HINDSIGHT:

THE DEVELOPMENT OF ORTHOPTICS IN AUSTRALIA 1931-60

Submitted by:

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ABSTRACT

This thesis explores the development of orthoptic education, orthoptic clinical practice and its professional association chronologically in the early period of the profession from 1931-60 and aims to add to the historiography of allied health care in Australia. My objective is to answer the basic questions of how and why changes and developments in orthoptic practice, orthoptic education and in the professional association came to be made and how these developments were influenced by the profession being all-female.

It will be shown that by 1960, orthoptic education was run by orthoptists and the practice and science of orthoptics had advanced, mainly due to the research conducted by orthoptists themselves. The professional association, the Orthoptic Association of Australia (now Orthoptics Australia), established and run by orthoptists, had been operating for 16 years and it had fulfilled its main objective to further the science of orthoptics for the benefit of its patients and for the continuing education of its workforce. Despite opposition from some ophthalmologists who did not value orthoptic therapy, the all-female workforce had established Australian orthoptics as world-class. 1960 was chosen as the endpoint because by that date the practice of orthoptics was changing. Orthoptists were being urged by ophthalmologist to widen their scope of practice, to continue with their management of eye movement disorders and to add examinations of a wider range of ocular problems. These changes in practice took place over the following decade.

AUTHORSHIP ATTRIBUTION STATEMENT

This is to certify that to the best of my knowledge the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Shayne Brown

As supervisor for the candidate upon which this thesis is based, I can confirm that the authorship attribution statements above are correct.

Julia Horne

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List of Abbreviations

AWAS	Australian Women's Army Service
DOBA	Diploma of the Orthoptic Board of Australia
DAO	Diploma of Australian Orthoptics
DBO	Diploma of British Orthoptics
ITS	Initial Training School
MES	Medical Eye Service
OAA	Orthoptic Association of Australia
OBA	Orthoptic Board of Australia
OSA	Ophthalmic Society of Australia (BMA)
RAAF FPRC	Flying Personnel Research Committee – Australian
RAAF	Royal Australian Air Force
RAAFNS	Royal Australian Air Force Nursing Service
RAHC	Royal Alexandra Hospital for Children
RANZCO	Royal Australian & New Zealand College of Ophthalmologists
RPA	Royal Prince Alfred Hospital
RWOH	Royal Westminster Ophthalmic Hospital
SEH	Sydney Eye Hospital
VEEH	Victorian Eye & Ear Hospital
WAAAF	Women's Auxiliary Australian Air Force

Glossary of Terms

This thesis examines the emergence of a medical field in the twentieth century with a specialised language. The following glossary is an explanation of common terms used in the thesis to bridge the gap between the precise medical terminology and the colloquial terms often used by the general public.

Accommodation: The ability of the lens to change focus for seeing at different distances.

Amblyopia ex anopsia (Greek: amblus = blunt, ops = vision), which is the loss of sight in the turned or strabismic eye without any demonstrable pathological disease. There are three main causes: strabismic; refractive by anisometropia (high degrees of hypermetropia, myopia, and astigmatism, the amount of which differs in each eye) and deprivational (vision-obstructing disorders such as congenital cataract).

Angle of deviation: The angle (size) of the strabismus/squint.

Astigmatism: Uneven curvature of the cornea or the lens of the eye creating distorted visual images and resulting in reduced vision. Astigmatism is usually associated with hypermetropia or myopia.

Binocular vision: The ability to use the two eyes as a pair, that is, for the brain to fuse the image received from each eye into a single image and to be able to maintain the single image as the eyes change fixation (look from one object to another and at different distances).

Certificate of Proficiency: A Certificate of Proficiency was issued by the registration boards on behalf of the Ophthalmological Society of Australia (BMA). The certificate guaranteed orthoptists the right to practice and it guaranteed ophthalmologists that their patients were being treated by a qualified orthoptist.

Convergence: The ability to turn both eyes in towards to the nose. Convergence can be initiated (a) voluntarily by directing both eyes towards the nose without a stimulus or (b) by

where both eyes maintain fixation on an object as it is directed towards the nose. Reduced convergence ability (convergence insufficiency or deficiency) can be the cause of symptoms of eye fatigue and sometimes headaches associated with performing prolonged near tasks.

Depth perception: Stereopsis; stereovision; stereoscopic vision.

Dioptre: A unit of measurement of the power of a lens or a prism.

Diplopia: Double vision. A condition where a person perceives two images of one object.

Esotropia: A manifest deviation where one eye is turned towards the nose while the other eye is directed at the object of regard. Also called a convergent strabismus or convergent squint.

Extra-ocular muscles: The external muscles of the eyes which move the eyeball.

Exotropia: A manifest deviation where one eye is turned towards the temple while the other eye is directed at the object of regard. Also called a divergent strabismus or divergent squint.

Fusion: The cortical ability to blend two similar images (one from each eye) and to perceive them as a single image.

Heterophoria: (Greek: heteros = other; pherein =to bear). A latent strabismus held in check by a person's fusion ability. (See esophoria, exophoria, hyperphoria, hypophoria and cyclophoria).

Heterotropia: A synonym for strabismus, squint, caste or 'turned eye'.

Hypermetropia: Long-sightedness. A person with significant hypermetropia cannot see near objects clearly.

Ophthalmology: A medical specialty concerned with the study and treatment of disorders and diseases of the eye.

Ophthalmologist: A surgeon and physician who prescribes glasses and contact lenses, medications and performs ocular investigations and ocular surgical procedures.

***Optometry**: Optometry is the measurement and correction of reduced sight, due to a refractive error such as long sightedness (hypermetropia), short sightedness (myopia) or abnormal curvature of one part of the eye resulting in a blurred image (astigmatism), by appropriate lenses.

***Optometrist:** Optometrists prescribe glasses; in the early period of this study some were also engaged in orthoptics.

***Orthoptics:** The word 'orthoptics' comes from the Greek orthos = straight and ops = vision. Orthoptics is the name given to that branch of ophthalmology which deals with the correction of strabismus (both manifest and latent) and other abnormalities of the binocular functions by means of special exercise designed to produce comfortable binocular vision.

***Orthoptist:** Orthoptists managed the non-surgical treatment of all forms of strabismus.

Near Visual Acuity: Normal visual acuity is N5. N5 relates to the printers' point system which ranges from N5 to N48. The higher the number the worse is the near visual acuity.

Myopia: Short-sightedness. A person with myopia cannot see distant objects clearly.

Refractive error: A refractive error of the eyeball occurs when the shape of the eye prevents light rays which enter the eye to focus on the retina. If the eyeball is too long the person has short sightedness (myopia) and if the eyeball is too short the person has long sightedness (hypermetropia). An irregularity of the cornea can result in astigmatism.

Stereopsis: Also referred to as stereoscopic vision or depth perception, is the cortical ability to fuse slightly disparate images of the object of regard – one from each eye – which is perceived as three dimensional.

