



50 YEARS AGO

"Scientists in Society To-day", proposal of a toast of the Royal Society by the Right Hon. The Viscount Hailsham Q.C.

To-night I can be as bold as brass. Although not a scientist, I am at least an 'egghead' by conviction and, I hope, by practice, and I am addressing a society of scientists who are also, always by achievement and almost by definition, 'eggheads'. It is time we got together. 'Eggheads' of the world, unite! We have nothing to lose but our brains. A country neglects its 'eggheads' at its peril. For it is the 'egghead' who is the greatest realist. It is the 'egghead' who invents the *Sputnik*, not the captain of football, nor the winner of the sword of honour, nor the president of the Junior Common Room ... It is a formidable indictment of Western civilization and democracy that 'eggheadedness' is not valued at its proper worth. From *Nature* 14 December 1957.

100 YEARS AGO

A telegram from Largs states that Lord Kelvin has not been well for more than a fortnight, and has been confined to his bed. His condition on Tuesday night had improved. [But worse news was to follow in the *Nature* issue of 19 December 1907, as will be reported in 100 Years Ago next week.]

ALSO:

A proposal made to the Public Control Committee of the London County Council by Signor D. Maggiora to apply the process of discharging cannon of special construction, known in Austria as weather shooting, "to prevent the formation of fog or to disperse it in the case it is already formed, and also to disperse and destroy all clouds, and to prevent rain, hailstorms, lightning, and thunder," has been under the consideration of the Council. It was referred to the director of the Meteorological Office for report ... As might be expected, Dr. Shaw's report ... is entirely unfavourable. From *Nature* 12 December 1907.

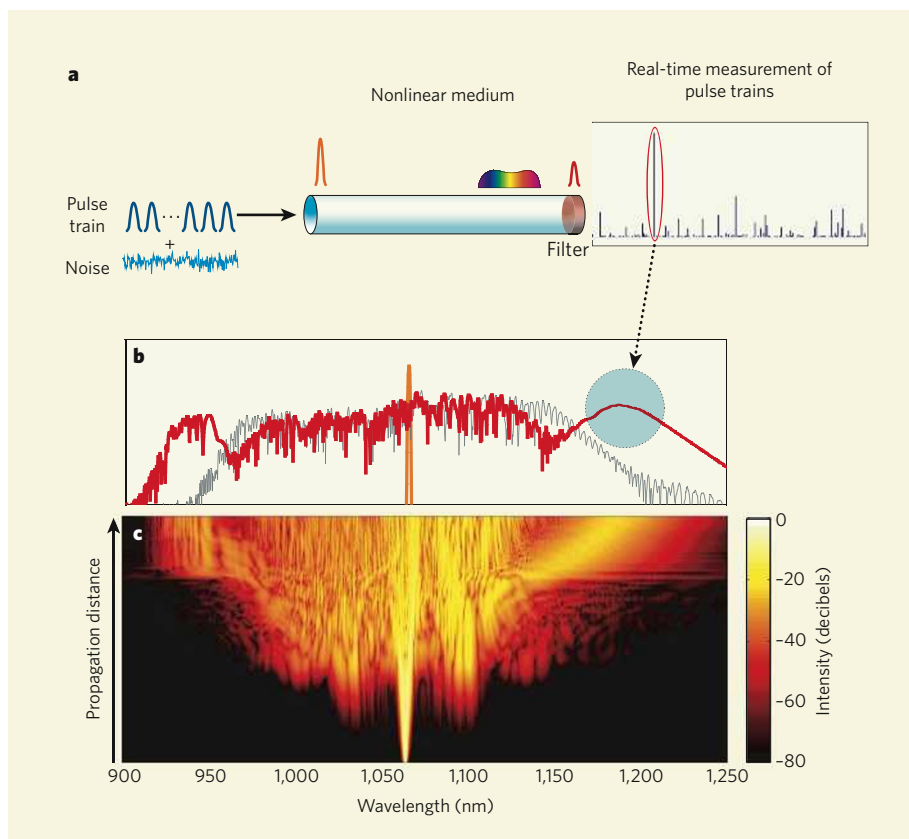


Figure 2 | Rogue generation. **a**, In Solli and colleagues' optical rogue-wave production³, noise is added to a smooth wave pulse that is sent through a nonlinear medium (a photonic crystal fibre). In a process known as supercontinuum generation, this narrowband pulse is increased hugely in bandwidth. After spectral filtering, a small number of 'rogue wave' events of statistically abnormal amplitude are found in the real-time measurement of pulse trains. **b**, By following the evolution of supercontinuum generation along the propagation distance in the optical fibre, the authors show that the rogue events correspond to solitary wave packets (solitons) that are shifted to long wavelengths. The orange line represents the spectrum of the (narrowband) input pulse, the grey line that of a normal broadband output pulse, and the red line that of a rogue output pulse. **c**, From bottom to top, the evolution of the spectrum of rogue-wave intensity as the light propagates along the nonlinear medium.

from a conventional gaussian distribution. In addition, optical and oceanic waves both undergo dramatic fluctuations in intensity during their evolution.

Solli *et al.*³ find supporting evidence for the soliton interpretation from numerical simulations, using the nonlinear Schrödinger equation — a way of representing wave propagation in a medium such as an optical fibre — to model supercontinuum generation. On the strength of these simulations, the authors propose an intimate connection between the initial amplification of input noise and the generation of rogue solitons.

So how do these optical findings help us to understand the generation of rogue ocean waves? Clearly, the noise and propagation environments are hardly identical. On the other hand, nonlinear propagation in optical systems is increasingly giving wider insight into areas as disparate as superfluidity and the science of self-similarity^{8,9}. The direct experimental access to the statistics of optical rogue solitons, as well as the ease of 'managing' supercontinuum generation by modifying the optical-fibre geometry^{10,11}, means that rogue-

wave physics is likely to join this list. The next intriguing stage will be to determine the precise degree to which the ideas elucidated by Solli *et al.*³ transfer to the oceanic context. ■

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