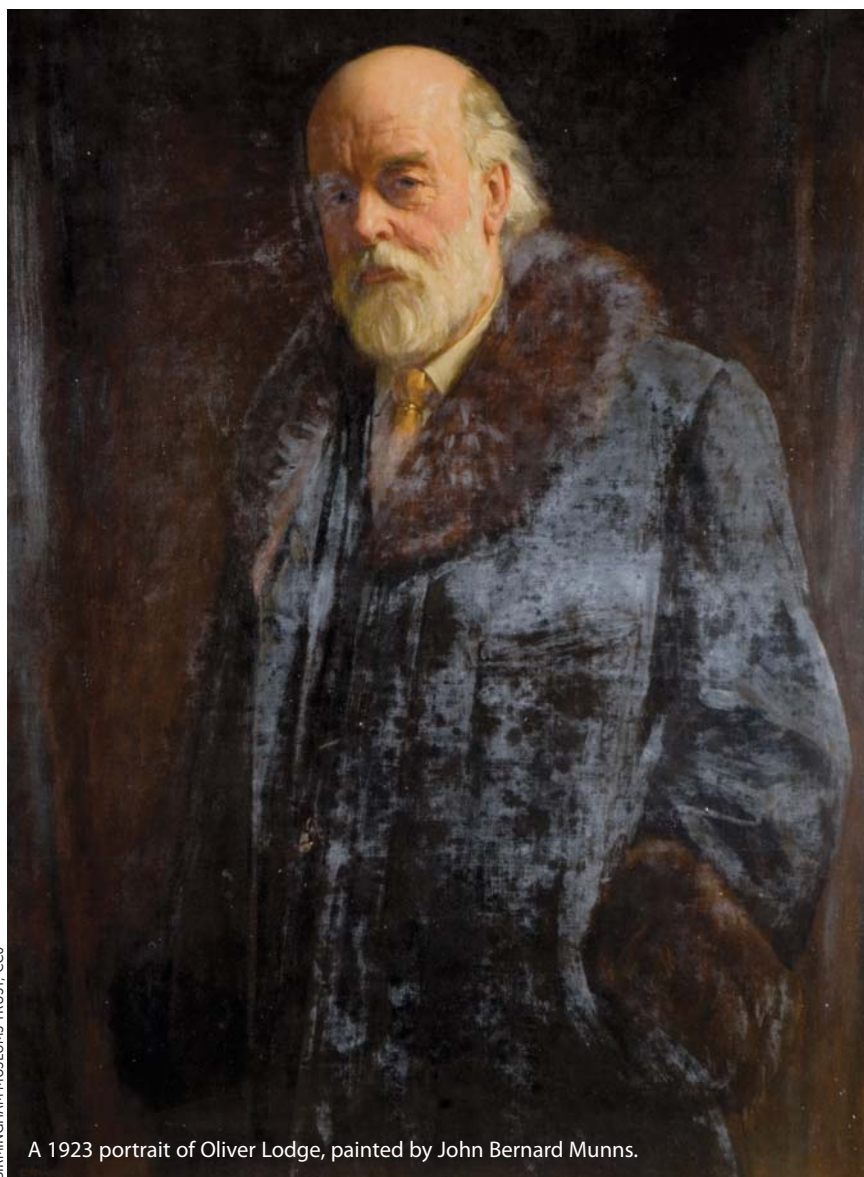




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A 1923 portrait of Oliver Lodge, painted by John Bernard Munns.

The quintessential Victorian scientist

Physicist Oliver Lodge is probably best known for the apocryphal tantrum he threw over Einstein's theory of relativity. The outburst relegated Lodge, who repeatedly missed opportunities to become rich and famous, to the dustbin of history. *A Pioneer of Connection: Recovering the Life and Work of Oliver Lodge*, a collected volume edited by James Mussell and Graeme Gooday, shows that there

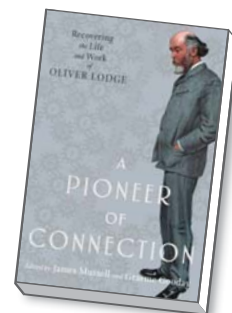
was much more to his life and work than that singular event.

Lodge's career demonstrates that although history is often told by the proverbial winners, scientific knowledge is produced through a productive dialog between advocates and detractors. Lodge was one of only a few brave souls who dared to look at an accepted idea and say, "That's not right." Even when wrong,

A Pioneer of Connection Recovering the Life and Work of Oliver Lodge

James Mussell
and Graeme
Gooday, eds.

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voices like Lodge's are invaluable because they push researchers to check their claims. Filling a notable gap in the scholarly literature, Mussell and Gooday's volume provides a welcome reminder of why hero worship does a disservice to our understanding of scientific progress.

