switching and merging. Although the basic idea sounds simple, the execution is not.

Is this a future technology and a viable way of information processing? It could be. The advantages are that the exciton-based systems can potentially be very fast and that the device architecture can be defined with standard lithography. A drawback however, at least for the present device, is that operation at low temperatures is required to prevent the excitons being shaken apart by lattice vibrations. Perhaps the use of GaN instead of GaAs, the typical choice, could raise the operating temperature to room temperature? Currently it is not clear if GaN can ever match the incredibly high-quality GaAs layers produced by Art Gossard and colleagues at UC Santa Barbara for this experiment. Technology aside, what would clearly be fascinating to explore is the transport of excitons — which are bosons — in a tunable-potential landscape. In the case of electronic transport, electrons — which are fermions — can interfere in subtle ways, which is explored in the field of mesoscopic physics. For excitonic bosons, additional phenomena might include global phase effects: Bose–Einstein condensation and — who knows — a Josephson effect. Perhaps this experiment will end where it began, as a manifestation of elegant physics.

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HISTORY OF SCIENCE

Those names to remember

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"The past is by no means definite. It is rather open", wrote the German historian of science Ernst Peter Fischer in *Die Welt* on 24 July 2006. In his column, Fischer introduced the "zeroth theorem of the history of science"; a discovery named after a person, the theorem says, did not originate from that person.

Take, for example, Avogadro's number, named after Amedeo Avogadro, who asserted that there is the same number of molecules contained in a given volume of any gas at the same temperature and pressure. However, it was not the Italian savant who first estimated that number, but the Austrian scientist Johann Josef Loschmidt. Indeed, German-language texts sometimes refer to the number 6.022×10^{23} as 'Loschmidt's number'. Much depends on who tells a story, and where and when. Fischer sees his zeroth theorem as an invitation to look with fresh eyes at the history of science, and in particular at how discoveries got their names.

That thought has now been picked up by J. David Jackson (*Am. J. Phys.* **76,** 704–719; 2008). He has explored five examples from physics that illustrate Fischer's zeroth theorem, and discusses the broader issue of credit-giving, and where it gives rise to inappropriate attributions. Jackson's five examples take in various areas of physics, from the Dirac delta function to the Weizsäcker–Williams method of virtual quanta, to the Bargmann–Michel–Telegdi equation of spin dynamics. The journey includes encounters with big names such as Enrico Fermi or Nikola Tesla, but also with physicists whose biographies are far less commonly known, such as Oliver Heaviside, Llewellyn Thomas or Emil Wiechert. Their names are famous in some specific contexts, but little is known about their complete works.

A particularly impressive example is that of the Irish physicist George Francis FitzGerald. Jackson discusses FitzGerald's work on determining "the period of vibration of disturbances of electrification of the Earth". Such modes of electromagnetic waves trapped between the conducting Earth and the ionosphere are nowadays known as 'Schumann resonances', after Winfried Otto Schumann, who worked in the 1950s on extremely low-frequency propagation in the Earth–ionosphere cavity. The phenomenon, however, had already been described by FitzGerald in 1893; he gave a good estimate for the lowest mode and also noted that thunderstorms are involved — today it is known that the resonances are indeed excited by lightning discharges.

FitzGerald showed similar foresight in earlier studies, most notably when he hypothesized in 1889 that key aspects of the Michelson–Morley experiment could be explained by assuming that a body travelling at velocity v seems to experience a length contraction proportional to $(v/c)^2$, one of the earliest contributions to what would lead to the theories of relativity. The effect is known as the Lorentz–FitzGerald contraction, but in many places it is simply called Lorentz contraction (although FitzGerald's priority, apparently, was never questioned). A man of many interests, in 1895 FitzGerald also undertook some of the early experiments in human flight, using a Lilienthal glider (pictured). And only months before his death on 21 February 1901, at the age of 49, FitzGerald put forward the idea that magnetism could be due to rotation of electrons (*Nature* **62,** 564; 1900) — a quarter of a century before Ralph Kronig, George Uhlenbeck and Samuel Goudsmit conceived the concept of the electron possessing intrinsic angular momentum, or spin.

The past, indeed, is by no means definite. Much remains to be rediscovered and many stories to be told — an undertaking that is undoubtedly worth the effort.

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