographie/Geographie im 16. Jahrhundert, p. 373–386, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

CAJZ, V. and HRADECKY, P., 1998, Young Volcanism in Bohemian Massif—History and evolution (abstract), p. 47–48, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

CAPUANO, F., CAVALCHI, B. DAVOLI, V., and MANZINI, P., 1998, Eudiometric measures at the end of XVIII century. Air quality of the Dog Cave from Lazzaro Spallanzani travels in Two Sicilies Kingdom, p. 55–63, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

CAPUANO, F., CAVALCHI, B., DAVOLI, V., and MANZINI, P., 1998, Vulcano isle water: from quali-quantitative analysis of Lazzaro Spallanzani to modern methods, p. 49–54, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commis-

sion on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

CAROZZI, ALBERT V., 1997, Travaux du comité Français D'Histoire de la Géologie (Cofrhigéo). Troisième Série, t.XI, no. 5, (séance du 4 juin 1997), p. 89–112.

CAROZZI, ALBERT V., 1998, Découverte d'une grande découvertee: Horace-Bénédict de Saussure et les refoulements horizontaux en sens contraires dans la formation des Alpes, p. 223-? , *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

CAROZZI, ALBERT V., 1998, Études de Géologie Structurale Alpine au XVIII[E] Siècle: la Méthodologie de Horace-Bénédict de Saussure. Les Alpes et la Science, Institut universitaire Kurt Bösch, Sion, Suisse, v. 3, p. 27–45.

CAROZZI, ALBERT V., 1999, Les Théories de L'Origine Des Montagnes Primitives de Louis Jurine, 1797 et 1804 in Louis Jurine- Chirurgien et Naturaliste (1751–1891) (R. Sigrist et al., eds.) Bibliothèque d'Histoire des Sciences. Editions George, Geneve, vol. 2, p. 351–376.

CAROZZI, ALBERT V., CRETTAZ, BERNARD, and RIPOLL, DAVID, eds., Les plis du temps: Mythe, science et H.-B. de Saussure. (Nouveaux Itineraires amoudruz, 5). Geneva: Musee, 368 p.

CARSON, D.J., 1999, Climate Modeling: Achievement and Prospects: *Quarterly Journal of the Royal Meteorological Society,* v. 125, no. 533, p. 1–27.

CARTWRIGHT, DAVID E., 1999, Tides: A Scientific History. Cambridge University Press, New York, 292 p.

CHALONER, W.G., 1995, Marie Stopes (1880–1958): The American Connection, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 127–134.

CHRISTIANSON, G.E., 1997, Edwin Hubble: Mariner of the Nebulae. Institute of Physics Publishing, 420 p.

CHRISTIANSON, GALE, 1999, Mastering the Universe: *Astronomy,* v. 27, no. 2, p. 60–66.

CHRISTY, B.M. and LOWMAN, P.D., Jr., 1998, Global maps of volcanism: two maps from two centuries, p. 65–90, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

CIBULKA, J., JANOUŠEK, K., and OTRADOVEC, J., 1997, Carl Ferdinand Peters: libcevesky meteor, jehoz svetlo zaplalo a rychle pohaslo, Sazba: J. Kerkovsky, Kontaktni adresa: Podsedice 137, 411 13 Trebenice Registrovano pod zn. "Okreseni urad Litomerice 11/92" Uzaverka: 15. Prosince, Czech Republic, p. 4–5.

CIVETTA, L., DE VITO, A., ORSI, G., and POLARA, G., 1998, Volcanism at Ischia from geological and historical record (abstract), p. 91–92, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

COHEN, C., 1998, Representations of volcanos in XVIIIth century's "Theories of the Earth" (abstract), p. 93, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

CONLEY, TOM, 1996, The Self-Made Map: Cartographic Writing in Early Modern France. Minneapolis, University of Minnesota Press, 378 p.

COOK, ALAN, 1998, Edmond Halley: Charting the Heavens and the Seas. Oxford: Clarendon Press, 542 p.

CRETTAZ, BERNARD, 1998, Du mythe des Alpes au mythe de la montagne, p. 51–84, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

CRETTAZ, BERNARD, 1998, Problématique générale en dix énouncés, p. 9–22, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

CROSS, AUREAL T. and KOSANKE, ROBERT M., 1995, History and Development of Carboniferous Palynology in North America During the Early and Middle Twentieth Century, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 353–388.

CROSS, AUREAL T., KOSANKE, ROBERT M., and PHILLIPS, TOM L., 1995, James Morton Schopf (1911–1978): Paleobotanist, Palynologist, and Coal Geologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 203–214.

CROWE, MICHAEL J., DYCK, DAVID R., and KEVIN, JAMES J., 1998, A calendar of the correspondence of Sir John Herschel. Cambridge University Press, 800 p.

CULLEN, CHRISTOPHER, 1996, Astronomy and Mathematics in Ancient China: the Zhou bi suan jing. Needham Research Institute Studies 1, Cambridge University Press, 255 p.

CZEGKA, WOLFGANG, 1999, Das Alexander von Humboldt—Gedenkjahr 1999: *Nachrichten der Deutschen Geologischen Gesellschaft,* Heft 70, p. 39–40.

DABER, R., 1998, Excellent preservation of fossil plant structure in connection to extrusive volcanic activity, p. 95–98, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

DE SAUSSURE, YVES, 1998, Horace-Bénédict de Saussure, mon aïeul, p. 143–154, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

DEAN, D.R., 1998, Italian volcanos and English observers, p. 99–122, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

DEAN, DENNIS R., 1999, Gideon Mantell and the Discovery of Dinosaurs. Cambridge University Press, United Kingdom, New York, 290 p.

DEBUS, A.A., 1997, Sorting Fossil Vertebrate Iconography: Fossil News: *Journal of Amateur Paleontology,* v. 3, nos. 10/11, p. 2–5.

DEBUS, A.A., 1998, The Art of Paleocatastrophe: Portraying Survivorship at the Quantum Crossroads: *Fossil News*: *Journal of Amateur Paleontology,* v. 4, no. 1, p. 14–16.

DEBUS, A.A. and MCCARTHY, STEVE, 1998, Reconstructing Hawkins' American Antediluvians: *Prehistoric Times,* no. 30, June/July, p. 45–48.

DECROUEZ, DANIELLE and LANTERNO, EDOUARD, 1998, La collection géologique d'Horace-Bénédict de Saussure, p. 211–222, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

DELÉCRAZ, CHRISTIAN, 1998, Les reliefs de montagne au XVIII siécle, entre la science et le mythe, p. 125–142, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

DELSEMME, ARMAND H., 1998, Our Cosmic Origins: From the Big Bang to the Emergence of Life and intelligence. Cambridge University Press, 320 p.

DEMIDOV, SERGEJ S., 1994, D.F. Egorov and mathematics in Moscow (1917–1931), p. 333–346, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

DESMOND, A., 1998, Huxley: From Devil's Disciple to Evolution's High Priest. Penguin, London, 820 p.

DEVORKIN, DAVID H., ed., 1999, The American Astronomical Society's First Century. Washington, D.C.: American Institute of Physics, 350 p.

DICK, STEVEN J., 1996, The Biological Universe: The twentieth century extraterrestrial life debate and the limits of science. Cambridge University Press, 596 p.

DICK, STEVEN J., 1998, Life on other worlds: the twentieth century extraterrestrial life debate. Cambridge University Press, 304 p.

DICK, STEVEN J., ORCHISTON, WAYNE, and LOVE, TOM, 1998, Simon Newcomb, William Harkness, and the Nineteenth- century American Transit of Venus Expedition: *Journal for the History of Astronomy,* v. 29, part 3, no. 96, p. 221–255.

DICK, WOLFGANG and HAMEL, JURGEN, eds., 1998, Beiträge zur Astronomiegeschichte: volume 1 (Acta Historica Astronomiae, 1). Thun/Frankfurt am Main: Harri Deutsch, 184 p.

DOBROVOL'SKII, G.V., 1998, History of Science—Achievements and Prospects of Research Studies and Student Training at the Faculty of Soil Science, Moscow State University: *Eurasian Soil Science,* v. 31, no. 12, 1388 p.

DODSON, PETER, 1999, Let Us Now Praise Famous Men: *American Paleontologist,* v. 7, no. 2, p. 3–7.

DOLLFUS, AUDOUIN, 1998, History of Planetary Science. The Pic du Midi Planetary Observation Project: 1941–1971: *Planetary and Space Science,* v. 46, p. 1037–73.