Strabismology: The sub-specialty of ophthalmology which deals with patients with strabismus.

Strabismus: (Greek: strabos = crooked), also known as heterotropia, is condition where the visual axes of the two eyes are not both directed towards the fixation point. Strabismus can be constantly present or intermittently present. It can be convergent or esotropic (one eye

deviating towards the nose), divergent or exotropic (one eye deviating towards the temple); vertical (one eye deviating up (hyper) or down (hypo). Synonyms include crossed-eye; squint; turned eye; walled-eyed; cast/e. The strabismus can be concomitant (angle of deviation is the same in all directions of gaze) or incomitant (angle of deviation varies with the direction of gaze).

Squint: A synonym for heterotropia; strabismus; crossed-eye; squint; turned eye; walled-eyed; cast/e.

Synoptophore: A reflecting stereoscope used to measure the size of the angle of deviation and to assess and treat defects of binocular function. The forerunner of the amblyoscope.

Visual Acuity: The standard normal visual acuity is 6/6 (metric measure used in Australia). This level equates to the American 20:20 (imperial measurement). When the bottom fraction number is greater than 6 in the metric system, or greater than 20 in the Imperial system, the person is considered to have reduced vision.

***** The definitions given here of ophthalmology and ophthalmologist, orthoptics and orthoptists, and optometry and optometrist describe the discipline during the period covered by this thesis. It is acknowledged that for orthoptics and optometry their roles in the eye health care has expanded.

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CHAPTER 1. INTRODUCTION

> [Abigail] tried to get Mr Bow to talk about his children, but he only gave her a piteous look from those preposterously crossed eyes, and she desisted.[1]

Introduction

Like novelist Ruth Park's character Abigail, who avoided talking to the cross-eyed Mr Bow, there have long been strong reactions to such ocular disfigurements. In part, peoples' responses to an unsightly strabismus - the lay term for a turned eye - were based on fear and superstition.[2] Knowing the cultural and functional impacts of strabismus helps explain why people, dating back to antiquity, went to such lengths to be 'cured', seeking many and varied remedies over the millennia. These have included surgical and non-surgical modalities. One non-surgical modality was orthoptics, pioneered in the late nineteenth century by French ophthalmologist Émile Javal, and rejuvenated by Mary Maddox, the daughter of an English ophthalmologist, Ernest Maddox in the 1920s. In the twentieth century orthoptics became part of the non-surgical management of eye movement disorders for both children and adults, initially with a greater emphasis on paediatric eye care. By the middle of the twentieth century, orthoptics was a firmly established auxiliary medical eye science, one with an all-female workforce.

Orthoptics had emanated from ophthalmology, but it was pioneering women who developed and expanded the field. Not all ophthalmologists embraced orthoptics. Some questioned the value of eye exercises and its place within ophthalmology. Also, some may

[1] Ruth Park, *Playing Beatie Bo* (Melbourne: Penguin Books, 1980), 81.

[2] Naomi Baker, *Plain Ugly: the unattractive body in early modern culture* (Manchester: Manchester Unity Press, 2010), 3; the medical term is strabismus. For a definition of strabismus see the Glossary of Terms.The medical term is strabismus. For a definition of strabismus see the Glossary of Terms.

have been skeptical that lay auxiliaries could deliver medical therapy without medical qualification, but the main reason stemmed from the uncertain physiology underlying orthoptic therapy.

This thesis explores the development of orthoptic education, orthoptic clinical practice and its professional association chronologically in the early period of the profession from 1931-60 and aims to add to the historiography of allied health care in Australia. In 1931 the first Australian orthoptic clinic was set up at the Alfred Hospital in Melbourne, two years after the first orthoptic clinic had been established at the Royal Westminster Ophthalmic Hospital (RWOH) in London. My objective is to answer the basic questions of how and why changes and developments in orthoptic practice, orthoptic education and in the professional association came to be made and how these developments were influenced by the profession being all-female.

It will be shown that by 1960, women had indeed taken charge of the profession. For example, by then orthoptic education was run by female orthoptists and the practice and science of orthoptics had advanced, mainly due to the research conducted by these women. The professional association had been operating for 16 years and it had fulfilled its main objective to further the science of orthoptics for the benefit of its patients and for the continuing education of its workforce. The all-female workforce had established Australian orthoptics as a world-class scientific discipline and profession. 1960 was chosen as the endpoint because by that date the practice of orthoptics was changing. Ophthalmologists were urging orthoptists to widen their scope of practice, and to add examinations of a wider range of ocular problems. These changes in practice took place over the following decades.

In 1898 English ophthalmologist Priestly Smith advocated three methods of treatment as a cure for strabismus - optical, operative and orthoptic, or his preferred term, 'educative' treatment. His aims of orthoptics were 'to lead the patient not merely to *direct*

[the author's italics] his eyes, but to *use* [the author's italics] them, in the normal way; to teach him the forgotten art of binocular vision'.[3] He also believed that orthoptics was

> an important auxiliary before and after operation [and] is capable by itself of curing certain cases…There are of course, cases of squint [strabismus] in which binocular vision is recovered without special exercises of any kind, and others in which it is irrevocable by any means whatever. [4]

As Priestly noted the debatable ground lay between extremes of those who benefited from exercises and cases where the problem righted itself without intervention. At its core was the unanswered question whether binocular vision was an innate or acquired reflex.[5] In other words, could binocular vision be restored by exercises, the premise on which orthoptics was based.[6] It was a question that would take decades to be answered.

Mary Maddox's early success convinced a number of ophthalmologists that orthoptics could restore binocular vision, in certain cases, and that orthoptics had a place within the ophthalmological treatment of eye movements disorders. She recognised that not all patients would benefit from binocular vision training, and the selection criteria required refinement. In the early years, before the selection benchmarks had been established, mistakes were made. Some patients underwent unsuccessful and lengthy treatment, which confirmed to those ophthalmologists, who believed that binocular vision was an innate reflex, one that could not be altered by exercise and that 'training' was therefore ineffectual and unnecessary. Orthoptists learnt from experience and adapted therapy techniques, assessed their value and, in doing so, added to the understanding of binocular vision in the treatment of strabismus.

When I embarked on this project I envisaged my thesis would focus on the chronological history of Australian orthoptics and the rationale for the developments at

[3] Priestly Smith, "On the etiology and educative treatment of convergent strabismus," *Transactions of the Ophthalmological Society of the United Kingdom* 18 (1898): 19. Binocular vision is the ability to use the two eyes as a pair, that is, for the brain to fuse the image received from each eye into a single image and to be able to maintain the single image as the eyes change fixation (look from one object to another and at different distances).

[4] Smith, "On the etiology and educative treatment pf convergent strabismus," 19.

[5] Smith, "On the etiology and educative treatment pf convergent strabismus," 28.

