The organisation of such a complex subject is always a problem. Certain articles in later sections are very close to this group, and should in my judgment be read with them. A later article by Palme and Wänke, one on lunar gravity by Sjogren, and three in the last section beginning with that of Kopal, are among these. They bear closely on questions of origin and early history.

The period of mare formation, extending roughly from 4×10^9 to 3×10^9 y ago, was an active stage about which we know a great deal. The least clear point is the relationship, causal and temporal, between the major impacts which produced huge basins on both the front and back sides of the planet, and the basaltic flows which created the maria on the side we see. This is a major theme of Section III; the articles by Geiss *et al.* and by O'Hara *et al.* deal especially with important aspects of the subject.

The meteoritic bombardment of the lunar surface continues to the present. It is important in its own right, and also as a chronological tool. A direct comparison of ages in different lunar regions is possible, and to some extent the chronology can be given an absolute basis, using the lunar samples. The comparison with other planets, especially Mercury and Mars, is more difficult. Articles in this section by Neukum and Housley, among others, are notable. Signer *et al.* call attention to some gaps in our understanding of lunar rare gases. Strangway and Olhoeft, and others, demonstrate the importance of electrical measurements in understanding the interior. Coleman and Russell, Runcorn, and others, summarise our knowledge of the striking magnetic remanence seen in the lunar samples, and in the orbital data. The coverage of geophysical aspects of lunar science is in fact especially thorough.

Allowing for the fact that any symposium must contain some weak contributions along with the strong, this volume can be highly recommended. Its one general fault is shared with many others: it appears more than two years after the event. There have been remarkable developments since, which cannot be reflected here and must be found in the current literature Chronological and isotopic studies, comparative lunar and meteoritic work, and the interpretation of orbital remote sensing data are among the areas that have moved ahead rapidly since 1975.

The distinguished editors have chosen to close the volume with an "Epilogue" showing a colour plate of Apollo orbital geochemical data, and pointing out the importance, for our understanding of the origin of the moon and the Solar System, of a global survey by a complete set of geochemical and geophysical instruments. This describes a potential future mission, the Lunar Polar Orbiter. Since this is a cause to which this reviewer has been passionately committed, he can hardly fail to agree with these sentiments.

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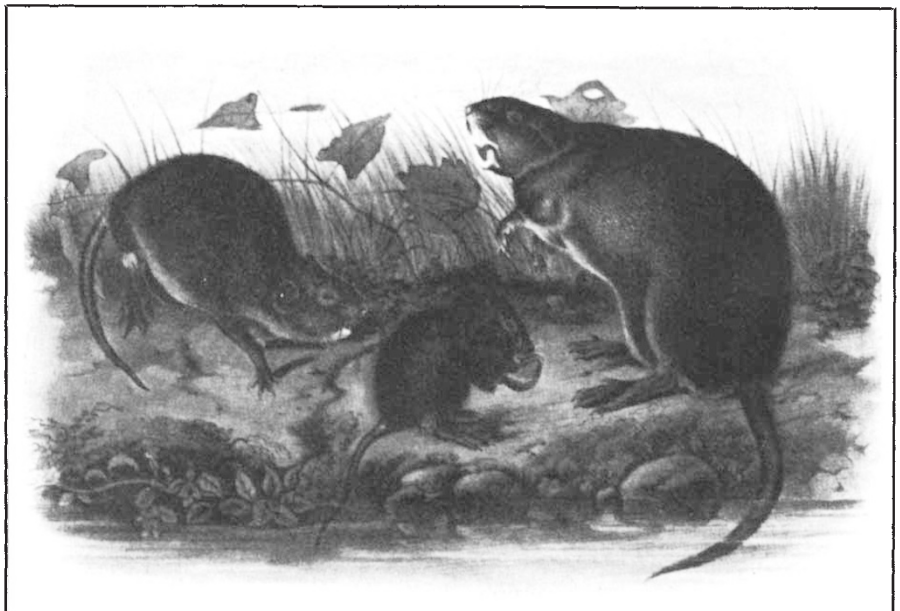

Family of muskrats (*Ondatra zibethica*). By John James Audubon in his famous book *Quadrupeds of North America* (1849). Illustration taken from *Larousse Animal Portraits*, compiled by P. P. Grasse (Hamlyn : London, New York, Sidney and Toronto, 1977; £6.95). The book contains over eighty Natural History prints from the seventeenth to the twentieth century, a large proportion of which were selected from a collection in the Natural History Museum in Paris. The collection was started by a brother of Louis XIII, Gaston of Orleans, a keen naturalist and patron of the arts.

Charged particle beams

The Physics of Charged-Particle Beams. By J. D. Lawson. Pp. xxi+462. (Oxford University. (Clarendon): Oxford; 1977.) £16.50.

CHARGED PARTICLE BEAMS have served to probe the nucleus, to analyse minute quantities of material, to reproduce television images, to resolve living structures smaller than the wavelength of light, to cut and join metals, and to reveal the subnuclear universe, as tiny and unexpected as that of the astronomer is large and apparent. In the future, one hopes they will provide the means to contain and perhaps ignite fusion reactions and prove useful in the treatment of malignant disease.

The field is as diverse in its intellectual content as in its applications. Based firmly in classical electromagnetism, it extends to a mathematics of collective phenomena as fascinating as any to be found in the fields of pure science to which it has been applied.

Lawson is particularly well placed, having contributed to most branches of this field of applied physics, to write an authoratitive and unifying text. This he does, manfully striding through six chapters of somewhat daunting mathematical equations, from some which the under-graduate will recognise to others which still puzzle the expert.

Besides the achievements of charged particle beam physics, the book stands as might a great master's treatise on perspective against the riches of renaissance art, perhaps somewhat disappointing to those who would appreciate but invaluable to those who would contribute.

The material is organised in an intellectual sequence which will frustrate those who may seek mathematical assistance in the solution of a particular problem. But no matter, it should be read from cover to cover, for Lawson disregards the partitions between specialities in the field in an attempt to cross pollinate neighbouring branches of the tree of physics whose blossoms, beautiful as they may be, might otherwise begin to show signs of infertility.

Such a book has been long awaited, particularly by those of us in the particle accelerator and fusion fields. It is regrettable that its printers have reverted to a typescript presentation that would have offended Gutenberg. Provided the reader can overcome his aesthetic scruples, however, he will find the layout of equations, figures, references and indexing perfectly adequate.

E. J. N. Wilson

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