DORN, WOLFGANG, 1999, "50 Jahre im Dienst der Umwelt": Jubiläumsbroschüre des Bayerischen Geologischen Landesamtes: Nachrichten: *Deutschen Geologischen Gesellschaft,* v. 68, p. 39–40.

DOTT, H.R., Jr., 1998, Recognition of the tectonic significance of volcanism in ancient orogenic belts, p. 123–131, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

DRAGONI, GIORGIO, 1994, Le misurazioni fisico-astronomiche di Eratostene, p. 97–124, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

DREYER-EIMBCKE, KONSUL O., 1998, Auf den Spuren der Entdecker am südlichsten Ende der Welt. Edition Peterman.Klett- Perthes, Justus Perthes Verlag Gotha GmbH, Postfach 10 04 52, 99854 Gotha, Germany, 248 p.

EHLING, ANGELA, HEINKE, ANDREA, LINDERT, WOLFGANG, and STRAHL, JAQUELINE, 1998, Geowissenschaftliche Sammlungen—historische Last oder modernes Instrumentarium?, *in* Terra Nostra, Schriften der Alfred-Wegener-Stiftung 98/4, Geo- Berlin '98, 150 Jahre Deutschen Geologischen Gesellschaft, Gemeinsame Jahrestagung, Deutschen Geologischen Gesellschaft, Deutsche Mineralogische Gesellschaft, Gesellschaft für Geowissenschaften, Paläontologische Gesellschaft, Geowissenschaften in Ökonomie und Ökologie: Das System Erde, 6.-9. Oktober 1998, Technische Universität Berlin, Exkursionsführer, p. B-4.

EHMKE, GERHARD and WUTZKE, ULRICH, 1998, Auf den Spuren von Alfred Wegener, *in* Terra Nostra, Schriften der Alfred- Wegener-Stiftung 98/4, Geo-Berlin '98, 150 Jahre Deutschen Geologischen Gesellschaft, Gemeinsame Jahrestagung, Deutschen Geologischen Gesellschaft, Deutsche Mineralogische Gesellschaft, Gesellschaft für Geowissenschaften, Paläontologische Gesellschaft, Geowissenschaften in Ökonomie und Ökologie: Das System Erde, 6.-9. Oktober 1998, Technische Universität Berlin, Exkursionsführer, p. C-6.

ELDREDGE, NILES, 1998, The Pattern of Evolution. W.H. Freeman and Company, 250 p.

ELLENBERGER, FRANÇOIS, 1994, Histoire de la géologie. Volume 2: La grande éclosion et ses prémices. 1660–1810. (Petite Collection d'Histoire de Sciences). London/Paris: Tec & Doc—Lavoisier, 383 p.

EVANS, JAMES, 1998, The History and Practice of Ancient Astronomy. Oxford University Press, New York, 494 p.

EVDOKIMOVA, T.I. and VASIL'EVSKAYA, V.D., 1998, On the 25th Anniversary of the Department of Soil Science, Moscow State University: *Eurasian Soil Science,* v. 31, no. 12, unpaginated.

FABIAN, A.C., ed., 1998, Evolution: Society, Science, and the Universe. Cambridge University Press, 186 p.

FALTER, REINHARD, 1994, Prägung des Menschen durch die Landschaft—Umwelt-psychologischer Forschungsansatz oder Rückfall in "Blut und Boden"—Idealogie? Eine geographiehistorische Revision, p. 369–402, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

FAWCETT, J.F., 1999, Celebrating the Past, Planning for the Future (1848–1998). 150 Years of Geology at the University of Toronto, University of Toronto, 40 p.

FEENEY, ROBERT E., 1998, Polar Journeys: The Role of Food and Nutrition in Early Exploration.

American Chemical Society, Washington, D.C. (distributor, Oxford University Press, New York), 309 p.

FELDEN, D., 1998, Durch den Fünften Kontinent. Edition Peterman.Klett-Perthes, Justus Perthes Verlag Gotha GmbH, Postfach 10 04 52, 99854 Gotha, Germany, 160 p.

FELDEN, D., 1998, Über die Kordilleren bis Bogotá. Edition Peterman.Klett-Perthes, Justus Perthes Verlag Gotha GmbH, Postfach 10 04 52, 99854 Gotha, Germany, 126 p.

FELLER, CHRISTIAN, 1997, La matiere organique des sols: Aspects historique at etat des conception actuelles: *C.R. Acad. Agric. France,* v. 83, no. 6, p. 85–131. (with discussion and Eng. Summary).

FERGUSON, KITTY, 1998, Prisons of Light—Black Holes. Cambridge University Press, 214 p.

FIGLIUOLO, B. and MARTURANO, A., 1998, The eruptions of Vesuvius from the 9th century to the 12th century, p. 133–156, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

FIGUERÔA, S.F. and LOPES, MA.M., 1998, Understanding volcanism in Brazil: a preliminary survey on Brazilian geoscientist's ideas (1854–1919), p. 157–170, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

FISHER, RICHARD, 1999, Out of the Crater: Chronicles of a Volcanologist, Princeton.

FLEMING, JAMES RODGER, 1998, Arrhenius and Current Climate Concerns: Continuity or a 100-year Gap?: *Earth in Space,* v. 11, no. 3, p. 11–14.

FLIS, LINDA, 1998, Oil Patch Memories: The RMAGA Tapes: *The Outcrop. Newsletter of the Rocky Mountain Association of Geologists,* v. 47, no. 10, p. 10, 12–13.

FLIS, LINDA, 1999, Oil Patch Memories: Looking into the Faces of the Past: *The Outcrop. Newsletter of the Rocky Mountain Association of Geologists,* v. 48, no. 7, p. 14–15.

FLÜGEL, HELMUT W., 1998, Hans Graul. Sonderdruck aus dem Almanach der Österreichischen Akademie der Wissenschaften, 147. Jahrgang (1996/97), Herstellung: Grasl Druck & Neue Medien, 2540 Bad Vöslau, p. 539–545.

FLÜGEL, HELMUT W., 1998, Heinrich Karl Erben. Sonderdruck aus dem Almanach der Österreichischen Akademie der Wissenschaften, 147. Jahrgang (1996/97), Herstellung: Grasl Druck & Neue Medien, 2540 Bad Vöslau, p. 547–554.

FOLKERTS, MENSO, 1994, Eine neue Handschrift der Arithmetik von al-Hwārizm., p. 181–194, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

FOSTER, JOHN BELLAMY and MAGDOFF, FRED, 1998, Liebig, Marx, and the Depletion of Soil Fertility: *Relevance for Today's Agriculture: Monthly Review,* v. 50, no. 3, p. 32–45.

FRAZZETTA, G., 1998, Lipari and Vulcano (Aeolian Islands, Italy) during the last 10 kyr. inferences from volcanological and human data, p. 171–207, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

FRITSCHER, BERNHARD, 1994, Salzbildung und Kontakmetamorphose. Zur Aufname der physikalischen Chemie in den Geowissenschaften um 1900, p. 281–308, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

FRITSCHER, BERNHARD, 1996, Tabellarische übersicht der Geschichte der Geowissenschaften von Plinus bis auf Charles Lyell, nach Jahren Geordnet.—Ein Leitfaden zum Studium der Geschichte der Geowissenschaften. Bernhard Fritscher, Dietramszellerpl. 7, D- 81371 Munich, Germany, 276 p.

FRITSCHER, B., 1998, Volcanoes and the "wealth of nations", Relations between the emerging sciences of political economy and geology in 18th Century Scotland, p. 209–228, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

FRITSCHER, WOLFGANG, 1994, Geowissenshaften und Flamenco. Anmerkungen zum Geist der Landeskunde bei der Geburt des "authentischen" Flamenco, p. 235–254, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

GASTALDO, ROBERT A., PFEFFERKORN, HERMANN W., and DIMICHELE, WILLIAM A., 1995, Taphonomic and Sedimentologic Characterization of Roof-Shale Floras, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 341–352.

GENNADIYEV, A.N. and OLSON, K.R., 1998, Pedological Cooperation Between Russia and the USA, Past to Present: *Soil Science Society of America Journal,* v. 62, no. 5, p. 1153–1161.

GERICKE, HELMUT, 1994, Bolzanos Begründung der Geometrie, p. 183–198, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

GIBBS, W.W., 1998, The Search for Greenland's Mysterious Meteor: *Scientific American,* v. 279, no. 5, p. 72–79.

GILBERT, ALAIN, 1997, Historique des Expeditions Speleologiques: Françaises au Guatemala: *Boletin de la Sociedad Venezolana de Espeleologia,* v. 31, p. 53–72.