[6] See the definition of orthoptics in Keith Lyle and Marian Walker, *Lyle and Jackson's Practical Orthoptics in the Treatment of Squint* (Philadelphia: The Blakiston Company, 1953), 358.

each stage – how and why orthoptics commenced in Australia; how and why the professional association was established; how and why the registration and training bodies evolved. Also, how orthoptists dealt with those ophthalmologists who opposed the intervention by non-medically trained personnel; and with those who did not believe in the non-surgical management of eye movement disorders despite the science having emanated from ophthalmic practice. And more generally, the emergence of orthoptics as a profession it is own right, separate from ophthalmology. Those landmarks will be examined, but the history of Australian orthoptics is more than a series of historical markers. At the heart of this history are the orthoptists themselves, women who forged a new career at a time when young females were not universally encouraged to further their education and take up a career.

Orthoptics commenced in England in 1928 when Mary Maddox opened a private orthoptic practice, the *Mary Maddox Clinic for the Treatment of Squint and Heterophoria* in London. In 1929 ophthalmologists at the Royal Westminster Ophthalmic Hospital invited her to establish a part-time orthoptic clinic. The volume of worked required her to train assistants. By 1932, the clinic was running full-time and, additionally, had taken on the status of a School of Orthoptics within the hospital.[7] Australian ophthalmologists followed the English lead and set up the first orthoptic clinic at the Alfred Hospital in Melbourne in 1931.

From its inception in Australia, orthoptics was an all-female profession. It remained so until orthoptic education became the responsibility of colleges of advanced education in 1973 in Sydney and in 1975 in Melbourne. In this period, women's salary and wages were generally set at a rate less than men's on the assumption that women were not generally the salary providers of the family. Despite being an uncertain financial undertaking, embarking on an allied health occupation such as orthoptics, presented an opportunity for Australian women to work in a stimulating career. It also presented the prospect of running a professional small business. The social mores of Australian society during the period

[7] Vivienne MacLellan, *Orthoptics - the early years. Recollections and a personal account* (Keighley, Yorkshire: Ann Macvie, 2006), 14.

covered by my thesis (1931-60) dictated that most women only worked between leaving school and getting married. However, between 1931-60 just under 40 percent who practised orthoptics until their retirements did not marry or have families. Once married, and certainly when pregnant, orthoptists, like many women in the workforce, ceased employment to manage their homes and bring up their children. They adhered to the sexual division of labour: men were the major breadwinners and women cared for the home and family.[8] In 1932 the NSW state government passed legislation which barred women from teaching.[9] The legislation was directed at female teachers and lecturers, nevertheless it reflected the attitudes concerning working married women in other professions, particularly within the public service. As historian Claire Hooker wrote, for the work practices of female scientists, 'matrimony was regarded as a profession in itself'.[10] And as historian Beverley Kingston observed, 'child rearing and the care of homes and maintenance of family influences' were so important and so time-consuming, that 'women were given no choice.'[11] Such were the social mores that many orthoptists, like female scientists, shared the belief that a women's place was in the home. Consequently, very few orthoptists continued in the workforce once married and almost none when they had children.

When the ophthalmologists introduced orthoptics to Australia they followed the English example set by orthoptist Mary Maddox and recruited women whom they considered 'suitable'. 'Suitable' meant being mature, intelligent, possessing the sort of feminine maternal skills that would assist relations with their patients, including children and the elderly.[12] They selected women from their social circles - personal contacts, daughters and friends of daughters - and from their work environment such as nurses. This trend continued until the early 1950s when orthoptics became more accepted as a medical intervention and the training course attracted women from outside ophthalmologists' and

[8] Rosemary Pringle, "Family kith, and kin," in *Australian Feminism, A Companion*, eds. Barbara Caine, Moira Gatens, Emma Grahame, Jan Larbalestier, Sophie Watson, Elizabeth Webby (Melbourne: Oxford University Press, 1998), 100.
[9] Marilyn Lake, "A History of Feminism in Australia," in *Australian Feminism, A Companion*, eds Barbara Caine, Moira Gatens, Emma Grahame, Jan Larbalestier, Sophie Watson, Elizabeth Webby (Melbourne: Oxford University Press, 1998), 139.
[10] Claire Hooker, *Irresistible Forces. Australian Women in Science* (Melbourne: Melbourne University Press, 2004), 44.
[11] Beverley Kingston, *My Wife, My Daughter and Poor Mary Ann* (West Melbourne: Thomas Nelson Australia Pty Limited, 1977), 137.
[12] MacLellan, *Orthoptics - the early years*, 2006), 13.

orthoptists' networks. Orthoptists shared some of the characteristics of women who entered science in Australia in the first half of the twentieth century, that is they were intelligent women from middle class families, private-school educated and motivated to pursue a career.[13] The broadening of training opportunities, the growing acceptance of female higher education with increasing career opportunities, meant more women sat for matriculation and went on to pursue a career, even if for only those years until they married.[14] Or in Alison Mackinnon's evocative phrase, trying to achieve the balance between 'love and freedom'.[15] Also significant was a sense of duty to the community. The education at the wealthy Sydney girls' school, Ascham, where several orthoptists were educated between the 1930s and 1950s, is an example of this ethos.[16] Ascham's headmistress in the 1930s was Margaret Bailey. According to Bailey's biographer, Jane Gilmore, Bailey strove for academic excellence, but equally important was that young women in her care became good citizens 'with a well-developed sense of responsibility and who valued personal endeavour.'[17] University may not have been for everyone and an allied health occupation such as orthoptics provided an alternative to fulfil this ideal.

The common allied health disciplines included occupational therapy, orthoptics, medical technology, physiotherapy, social work, and speech therapy.[18] They were perceived as caring professions, an important attribute for middle-class young women who were expected to contribute to the social wellbeing of the community. As an orthoptist's sister told me her parents did not care what career their daughters chose but 'insisted that she and [her sister] Jane did something to help others.'[19] These disciplines were considered academically stimulating if not as rigorous as a university education in those developing

[13] Hooker, *Irresistible Forces: Australian Women*, 39.
[14] Julia Horne, "The Final Barrier? Australia Women and the Nineteenth Century Public University," in *Women in Higher Education, 1850-1970*, eds. E. Lisa Panayotidis and Paul Stortz (New York and London: Routledge, 2017), 76-96.
[15] Alison Mackinnon, *Love and Freedom: Professional Women and the Reshaping of Personal Life* (Melbourne: Cambridge University Press, 1997), 76-116.
[16] Between 1940 till the mid-1950s, at least nine orthoptists were educated at Ascham School.
[17] Jane Gilmore, *Margaret Bailey: Pioneering Headmistress of Ascham School*. (North Melbourne: Australian Scholarly Publishing Pty Ltd, 2016), 100.
[18] Speech therapy is now called speech pathology, but throughout this thesis I shall refer to the discipline as speech therapy.
[19] Prue Socha, sister of orthoptist, Jane Russell, interview for the Orthoptics Australia Interview Archive Project, 14 March 2016.

years. For those who were drawn to orthoptics it offered a new area of scientific study combined with service to others.