Lodge was the patron saint of thankless scientific tasks. He repeated experiments countless times, showed lay audiences how science worked, edited journals and articles, and tirelessly advocated for science funding and education. He excelled at teaching physics, and his sensational lectures, often featuring lightning demonstrations, brought the general public's attention to otherwise esoteric laboratory research. Before radio became commonplace, for example, his lectures showed how electromagnetic waves could be detected by early receivers known as coherers. Those activities raised the public profile of science in the UK, but they brought Lodge little glory; he is a particularly tragic figure because he had the skills to achieve tremendous scientific renown but chose otherwise.

Nevertheless, his scientific work should not be underestimated. Today his discoveries are more important than ever because the fields in which he worked—most notably, the electrodynamics of wireless transmission—form the backbone of our modern technological universe. Among many other contributions, *A Pioneer of Connection* makes clear that it was Lodge who authored the first publication announcing the discovery of electromagnetic waves and who first published results verifying Maxwell's theory of electromagnetic radiation.

So why is Lodge not more celebrated today? One reason is because he criticized Einstein's theory of relativity. Ironically, as Bernard Lightman demonstrates in his chapter, Lodge's criticisms of relativity theory were valid—in fact,

Albert Einstein himself agreed with them. A second reason stems from Lodge's research into psychic and spiritual phenomena, epitomized by his 1916 book *Raymond, or Life and Death*, which details communications beyond the grave with his youngest son, who was killed during World War I in 1915.

Here, too, we should celebrate Lodge, for despite his belief that communication with the deceased was possible, he nevertheless warned the public about how many mediums took advantage of people's vulnerabilities. During his day, it was commonplace even for educated people to hold spiritualist beliefs; it is largely due to Lodge that most everyone now tends to distrust those who allegedly communicate with the dead. Moreover, his advocacy of science education, his public lectures, and his willingness to test wild claims are key reasons why many spiritualist beliefs were checked against the best science of the era. Mussell argues in his chapter that Lodge's studies on psychic phenomena are as much a part of his scientific legacy as his research on telegraphic systems, loudspeakers, and microphones.

Setting himself apart from the scientific trends of his day, Lodge warned of the dangers of going off on a theoretical limb without experimental support. For him, physics was about "hands-on laboratory work," to be followed by a theoretical apparatus based on "tangible physical concepts, not symbols." Such knowledge would lead to a better, "full-blooded" understanding of the universe—one in which it was much easier to know why we should care about knowing. Lodge also played a key role in the successful struggle to incorporate science into the general curriculum at British universities; previously, it was relegated to polytechnical schools.

One of the most interesting claims in *A Pioneer of Connection* is that Lodge was self-conscious of his tendency to damage his own reputation. He left accolades for others to collect, just as many talented untenured lecturers, adjuncts, and laboratory scientists do today. His life demonstrates that second place in science should receive more attention. What use are first observations if they are not confirmed? In science, the inclusion of less prestigious lives matters.

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THE FIRST IMAGES taken by NASA's *Solar Dynamics Observatory* are presented during a press conference in Washington, DC, in April 2010.

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A researcher's how-to manual

Even the most groundbreaking scientific research is of little use if it can't be communicated to the broader scientific community, and to the general public, in a cogent and timely manner. Nevertheless, many scientists struggle to disseminate their results successfully. *Effective Science Communication: A Practical Guide to Surviving as a Scientist*, by Sam Illingworth and Grant Allen, aims to help researchers do just that. Both authors are successful researchers, and they base their narrative on their extensive personal experience. Comprising nine chapters that work both independently and as a whole, *Effective Scientific Communication* is a useful handbook for anyone in the scientific world.

The book's introduction highlights the importance of scientific communication and offers advice on how to use the book. The authors then discuss how to prepare research findings for journal publication—the way in which most scientific results are disseminated to the broader community. They begin with tips for choosing an appropriate journal, advice on writing the manuscript, and explanations of the peer review process and metrics like impact factors and citations. According to

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IOP, 2020 (2nd ed.).
\$50.00



Illingworth and Allen, when sitting down to write a journal article, authors should first identify the key message they wish to share. Additionally, they note that publishing more papers on a topic as opposed to fewer is not always advisable—the oft-quoted “publish or perish” can be a misleading mantra.

Chapter 3 details how to secure funding to establish and sustain scientific research. Gone are the days of Isaac Newton and Albert Einstein, who required little or no research funding. Nowadays, a successful research career requires continuous funding, so learning how to craft grant proposals is a vital skill for researchers. The authors give quality advice on conceptualizing a good research