

- NONCHEMIST
- FRAUD
- EGO
- TRICKY
- JOKE
- TOO SOON

1790 Sy Sydneium					1790 Ap,Bn Apulium, bornium, etc.
1858 J Junonium	1896 An Actinium	1896 Ks,Nk Kosmium, Neo-kosmium	1897 Ma Metaargon	1898 Vc Victorium	1903 Nt Newtonium
1909 Oc Occultium	1911 Nh Neo-holmium	1922 Ct Celtium	1922 Hb Hibernium	1927 Fo Florentium	1931-32 Vr,Ab Virginium, Alabamine
1934 Ao,Hp Ausonium, hesperium				1999 ? Element 118	2004 Hk Hawkingium

INFOGRAPHIC

The elements that weren't

A periodic table of failure, fraud, and overconfidence



By Mary Virginia Orna and Marco Fontani | GLOBE CORRESPONDENTS JANUARY 04, 2015

In the popular imagination, science proceeds with great leaps of discovery—new planets, new cures, new atomic elements. In reality, though, science is a long, grueling process of trial and error, in which tantalizing false discoveries constantly arise and vanish on further examination. These failures can teach us as much—or more—than its successes.

The field of chemistry is littered with them. Today only 118 elements have been documented, but hundreds more have been “discovered” over the years—named, publicly trumpeted, and sometimes even included in textbooks—only to be exposed as bogus with better tools, or when a fraud was sniffed out. Their stories read like a catalog of the ways science can go awry, and how it moves forward nonetheless.

Hover over the periodic table below for a selective tour of 17 illustrative “lost elements” drawn from a new compendium of bogus chemical discoveries—and what we learned in spite of them.

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1909 Oc Occultium	1911 Nh Neo-holmium	1922 Ct Celtium	1922 Hb Hibernium	1927 Flo Florentium	1931-32 Vr, Dh
1934 Ao, Hp Ausonium, hesperium				1999 ? Element	

Florentium
1927
Discovered by: Luigi Rolla
Many scientists were on the hunt for the elusive element 61. Rolla carried out over 50,000 chemical separations in an attempt to isolate it from naturally occurring rare-earth mixtures. Soon after announcing the discovery, he realized it was in error, but he retracted it only 15 years later in an obscure journal published partially in Latin.

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Adapted from “The Lost Elements: The Periodic Table’s Shadow Side,” by Marco Fontani, Mariagrazia Costa, and Mary Virginia Orna.

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1934 Ao,Hp Ausonium, hesperium				?	2004 Hk Hawkingium

Celtium
1922
Discovered by: Georges Urbain
Flimsy evidence on impure samples led Urbain to fall into a trap the same kind of error for which he had blamed others for falling into, detecting an element where one didnt exist.

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1934 Ao,Hp Ausonium, hesperium	<div> <p>Ausonium, hesperium 1934 Discovered by: Enrico Fermi The great physicist and his team bombarded uranium with neutrons and detected what seemed like unknown atoms. Despite their caution, their university administrator announced the two new elements, and Fermi received the 1938 Nobel Prize. He never admitted his Nobel was based on a false discovery. Interpreted correctly, he had found the first evidence of nuclear fission, which would have deserved the Nobel anyway.</p> </div>			1999 ? Element 118	2004 Hk Hawkingium

Adapted from "Orna.

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 Shadow Side," by Marco Fontani, Mariagrazia Costa, and Mary Virginia

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1934 Occultum 1909 ff. Discovered by: Annie Besant, Charles W. Leadbeater Clairvoyants Besant and Leadbeater claimed to use their cognitive powers to observe the entire atomic universe, slowing down its movement by force of will and describing bizarre elements like occultum and anu in great detail. Their book Occult Chemistry went into three editions.				1999 ? Element 118	2004 Hk Hawkingium

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AC will and describing bizarre elements like *periodic Table's Shadow Side," by Marco Fontani, Mariagrazia Costa, and Mary Virginia*