GILBERT, ALAIN, and SAMMARTINO, YVES, 1998, Historique de la Speleologie au Perou (1802–1989): *Boletin de la Sociedad Venezolana Espeleologia,* v. 32, p. 44–48.

GILLISPIE, CHARLES COULSTON, 1997, Pierre-Simon Laplace, 1749–1827: A Life in Exact Science. Princeton University Press, 304 p.

GLASS, I.S., 1997, Victorian Telescope Makers: The Lives and Letters of Thomas and Howard Grubb. Institute of Physics Publishing, 276 p.

GOHAU, GABRIEL, ed., 1997, De la géologie à son histoire. Comité des travaux historiques et scientifiques, Paris, 224 p.

GOHAU, GABRIEL, 1997, Naissance de la méthode "actualiste" en géologie. p. 139–149 *in* Gabriel Gohau, ed., De la géologie à son histoire. Paris: Comité des Travaux Historiques et Scientifiques.

GOHAU, GABRIEL and GAUDANT, JEAN, eds., 1997, De la géologie à son histoire. Ouvrage édite en hommage à François Ellenberger. Mémoires de la Section des Sciences, v. 13, Paris: Comité des Travaux Historiques et Scientifiques, 224 p.

GOLAY, ERIC, 1998, Un paratonnerre pour l'arbre de la liberté, p. 155–200, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

GOLODETZ, ALISA D. and FOSTER, DAVID R., 1997, History and Importance of Land Use and Protection in the North Quabbin Region of Massachusetts (USA): Conservation Biology: *The Journal of the Society for Conservation Biology,* v. 11, no. 1, 227 p.

GOSSE, PHILIP H., 1998, Omphalos: An Attempt to Untie the Geological Knot. Ox Bow Press, 376 p.

GOULD, STEPHEN JAY, 1999, Dorothy, It's Really Oz: *Time,* v. 154, no. 8, p. 59.

GOULD, STEPHEN JAY, 1999, Lyell's Pillars of Wisdom: *Natural History,* v. 108, p. 28–34, 87–89.

GOULD, STEPHEN JAY, 1999, Pozzuoli's Pillars Revisited. Even the best of geological theories can be pushed to explain too much.: *Natural History,* v. 108, no. 4, p. 24, 82–83, 88–91.

GRANT, EDWARD, 1996, Planets, Stars, and Orbs: The Medieval Cosmos, 1200–1687. Cambridge University Press, 842 p.

GREEN, JOHN C., 1999, Debating Darwin: Adventures of a Scholar. Claremont, CA, Regina Books, 288 p.

GREENBERG, JOHN L., 1995, The Problem of the Earth's Shape from Newton to Clairaut: The rise of mathematical science in 18th century Paris and the fall of "Normal" science. Cambridge University Press, 799 p.

GUNTAU, MARTIN, 1994, Das Begreifen der Erdgeschichte und die Anfänge stratigraphischer Ideen in Deutschland, p. 97–114, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

GUNTAU, M. and OSPOVAT, A.M., 1998, Abraham Gottlob Werner: volvanism and volcanic rocks, p. 229–235, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

GURNEY, A., 1997, Below the Convergence. Voyages Toward Antarctica 1699–1839. W.W. Norton & Company, New York & London, 315 p.

GÚSTAFSSON, L.E., 1998, The Laki eruption 1783–84 in Iceland. Its impact on Icelandic society and its manifestation in other countries (abstract), p. 237–238, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

HAGENGRUBER, RUTH, 1994, Platons "Timaios", eine Anleitung zur wissenschaftlichen Hypothesenbildung?, p. 75–98, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—-Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

HAMEL, JÜRGEN, 1994, Die Rezeption des mathematisch- astronomischen Teils des Werkes von Nicolaus Copernicus in der astronomisch-astrologischen Kleinliteratur um 1600, p. 315–336, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

HARBAUGH, JOHN W., 1999, History of Mathematical Geology: Stamford's Geomath Program: *International Association for Mathematical Geology (IAMG) Newsletter* No. 58, p. 10–11.

HARTGE, K.H., 1999, Vom Wissen uber die Boden zur Wissenschaftlichen Bodenkunde [From Knowledge on Soils to Current Soil Science]: *Mitt. Deut. Bodenkundl. Gesell.*, v. 89, p. 39–60 (in Ger. w/ Eng. summary).

HAUBELT, J., 1998, Conflicts surrounding volcanic activity in Central Europe in the Enlightenment and romantic period, p. 239–243, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

HEINRICH, CARL, 1998, Photo History of Ohio's Oil and Gas Industry: *American Association of Petroleum Geologists Bulletin,* v. 82, p. 1768.

HELMS, DOUGLAS, 1999, Minutes of Meeting of the Standing Committee on the History, Philosopy, and Sociology of Soil Science, *in* Newsletter, Committee on the History, Philosophy, and Sociology of Soil Science, International Union of Soil Science, and Council on the History, Philosophy, and Sociology of Soil Science, Soil Science Society of America, no. 8, August, p. 1–2.

HENDERSON, FERGUS, 1994, Novalis, Schelling, and Werner: approaches to method in natural philosophy, p. 143–182, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

HENDERSON, MICHAEL D., 1995, John Edward Jones (1883–1957): Pioneer in Coal-Mining Safety and Generous Collector of Fossil Plants and Animals, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 273–276.

HERBIG, HANS-GEORG, 1998, Die Vergangenheit als Schlüssel zur Zukunft—Gegenwärtige Lage und Zukünftige Entwicklung der Paläontologie im Verbund der Geowissenschaften: *Terra Nostra,* p. v129-v130.

HERBST, KLAUS-DIETER, 1996, Die Entwicklung des Meridiankreises, 1700–1850: Genesis eines astronomischen Hauptinstrumentes unter Berücksichtigung des Wechselverhältnisses zwischen Astronomie, Astro-Technik, und Technik. Stuttgart: Verlag für Geoschichte der Naturwissenschaften und der Technik, 255 p.

HETZER, HANS, 1998, Der schwere Weg der Erkenntnisfindung—eine Episode aus dem Leben Leopold von Buchs: *Geohistorische Blätter,* v. 1, no. 1, p. 15–22.

HEUNISCH, C., 1999, 125 Jahre Staatlicher Geologischer Dienst: Ein Blick zurück und nach vorne: *Nachrichten—Deutschen Geologischen Gesellschaft,* v. 68, p. 35.

HJARTARSON, A., 1998, The research history of Mt. Hekla, Iceland, p. 247–252, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

HOCKEY, T.A., 1998, Galileo's Planet. Institute of Physics Publishing, 236 p.

HOLTSTAM, D. and LANGHOF, J., eds., 1999, Långban: The Mines, Their Minerals, Geology and Explorers. Raster Förlag and Swedish Museum of Natural History, Stockholm, 217 p.

HONGZHEN, WANG, BRANAGAN, DAVID F., ZIYUAN, OUYANG, and XULIAN, WANG, eds., 1997, Comparative Planetology, Geological Education, Historyof Geology: Proceedings of the 30th International Geological Congress, Beijing, China, 4–14 August, 1996, Volume 26, VSP, Utrecht and Tokyo, 306 p.

HONTARRÈDE, M., 1998, Meteorology and the Maritime World: 150 Years of Constructive Cooperation: *Bulletin of the World Meteorological Organization,* v. 47, no. 1, p. 15–26.

HOPPE, BRIGITTE, 1994, Das Experiment in der Naturwissenschaft Alexander von Humboldts, p. 115–142, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

HOPPE, GÜNTER, 1998, Die Bildnisse Leopold von Buchs: *Geohistorische Blätter,* v. 1, no. 1, p. 7–14.

HÖRZ, HERBERT, 1998, Zeit in Philosophie und Geologie: Terra Nostra, p. V136-V137.

HOSKIN, MICHAEL, 1998, Cambridge Concise History of Astronomy. Cambridge University Press, 320 p.

HOSKIN, MICHAEL, ed., 1999, The Cambridge Concise History of Astronomy. Based on the Cambridge Illustrated History of Astronomy. Cambridge/ New York: Cambridge University Press, 362 p.

HOTH, K., 1998, Geschichte und Zukunftsansätze Deutscher Geogesellschaften: *Terra Nostra,* p. V143-V144.

HUBMANN, BERNHARD, 1996, Carl Ferdinand Peters, "Ein Epigone Jener Alten Naturforscher von Universeller Naturwissenschaftlicher und Medicinischer Bildung": Der Steirische Mineralog: *Sammlerzeitschrift für Mineralogie und Paläontologie,* Nr. 10, Jahrg. 7, p. 23–27.

