

## Editorial



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I am sure that every new Editor-in-Chief of *Proceedings of the Royal Society A* says what a great honour and exciting prospect it is—I am equally sure that, like me, they really do mean it. Trawling through ‘*Proc A*’, it is profoundly humbling to discover papers by so many giants in the history of science, such as James Clerk Maxwell [1], Michael Faraday [2], Paul Dirac [3], Dorothy Hodgkin [4], Werner Heisenberg [5], Rosalind Franklin [6], Ernest Rutherford [7], Erwin Schrödinger [8], Niels Bohr [9], Lord Rayleigh [10], Lord Kelvin [11], Kathleen Lonsdale [12], Max Born [13], Linus Pauling [14], J. J. Thomson [15] and a great many others. There are celebrated partnerships here too such as W. H. Bragg & W. L. Bragg [16], Crick & Watson [17], Geiger & Marsden [18], Brewer & Dobson [19] and Hawking & Penrose [20]. There are also names with a special importance in my own field such as Oliver Heaviside [21], George Fitzgerald [22], Karl Friedrich Gauss [23], John Tyndall [24], John Dalton [25], Edward Sabine [26], Edward Appleton [27], Ruby Payne-Scott [28], C. T. R. Wilson [29], Hannes Alfvén [30] and Sydney Chapman [31].

The role of *Proc A* has changed considerably over the years. The number of sub-disciplines in the physical sciences has grown dramatically, and with it, there has been a proliferation in specialist journals. Naturally, these have tended to become the journals of choice with scientists and engineers who wish to communicate only with experts in their specialist areas. Long before the establishment of these specialist journals, however, *Proc A* was already providing an outlet for a wide variety of emerging research. This is a tradition that myself and the Editorial Board are keen to continue and in doing so, will search for new, emerging areas of physical, mathematical and computational science and engineering. Our hope is to offer these emerging areas an ‘academic home’, at least until such time that they establish their own specialist journals. *Proc A* is unique in that over the years, it has remained broad in scope yet excellent in quality; a combination which facilitates opportunities for interdisciplinary research, and the communication of top quality advances to a wider community of scientists. For example, I am a space physicist with a particular focus on solar magnetic variability and its effects on near-Earth space and Earth’s atmosphere. For me, one of the great

strengths of *Proc A* is how it has facilitated applications of my own research field in areas as diverse as climate science and numerical weather prediction, spacecraft design, dendrochronology, aviation medicine, power grid engineering, atmospheric electricity, archaeology and communications. Hence, I have always been very pleased, not only by the number of citations garnered by the papers that I have published in the journal, but also most especially by the surprisingly wide variety of subject areas that those citations have covered and how this has led to further applications of our work, often in unexpected areas. Our aim will be to provide other scientists with the same advantages and possibilities in their own areas of research.

Pre-publication peer review is often, and in my view rightly, described as Britain's greatest single contribution to science, and is yet another example of the importance of using the best talent, wherever it may come from. Peer review was first introduced in 1665 by an immigrant to Britain, Henry (formerly Heinrich) Oldenburg, the founding Editor of *Philosophical Transactions of the Royal Society* [32]. Oldenburg was born in Bremen, Germany, where he gained a theology degree in 1639, migrating to London soon after and becoming the first secretary of the Society in 1660. The formal peer-review procedures as we know them today, were developed from Oldenburg's ideas by Francis Bacon and applied to *Medical Essays and Observations* published by the Royal Society of Edinburgh in 1731. The rest, as they say, is history and the age of enlightenment was organized and truly underway. Peer review remained largely unchanged for the next few centuries or so, however, the last few decades have brought unprecedented change in scientific publication practices and procedures. This change is bound to continue and accelerate, and in light of the many criticisms that peer review is inefficient, outdated and open to abuse, I foresee an increasing pressure to abandon it completely. However, a key point here is that peer review is the way, and the only way, by which science arrives at a consensus and, at a time when many seek to undermine inconvenient scientific understanding for political or financial reasons, it is absolutely critical that we do not allow any changes that sow confusion and undermine confidence in well-established results.

My philosophy and aim is that we keep peer review efficient and fair with judicious flexibility, while maintaining its key function in consensus-forming. It is undesirable, but not a catastrophe, if a flawed paper is published; indeed, *Proc A* has a well-established Comment & Reply policy in place, and it is the duty of all scientists to use procedures such as this to keep the literature record 'clean'. At the same time, high standards of rigorous review are vital to maintain the reputation of the journal. Consequently, I will urge all members of the Editorial Board to be decisive and interventionist in order to protect authors from unfair delays due to unnecessary rounds of reviewing while, at the same time, identifying at an early stage, papers that are below the standard expected for the journal. Practices such as these should, in the long run, prevent both authors and referees from wasting valuable time and effort.

