A bragger's guide to fuzzy objects

Deep Sky Companions: The Messier Objects

by Stephen James O'Meara
Cambridge University Press: 1999. 318 pp.
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As David Levy writes in the foreword to *The Messier Objects*, "There can be no better exercise for a beginning astronomer than to find and observe all of the Messier objects". There are up to 110 of them (depending on how you count them), consisting of star clusters, nebulae and galaxies. They begin with M1, the Crab nebula, and include such other celestial sights as M31, the Andromeda galaxy, and M13, the large globular cluster in Hercules. Most were discovered by Charles Messier (1730–1817), a French astronomer intent on finding new comets.

Given viewing conditions in Paris, it's not surprising that many clusters, nebulae and galaxies would appear as fuzzy blobs, just as a comet may. So Messier conducted the work for which he is remembered, not because he was interested in these things, but to find and tabulate objects that might otherwise confuse his search for comets.

In the past, amateur astronomers trained on Messier objects just as Levy suggests. In the United States, the Astronomical League conducts activities known as the Messier Club and the Binocular Messier Club, and awards certificates for documented personal observations of at least 70 (with telescopes) or 50 (with binoculars) Messier objects (see <http://www.astronleague.org/al/obsclubs/messier/mess.html>).

There are even Messier marathons, held annually in late March or early April (when all the objects are visible), in which contenders try to spot all the Messier objects in a single night. This earns bragging rights but defeats any hope of contemplating the heavens, as no time can be lost in viewing a nebula once it has been identified.

A recent development seems poised to relegate the competitive observation of Messier objects to the same graveyard of discontinued practices as the use of sextants to determine position at sea. What the Global Positioning System does for mariners, the introduction of inexpensive telescopes, equipped with electronic pointing systems and databases of Messier objects and other sky targets is doing for amateur astronomers. They will see sights more readily, but feel less accomplishment in so doing.

For those planning to earn a certificate, "run a marathon" or just enjoy many fine celestial vistas, there is no better guide than Stephen O'Meara's book. For each object, a

photograph, a finder chart, basic data and a quote from Messier's accounts are provided, with a discussion of what is seen through small telescopes, and some history of telescopic studies.

This is not a treatise on the astrophysics of Messier objects, but an observer's guide, a worthy and superior successor to previous attempts. □

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Tale of two disciplines

Before Big Science: The Pursuit of Modern Chemistry and Physics, 1800–1940

by Mary Jo Nye
Harvard University Press: 1999. 282 pp.
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Bernadette Bensaude-Vincent

There have been numerous complaints over the past decade about the increasing gap between the studies produced by historians of science and the historical accounts that actually interest working scientists. Anyone who has deplored the fact that, while pursuing their own historiographical interests, historians of science have been losing the audience of scientists, will be reassured when they read this volume, the first of a series intended to fill this gap. Here is a concise survey of 140 years of natural science written by a professional historian of science.

Mary Jo Nye clearly targets an educated lay audience with a minimal scientific background. To this end, she has adopted a biographical approach, making extensive use of anecdotes and striking details, including such famous legends as August Kekulé's vision on a London bus of carbon atoms dancing in a circle, which he presented as the origin of the theory of structure.

Clearly, the purpose is to excite the reader's imagination with these heroic figures — but this is by no means a naive, factual historical narrative. Although the title suggests a contemporary perspective, Nye carefully avoids a teleological account of the past that simply describes the formation of contemporary chemistry and physics. On the contrary, her intention is to emphasize the changing profiles of these disciplines and their fluctuating boundaries. Whereas in the mid-nineteenth century, chemistry and physics had developed two independent views of matter, the chemical atoms and molecules being different and disconnected from the physical ones, by the end of the nineteenth century the split was between two chemistries. Organic structural chemistry, which Nye presents as inspired by thinking

from a natural-history standpoint, was opposed to inorganic chemistry, which was based on the Newtonian model of forces. Although spectroscopy and X-ray crystallography confirmed the predictive power of the chemical-structural theories, most organic chemists distrusted physical instruments.

Given this history of mutual disregard, the development of quantum chemistry in the inter-war period appears as a dramatic event. Far from suggesting a necessary reduction of chemistry to quantum physics, Nye concludes this chapter with Linus Pauling's remark: "There is more to chemistry than an understanding of general principles. The chemist is also, perhaps even more, interested in the characteristics of individual substances — that is, of individual molecules."

In stark contrast to the uncertain disciplinary identities, Nye's narrative stresses the strong national identities of scientists. In the late nineteenth century, it was generally admitted that there were national styles of reasoning: the British tradition was said to value pragmatic and visual models, while the German and French traditions liked abstract, more speculative models.

These stereotypes were, of course, influenced by national rivalries. However, they played an active role in this history insofar as they influenced both educational programmes and scientists' self-perception. Despite the huge efforts in the late nineteenth century to set up international meetings and scientific organizations, the scientists portrayed in these pages could not fully define themselves as members of international communities of physicists or chemists. Apart from a few individuals like Albert Einstein, Paul Langevin — the French physicist who invented sonar — and Hermann Staudinger — the Swiss chemist who discovered macromolecules — they remained torn between patriotism and internationalism. In conclusion, Nye stresses the end of the transcendental ethos of the scientist and the more modest self-perception that resulted.

It is thus clear that, far from being merely descriptive, this concise volume is a bold and highly skilled interpretation of the recent past of chemistry and physics. My only regret is that the reasons behind the author's historiographical choices were not explicitly stated in order to convey a better understanding of the methodology used by historians of science. However, this volume provides rich, enjoyable and easy reading. I would recommend it as both an introduction to the history for scientists and a useful tool for those wanting to develop this interest further by using the bibliographical essays in the appendix. □

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