The characteristics common to these orthoptists were keen and inquiring minds; they were adaptable to change, and many were trailblazers with the commitment and zeal to further the science of orthoptics. They had foresight and in 1944 established the national professional association, the Orthoptic Association of Australia (OAA), the third oldest orthoptic association in the world. The OAA held annual scientific meetings where scientific knowledge was exchanged and debated. These meetings were particularly beneficial for orthoptists in isolated areas to maintain professional links with colleagues in the major teaching centres of Melbourne and Sydney who were at the forefront of scientific developments. Most apparent is the dedication to the profession, a desire to create a collegial outlook and a commitment to their patients for their long-term care. Patient care was of paramount concern and from the outset orthoptists strove to provide the most up-to-date and scientifically proven management of eye movement disorders.

In Hannah Forsyth's study of census data of Australian professional occupations over the course of the twentieth century, she included those in the allied health occupations amongst the professional groups and noted that doing so increased the number of female professions.[20] Similarly, throughout this thesis, I refer to orthoptics as an all-female profession the study of which adds a further dimension to the history of the professions, in particular, the female professions. As Louella McCarthy notes in her study of women doctors in early 20th century Australia, the history of women in the professions was not simply shaped by male dominance, and so, should allow for female agency.[21] An important aspect of my argument is to detail this feminine profession in ways that note how these women achieved professionalism over the course of about three decades. Aspects of this development include the establishment of a professional training and higher education

[20] Hannah Forsyth, "Census Data on Professions, War Service and Universities, 1911-1933," in *The First World War, The Universities and the Professions in Australia 1914-1939*, eds Kate Darian-Smith and James Waghorne (Carlton: Melbourne University Press, 2019), 13.

[21] Louella McCarthy, "Idealist or Pragmatists? Progressives and Separatists among Australian Medical Women, 1900-1940," *Social History of Medicine*, , no. 2 (2003): 263-282.

course, registration, the establishment of a professional society and journal for the transmission of new disciplinary knowledge.[22] Extensive sociological literature exists which theorises the essential qualities and characteristics of a profession as compared with those of a trade.[23] While this is not a sociological study of professions, but an historical study, I do note that orthoptics, as an allied health discipline, has specific elements of a profession as described by English surgeon and historian, Zachery Cope. The Cope Report investigated the registration of a number of British allied health professions (radiographers, chiropodists, physiotherapists, laboratory technicians, dieticians, almoners, speech and occupational therapists) in Britain in 1951.[24] The Report described the allied health professions as being a calling with its own standard of training, its own esoteric knowledge and principles of practice and its own set of professional ethics.[25] I shall show that by 1960 orthoptics in Australia had fulfilled the Cope criteria.

Use of specialist language

For the reader to understand the 'world' of orthoptics it is useful to list the professional groups involved in eye care and outline their roles and responsibilities. It is also helpful to provide brief definitions and explanations of the common eye movement disorders and the various management modalities. Orthoptics emerged as a specialty within ophthalmic medicine and like all allied sciences, possessed a specialised language. It is, however, a language not well known outside medicine. But to do the topic justice it is important to

[22] Kate Darian-Smith and James Waghorne, "The War, the Universities and the Professions" in *The First World War, The Universities and the Professions in Australia 1914-1939*, eds Kate Darian-Smith and James Waghorne (Carlton: Melbourne University Press, 2019), 4-5.

[23] Alexander M Carr-Saunders and Paul A Wilson, *The Professions* (London: Frank Cass & Co. Ltd., 1964); Ernest Greenwood, "Attributes of a Profession," *Social Work* 2, (1957): 45-55; Geoffrey Millerson, *The Qualifying Associations: A Study in Professionalization* (London: Routledge and Kegan, 1964).

[24] In 1971 British orthoptics joined this group as one of the Professions Supplementary to Medicine. Lesley-Anne Baxter, *Orthoptics: 75 Years of History 1937-2012. British Orthoptic Society* (Crediton, UK: Hedgerow Print, 2012), 3.

[25] V Zachary Cope, "Report on Medical Auxiliaries. Part 1." *Ministry of Health. Department of Health for Scotland* (London: His Majesty's Stationery Office, 1951); 1-2; Gerald Larkin, "Regulating the Professions Allied to Medicine," *Regulating the Health Professions* (2002).

refer to the orthoptic language rather than simplify it with often degrading euphemisms used within the general population.

Professional groups involved in the management of eye movement disorders

For the purpose of this thesis the two main groups involved in the management of eye movement disorders were orthoptists and ophthalmologists. Optometrists also practised orthoptics but their focus differed from that employed by ophthalmologically-trained orthoptists and so will be mentioned, albeit in less detail than ophthalmology and orthoptics.

Orthoptics

The word 'orthoptics' comes from the Greek orthos = straight and ops = vision. Orthoptics is the name given to that branch of ophthalmology which deals with the correction of strabismus (both manifest and latent) and other abnormalities of binocular function by means of special exercises designed to produce comfortable binocular vision. Orthoptists were the allied health practitioners who managed the non-surgical treatment of all forms of strabismus.[26] Orthoptic training was based on the medical sciences of general and ocular anatomy, general and ocular physiology, and on the physical and physiological science of optics which concerned the nature and properties of light. The subject of optics included the properties of lenses and optical instruments and equipment, and the mechanism of vision.[27] Orthoptic training also included the theory of eye movement disorders and their diagnosis and treatment modalities both surgical and non-surgical, and the use of investigative and treatment techniques.

[26] Today the range of eye conditions seen and managed by orthoptists has changed but in 1931 when orthoptics was first introduced to Australia that was the definition on which the profession was based.

[27] Harold A Stein and Bernard J Slatt, *The Ophthalmic Assistant: fundamentals and clinical practice* (St Louis: The C V Mosby Company, 1983), 37.

Ophthalmology

Ophthalmology is the medical specialty concerned with the study and treatment of disorders and diseases of the eye. Ophthalmologists are both surgeons and physicians. They prescribe glasses and contact lenses, medications and perform ocular surgical procedures. Before orthoptics was introduced as a separate discipline in the mid-1920s, some ophthalmologists practised orthoptics.

Optometry

Optometry is the correction of reduced sight, due to a refractive error such as long sightedness (hypermetropia), shortsightedness (myopia) or abnormal curvature of one part of the eye resulting in a blurred image (astigmatism), by appropriate lenses.[28] All optometrists prescribed glasses; some were engaged in orthoptics.