HUCH, MONIKA, 1998, Geowissenschaften- Stiefkind im öffentlichen Bewußtsein: *Terra Nostra,* p. V147.

HUDSON, JOHN and KING, ROY, 1998, British Landmarks in Seismology: *Astronomy and Geophysics,* v. 39, no. 1, p. 29–30.

HÜNEMÖRDER, CHRISTIAN, 1994, Naturbeispiele in einer anonymen lateinischen Predigtsammlung (15. Jhdt.) aus bayerischen Klöstern, p. 223–248, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

IHSANOGLU, EKMELEDDIN, ed., 1997, Osmanli Astronomi Literatürü Tarihi: (History of Astronomy Literature during the Ottoman Period). (Islâm Tarih, Sanat ve Kültür Arastirma Merkezi), Istanbul: Research Center for Islamic History, Art, and Culture, 1146 p.

IVANOV, I.V. and LUKOVSKAYA, T.S., 1999, Stages and Lines of Development of Russian Pedology as a Basic Science: *Eurasian Soil Science,* v. 32, no. 3, p. 355–363.

JUNG-HÜTTL, ANGELIKA, 1994, Franz von Kobell (1803–1882)—ein vielseitiger Mineraloge, p. 269–280, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

KAEMMEL, THOMAS, 1998, Kurzbiographien der dreizehn Gründungsväter der Deutschen Geologischen Gesellschaft. Teil I: *Geohistorische Blätter,* v. 1, no. 1, p. 55–70.

KAUTER, KURT, 1998, "Geologie"—mein Selbstbekenntnis oder: Wie es bei mir angefangen hat mit der Geologie: *Geohistorische Blätter,* v. 1, no. 1, p. 37–41.

KENNEDY, EDWARD S., 1998, Astronomy and Astrology in the Medieval Islamic World. Ashgate Publishing, Brookfield, VT, 368 p.

KERR, AUBREY, 1999, Historical Snapshots: Frank Black, P.Eng 1923–1999: *Canadian Society of Petroleum Geologists Reservoir,* v. 26, issue 8, p. 32.

KERR, AUBREY, 1999, Historical Snapshots: John Patrick Gallagher (1916 to1998): *Canadian Society of Petroleum Geologists Reservoir,* v. 26, issue 5, p. 30.

KIRSCHNER, STEFAN, 1994, Eine weitere Fassung eines lateinischen "De caelo-Kommentars" von Nicolaus Oresme?, p. 209–222, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

KNELL, SIMON J., 1999, Fossils, Collecting, and the Culture of English Geology, 1815–1851. Ashgate Publishing, Brookfield, VT.

KOKOTT, WOLFGANG, 1994, Peter Creutzers "Komet" vom 11. Oktober 1527. Zur Langlebigkeit von Fehldatierungen in der Sekundärliteratur, p. 249–254, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

KOSANKE, ROBERT M. and CROSS, AUREAL T., 1995, Leonard Richard Wilson (1906-) : Palynologist, Paleobotanist, and Geologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner,

Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 237–244.

KOZÁK, J., 1998, Historical volcanic earthquakes—A pictorial record, p. 253–278, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

KRAFT, FRITZ, 1994, Des Nicolaus Copernicus Bemühungen um die Bestimmung der Länge des Tropischen Jahres. Zur Chronologie copernicanischer Astronomie, p. 255–296, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

KRÄTZ, OTTO, 1997, Alexander von Humboldt—Wissenschaftler, Weltbürger, Revolutionär. Callwey, Munich, 214 p.

KRITSMAN, V.A., 1994, Die Enstehung der russischen chemischen Nomenklatur in europäischen Kontext: Die Frühgeschichte, p. 199–218, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

KRUPENIKOW, I.A., 1999, Role of the Journal Pochvovedenise in the Development of Soil Science in the Republic of Moldova: *Eurasian Soil Science,* v. 32, no. 1, 25 p.

KÜHN, PETER, KRÜGER, PETER, and SCHMOOK, REINHARD, 1998, Alexander von Humboldt und Leopold von Buch: Spurensuche in Berlin und Brandenburg, *in* Terra Nostra, Schriften der Alfred-Wegener-Stiftung 98/4, Geo-Berlin '98, 150 Jahre Deutschen Geologischen Gesellschaft, Gemeinsame Jahrestagung, Deutschen Geologischen Gesellschaft, Deutsche Mineralogische Gesellschaft, Gesellschaft für Geowissenschaften, Paläontologische Gesellschaft, Geowissenschaften in Ökonomie und Ökologie: Das System Erde, 6.-9. Oktober 1998, Technische Universität Berlin, Exkursionsführer, p. A-9.

KÜHNE, ANDREAS, 1994, Copernicus redivivus. Zur Editionsgeschichte der Briefe, Urkunden und Akten von Nicolaus Copernicus, p. 29–52, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

KUPFER, DONALD H., 1998, Colorado's Early Oil Happenings: Dr. J.L. Dunn, Oil developer and more: *The Outcrop. Newsletter of the Rocky Mountain Association of Geologists,* v. 47, no. 10, p. 6–7.

KUPFER, DONALD H., 1999, Colorado's Early Oil Happenings: History of Florence Oil Field: *The Outcrop: Newsletter of the Rocky Mountain Association of Geologists,* v. 48, no. 10, p. 6, 20.

KUPFER, DONALD H., 1999, Colorado's Early Oil Happenings: The Oil Spring's Phantom ("Blackhawk") Well: *The Outcrop. Newsletter of the Rocky Mountain Association of Geologists,* v. 48, no. 7, p. 1, 9.

KURTAK, JOSEPH M., 1998, Mine in the Sky: The History of California's Pine Creek Tungsten Mine and the People Who Were Part of It. 2nd Edition, Anchorage: Publication Consultants, 220 p.

LANGER, WOLFHART, 1994, German translations of 18th century Italian geoscience writing and their impact on contemporaneous science in Germany, p. 81–96, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

LANGER, W., 1998, Volcanological research in Southern Italy by mineralogists from the University of Bonn with special reference to Gerhard vom Rath (1830–1888)(abstract), p. 279–280, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

LAVEINE, JEAN-PIERRE, 1995, Paul Bertrand (1879–1944): French Paleobotanist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 99–118.

LEARY, RICHARD L., 1995, George Langford, Sr. (1876–1964): Amateur Paleobotanist and Inventor, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 267–272.

LESNIKOWSKA, ALICIA, 1995, Maxim Konrad Elias (1889–1982), *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 169–174.

LIXANDRU, G.H., 1998, The Beginning of the International Society of Soil Science: Contribution of Romanian Scientists: *Stiinta Solului,* v. 32, nos. 1, 2, p. 189–197.

LORCH, RICHARD, BREY, GERHARD, KIRSCHNER, STEFAN, and SCHÖNER, 1994, Ibn-as-Saffārs Traktat über das Astrolab in der Übersetzung von Plato von Tivoli, p. 125–180, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

LÜDECKE, CORNELIA, 1994, Stratigraphische Methode der Rekonstruktion von Expeditionsereignissen am Beispiel des Todes von Alfred Wegener während der Grönlandexpedition (1930–31), p. 347–368, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

LYONS, PAUL C. (and Teichmueller, Marlies), 1995, Reinhardt Thiessen (1867–1938): Pioneering Coal Petrologist and Stratigraphic Palynologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 149–162.

LYONS, PAUL C. and MOREY, ELSIE DARRAH, 1995, David White (1862–1935): American Paleobotanist and Geologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 135–148.

LYONS, PAUL C. and WAGNER, ROBERT H., 1995, The Stephanian of North America: Early 1900s Controversies and Problems, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 293–314.

LYONS, PAUL C. and ZODROW, ERWIN L., 1995, Early to Mid- Twentieth Century Floral Zonation Schemes of the Pennsylvanian (Late Carboniferous) of North America and Correlations with the Late Carboniferous of Europe, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 277–292.

MACPHEE, ROSS D.E., 1999, By Endurance we overcome: Sir Shackleton's Fateful expedition: *The Explorer's Journal,* v. 77, no. 1, p. 13–21.

MAMAY, SERGIUS H., ASH, SIDNEY R., and LYONS, PAUL C., 1995, Charles Brian Read (1907–1979): American Paleobotanist and Geologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 225–236.