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1909 Oc Occultium	1911 Nh Neo-holmium	1922 Ct Celtium	Kosmium, Neo-kosmium 1896 Discovered by: Bernhard Hans Kosmann The announcement of two new elements with names very similar to that of the author might have been an April Fools joke in the menacing atmosphere of Kaiser Wilhelm II's Germany. But it also may have been an effort to circumvent patents limiting the use of rare-earth elements.		1931-32 Vr, Ab Virginium, Alabamine
1934 Ao, Hp Ausonium, hesperium					2004 Hk Hawkingium

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1934 Ao, Hp Ausonium, hesperium				Element 118	Hawkingium

Metaargon
1897
Discovered by: Sir William Ramsay; Morris W. Travers
Due to an experimental error, a very experienced scientist claimed discovery of a new noble gas he called metargon, or metaargon. Attempts to reconfirm the discovery failed, and Ramsay subsequently retracted his claim.

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1934 Ao, Hp Ausonium, hesperium				1999 ? Element 118	HK Hawkingium

Victorium
1898
Discovered by: Sir William Crookes
Crookes imprudently announced the discovery of a new element that was later shown to be a mixture of gadolinium and terbium. He first called this element monium, and then perpetuated his error by renaming it in honor Queen Victoria, who had recently knighted him.

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1934 Ao,Hp Ausonium, hesperium				1999 ? Element 118	

Virginium, Alabamine
1931/1932
Discovered by: Fred Allison
Allison was among many scientists seeking the elements 85 and 87, which were missing spots on the periodic table. He devised an apparatus based on vacuum he called the magneto-optic method analysis, and then claimed to have observed both. Although quickly shown to be false, these elements remained in the periodic tables of chemistry textbooks for years.

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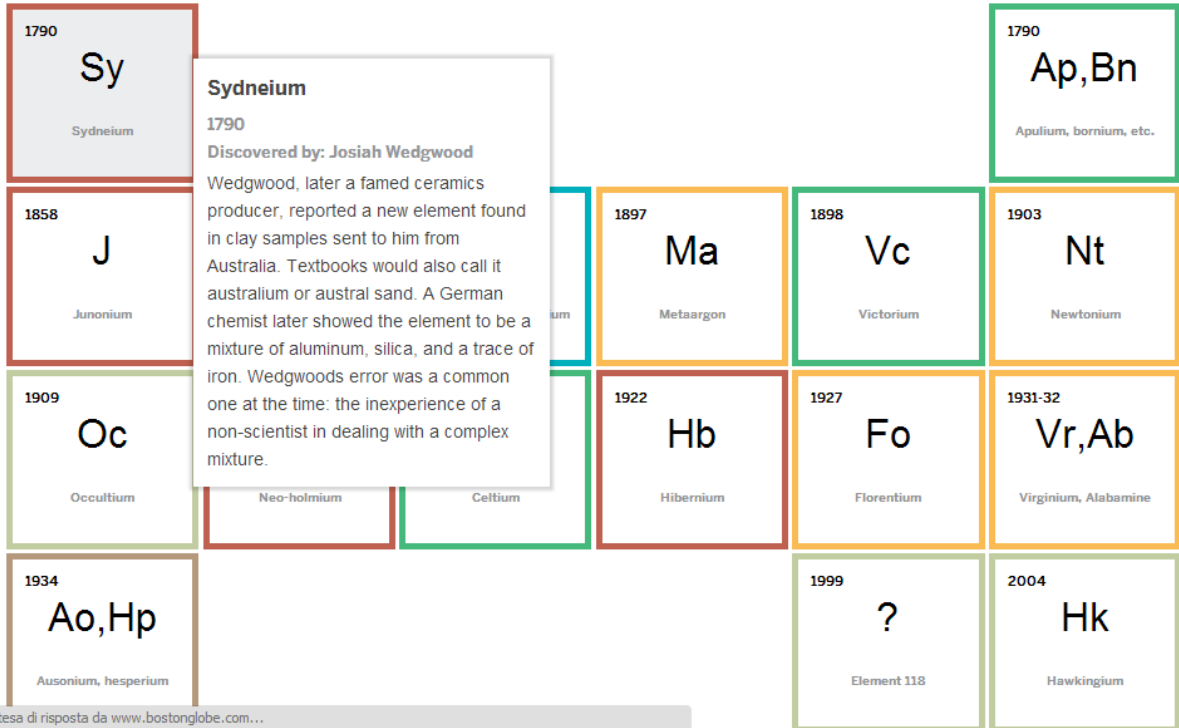
ELEMENTS LABELED BY DATE OF “DISCOVERY.” CATEGORIES AND ATOMIC SYMBOLS INVENTED FOR THIS CHART.

