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Discoveries of real and imaginary elements by astronomical methods

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Monday, August 11, 2014

22 - Discoveries of real and imaginary elements by astronomical methods

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Helium? Yes, in 1868, by Norman Lockyer, who spotted a yellow line not due to sodium in the spectrum of solar prominences, which he and Pierre Janssen had learned to observe without the need of an eclipse. Acceptance by the chemical community came only after laboratory confirmation by William Ramsay. Technetium? The first natural sample was recognized in 1952 by Paul Merrill in the spectra of a few cool stars. Charles A. Young and William Harkness thought they had identified an element in the solar corona following the 1869 solar eclipse: they dubbed it coronium. Only in 1942 did Bengt Edlén show that this 5303 Å feature came from iron atoms deprived of 13 electrons. The corona is hot, though chemically normal. Nebulium? The Oxford English Dictionary credits the word to William Crookes, who was a chemist and should have known better, in his 1898 address to the British Association for the Advancement of Science, though the strongest line had actually been seen by William Huggins in the Orion nebula long before. Lockyer thought Mg was to blame. The right answer came in 1928 from physicist Ira Bowen (later director of the Mount Wilson and Palomar Observatories). Twice-ionized oxygen is responsible for the strongest emission lines (O and N for others), the very low density of interstellar gas permitting forbidden radiative decays from levels that would be depopulated by collisions in terrestrial samples. Shorter-lived were asterium, aldebaranum, and others. And the less said about whether potassium flares smoke, the better!

Monday, August 11, 2014 01:45 PM

[Found and Lost: Incredible Tales of Spurious, Erroneous and Rehabilitated Elements \(01:15 PM - 04:55 PM\)](#)

Location: InterContinental San Francisco

Room: Grand Ballroom C

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