MARTURANO, A. and SCARAMELLA, P., 1998, The role of primary sources in reconstructing the history of volcanos: the eruption of Vesuvius in 1631, p. 281–301, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MARVIN, U.B., 1998, The shower of stones at Siena, 1794: History's most consequential meteorite fall, p. 303–321, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MATHEWS, ROBERT, 1998, Dirac's Coincidences 60 Years On: *Astronomy & Geophysics,* v. 39, issue 6, p. 12–20.

MCCALL, JOE, 1999, Mary Anning and her times: the discovery of British palaeontology 1820–1850: *Geoscientist,* v. 9, no. 10, p. 4–7.

MCCLUSKEY, STEPHEN C., 1998, Astronomies and cultures in Early Medieval Europe. Cambridge University Press, 250 p.

MILANOVSKY, E.E., 1998, Main development stages of volcanological researches in Russia, p. 323–349, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MILANOVSKY, E.E., 1998, Problem of Atlantis in the light of geological and archaeological re-

searches on the Santorini volcanic archipelago in Aegean Sea, p. 351–370, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MILITELLO, P., 1998, Volcanic activity and the evolution of the Aegean society, p. 317–393, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MONMONIER, MARK, 1999, Air Apparent: How Meteorologists Learned to Map, Predict, and Dramatize Weather. Chicago/London: University of Chicago Press, 309 p.

MORELLO, N., 1998, Giovanni Alfonso Borelli and the eruption of Etna in 1669, p. 395–413, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

MORETON, RICHARD, ed., 1999, Tales of Early UK Oil Exploration 1960–1979. Petroleum Exploration Society of Great Britain. PESGB, 2nd Floor, 17/18 Dove Street, London W1X 3PB, England.

MOREY, ELSIE DARRAH, 1995, Carl Rudolf Florin (1894–1965): A Pioneer in Fossil-Conifer Studies, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 119–126.

MOREY, ELSIE DARRAH, 1995, Correspondence and Plant-Fossil Exchanges Between William C. Darrah and European Paleobotanists, 1932–1951, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 35–58.

MOREY, ELSIE DARRAH, 1995, Frederick Oliver Thompson (1883–1953): Amateur Collector and Patron of Paleobotany, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 255–266.

MOREY, ELSIE DARRAH, 1995, William C. Darrah's European Experience in 1935: Paleobotanical Connections and Stratigraphic Controversies, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 23–34.

MOREY, ELSIE DARRAH and LESNIKOWSKA, ALICIA, 1995, Elias Howard Sellards (1875–1961): Paleontologist, Geologist, and Anthropologist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 163–168.

MOREY, ELSIE DARRAH and LYONS, PAUL C., 1995, Adolf Carl Noé (1873–1939): Pioneer in North American Coal-Ball Studies, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 175–182.

MOREY, ELSIE DARRAH and LEARY, RICHARD L., 1995, History of Significant Collections of Carboniferous (Mississippian and Pennsylvanian) Plant Fossils in Museums of the United States, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 59–74.

MOREY, ELSIE DARRAH and LYONS, PAUL C., 1995, William Culp Darrah (1909–1989): A Portrait, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 1–22.

MORRIS, SIMON CONWAY, 1998, The Crucible of Creation: The Burgess Shale and the Rise of Animals. Oxford University Press, 242 p.

MOTUZAS, A.M., 1998, Forty Years of the Lithuanian Soil Science Survey: *Eurasian Soil Science,* v. 31, no. 11, 1278 p.

NAZZARO, A. and DI GREGORIO, A., 1998, The contribution of the neapolitan geologist Teodoro Monticelli (1759–1843) to the development of geology, p. 415–439, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

NELSON, CLIFFORD M., 1999, Toward a Reliable Geologic Map of the United States, 1803–1893, in Surveying the Record: North American Scientific Exploration to 1930. Edited by Edward C. Carter, II, American Philosophical Society, Philadelphia, p. 51–74.

NELSON, PHILIP J., 1997, To Hold the Land: Soil Erosion, Agricultural Scientists, and the Development of Conservation Tillage Techniques: *Agricultural History,* v. 71, no. 1, 71 p.

NEWCOMB, S., 1998, Early volcanology and the laboratory, p. 441–458, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

NIELS, TED, 1998–1999, The Last Assignment: *European Geologist,* no. 8, p. 5–6.

NUMBERS, RONALD L., 1998, Darwinism Comes to America. Cambridge, MA/London: Harvard University Press, 216 p.

NYSSEN, WILHELM, 1994, Hinführung zu Konrad Weiss—Ein Weg in die "Kleine Schöpfung", p. 25–36, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

OLDROYD, D.R., 1998, Geikie and Judd, and controversies about the igneous rocks of the Scottish Hebrides: theory, practice, and power in the geological community, p. 459–503, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

OLDROYD, D., 1998, Sciences of the Earth: Studies in the History of Mineralogy and Geology. Variorium Collected Studies Series CS628. Ashgate, Brookfield, VT, 462 p.

OLSEN, ROBERTA J.M. and PASACHOFF, JAY M., 1998, Fire in the Sky: Comets and Meteors, the Decisive Centuries, in British Art and Science. Epilogue by Colin Pillinger. Cambridge: Cambridge University Press, 370 p.

OLSON, ROBERTA J.M., PASACHOFF, JAY M., and PILLINGER, COLIN T., 1998, Fire in the Sky. Cambridge University Press, 384 p.

ORCHISTON, W., 1999, C/1881 K1: A Forgotten 'Great Comet' of the Nineteenth Century: *Irish Astronomical Journey,* v. 26, no. 1, p. 33–44.

OSBORNE, R., 1998, The floating egg. Episodes in the making of geology. Jonathan Cape, London, 372 p.

PALMER, ARTHUR, 1997, History of the Department of Earth Sciences at the State University of New York, College at Oneonta: *The Compass of Sigma Gamma Epsilon,* v. 74, no. 1, p. 1–3.

PAPP, G., 1998, An ardent vulcanist from Hungary. Sketches to the scientific portrait of Johann Ehrenreich von Fichtel (1732–1795), p. 505–522, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

PASCHOS, E.A. and SOTIROUDIS, P., 1998, The Schemata of the Stars: Byzantine Astronomy from A.D. 1300. World Scientific, River Edge, NJ, 213 p.

PETRI, WINFRIED, 1994, Indische Zeitvorstellungen, p. 69–74, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

PFEIFFER, HEINZ and SCHWAB, MAX, 1983, Johann Jacob Lerche: Oryctographia Halensis (1730): Halles Älteste Regionalgeologie: Beiträge zur Universitätsgeschichte. Deutsche übersetzt von Horst Koehn. Martin-Luther-Universität Halle- Wittenberg Wissenschaftliche Beiträge. Halle (Saale), Germany, 55 p.

PHELAN, P.L., 1997, Soil-Management History and the Role of Plant Mineral Balance as a Determinant of Maize Susceptibility to the European Corn Borer: *Biological Agriculture and Horticulture: An International Journal,* v. 15, no. 1, p. 25–34.

PHILLIPS, TOM L. and CROSS, AUREAL T., 1995, Early and Mid- Twentieth Century Coal-Ball Studies in North America, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 315–340.

PHILLIPS, TOM L. and GENSEL, PATRICIA G., 1995, Henry Nathaniel Andrews, Jr. (1910-) : Paleobotanist, Educator, and Explorer, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 245–254.

PIERATTINI, D., GASPARINI, P., and MUSELLA, S., 1998, The foundation of the Vesuvius Obser-

vatory (abstract), p. 523, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

PLOEG, R. VAN DER, MARQUARTDT, MARIA, and KIRKHAM, DON, 1997, On the History of the Ellipse Equation for Soil Drainage: *Soil Science Society of America Journal,* v. 61, no. 6, 1604 p.

PONT, JEAN-CLAUDE, 1998, Le mythe et la science, p. 23–50, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

PRINCIPE, C., 1998, The 1631 eruption of Vesuvius: volcanological concepts in Italy at the beginning of the XVIIIth century, p. 525–542, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

PRINCIPE, L.M., 1998, The Aspiring Adept: Robert Boyle and His Alchemical Quest. Princeton University Press, Princeton, NJ, 339 p.

PRIVITERA, F., 1998, Recent findings in the prehistory of Mt. Etna, p. 543–553, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

PROCELLI, E., 1998, Prehistoric communities of the Etna area, p. 555–561, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

RAINER, GERSONDE, 1998, Ein Gewaltiger Schlag in den Ozean—Auswirkungen eines Oberpliozänen Asteroideinschlages in das Südpolarmeer: *Terra Nostra,* p. V97.