Eye movement disorders and associated conditions

Orthoptics deals with the management of eye movement disorders, or to use the medical term, strabismus. **Strabismus**, from the Greek word *strabos* meaning crooked, is a condition where the visual axes of both eyes are not directed towards the fixation point. One eye may deviate towards the nose (convergent strabismus or esotropia) or towards the temple (divergent strabismus or exotropia) and/or have a vertical component. (Figures 1.1 and 1.2. Note in Figure 1.1 Cupid's right eye is turned in towards the nose and in Figure 1.2 Cupid's right eye deviated outwards, that is, away from the nose).[29]

[28] Barry Cole, *A History of Australian Optometry: two hundred years of beating the tyranny of distance and fighting political battles to find new roles and a new place in health care* (Carlton: Australian College of Optometry, 2015), vii. See a definition of astigmatism, hypermetropia and myopia in the Glossary of Terms.

[29] See a definition of esotropia and exotropia in the Glossary of Terms.

Figure 1.1: Cupid with a right convergent strabismus.[30]

Figure 1.2: Cupid with a right divergent strabismus.[31]

Lay terms for strabismus are many and varied, and while this is not an exclusive list, include squint, lazy eye, turned eye, heterotropia, cast/e, cross eyed and wall-eyed.[32] A strabismus can be constantly or intermittently present, or it may be a latent condition (heterophoria). Depending on the size of the strabismus it may cause a cosmetic disfigurement. Surgery to the eye muscles can be performed to improve appearance. In some cases of intermittent strabismus orthoptic exercises help the patient control the strabismus. The causes of all forms of strabismus can be due to congenital or acquired factors. A differential diagnosis between a congenital strabismus and an acquired one can be crucial. In some cases, the cause can be a life-threatening condition which requires medical attention. In others, a misdiagnosis between a serious and a benign cause may mean the patient is subjected to unnecessary time-consuming tests.

While **heterophoria** (latent strabismus) will not present a cosmetic problem, the root cause can be a mild disturbance of the binocular reflex causing symptoms of ocular discomfort and/or headaches associated with performing near tasks.[33] As well as symptom producing, a person's poor control of a heterophoria may result in inaccurate perception of

[30] "Cupid with a right convergent strabismus," Santa Casa da Misericordia de Arraiolos, Portugal, 2017. Photograph taken by the author.
[31] "Cupid with a divergent strabismus," Santa Casa da Misericordia de Arraiolos, Portugal, 2017. Photograph taken by the author.
[32] For a definition of heterotropia see the Glossary of Terms.
[33] For a definition of heterophoria see the Glossary of Terms.

depth. Orthoptic treatment was, and is, most effective and beneficial for heterophorias and intermittent strabismus.

A secondary problem associated with strabismus is **amblyopia ex anopsia** (Greek: amblus = blunt, ops = vision), which is the loss of sight in the turned or strabismic eye without any demonstrable pathological disease.[34] Amblyopia management involved testing children's visual acuity and prescribing a therapy program which involved the occlusion of the 'good' eye to restore the vision in the strabismic eye.[35] Treatment for amblyopia was most effective when a child was young and remains so today.

An additional outcome of strabismus is the loss of development or interruption of **binocular vision**.[36] Binocular vision is the ability of the brain to receive the image of an object from each eye and fuse it into a single image. Loss of binocular vision in acquired cases of a strabismus can result in double vision and in both congenital and acquired strabismus the accuracy of **stereopsis** (depth perception) can be affected.[37]

The development of orthoptics as an allied health discipline was driven by ophthalmology's quest for improved outcomes of strabismus diagnosis and management; to assess and treat, if necessary, defects of binocular vision; to improve a patient's cosmetic appearance and to alleviate the sometimes-troubling symptoms associated with heterophorias.

Orthoptic Historiography

This thesis will explore the development of Australian orthoptics from its beginnings in the early 1930s until 1960 and is the first Australian orthoptic history to be written which examines the early years of orthoptics in Australia.

[34] For a definition of amblyopia ex anopsia see the Glossary of Terms.
[35] For a definition of visual acuity see the Glossary of Terms.
[36] For a definition of binocular vision see the Glossary of Terms.
[37] For a definition of stereopsis and depth perception see the Glossary of Terms.

Only seven works can be found which chronicle the development of Australian orthoptics. There are two articles by orthoptist, Patricia Lance; three contributions, one each by ophthalmologists, William Gillies, Reuben Hertzberg and Ronald Lowe, and one by medical historian Ronald Winton. An additional source is *Rear Vision: celebrating Australia's early orthoptists* (hereafter *Rear Vision),* a book of profiles of the first 76 Australian orthoptists co-authored by retired orthoptist, Jill Gordon and myself.[38]

Orthoptist Patricia Lance is an early contributor to the history of orthoptics who, in her 1954 presidential address to the OAA, outlined the arrival of orthoptics to Australia in the early 1930s and its subsequent development in Australia as a treatment of eye movement disorders.[39]

The ophthalmologists' (Gillies, Hertzberg and Lowe) and historian Winton's accounts reiterate Lance's versions of events.[40] However, they have placed more emphasis on the development of orthoptics as it pertained to and grew out of ophthalmology and in particular to the sub-specialty of strabismology (study of eye movements). These authors concentrated on the scientific developments over time and the place of orthoptics and orthoptists within ophthalmology rather than examining orthoptics as a discreet allied health science**.**

The book of profiles, *Rear Vision*, compiled by Jill Gordon and myself focuses mainly on the working lives of the first 76 orthoptists in Australia. It was written to commemorate the 75th anniversary of the formation of Orthoptics Australia (previously the Orthoptic Association of Australia), the orthoptic professional association and is part of the archive of

[38] Shayne Brown and Jill Gordon, *Rear Vision: Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019).

[39] Patricia Lance, "Presidential Address: a history of the Treatment of Strabismus," *Transactions of the Orthoptic Association of Australia* 11, Part 1 (1954): 1-19; Patricia Lance, "Orthoptics: past, present and future," *Australian Orthoptic Journal* 13, (1973-74): 2-7;

[40] William E Gillies, "The History of Strabismology in Australia and New Zealand," in *The History of Strabismology*, ed. Gunter von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 215-30; Reuben Hertzberg, "The Emmie Russell Department of Orthoptics." Unpublished. Sydney Eye Hospital Library. (circa 1990): 1-4; Ronald F Lowe, "An Outline of the History of Ophthalmology in Australia: Orthoptics," *Australian Journal of Ophthalmology* 12, (1984): 5-14; Ronald Richmond Winton, *New Lamps for Old: A History of the Royal Australian College of Ophthalmologists* (Sydney: Royal Australian College of Ophthalmologists, 1992).

Orthoptics Australia.[41] The book includes short biographies of these women including their contributions to the profession and the social context of their life and times.[42]

These orthoptic histories offer insights into orthoptic practice, its regulation and ethics, the raison d'être for collegiate association, and the development of orthoptic education, yet all have taken a factual, chronological approach. None have included an in-depth analysis, other than scientific, of the development of orthoptics as an allied health specialty. None have explored the way orthoptics has evolved. Nor have they examined orthoptics as a feminised profession. They have tended to present the history of orthoptics as an internal development (to use Gordon L. Miller's classification) rather than one also subject to 'outside' influences of a social, political, economic, institutional or technical character.[43]

A further difference between my historical approach and the existing literature on orthoptic history is the range of sources I have used. While the official records of the OAA are crucial to my investigation, as important are the published and unpublished private papers of orthoptists themselves.

