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Title:

The Ida Mann 2020 special issue: Vision scientists breaking the glass ceiling

Date:

2020-03-01

Citation:

Pardhan, S., Thompson, B., Downie, L. E., Porter, J. & van Nispen, R. M. A. (2020). The Ida Mann 2020 special issue: Vision scientists breaking the glass ceiling. *Ophthalmic and Physiological Optics*, 40 (2), pp.61-65. <https://doi.org/10.1111/opo.12678>.

Persistent Link:

<https://hdl.handle.net/11343/275481>

Vision Scientists breaking the Glass Ceiling.

Welcome to this special edition, celebrating some of the leading female vision scientists worldwide. This issue is a tribute to Professor Dame Ida Caroline Mann, a distinguished ophthalmologist recognised for her inspiring work on embryology and development of the eye, as well as genetic and social influences on eye diseases. She was awarded a personal Chair from the University of Oxford, UK in 1945, the first woman to receive a professorship at Oxford.

Ida Mann and her career

Ida Mann's first job was at the Post Office Savings Bank having passed the Civil Service Girl Clerk's examination. Despite opposition from her father, in 1920 she qualified at the London School of Medicine for Women, the only medical school in the UK that was open to women at that time.* Ida was awarded a DSc in 1924 for her work on the embryology of the human eye. To further her career she also qualified in general surgery, becoming a Fellow of the Royal College of Surgeons. By 1927 she had secured an honorary staff post at Moorfields Eye Hospital, London, and was also running her own private practice at Harley Street, London. In 1940, working at the Imperial Cancer Research Fund at Mill Hill, her research focused on mustard gas burns of the eye. This then led her to be responsible for a research team in the Chemical Defense Research Department in Ministry of Supply. She was also appointed as a Reader in Ophthalmology at the University of Oxford in 1941 and a Professor in 1945, where she oversaw the building of the Nuffield Laboratory of Ophthalmology, inaugurated the Orthoptic School, and re-instituted the Oxford Ophthalmological Congress. Her research on pathology of mustard gas keratitis, which afflicted soldiers from the First World War, was ground

* The medical school was opened by Elizabeth Blackwell, the first woman on the UK General Medical Council's register, in 1859. Elizabeth could not attend a UK School and was accepted at Geneva Medical College, New York, USA, only after all 150 male students voted unanimously to accept her.

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/OPO.12678](https://doi.org/10.1111/OPO.12678)

breaking. Under Dr. Mann's care, the team was able to alleviate symptoms using contact lenses. Professor Mann moved to Australia from the UK in 1947 and embarked on further research on the incidence of eye disease for the Western Australia Public Health Department. Her work on endemic trachoma among the indigenous population led to the classic work, *Culture, Race, Climate and Eye Disease* (1960). She published extensively in the area of eye anatomy and eye disease, under her married name Ida Gye or a pseudonym, Caroline Gye. Her talent, drive, and achievements have been acknowledged by the Australian Royal College of Ophthalmology (who view her much more as an Australian than British!) via the annual presentation of the Dame Ida Mann Memorial lecture.

Conscious and unconscious bias

To be able to achieve such an impressive career, especially in those early days, Professor Mann must have had to overcome many instances of conscious and unconscious bias and challenges reconciling professional and personal commitments. These potential barriers to success still exist today, albeit in different and perhaps more subtle ways (1). In this special edition we recount some examples of conscious and unconscious bias shared by some of our authors and show how these leading women scientists overcame them. We hope this will show that these biases, no matter what they are, can be overcome, and offer inspiration to future generations of female leaders in our discipline.

Changes in law enabling women to enter university, Title IX, USA (1972)

It would appear that access to education for women had not improved as much as you might imagine from Ida Mann's time to the early 1970s. Ann Elsner told us about Title IX, a landmark law in the United States that forced the door open for women in 1972 by enshrining that "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance." Ann, who refers to herself as "pre-title IX," was accepted into graduate school before the law was passed: a major achievement! Amazingly (this is not that long ago) one of her applications for graduate school required the signature of her husband or father, despite the fact that she was 21 years old. As there were very few women in in optics

then, she was once referred to “The Other One” at a physiological optics poster session at ARVO.

Change to all male UC Berkeley Faculty Club, USA (1972)

Susan Cotter shared the story of one of her mentors, Elizabeth Caloroso, a clinical professor of optometry at Berkeley (Sue provided support for this via Paltridge JG. *A History of the Faculty Club at Berkeley*, 1990). Before 1972, the Berkeley Faculty Club was open to males only and female faculty were not allowed entry. However, the author notes, that Betty Caloroso, a clinical professor of optometry, attracted particular attention because she was the “woman to break the ‘men only’ tradition of luncheons in the Great Hall.” Moreover, she sat at the front centre table with her male optometry professor colleagues and “smoked a rather large cigar after her lunch each day - in keeping, of course, with an old-time Faculty Club tradition.”