RANDLES, W.G.L., 1999, The Unmaking of the Medieval Christian Cosmos, 1500–1760: From Solid Heavens to Boundless Æther. Ashgate Publishing, Brookfield, VT, 304 p.

RASMUSSEN, CHRIS, 1999, Never a Landlord for the Good of the Land: Farm Tenancy, Soil Conservation, and the New Deal in Iowa: *Agricultural History,* v. 73, no. 1, 70 p.

REMY, WINFRIED, REMY, RENATE, and HARTUNG, WOLFGANG, 1995, Walther Gothan (1879–1954): Botanist, Geologist, and Teacher, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 91–98.

RIPOLL, DAVID, 1998, Faire voir, faire croire, faire savoir: images de montagne et sciences de la nature au XVIII siècle, p. 85–124, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

RITTENBERG, PAUL and CRELIN, SIMON, 1999, Indonesia: The past, present, and future in the oil and gas industry: *Seapex Press,* v. 2, no. 6, p. 42–49.

ROCHE, M., 1997, The Land We Have We Must Hold: Soil Erosion and Soil Conservation in Late Nineteenth- and Twentieth-Century New Zealand: *Journal of Historical Geography,* v. 23, no. 4, 447 p.

ROZONOVA, I.M., 1996, Four Books on the History of Soil Science: *Eurasian Soil Science,* v. 29, no. 4, 482 p.

RUDWICK, MARTIN J.S., 1997, Georges Cuvier, Fossil Bones, and Geological Catastrophies: New Translations and Interpretations of the Primary Texts. Chicago/London: University of Chicago Press, 301 p.

RUGGLES, C., 1999, Astronomy in Prehistoric Britain and Ireland. Yale University Press, New Haven, London, 286 p.

RUPKE, NICOLAAS A., 1998, The End of History in the Early Picturing of Geological Time: *Historyof Science,* v. 36, no. 111, p. 61–90.

RUSE, MICHAEL, 1999, Mystery of Mysteries: Is Evolution a Social Construction? Harvard University Press, 320 p.

SAMSÓ, JULIO, 1994, Islamic Astronomy and Medieval Spain. Ashgate Publishing, Brookfield, VT, 352 p.

SANTACROCE, R., 1998, The eruptive history of Somma-Vesuvius as a guide to a model of operating

(abstract), p. 563–564, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

SARJEANT, W.A.S., 1997, Crystal Palace, p. 161–164, *in* Currie, Philip J. and Padian, Kevin, eds., Encyclopedia of Dinosaurs. Academic Press. San Diego-London-Boston-New York-Sydney- Tokyo-Toronto.

SAUNDERS, D., 1997, Conservation History of Pembrokeshire Island: *Countryside Council for Wales,* v. 126, p. 130–133.

SCHENK, H., ed., 1998, Crystallography Across the Sciences: A Celebration of 50 Years of Acta Crystallographica and the IUCr. International Union of Crystallography, Chester, UK, 955 p.

SCHIMKAT, PETER, 1994, Laboratorien für die Geologiegeschichte, p. 61–80, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

SCHMEIDLER, FELIX, 1994, Die Mondbewegung nach Copernicus und die säkulare Akzeleration des Mondes, p. 297–314, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—-Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

SCHMIDT, PETER, 1994, Deutschsprachige Einblattdrucke seismologischen Inhalts des 16. und 17. Jahrhunderts, p. 387–396, in Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

SCHORN, RONALD A., 1998, Planetary Astronomy: From Ancient Times to the Third Millennium. College Station: Texas A&M University Press, 376 p.

SCHRÖDER, WILFRIED, 1999, History Commission of the German Geophysical Society: *History of Science Society,* v. 28, no. 2, p. 11.

SCHULTE, KERSTEN, 1994, Gletschertheorie versus Drifttheorie. Zur Geschichte der Eiszeittheorie vom Ende des 18. bis Ende des 19. Jahrhunderts, p. 219–234, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

SCHÜTT, HANS-WERNER, 1994, Natur und Schöpfung, p. 1–24, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

SCOTT, RICHARD A., 1995, Chester A. Arnold (1901–1977): Portrait of an American Paleobotanist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 215–224.

SEGRE, MICHAEL, 1994, Ramellis "machine": Realität oder Fiktion?, p. 367–372, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

SEIBOLD, EUGEN and THIEDE, JÖRN, 1997, Die Geoschichte der Ozeane nach Tiefseebohrungen: Wissenschaftlich-technologischer Erfolg und Herausforderung an der Jahrhundertwende in Academie der Wissenschaften und der Literatur: Abhandlungen der Mathematisch- Naturwissenschaftlichen Klasse, 62 p.

SERRANO PINTO, M., 1998, Effects of eruption on society—The case of the Azores Archipelago. A brief account, p. 565–580, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

SHAPIRO, ROBERT, 1999, Planetary Dreams: The Quest to Discover Life Beyond Earth. New York/ Chichester, England: John Wiley and Sons, 306 p.

SHARPE, T. and MCCARTNEY, P.J., 1998, The Papers of H.T. De la Beche (1796–1855) in the National Museum of Wales. Geological Series no. 17, Cardiff: National Museum of Wales, 257 p.

SHEETS-PYENSON, SUSAN, 1998, John William (Sir William) Dawson: Geologist and Educator: *GSA Today,* v. 8, no. 9, p. 14–15.

SIMONIAN, LANE, SIMONIAN, MELVILLE, and ELINOR, G.K., 1997, Defending the Land of the

Jaguar: A History of Conservation in Mexico: *The American Historical Review,* v. 102, no. 1, 235 p.

SIMONSON, ROY W., 1999, Origin and Acceptance of the Term Pedology: *Soil Science Society of America Journal,* v. 63, no. 1, p. 4–10.

SINGER, CHARLES, 1998, A Short History of Science to the Nineteenth Century. Dover Publications, 414 p.

SMITH, AVERY E., 1998, A History of Illinois Basin Oil Exploration: *American Associaton of Petroleum Geologists Bulletin,* v. 82, p. 1773–1774.

SMITH, CHARLES H., 1999, William Logan's 1850 History of the Geological Survey of Canada: *Geoscience Canada,* v. 26, no. 3, p. 111–120.

SMITH, DAVID M. and SIVARAM, C., 1999, Proponents of Colliding Cosmologies Take Exotic Turns: *Physics Today,* v. 52, no. 9, p. 13, 15.

SRINIVASAN, G., ed., 1999, From White Dwarfs to Black Holes: The Legacy of S. Chandrasekhar. Chicago: University of Chicago Press, 240 p.

STEELE, EDWARD J., LINDLEY, ROBYN A., and BLANDEN, ROBERT V., 1998, Lamark's Signature: How Retrogenes Are Changing Darwin's Natural Selection Paradigm. Perseus Books, 286 p.

STERN, ALAN and MITTON, JACQUELINE, 1998, Pluto and Charon: Ice Worlds on the Ragged Edge of the Solar System. Wiley, New York, 216 p.

STICHER, HANS, 1995, 20 Jahre Bodenkundliche Gessellschaft der Schweiz: *Bulletin Bodenkundl. Gesell. Schweiz,* v. 19, p. 15–24.

SURANYI, D., 1998, History of Replant Disease and Soil Sickness in Hungary: *Acta Horticulturae,* v. 477, 23 p.

SUWA, K., 1998, Historical review on volcanic petrology in the University of Tokyo, p. 581–594, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

TAQUET, PHILIPPE, 1998, Dinosaur Impressions: Postcards from a Paleontologist. Translated by Kevin Padian. Original publication 1994. Cambridge/New York: Cambridge University Press, 244 p.

TAYLOR, K.L., 1998, Volcanoes and accidents: how "natural" were volcanoes in 18th-century naturalists?, p. 595–618, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

TAYOR, THOMAS N., 1995, Fredda Doris Reed (1894–1988): Educator and Paleobotanist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 183–186.

TEDROW, J.C.F., 1999, Historical Developments in Polar Pedology, *in* Newsletter, Committee on the History, Philosophy, and Sociology of Soil Science, International Union of Soil Science, and Council on the History, Philosophy, and Sociology of Soil Science, Soil Science Society of America, no. 8, August, p. 5–9.

TEICHMANN, JÜRGEN, 1994, Der freie Fall bei Galilei—Meßtechnik und Meßmythos, p. 397–413, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—Festschrift für Heribert M. Nobis zum 70. Geburtstag. First Volume. Institut für Geschichte der Naturwissenschaften. Munich, 413 p.