- NONCHEMIST
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- JOKE
- TOO SOON

1790 Sy Sydneium					1790 Ap, Bn Apulium, bornium, and more
1858 J Junonium	1896 An Actinium	1896 Ks, Nk Kosmium, Neo-kosmium	1897 Ma Metaargon	1898 Vc Victorium	1790 Discovered by: Antal Leopold Ruprecht, Matteo Tondi A complex mixture of oxides could not be separated with the tools available, so Ruprecht and Tondi jumped to conclusions and declared several new pure elements. It was an experiment simply could not be done before the advent of electrolysis.
1909 Oc Occultium	1911 Nh Neo-holmium	1922 Ct Celtium	1922 Hb Hibernium	1927 Fo Florentium	Vr, Ab Virginium, Alabamine

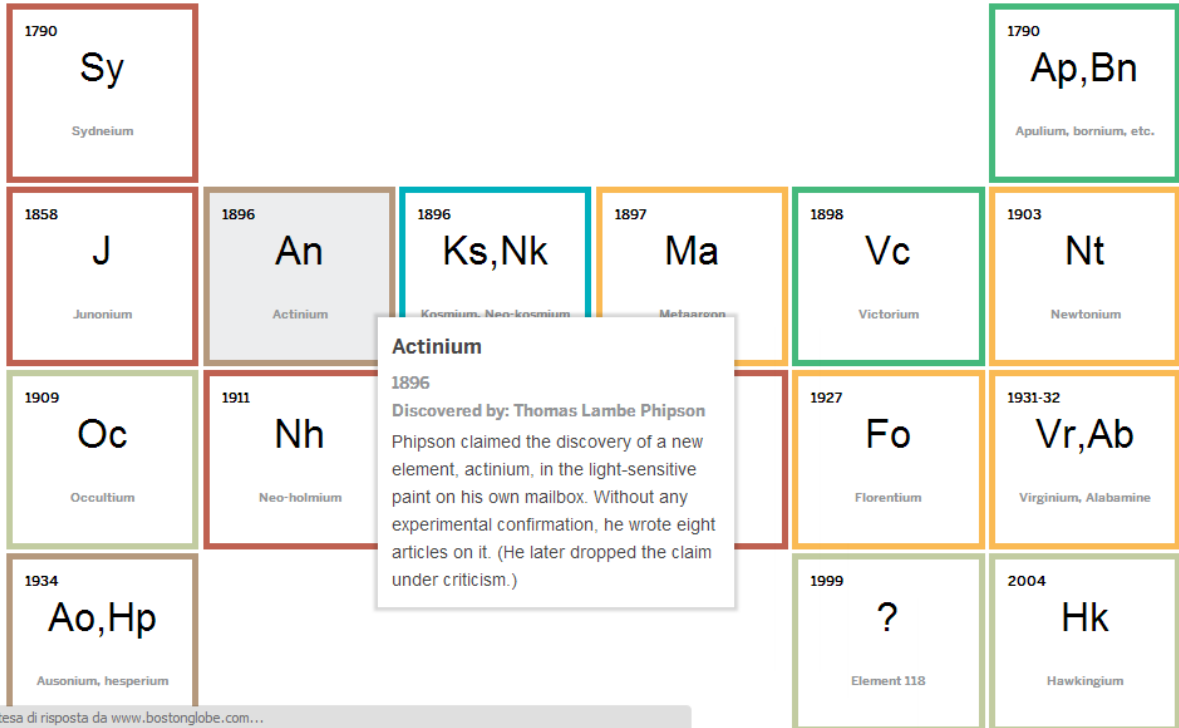
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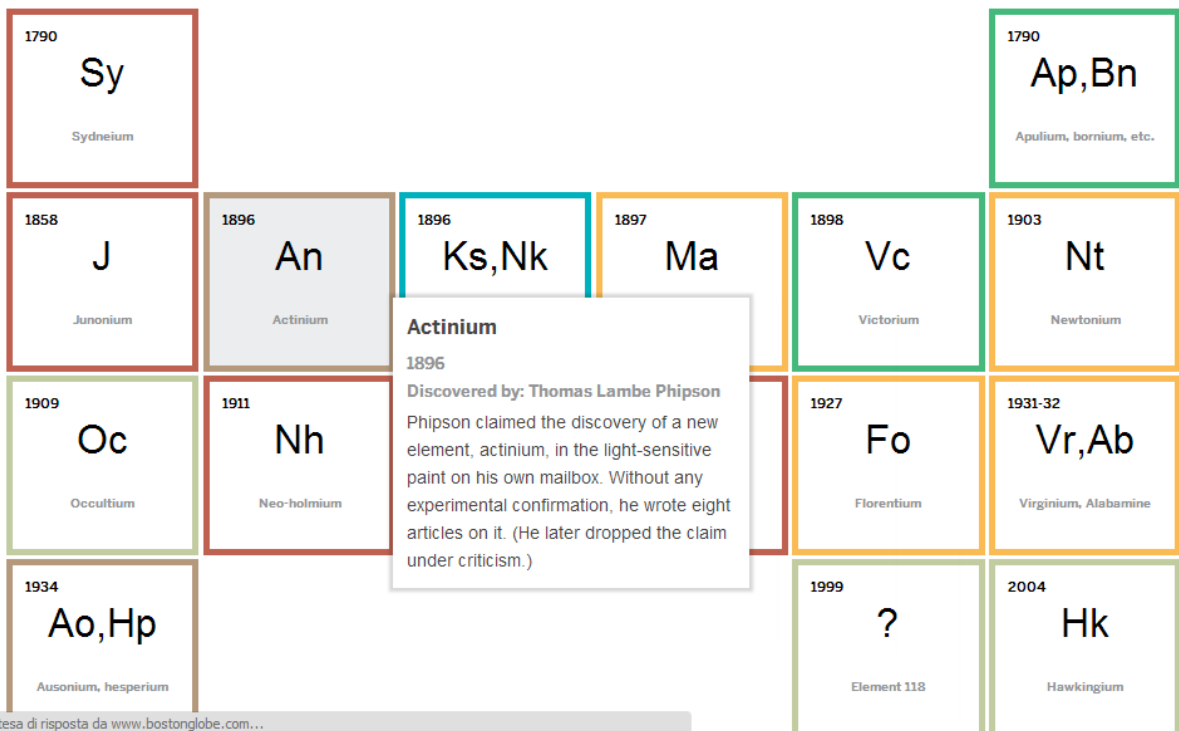
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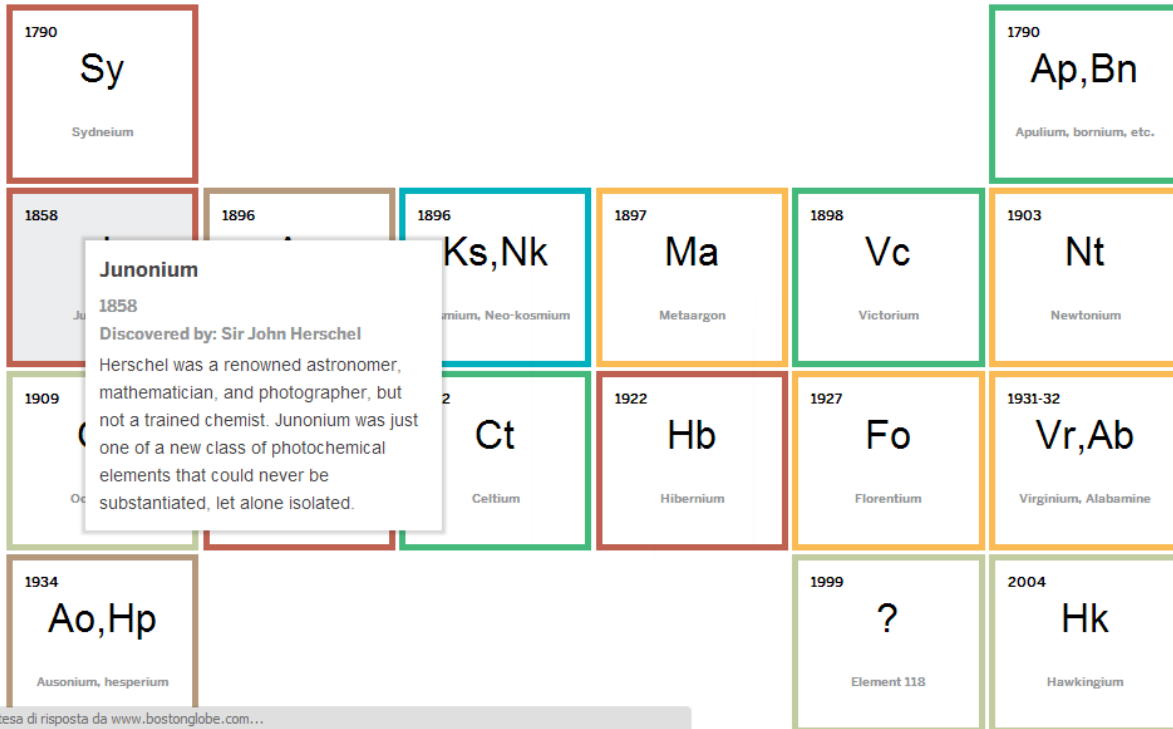
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Junonium
1858
Discovered by: Sir John Herschel
Herschel was a renowned astronomer, mathematician, and photographer, but not a trained chemist. Junonium was just one of a new class of photochemical elements that could never be substantiated, let alone isolated.