Mentoring differences (USA, late 1970s)

There is a power dynamic in the mentor-mentee relationship that can be abused. Sheila West noted with growing frustration the characteristics of students who were able to gain immediate appointments (males) or special meetings (female, with “privileges”) with her advisor. Not wishing to change her gender or attempt another approach to her sessions, she would sometimes have to wait months for a meeting. Fortunately, she chose a thesis topic that interested three women in the faculty who subsequently provided the support and mentorship she needed to complete her PhD.

Admissions processes (UK, late 1970s)

Joanne Wood recounted the story of her application to UK undergraduate Optometry Schools in the late 1970's. The male admissions professor at her preferred University indicated that her lack of A-level Physics was a *major* problem (16-18 year-old UK school students studied three of the four science subjects of Physics, Biology, Chemistry and Maths, so missing one of the four was typical). Despite her protestations that she would catch up in the first year by taking the available physics bridging course, his advice was that “girls always say that before they meet first year boys”. Jo decided not to attend that University and is now internationally known for her research which involves

complex lighting and optics in relation to night driving, despite never completing that physics bridging course.

Social interaction (UK, 1980-90s)

Of course, just because Universities and faculty clubs etc. were open to women, this did not ensure equality immediately. Shahina Pardhan's experience relates to this. On her first day as a lecturer in 1991, she was thrown out of the senior common room (UK version of the faculty club) at the University of Bradford and was told that "secretaries were not allowed". Also, being the only female academic member of the staff, networking events were mostly 'male orientated' around football and beer, and she did not appreciate either. In fact, a well meaning lecturer had advised her not to embark on a PhD as she would then be too qualified for anybody to want to marry her!

Improvements...but (Post-2000)

Maria Vinas also highlighted her experiences of not been taken seriously in research meetings, and how by acknowledging and recognising this, she has managed to deal with it. A feeling that will resonate with many readers!

To summarise, unconscious prejudice and biases influence decisions, feelings and behaviour in surprising and important ways. Of course, unconscious bias is not encountered only in vision research; it is a universal issue. There are numerous commitments globally by Governments, research bodies, universities etc. to recognise unconscious bias and develop strategies to minimise its impact. Recognizing these biases is an essential and challenging process, and important for us to recognize this in ourselves and in others, and develop conscious processes to deal with it (1). This is where training and mentorship becomes important. Our world-class authors in the examples above have managed to overcome it, which proves that it can be done! We celebrate their successes and thank them for their contributions.

1. Pardhan S. Breaking the glass ceiling in academia. *Ophthalmic Physiol Opt.* 2018;38:359-362.

Shahina Pardhan

Shahina was appointed as the first female professor in optometry in the UK in 2001. She is currently the director of Vision and Eye Research Institute within the School of Medicine, Anglia Ruskin University. Under her leadership, the multi-disciplinary Vision and Eye Research Institute was recognised as world leading and internationally excellent in the last Research Excellence Framework (2018).

Shahina qualified with First Class Honours in Optometry from the University of Bradford in 1984 when she was also awarded the Yorkshire Optical Society's 'Best Student Prize'. In 1986, having been awarded a research studentship from the British College of Optometrists and a further scholarship from the Committee of Vice-Chancellors of the United Kingdom as a foreign student of outstanding merit, she commenced her PhD and was awarded a doctorate in 1989 from University of Bradford. Shahina's main current research interests are diabetic retinopathy in Asians, and impact of low vision on mobility and auditory responses.

Shahina is a recipient of the Asian Jewel Award – Health Care and Education category; Asian Women of Achievement Award – Professions category and the First Ismaili Award for Excellence – Postgraduate category. She was also included in the Ophthalmologist Powerlist 2019.

Professor Pardhan has given a number of seminars on this topic including an invited talk at the Association for Research in Vision and Ophthalmology (ARVO) 2017, and the inaugural meeting for Women in Vision at UCL London UK in 2017. She was also invited to write an editorial for this journal in 2019.