THOMPSON, WOODROW B., 1999, History of Research on Glaciation in the White Mountains, New Hampshire (U.S.A.): *Géographie physique et Quaternaire,* v. 53, no. 1, p. 7–24.

TORRENS, H.S., 1998, Charles Daubeny (1795–1867) F.R.S. and his work on volcanoes (abstract), p. 619–620, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

TREIVUS, E.B., 1999, Once more about the history of two-circle goniometers in Proceedings of the Russian Mineralogical Soceity: *Russian Academy of Sciences,* v. 128, no. 1, p. 48–49.

URASHADZE, TENGIZ F. and URASHADZE, TEO T., 1999, A Brief Outline of Soil Studies in Georgia: Committee on the History, Philosophy, and Sociology of Soil Science, International Union of Soil Science, and Council on the History, Philosophy, and Sociology of Soil Science, Soil Science Society of America Newsletter, August, no. 8, p. 5.

URBANI, FRANCO, 1996, Notas Históricas Sobre los "volcanes" del estado lara: *Boletin de Historia de las Geosciences en Venezuela,* no. 57, p. 1–14.

URBANI, FRANCO, 1998, Historia Espeleologica Venezolana, Parte 9: Francisco de Paula Alamo (1866–1943) La Comision Eduardo Röhl a la Cueva del Guacharo: *Boletin de la Sociedad Venezolana Espeleologia,* v. 32, p. 49–60.

VACCARI, E., 1998, Lazzaro Spallanzani and his geological travel to the "Due Sicilie": the volcanology of the Aeolian Islands, p. 621–651, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

VAICHIS, M., 1999, Role of the Journal *Pochvovedenise* in the Development of Soil Science in Lithuania: *Eurasian Soil Science,* v. 32, no. 1, 28 p.

VAN DER PLOEG, R., MARQUARTDT, MARIA, and KIRKHAM, DON, 1997, On the History of the Ellipse Equation for Soil Drainage: *Soil Science Society of America Journal,* v. 61, no. 6, 1604 p.

VAN VEEN, F.R., 1996, Van Waterschoot van der Gracht en de Amerikaanse Controverse over Wegeners Continentverschuivingstheorie in 1926: Actes du 13e Congrès Benelux d'Histoire des Sciences, p. 221–229.

VAN TYNE, ARTHUR M., 1998, History of New York State Oil Fields: *American Association of Petroleum Geologists Bulletin,* v. 82, p. 1775.

VAN VEEN, F.R., 1996, Willem van Waterschoot van der Gracht (1873–1943), een biografie. Delftse Universitaire Pers, 98 p.

VILLA, FLORIANO and BRAVI, CARLO ENRICO, 1999, Ardito Desio's One Hundred Years and His Last Big Project: *European Geologist,* p. 3.

VLADYCHENSKII, A.S., 1998, Chronicle- The Twenty Fifth Anniversary of the Faculty of Soil Science, Moscow State University: *Eurasian Soil Science,* v. 31, no. 12, 1392 p.

VOIGT, J.H., 1998, Die Erforschung Australiens. Edition Peterman.Klett-Perthes, Justus Perthes Verlag Gotha GmbH, Postfach 10 04 52, 99854 Gotha, Germany, 160 p.

VOSS, R., 1998, Fertility Recommendations: Past and Present: *Commun. Soil Sci Plant Anal,* v. 29, p. 1429–1440.

WAGNER, ROBERT H. and VAN AMEROM, H.W.J., 1995, Wilhelmus Josephus Jongmans (1878–1957): Paleobotanist, Carboniferous Stratigrapher, and Floral Biogeographer, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 75–90.

WALTER, FRANÇOIS, 1998, Les préventions d'H.-B. De Saussure au risque de la métaphore, p. 201–210, *in* Carozzi, Albert V., Crettaz, Bernard, and Ripoll, David, eds., les plis du temps: mythe, science et H.-B. De Saussure. 5 nouveaux itinéraires amoudruz. Collections Payot Amoudruz. Musée d'ethnographie, Annexe de Conches, Geneve, Switzerland, Conservatoire d'Art et d'Histoire de Haute-Savoie, Annecy, 366 p.

WARKENTIN, B.P., 1999, The return of the "other" soil scientists: *Canadian Journal of Soil Science,* v. 79, p. 1–4.

WARREN, LEONARD, 1998, Joseph Leidy. The Last Man Who Knew Everything. Yale University Press, New Haven, 303 p.

WHEELER, SARA, 1996, Terra incognita: travels in antarctica. Random House, New York, 351 p.

WHITESELL, PATRICIA S., 1998, A Creation of His Own: Tappan's Detroit Observatory. Ann Arbor: University of Michigan Press, 236 p.

WHITNEY, GORDON G., 1996, From Coastal Wilderness to Fruited Plain: A history of Environmental Change in Temperate North America, 1500-Present. Cambridge University Press, 485 p.

WILLIAMS, G., 1997, The Great South Sea. English Voyages and Encounters 1570–1750. Yale University Press, New Haven & London, 300 p.

WILSON, L.G., 1999, Lyell in America: Transatlantic Geology 1841–1853. The Johns Hopkins University Press, Baltimore, London, 429 p.

WILSON, LEONARD G., 1998, Lyell in America. Johns Hopkins University Press, Baltimore, 429 p.

WILSON, LEONARD G., 1998, The critical role of Italian geology in the thought of Charles Lyell, p. 653–673, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

WOLFSCHMIDT, GUDRUN, 1994, Die große Debatte: "Big Galaxy" oder "Island Universe"?, p. 309–332, *in* Fritscher, Bernhard and Brey, Gerhard, eds., Cosmosgraphica et Geographica.—

Festschrift für Heribert M. Nobis zum 70. Geburtstag. Second Volume. Institut für Geschichte der Naturwissenschaften. Munich, Germany, 402 p.

WOODFORK, LARRY D., 1998, Burning Springs Firsts: *American Association of Petroleum Geologists Bulletin,* v. 82, p. 1776.

WOODWARD, DAVID and LEWIS, G. MALCOLM, 1998, Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies. (The History of Cartography, vol. 2, book 3.) Chicago/London: University of Chicago Press, 640 p.

WUTZKE, ULRICH, 1998, Alfred Wegener: Kommentiertes Verzeichnis der schriftlichen Dokumente seines Lebens und Wirkens, Berichte zur Polarforschung. Alfred-Wegener-Institut für Polar- und Meeresforschung. Bremerhaven, Germany, 144 p.

WUTZKE, ULRICH, 1998, Die Gedenktafeln für Alfred Wegener: *Geohistorische Blätter,* v. 1, no. 1, p. 23–35.

WUTZKE, ULRICH, 1998, Durch die weiße Wüste. Edition Peterman.Klett-Perthes, Justus Perthes Verlag Gotha GmbH, Postfach 10 04 52, 99854 Gotha, Germany, 248 p.

WYNN, JEFFREY C. and SHOEMAKER, EUGENE M., 1998, The Day the Sands Caught Fire: *Scientific American,* v. 279, no. 5, p. 65–71.

WYSE JACKSON, P.N., 1998, Hibernian research on Italian volcanic rocks: the Mallet and Guiscardi? Haughton collections in Trinity College, Dublin, Ireland, p. 675–685, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

WYSE JACKSON, PATRICK N., 1998, William Henry Fitton (1780–1861) and the Wollaston Medal of 1852: *Geoscientist,* v. 8, no. 10, p. 9.

YAALON, DAN H., 1998, Attitudes to Soil Care and Land Use Through Human History: Trans. 16th Cong. Internat. Soil Science Society, Montipellier, August, p. 810.

YAALON, DAN H., 1999, Plenary Session: On Mediterranean Soils Conferences: A Brief History: Agricultural Academy of Bulgaria: *Bulgarian Journal of Agricultural Science,* v. 5, p. 7–8.

YAALON, DAN H., 1999, Sound Bytes: *INQUA Newsletter,* v. 10, no. 1.

YAGI, K., 1998, Petrological studies on Showa-Shinzan at the time of its birth, p. 687–706, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

YALDWYN, JOHN and HOBBS, JULIET, eds., 1998, My Dear Hector, Letters from Joseph Dalton Hooker to James Hector 1862–1893. Wellington, Museum of New Zealand Te Papa Tongarewa (Tech. Rept. 31).

YODER, H.S., Jr., 1998, Italian volcanology: geophysical laboratory contributions, 1905–1965, p. 707–734, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

YOUNG, DAVIS A., 1998, N.L. Brown and Crystallization- Differentiation: The Evolution of a Theory. (MSA's Monograph Series, 4). Washington: Mineralogical Society of America, 276 p.