The elements that weren't - x

www.bostonglobe.com/ideas/2015/01/04/elements-that-weren/k9RZqzLsxETNgm1Kq6tkSL/story.html

Sydneyium					Apulium, bornium, etc.
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1934 Ao,Hp Ausonium, hesperium	<p>Neo-holmium</p> <p>1911</p> <p>Discovered by: Josef Maria Eder</p> <p>Very influential in photography, Eder postulated this and other nonexistent rare-earth elements on the basis of flimsy and misinterpreted spectroscopic data. Inexperienced and out-of-field in this kind of chemistry, he failed to recognize that his samples contained impurities that skewed the results, leading to errors spanning almost a decade.</p>			1999 ? Element 118	2004 Hk Hawkingium

Adapted from "The Lost Elements" by Marco Fontani, Mariagrazia Costa, and Mary Virginia Orna.

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J	An	Ks,Nk	Ma	Vc	Nt
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1934 Ao,Hp Ausonium, hesperium	<p>Hibernium</p> <p>1922</p> <p>Discovered by: John Joly</p> <p>An Irish physicist and geologist, Joly was the first to deduce that the age of the Earth might be measured in billions rather than thousands of years. He theorized that strange halo-like marks in mica samples were caused by a radioactive element that he called hibernium. He inferred too much from too little data; it was later found that the causative substance was a radioactive isotope of an already known element.</p>			1999 ? Element 118	2004 Hk Hawkingium

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Element 118

1999

Discovered by: Victor Ninov

In the mid-1990s, Ninov helped discover elements 110, 111, and 112 in Germany using a data-analysis code that he developed. He moved to Lawrence Berkeley Laboratory and in 1999 announced the synthesis of element 118. Only Ninov had access to the raw data and it took three years to discover that he had deliberately falsified them. Ninov was fired in 2002.

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1934 Ao,Hp Ausonium, hesperium				1999 ? Element 118	

Newtonium, coronium

1903

Discovered by: Dmitri Mendeleev

Mendeleev is famous for having discovered (and publicized) the periodic law of the elements. What is less well known is that he postulated the existence of elements lighter than air, among them newtonium and coronium. These were largely a paranoid response to the discovery of the electron, which he thought would compromise the validity of his periodic table.

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