Looking back

2015 promises to be a year for celebrating important discoveries in physics — an apt way to mark the International Year of Light. And, after ten years in print, *Nature Physics* looks forward to its own anniversary.

Many New Year celebrations around the globe involve light — everything from the first sunrise to spectacular displays of fireworks. This year such traditions could not be more appropriate, as 2015 has been proclaimed the United Nations International Year of Light and Light-based Technologies (IYL 2015) — an initiative to emphasize the role of light and optical technologies in our everyday lives through an international series of scientific and cultural events.

But 2015 is also a year for physics anniversaries. A century and a half has passed since James Clerk Maxwell wrote down the equations of electromagnetism, we've had 120 years of X-rays and the general theory of relativity is now 100 years old. These celebrations present an ideal opportunity to link past and present by looking back at these important breakthroughs and the effect they had — and continue to have — on the physics world.

Maxwell's equations are undoubtedly one of the greatest achievements of nineteenth-century physics and their impact is explored in this month's issue of *Nature Photonics*. But the implications of the equations were not immediately obvious to Maxwell's contemporaries. Indeed, Einstein noted[1] that "it took physicists some decades to grasp the full significance of Maxwell's discovery, so bold was the leap that his genius forced upon the conceptions of his fellow workers."

This slow uptake was not necessarily the order of the day. In December 1895, Wilhelm Röntgen took the first X-ray picture, using his wife's hand as the subject of his study (pictured). Although she was quietly horrified — believing she'd seen her own death — others were delighted. Röntgen's discovery was probably one of the earliest science media hits. News quickly spread around the world, and in January the *New York Times* wrote[2] that "men of science in this city are awaiting with the utmost impatience the arrival of English technical journals which will give them the full particulars of Professor Roentgen's discovery of a method of photographing opaque bodies." His paper 'On a new kind of rays' was published the same month in *Nature*. The implications were already clear — even to lay newspaper readers — and Röntgen was immediately awarded the Prussian Order of the Crown.

PROF. ROENTGEN'S X-RAYS

May Be Due, He Says, to Longitudinal Vibrations of Ether.

HE WRITES OF HIS GREAT DISCOVERY

Difference Between His and the Kathode Rays of Lenard—Some of the Substances He Has Photographed.

At the beginning of the twentieth century, ten years after his *annus mirabilis*, Albert Einstein presented the now-famous field equations of general relativity. His work met significant opposition at the time, to the extent that an organized anti-relativity movement was actually established. Einstein was denounced as a fraud and scientific philistine, prompting his letter to Marcel Grossmann in which he complained[3] that "this world is a strange madhouse. Currently, every coachman and every waiter is debating whether relativity theory is correct." It seems that scientific controversy is not a privilege of our time — the 'Einstein was wrong' meme is as old as the theory of relativity itself.

It is perhaps inevitable that contemporaries fail to appreciate the greatest breakthroughs, especially those presenting significant conceptual leaps. The importance of some discoveries, such as X-rays, the structure of DNA or the cosmic background radiation, is immediately clear, even to the general public. Certainly, on the timescale of decades and centuries, a consensus is easily achieved on the impact of scientific research. But can we gauge greatness on a shorter timescale — say, a few years? Is a decade long enough for the importance of a particular result to become clear to the scientific community?

This is not a purely philosophical question, but a concrete and timely one, as *Nature Physics* approaches its tenth anniversary in October this year. As we look back, we wonder how the results appearing in our pages have influenced and shaped research in physics. How were they received at the time of publication? And where have they led us? To answer these questions, we will revisit some highlights from our back catalogue in a special News & Views series over the course of the year. In keeping with our scope, the papers will cover a broad spectrum of research topics. But the selection is neither exhaustive nor based on any measurable criterion. Rather, we have simply chosen twelve topics that we believe have an interesting post-publication story to tell.

The retrospective begins this month on page 15 and the entire collection will be available at http://www.nature.com/nphys/focus/10th-anniversary/index.html. As we look forward to another successful year publishing excellent research, we invite you to join us on a trip looking back into the brief history of *Nature Physics*. ❐

References

1. Einstein, A. *Out of My Later Years* (Open Road Media, 2011).
2. Assmus, A. *SLAC Beam Line* **25,** 10 (1995); http://www.slac.stanford.edu/pubs/beamline/pdf/95ii.pdf
3. Waczek, M. *Einstein's Opponents: The Public Controversy about the Theory of Relativity in the 1920s* (Cambridge Univ. Press, 2014).