ZODROW, ERWIN L., 1995, Walter Andrew Bell (1889–1969): Canadian Paleobotanist and Earth Scientist, *in* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H., 1995, Historical Perspective of Early Twentieth Century Carboniferous Paleobotany in North America. Geological Society of America Memoir 185, p. 187–202.

ZONN, S.V., 1997, Closer to Dokuchaev than Dokuchaev's own Followers: In commemoration of Petr Kossovich (1862–1915): *Eurasian Soil Science,* v. 30, no. 8, p. 909–915.

ZONN, S.V., 1999, Historical Importance of the Journal Pochvovedenie for the Development of Soil Science: *Eurasian Soil Science,* v. 32, no. 1, p. 10–15.

ZOTO, T. and RAMA, M., 1998, Institute of geological research and its Library's Service, p. 735–739, *in* Morello, Nicoletta, ed., Volcanos and History, Proceedings of the 20th INHIGEO (International Commission on the History of Geological Sciences) Symposium Napoli-Eolie-Catania (Italy), 19–25 September 1995, 755 p.

NOTES ON CONTRIBUTORS

Michael J. Crowe is the Cavanaugh Professor in the Humanities in the Program of Liberal Studies and Graduate Program in History and Philosophy of Science at the University of Notre Dame. A historian of science who took his doctorate at the University of Wisconsin, he specializes in the history of astronomy, physics, and mathematics in the period from 1700 to 1915. His books include *A History of Vector Analysis, Calendar of the Correspondence of Sir John Herschel, Theories of the World from Antiquity to the Copernican Revolution, Modern Theories of the Universe from Herschel to Hubble,* and *The Extraterrestrial Life Debate 1750–1900,* which last year appeared in a three-volume Japanese translation. His current project is the publication of a book titled *The Extraterrestrial Life Debate—Antiquity to 1915: A Source Book.*

Dennis Dean, a retired academic, has published numerous articles and three books on the history of geology. An honorary contributing member of the Edinburgh Geological Society and a Fellow of the Geological Society of London, he is currently the general editor of an earth sciences reprint series.

Gerald M. Friedman founding editor of *Earth Sciences History* and Distinguished Professor of Geology at Brooklyn College and Graduate School of the City University of New York, received the Sidney Powers Memorial Award, the highest honor of the American Association of Petroleum Geologists. He also was elected an Honorary Lifetime Member of *History of the Earth Sciences Society* in 2001, along with Ellis L. Yochelson. These are the first two individuals chosen for this distinction, based on their significant contributions to the history of the earth sciences and to the society.

Cyril Galvin is a coastal engineer, a licensed professional engineer in private practice since 1978. He holds a B.S. in geological engineering (1957, St. Louis University), an M.S. in geology with emphasis on structural geology (1959, MIT), and a Ph.D. in geology based on an experimental study of longshore currents (1963, MIT). His published technical work emphasizes waves, currents, and sediment transport in and near the surf zone, for which he has received the Huber Research Prize and the Norman Medal of the American Society of Civil Engineers. He is a life-long writer in notebooks and journals with a serious interest in the clear exposition of facts. In the history of geology, his main interests have been British geologists from Hutton through Geikie and modern catastrophism. He aims at quantifying geologic knowledge based on evidence from field observation and laboratory experiment.

Barbara A. R. Mohr received her university education at Bonn, completing her Ph.D. in 1982 on Tertiary pollen floras from the Cologne area. As a Post-doc she worked in West Berlin (1982–1985), mostly on material from the Iberian Peninsula, in cooperation with vertebrate paleontologists. She spent ten years as an assistant professor at the ETH of Zurich, Switzerland, mostly studying Mesozoic and Tertiary pollen floras from Antarctica. Since 1996 she has held a position as curator of the Mesophytic plant collections of the Museum of Natural History, Berlin. Lately she started to study gnetalean plants and early angiosperms from Brazil.

Sally Newcomb's interests focus on the interplay between chemistry and geology, primarily at the end of the eighteenth and the beginning of the nineteenth centuries. Her latest papers have concerned the use of the balance in geology, and how hardness tests have functioned from Greek times until the end of the twentieth century. She was co-convener of a Pardee symposium and two related sessions titled "Ophiolites as Problem and Solution in the History of Geological

Thinking" at the Geological Society of America meeting in Boston in 2001, and is co-editor of the resulting volume of papers.

William A. S. Sarjeant is a palynologist, palaeoichnologist, and historian and bibliographer of geology. He has written on many aspects of the history of geology and especially of palynology, but is best known as the author of the ten-volume, international bibliography of *Geologists and the History of Geology.* He is a professor of geological sciences at the University of Saskatchewan, Canada and a Fellow of the Royal Society of Canada.

Brian C. Shipley is a Ph.D. candidate in the Department of History, Dalhousie University (Halifax, Nova Scotia, Canada), and an Assistant Editor with the Thomas A. Edison Papers at Rutgers, the State University of New Jersey. His dissertation-in-progress concerns William E. Logan and the practice of geological surveying and mapping in colonial Canada. His recently published article, Rough Science in the Bush, *The Beaver: Canada's History Magazine,* Feb/Mar 2002, 82(1):8–15, describes Logan's first field season on the Gaspé peninsula. He has also written about the relationship between John Perry and Lord Kelvin in their debate on the age of the Earth. Visit Brian online at http://www.rci.rutgers.edu/~bshipley

Kenneth L. Taylor, a recent Past President of HESS, teaches the history of science at the University of Oklahoma. In 2001, during a sabbatical leave of absence spent in Paris, he lectured on eighteenth-century geology at the École des Hautes Études en Sciences Sociales. For his brief discussion of a previously unknown critique by Desmarest on William Hamilton's *Campi Phlegraei* (the full account to appear in the *Travaux du Comité Français d'Histoire de la Géologie*), see the website of *Pour La Science*—http://www.pourlascience.com/—the August 2001 number.

Annette Vogt studied mathematics at the University in Leipzig, made the Diplom and received her Ph.D. (Dr. rer. nat.) in history of mathematics, both at Leipzig. Since 1975 she has been a historian of mathematics and science, first at an Institute of the Academy of Science of the GDR in Berlin (1975–1991), and then in a Forschungsschwerpunkt (Center for History of Science, 1992–1994) in Berlin. Since 1994 she has been a research scholar at the Max Planck Institute for History of Science in Berlin. Her research interests include: mathematics in Germany in the nineteenth and twentieth centuries, scientific relationships between Russia/Soviet-Union and Germany, the history of Jewish scientists, and the comparative history of women scientists in the nineteenth and twentieth centuries.

Peter-Noel Webb is a Professor of Geological Sciences in the Department of Geological Sciences and a member of the Byrd Polar Research Center at The Ohio State University. He completed M.Sc. and Ph.D. degrees at Victoria University of Wellington (New Zealand) and Rijksuniversiteit te Utrecht (The Netherlands), respectively. His research activities have been directed towards Cenozoic paleontological, stratigraphical, and glacial climatic investigations on and around Antarctica; he has made twenty visits to the seventh continent since the Hillary-Fuchs Trans-Antarctic Expedition and International Geophysical Year (during 1957–1959). Other interests include: the evolution and enactment of the Antarctic Treaty, science and scientists of heroic and later polar exploration eras, paleocartography, history of micropaleontology, and history of international governance and science in the south polar regions. He is a recipient of the U.S. Polar Medal, the Alexander von Humboldt Prize (Germany), and the Hamilton Prize of the Royal Society of New Zealand.

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Program Officer: James R. Fleming (Term 2000, 2001, and 2002), Science, Technology, and Society Program, Colby College, Waterville, ME 04901, USA. E-mail: jrflemin@colby.edu

Councilors: Jill S. Schneiderman (Term 2000 and 2001), Box 312, Vassar College, 124 Raymond Ave, Poughkeepsie, NY 12604-0312, USA. E-mail: schneiderman@vassar.edu. Martina M. Kölbl-Ebert (Term 2000 and 2001), Geologische Staatssammlung, Luisenstrasse 37, München, Germany D-80333. E-mail: martina.koelbl@iaag.geo.uni-muenchen.de. Patrick Wyse Jackson (Term 2001 and 2002), Curator and Librarian, Department of Geology, Trinity College, Dublin 2, Ireland. E-mail: wysjcknp@tcd.ie. Cyril Galvin (Term 2001 and 2002), Box 623, Springfield, VA 22150, USA. E-mail: galvincoastal@juno.com.

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