Ben Thompson

Ben is a Professor and the Associate Director of Research within the School of Optometry and Vision Science at the University of Waterloo. Ben holds a BSc and DPhil in experimental psychology from the University of Sussex and completed postdoctoral training in the Department of Psychology, UCLA and the Department of Ophthalmology, McGill University. Ben became a faculty member within the School of Optometry and Vision Science at the University of Auckland in 2008, where he retains a research position. He moved to the

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University of Waterloo in 2014. Ben's research involves the use of psychophysics, non-invasive brain stimulation and magnetic resonance imaging to investigate development and plasticity of the human visual system.

Laura E Downie

Laura is a clinician scientist who has gained international recognition for research excellence in ocular disease, with awards, highly cited papers, international speaking engagements and appointments to key professional bodies. She is an Associate Professor and an inaugural Dame Kate Campbell Fellow in the Department of Optometry and Vision Sciences, Faculty of Medicine, Dentistry and Health Sciences, at the University of Melbourne, Victoria, Australia. In this role, she provides didactic and clinical training to eye care clinicians, leads the sub-specialty cornea clinic at University of Melbourne eyecare clinic and heads her own research laboratory, the 'Anterior Eye, Clinical Trials and Research Translation Unit.' Her research combines laboratory, clinical and implementation science as a foundation for improving patient outcomes, particular in the areas of anterior eye disease and age-related macular degeneration. She is a previous National Health and Medical Research Council (NHMRC) Translating Research Into Practice (TRIP) Fellow (2015-7), and has been awarded research funding from a diversity of sources, including the NHMRC, Macular Disease Foundation of Australia, Rebecca L Cooper Medical Foundation and industry.

A/Prof Downie graduated from the University of Melbourne with a Bachelor of Optometry in 2003, and completed her PhD, focusing on vascular, neuronal and glial cell changes in retinopathy of prematurity, at the same institution in 2008. She has undertaken post-graduate training in evidence synthesis and evidence-based medicine at the University of Oxford, and completed the Women's Executive Leadership program at the Hass School of Business, UC Berkeley. Her research expertise spans ocular biomarkers and diagnostics, evidence-based medicine, clinical trials, systematic reviews, critical appraisal and implementation science.

A/Prof Downie has authored, or co-authored, 80 peer-reviewed publications, and has achieved international recognition for her research achievements, including receiving the prestigious 2014 Irvin M and Beatrice Borish Award and 2019 Korb-Exford Dry Eye Career Development Award from the American Academy of Optometry. She has served as a member on national and international expert panels, including the 2017 Tear Film and Ocular Surface Society International Dry Eye Workshop II (a global initiative to develop a consensus on dry eye care practices), standards committees, industry advisory boards and community and professional committees. She is an Editorial Board member on several

leading refereed journals including *Ophthalmology*, *Ophthalmic & Physiological Optics* and *Optometry & Vision Science*.

Jason Porter

Jason earned his BS, MS, and PhD degrees in Optics from the University of Rochester's Institute of Optics. As a graduate student and postdoc with David Williams, he worked in the areas of ocular aberration measurement, customized correction, and high-resolution retinal imaging using adaptive optics. Jason is an Associate Professor in Vision Science and Biomedical Engineering at the University of Houston's College of Optometry. His laboratory investigates mechanisms responsible for the development and progression of optic nerve head and retinal-related diseases (e.g., glaucoma, traumatic brain injury, inherited retinal degenerations) using advanced imaging techniques, including adaptive optics. Jason was lead editor for the book entitled, "Adaptive Optics for Vision Science," a collaborative work that describes the principles and practices of adaptive optics in vision science. He is an Editorial Board Member for *Ophthalmic & Physiological Optics* and *Optometry & Vision Science*, as well as a Fellow of the American Academy of Optometry and the Association for Research in Vision and Ophthalmology.

Ruth MA van Nispen

Ruth is an associate professor at the department of Ophthalmology at Amsterdam University Medical Centers in the Netherlands. She has a background in psychology and epidemiology. She obtained a PhD degree in 2009 from the Faculty of Medicine of the VU University on the topic of longitudinal measurement of the older patient's vision-related quality of life. Ruth manages the Low Vision Research group and is responsible for PhD candidates, junior researchers, postdocs and medical students. She has been publishing on the topics of evidence-based rehabilitation for the visually impaired, psychological functioning and has performed psychometric studies on vision-related quality of life, reading and participation. The focus of her research is on enhancing care in the field of low vision rehabilitation, in order to improve participation and quality of life in severely visually impaired patients. Apart from research, Ruth coordinates education and scientific internships at the ophthalmology department for medical students and chairs the PhD committee of the Amsterdam Public Health research institute. She is also chairing the Dutch Society for Low Vision Rehabilitation which organizes symposia twice a year for professionals working in this field.