I am genuinely excited to be able to work with what is a truly excellent Editorial Board with a wide range of expertise and clearly defined areas of responsibility. Our Reviews Editor, Michel Destrade, holds responsibility for all review articles submitted to *Proc A*, and these are central to maintaining the breadth and topicality of the journal. I am delighted that Michel is continuing in this role. We will also continue to use guest editors for special themed issues and are considering new procedures to allow scientists to propose topics for consideration. I am equally excited to be able to work with the Royal Society publishing staff, who have already impressed me greatly with their outstanding professionalism and skill, and also the staff working on public communication who can add a very important support service to our authors. Lastly, I thank Sir Mark Welland for his stewardship and handing over to me a journal that is in great shape and full of potential, and for his helpful advice which will help us make a smooth transition.

I look forward to helping your papers get published as quickly as possible after constructive improvement brought about by the review procedure. We will also welcome, at any time, feedback and suggestions which will help us be adaptive to the needs and trends of the wide variety of science areas we cover. So send us your best papers, and we will take good care of them!

The Editor's selection of note-worthy papers in *Proceedings A* are in the 'Reference list'

1. Maxwell JC. 1863 A dynamical theory of the electromagnetic field. *Proc. R. Soc. Lond.* **13**, 531–536. (doi:10.1098/rspl.1863.0098)
2. Faraday M. 1851 Experimental researches in electricity. *Proc. R. Soc. Lond.* **5**, 567–569. (doi:10.1098/rspl.1843.0063)
3. Dirac PAM. 1928 The quantum theory of the electron. *Proc. R. Soc. Lond. A* **117**, 610–624. (doi:10.1098/rspa.1928.0023)
4. Hodgkin DC. 1974 The Bakerian Lecture, 1972: insulin, its chemistry and biochemistry. *Proc. R. Soc. Lond. A* **338**, 251–275. (doi:10.1098/rspa.1974.0085)
5. Heisenberg W. 1948 On the theory of statistical and isotropic turbulence. *Proc. R. Soc. Lond. A* **195**, 402–406. (doi:10.1098/rspa.1948.0127)
6. Franklin RE. 1951 Crystallite growth in graphitizing and non-graphitizing carbons. *Proc. R. Soc. Lond.* **209**, 196–218. (doi:10.1098/rspa.1951.0197)
7. Rutherford E, Geiger H. 1908 The charge and nature of the  $\alpha$ -particle. *Proc. R. Soc. Lond. A* **81**, 162–173. (doi:10.1098/rspa.1908.0066)
8. Schrödinger E. 1955 The wave equation for spin 1 in Hamiltonian form. II. *Proc. R. Soc. Lond. A* **232**, 435–447. (doi:10.1098/rspa.1955.0229)
9. Bohr N. 1909 Determination of the surface-tension of water by the method of jet-vibration. *Proc. R. Soc. Lond. A* **82**, 146. Communicated by Sir W. Ramsay. (doi:10.1098/rspa.1909.0014)
10. Strutt JW (Lord Rayleigh). 1912 On the propagation of waves through a stratified medium, with special reference to the question of reflection. *Proc. R. Soc. Lond. A* **86**, 207–226. (doi:10.1098/rspa.1912.0014)
11. Thompson W (Lord Kelvin). 1857 On the electro-dynamic qualities of metals:- Effects of magnetization on the electric conductivity of nickel and of iron. *Proc. R. Soc. Lond.* **8**, 546–550. (doi:10.1098/rspl.1856.0144)
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14. Pauling L. 1927 The theoretical prediction of the physical properties of many electron atoms and ions. Mole refraction, diamagnetic susceptibility, and extension in space. *Proc. R. Soc. Lond. A* **114**, 181–211. (doi:10.1098/rspa.1927.0035)
15. Thomson JJ. 1913 Bakerian lecture: rays of positive electricity. *Proc. R. Soc. Lond. A* **89**, 1–20. (doi:10.1098/rspa.1913.0057)
16. Bragg WH, Bragg WL. 1918 The reflexion of X-rays by crystals. *Proc. R. Soc. Lond. A* **88**, 428–438. (doi:10.1098/rspa.1913.0040)
17. Crick FHC, Watson JD. 1954 The complementary structure of deoxyribonucleic acid. *Proc. R. Soc. Lond. A* **223**, 80–96. (doi:10.1098/rspa.1954.0101)
18. Geiger H, Marsden E. 1909 On a diffuse reflection of the  $\alpha$ -particles. *Proc. R. Soc. Lond. A* **82**, 95–500. (doi:10.1098/rspa.1909.0054)
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21. Heaviside O. 1892 On the forces, stresses, and fluxes of energy in the electromagnetic field. *Proc. R. Soc. Lond.* **50**, 126–129. (doi:10.1098/rspl.1891.0016)
22. Fitzgerald GF. 1877 On the rotation of the plane of polarization of light by reflection from the pole of a magnet. *Proc. R. Soc. Lond.* **25**, 447–450. (doi:10.1098/rspl.1876.0065)
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25. Dalton J. 1833 On the height of the Aurora Borealis above the surface of the Earth; particularly one seen on the 29th of March, 1826. *Proc. R. Soc. Lond.* **2**, 342–344. (doi:10.1098/rspl.1815.0342)
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