

**Subject:**Historical Error on <http://cerncourier.com/cws/article/cern/37868>

**Date:**Mon, 25 Jun 2018 23:15:33 -0700

**From:**Steven B. Krivit <>

**To:**cern.courier@cern.ch

Matthew Chalmers  
Publisher, CERN Courier

Dear Dr. Chalmers,

There is a historical error on this page: <http://cerncourier.com/cws/article/cern/37868>

I realize that the author, John Campbell, is a pre-eminent scholar on Rutherford. In fact, I exchanged several e-mails with Campbell when I began to unravel this historical error during my research. Campbell was unable to provide any credible support for his erroneous claim that "Rutherford changed nitrogen into oxygen, which was an endeavour that had eluded chemists for centuries."

It's not Campbell's fault. The error has existed for nearly 70 years and it is deeply embedded, not only on the Internet but in most (but not all) textbooks.

Most scholars have incorrectly attributed the first man-made nuclear transmutation to Rutherford, however, the credit belongs to Patrick Blackett, a research fellow working under Rutherford.

In 2016, I published a forensic historical examination of the research in my book *Lost History*. In 2017, I communicated my findings to the U.S. Department of Energy, Office of History and Heritage Resources; the American Institute of Physics, Center for History of Physics; the Imperial College London, Physics Department (Home to Blackett's laboratory); and the Cambridge University, Physics Department (Home to Rutherford's laboratory). Each organization has now completed its own independent analysis, concurred, and corrected their respective Web sites. Here are the respective urls:

<https://www.osti.gov/opennet/manhattan-project-history/Events/1890s-1939/exploring.htm>

(U.S. Department of Energy)

<http://history.aip.org/history/exhibits/rutherford/sections/atop-physics-wave.html>

<http://www.imperial.ac.uk/physics/about/department-history/> (Click on Nobel Prize Winners)

[http://www.cambridgephysics.org/cockcroftwalton/cockcroftwalton2\\_1.htm](http://www.cambridgephysics.org/cockcroftwalton/cockcroftwalton2_1.htm)

Campbell was not honest with me when I asked him to defend his claim that this credit belongs to Rutherford. Therefore, to help you recognize the validity of my information, I am also enclosing letters of acknowledgement from AIP, Cambridge University, and Imperial College. I am also directly acknowledged on the DOE and AIP Web sites.

I hope to hear from you soon,  
Steven

On 8/31/2018 2:05 AM, Matthew Chalmers wrote:

Dear Steven

I am not sure how best to deal with this matter - e.g. a letter to the editor would seem inappropriate given that the Campbell piece was published almost a decade ago.

Perhaps we could invite you to write a similar "Inside Story" piece as per Campbell's, based on the research you did for your book. In that case, to add to the article's appeal, perhaps we could address the broader point of the difficulties in correcting persistent historical inaccuracies. This would need to be the bulk of the piece, but just a paragraph or two.

I look forward to your reply.

Thanks, Matthew

On 12 Sep 2018, at 04:30, Steven B. Krivit <> wrote:

Dear Matthew,

I am enclosing a first draft. I welcome your critique and suggestions.

**On the Transmutation of Nitrogen to Oxygen**

By Steven B. Krivit

*Submitted to the CERN Courier*

Kind regards,  
Steven

On 1/21/2019 7:05 AM, Matthew Chalmers wrote:

Dear Steven

Thanks for bearing with me.

Since we last spoke, we have decided to devote broader coverage to the proton on this centenary year of Rutherford's discovery. So, in addition to the historical aspect, we will be exploring contemporary scientific understanding of the particle etc.

We are interested in publishing your article as part of this special focus. Having had several discussions about this topic lately with the CERN Courier advisory board, some question the premise "For at least 70 years, the near-consensus of the scientific community about the person who discovered the first confirmed artificial nuclear transmutation has been wrong. E.g. one member replied: "That it was Blackett, working under Rutherford, who figured out how to correctly identify what was actually happening is certainly very interesting, and deserves major credit, but it doesn't really change the fact that this is what Rutherford was doing in his lab earlier."

I therefore wanted to clarify:

As you state, Rutherford did not make claims to transmutation in his 1919 papers, nor was that his objective. So when (and how?) did the myth arise? In other words, when was it first shown that it was Blackett, not Rutherford?

You reference a 1948 cartoon but surely the myth had already been established by then?

It seems this is an interesting aspect of the story that could offer a rich addition to your draft.

Of course, if you would prefer not to take this further, we will understand.

I look forward to hearing from you, and thanks again for bearing with us during this recent period (which has seen the magazine totally redesigned and has taken up all my energy!)

Matthew

January 21, 2019

Dear Matthew,

Thank you for your e-mail. It's good to hear that the article is on track. I appreciate the two concerns you have brought to my attention.

The first concern, expressed by a member of the CERN Courier advisory board, is that, by bombarding targets with alpha particles, Rutherford had actually done the experiment before Blackett. The board member wrote, "That it was Blackett, working under Rutherford, who figured out how to correctly identify what was actually happening is certainly very interesting, and deserves major credit, but it doesn't really change the fact that this is what Rutherford was doing in his lab earlier."

This reasoning is not valid. There are two interrelated reasons. First, if we follow the board member's reasoning, then we must ascribe the discovery credit not to Rutherford, but to Ernest Marsden who had preceded Rutherford in similar experiments.

The second and most important reason is that in science — at least in my understanding — we ascribe experimental discovery credit to the person who first observes and reports the data. This is precisely what Blackett did. Blackett performed the precise experiments necessary to obtain the data, correctly identified the residual oxygen nucleus, and correctly interpreted that a transmutation process had occurred. Moreover, his correct interpretation of an integration process contradicted Rutherford's incorrect interpretation of a disintegration process.

Fortunately, the situation is very clear-cut: Rutherford's experiments were not designed to obtain the data necessary to identify a transmutation reaction. Therefore, Rutherford did not obtain such data, or of course, report such data or conclusion. This historical event provides a wonderfully vivid example of the process used by the scientific community to ascribe experimental discovery credit.

The second concern is when and how the myth arose. I absolutely agree with you that the myth must have been established earlier than the 1948 cartoon. Unfortunately, in my efforts so far, I have not come across any definitive marker for an earlier point of origin. The closest I have come to identifying an earlier origin is what I described in my book *Lost History*, on pages 278-279. I am appending those pages to this letter.

Kind regards,



Steven Krivit

Publisher and Senior Editor, *New Energy Times*