To piece together the developments in these fledgling years I have relied on fragments of history from orthoptic publications and contemporary newspaper articles. Before the formation of the orthoptic registration bodies in 1938 and the establishment of the OAA in 1944, very little detail is available about the early years of orthoptic training, the trainees or orthoptic practice in Australia. No orthoptic or ophthalmic records are known to exist. The most detailed source is orthoptist, Patricia Lance's 1954 Presidential Address. Lance, the daughter of an ophthalmologist, was trained in Sydney, and was one of the last to receive apprentice-style training. Though she had first-hand knowledge of the early years of Australian orthoptic education and practice, her address broached the topic of strabismus treatment over time, rather than provided specific details of the establishment of orthoptic

[41] Interviews for Orthoptics Australia Interview Archive Project.
[42] Brown and Gordon, *Rear Vision*, 2019.
[43] Gordon Miller, *The History of Medicine; an annotated bibliography* (Pasadena: Salem Press, 1992), 2-3.

clinics in the public and private spheres, or of the early training courses.[44] It has been an historically useful document for some details of events prior to the establishment of the orthoptic professional association and the registration and training bodies.

Prior to 1944, scientific papers by orthoptists and ophthalmologists published in the Australian ophthalmological journal shed light on the earliest theories of orthoptic assessment and treatment. Other primary source material includes scientific papers in the *Australian Orthoptic Journal* and its predecessor, the *Transactions of the Orthoptic Association of Australia*. These publications map the practice of orthoptics and its scientific development from 1944 to 1960 and show the development of scientific investigation to improve the assessment techniques and treatment of eye movement disorders. These papers also illustrate the increasing number of conditions orthoptists had become proficient at assessing and treating. A 1939 newspaper article, '*Malpractice in Hospitals. Eye patients. Optometrists' Complaint'* led me to question why the Hospitals Commission of NSW approached the NSW Branch of the Ophthalmological Society of Australia (BMA) to register and oversee orthoptic training in NSW.[45]

When researching the development of the registration and training bodies and the orthoptic association from their establishment in the late 1930s to the mid-1940s, I relied on the Minutes of the OAA (including annual reports from the states in which orthoptics was practised) and its state branches of NSW and Victoria; the Orthoptic Board of Australia (OBA) and the Orthoptic Council of NSW. These sources provide the rationale for the establishment of the registration bodies, collegiate association and the code of ethics. They also provide insight into qualities and levels of education required for application into the orthoptic course and the level of orthoptic education. Nonetheless, while minutes of meetings can be revealing what is not recorded can be as important. For example, I was not able to determine why, in 1947, the OBA limited the extension of the orthoptic training to

[44] Lance, "Presidential Address: a history of the Treatment of Strabismus," 1-19.
[45] ""Malpractice in Hospital." Eye Patients. Optometrist's Complaint." *Sydney Morning Herald*, (NSW: 1842 - 1954), 16 August 1939, 16.

six months instead of 12 months as recommended by the orthoptic association. Neither is there any record of the association's reaction to this decision.

I am fortunate to hold the personal papers of one of the founding orthoptists, Lucy Retalic (née Willoughby). Her archives contain lecture notes from the orthoptic course she completed in England in 1938; letters pertaining to her work in aviation medicine during World War II (WWII) and personal reminiscences. This material provides a unique insight into the course curriculum in the 1930s, into the orthoptists' role with trainee pilots and a women's personal perspective into the value of formal qualification for orthoptic training. In addition to Retalic's material concerning orthoptic contribution to the Royal Australian Air Force (RAAF) during WWII, I sourced the minutes and reports of Flying Personnel Research Committee (and its sub-committees), which oversaw the ocular management of trainee RAAF pilots during WWII. A rare find was a copy of the RAAF *Medical Branch Technical Instructions* co-written by ophthalmologist Joseph Ringland and orthoptist Diana Mann. This publication detailed how orthoptics was to be administered to RAAF trainee pilots who required visual rehabilitation. Information about individual orthoptists was sourced from newspapers. Also significant in helping me shape my argument about women and the professions were interviews I conducted for the Orthoptics Australia Interview Archival Project. As mentioned on page 14, the interviews were with 24 orthoptists for profiles subsequently published as *Rear Vision*. They provided further insight into the archival research for this thesis including the culture of orthoptics; what motivated them; how orthoptics was practised; the effects of marriage and their relationship with male dominated ophthalmology from which orthoptics grew.

There is a paucity of secondary orthoptic material. Orthoptists, Julia Kelly and Anne-Marie Mahoney produced articles on the changes in orthoptic education as a part-requirement for their higher degrees. Kelly examined orthoptics' progression from a discipline to a profession and how the professional association shaped that progression.[46] Mahoney's paper examined orthoptic training as it progressed from

[46] Julia Kelly, "Industrial and Professional Issues in Health Services," Paper written as part of requirement for Masters' degree in Health Services Management, Charles Stuart University, Bathurst, 2002.

hospital-based training to degree courses in Sydney and Melbourne and, like Kelly's, argued that the level of training conferred professional status on orthoptics.[47] Because of the limited secondary sources on the history of orthoptics I have used a broad range of literature pertaining to other allied health professions and nursing to gauge where orthoptics was positioned in the health sector relative to similar disciplines and professions and the way their training was conducted. In order to understand how Australian orthoptics developed, both as a consequence of local conditions and within a broader medical network, where appropriate I have compared developments in Australia with those in Britain, the 'home' of orthoptics.[48] Publications by allied health practitioners and researchers were useful for comparison and context-setting with other allied health professions in respect to training, their relationship with the medical profession and the public and private health sector, and the markers and recognition of allied health disciplines as professions.[49]

For an examination of the feminisation of orthoptics, the literature I found beneficial included references to women in the general workforce including in, some instances, those in allied health and nursing. Issues canvassed included the sexual division of labour, with men as breadwinners and women the home-makers.[50] This sexual division of labour effected women's perception of their place in the workforce,

[47] Anne-Marie Mahoney, "Apprentice to Doctor: Orthoptic Education in Australia," Paper written as part of Graduate Diploma of Education, Contextual Studies in Adult Vocation Education, 23 October 1995.

[48] MacLellan, *Orthoptics – the early years*, 2006; Lesley-Ann Baxter's, *Orthoptics: 75 Years of History 1937-2012*. *British Orthoptic Society* (Crediton, UK: Hedgerow Print, 2012).

[49] Philip Bentley with David Dunstan, *The Path to Professionalism: physiotherapy in Australia to the 1980s* (Melbourne: Australian Physiotherapy Association, 2006); Lynsey Cullen, "The First Lady Almoner: The Appointment, Position, and Findings of Miss Mary Stewart at the Royal Free Hospital, 189-99," *Journal of the History of Medicine and Allied Sciences* 68, no. 4 (2012): 551-82; Heather Gardner and Brigid McCoppin*, "Struggle for survival by health therapists, nurses and medical sciences,"* in *The Politics of Health: the Australian Experience*, ed. Heather Gardner (Melbourne: Churchill Livingstone, 1995), 371-427; Dale Larsen, "Historical Development of Knowledge in Physiotherapeutic Spinal Manual Therapy" (PhD diss., The University of Sydney, 2005).

[50] Gilmore, *Margaret Bailey: Pioneering Headmistress of Ascham School*, 100; Kingston, *My Wife, My Daughter and Poor Mary Ann*, 137; Pringle, "Family kith, and kin," 98-107.

and the type of work to which they could aspire.[51] It also normalised women not seeking a career and certainly not working once married.[52]

In the period covered by my thesis, the position of orthoptics within the Australian health sector was similar when compared to other allied health disciplines and nursing. The workforce of these disciplines was mainly all-female, and they were subordinated to mainly male medical disciplines and so had little autonomy. But orthoptics like other allied health accepted their subordination and, as Gardner and McCoppin observed about occupational therapists 'they saw nothing untoward in such submission; they encouraged commitment to service; high standards of etiquette and ethical behaviour, rather than independence'.[53] This quote may have been attributed to the occupational therapists' practice but, as I shall show, the same can be said of orthoptic practice from its beginnings in 1931 until 1960.

Thesis structure

To address my thesis question of how and why the Australian all-female profession of orthoptics developed in the manner it did between 1931-60, I have laid out my investigation chronologically. Chapter 1 (the current chapter) is the *Introduction* to the thesis and sets up the aims of the study. Chapter 2, *Orthoptics: How and Why It All Began,* outlines the historical events which led to the birth of modern orthoptics in London in the late 1920s as a career suitable for women who could perform auxiliary medical tasks. Australia followed in Britain's footsteps and established orthoptics with an all-female workforce. Chapter 3, *The Embryonic Years in Australia: 1931-39,* examines the establishment of Australian orthoptics

[51] Alison Bashford, "Domestic Scientists: Modernity, Gender, and the Negotiation of Science in Australian Nursing 1880-1910," *Journal of Women's History* 12, no. 2 (Summer 2000): 127-46; Barbara Caine. *Victorian Feminists* (Oxford: Oxford University Press, 1992); Desley Deacon, *Managing Gender: The State, the New Middle class and Women Workers 1830-1930 (Melbourne: Oxford University Press, 1989)*; Katie Holmes and Sarah Pinto, "Gender and sexuality," in *The Cambridge History of Australia. Volume 2: The Commonwealth of Australia*, eds. Alison Bashford and Stuart Macintyre (Cambridge: Cambridge University Press, 2015), 308-31.

[52] Hooker, *Irresistible Forces. Australian Women in Science*, 2004; Lake, "A history of feminism in Australia," 139; Stuart Macintyre, *The Oxford History of Australia, the succeeding age. Volume 4 1901-1942* (Melbourne: Oxford University Press, 1990).

[53] Gardner and McCoppin, 389.

by ophthalmologists, and the challenges faced by the early female orthoptists to opposition from some ophthalmologists (a mainly masculine profession) who did not believe in the science of orthoptics and/or that female auxiliaries could carry out medical work without medical qualifications. This period also marked the introduction of ophthalmologically-run registration and education bodies and shows orthoptists beginning to take responsibility for clinical education of trainee orthoptists. Chapter 4, *Orthoptics and Orthoptists: The War Years: 1939-45* explores the invaluable role in aviation medicine played by orthoptists during wartime. Chapter 5, *Consolidation: 1946-60* examines the period when orthoptists established a professional association; gained orthoptic representation on the registration and educational bodies and had increased orthoptic scientific knowledge independent of ophthalmology. I argue that by 1960 the small group of all-female orthoptists, while working collaboratively with ophthalmology, had established orthoptics as an important part of the eye health care system in Australia. Chapter 6. *Conclusion*, summarises my findings that the growth of Australian orthoptics in the early years lay the foundation for Australia being now a world leader, especially in orthoptic education.

CHAPTER 2. ORTHOPTICS: HOW AND WHY IT ALL BEGAN

> To attempt to diagnose cases of strabismus and to treat the patient without the assistance of an orthoptic department is rather like trying to treat and diagnose cases of disease of the chest or alimentary tract without the use of radiography. Without a knowledge of the state of binocular vision one is really just working in the dark.[1]

Introduction

This chapter charts the beginnings of orthoptics as a profession for women. As these beginnings are British in origin, I first turn to Britain to examine the circumstances which persuaded ophthalmologists in the 1920s and 1930s that 'medical auxiliaries' - the term used before the word 'orthoptist' was widely accepted - could be trained to diagnose and provide non-surgical therapy for eye movement disorders. In the 1920s some British ophthalmologists began to see orthoptics as a sub-discipline practised by medical auxiliaries who would consult with ophthalmologists as the medical specialists. They also believed its practice should involve measurements of eye movements to determine more precisely the most suitable therapy, which generally required working with patients on suitable ocular exercises and providing oversight over time.

When charting the history of orthoptics, from the late nineteenth century to the 1920s, historical accounts have emphasised the time it took to provide orthoptic treatment to restore binocular vision.[2] The time-consuming nature of the treatment is often suggested as the major reason that ophthalmologists trained medical auxiliaries to take on the task of remedial therapy. Diagnostic and therapeutic tests required a high level of skill and could be laborious. When orthoptists gained expertise, ophthalmologists were relieved of these

[1] Keith T Lyle, "Wither Orthoptics?" *Transactions of the Ophthalmological Society of Australia* IX, (1949): 75.

[2] James E Lebensohn, "Louise Émile Javal 1839-1907. A centenary tribute," *Archives of Ophthalmology* XXI, (1939): 655-66; MacLellan, *Orthoptics - the early years*, 12; Gill Roper-Hall, "Historical Vignette: Louis Émile Javal (1839-1907): The Father of Orthoptics," *American Orthoptic Journal* 57, (2007): 134; Patricia Lance, "Presidential Address: a history of the Treatment of Strabismus," *Transactions of the Orthoptic Association of Australia* 11, Part 1 (1954): 12.

labour-intensive diagnostic and therapeutic tasks. Some ophthalmologists continued to perform the diagnostic tests and only referred patients for therapy, while others handed over responsibility of both diagnostic testing and therapy. Once orthoptists earned respect for their clinical skills, virtually all ophthalmologists, who already used orthoptics as a form of treatment, now referred patients for orthoptic therapy. Only a minority continued to *treat* patients themselves.[3] But not all ophthalmologists believed in the non-surgical management of eye movement disorders. As with other emerging therapies there were varying opinions; some ophthalmologists embraced orthoptics while others did not. This situation created a professional challenge, which orthoptists embraced, in some instances supported by ophthalmologists and in others as a lone battle.

If ophthalmologists valued orthoptic management, what convinced them to hand over this responsibility to these 'medical auxiliaries'? Another question this development raises is why ophthalmologists created 'orthoptics' as a new sub-specialty of ophthalmology, in preference to working with ophthalmic opticians, as optometrists were called in Britain. I shall show that as ophthalmologists withdrew from practicing orthoptics, it created opportunities for female auxiliaries who could operate orthoptic devices and had the necessary expertise to produce dependable and repeatable results.

British Ophthalmologists hand over orthoptic treatment to 'lay auxiliaries'

When ophthalmologists handed over the practice of orthoptics to lay auxiliaries they did so for sound reasons. Ophthalmologists were surgeons, proceduralists responsible for the diagnosis and medical and surgical treatment of people with ocular disorders. When, from the mid-nineteenth century until the early twentieth century, a plethora of new ophthalmic

[3] I concluded that very few ophthalmologists carried out orthoptic treatment themselves after I found only one publication in which an ophthalmologist produced results of orthoptics he had given. Bruce Hamilton, "Orthoptics in the Field," *Australian & New Zealand Journal of Surgery* 13, no. 2 (1943): 108-10. In other publications by ophthalmologists the orthoptist who assisted the surgeon was often acknowledged. For example, see, Walter D Counsell, "Air Force Eye Standards and Examination Procedure," *Transactions of the Ophthalmological Society of Australia (British Medical Association)* II, (1940): 7-18, and A L Tostevin, "Orthoptics and Aviation," *Transactions of the Ophthalmological Society of Australia (British Medical Association)* III, (1941): 145-6.

instruments became available, these devices enabled ophthalmologists to accurately measure the size of strabismus, assess the state of binocular vison - essential information when planning surgery - and plan appropriate therapy. Yet many tests were time-consuming to perform and required skill and patience and the results of therapy were unreliable due in part to poor patient selection.[4] French ophthalmologist, Émile Javal (1839-1907), considered a pioneer of orthoptics, had warned that it was imperative to carefully choose patients who would respond to orthoptic treatment: they had to be young; have some binocular vision and be willing to put in the hours of practice. But, as research orthoptist Gill Roper-Hall noted, Javal's *Manuel du Strabisme* was not translated into English. Consequently, practitioners may have been unaware of the importance of 'selecting the right patients for the therapy'. Even Javal was disappointed in his success rate. His disillusionment rested not with orthoptics, *per se*.[5] He conceded that orthoptic treatment was not for everyone, but for those capable and motivated to spend the time performing their exercise regimen. How much therapy was carried out by the patient on their own and how much was one-on-one supervision by the ophthalmologist is unknown. Suffice to say both the assessment and treatment of a patient with strabismus was time-consuming for both clinician and patient. Hence, at the beginning of the twentieth century, despite the invention of new instruments, orthoptic therapy was practised only by a handful of ophthalmologists.

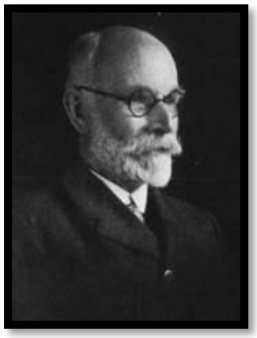
The reason that so few ophthalmologists adopted orthoptics as part of their practice was because they were surgeons. They were trained in the diagnosis and treatment of eye disorders, but that treatment did not encompass repetitive eye exercise therapy; it was not part of ophthalmologists' training, nor of their routine clinical practice. Administering laborious orthoptic treatment took them away from more essential surgical and medical aspects of eye care. Only dedicated ophthalmologists persisted, sometimes devoting time outside their normal clinic hours. By the 1920s widespread use of orthoptic therapy was in

[4] Gill Roper-Hall, "The Beginning of Fusion Training" in *The History of Strabismology,* ed. Gunter K von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 258, 261.
[5] Michael Revell, *Strabismus: A History of Orthoptic Techniques* (London: Barrie & Jenkins Limited: 1971), 20.

decline.[6] Had it not been for the father and daughter team in England – Ernest and Mary Maddox - it is possible that orthoptics, as an allied health discipline, would not have developed. Some ophthalmologists may have persisted, but many would not.

In the mid-1920s the Maddoxes revived orthoptic practice in Britain. Mary Maddox demonstrated that an intelligent, female auxiliary could become proficient in techniques which had been the domain of ophthalmologists. Together father and daughter set the foundation for the development of a new allied health discipline, orthoptics, one that would be female dominated. One male, Eric Pemberton, was amongst the first English trainee orthoptists, but no other men trained in Britain until the 1980s. Orthoptics, for over 40 years, remained a profession with a completely female workforce.

Figure 2.1: Ernest Edmund Maddox[7]



English ophthalmologist and clinical researcher, Ernest Edmund Maddox (1860-1933) was a firm believer in the value of the non-surgical treatment of strabismus (Figure. 2.1).[8] Physiology was his passion and influenced his lifetime research into eye movement disorders. In 1899 he set up a private practice in Bournemouth, Southern England where he specialised in the management of ocular motility problems.[9] Maddox trained his daughter, Mary, to assist him in the management of strabismus and amblyopia. This relieved him of tasks such as training binocular vision, which were essentially undertaken when his other surgical responsibilities allowed. When his daughter mastered skills, hitherto the domain of ophthalmologists, Maddox recognised that specialist medical qualifications were not essential for some aspects of strabismus

[6] Keith Lyle and Marian Walker, *Lyle and Jackson's Practical Orthoptics in the Treatment of Squint* (Philadelphia: The Blakiston Company, 1953), ix.

[7] Gill Roper-Hall, "The Emerging Profession" in *The History of Strabismology,* ed. Gunter K von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 261.

[8] Gill Roper-Hall, "Historical Vignette: Ernest Edmund Maddox (1860-1933): Master Surgeon, Inventor, and Investigator," *American Orthoptic Journal* 59, (2009): 103-10.

[9] Ocular motility problems included manifest strabismus and latent strabismus, called heterophoria.

management. Provided the lay assistants were intelligent, diligent and had good communication skills, he envisaged they could become proficient in orthoptic techniques. Furthermore, this non-surgical approach would greatly benefit many patients diagnosed with strabismus leaving those cases requiring surgical intervention to ophthalmologists.

Figure 2.2: Mary Comfort Maddox. [10]

Mary Comfort Maddox (1896-1972) was the oldest girl of Ernest Maddox's thirteen children (Figure. 2.2). The norm for her generation and class was to remain at home until they married, but she went against the trend.[11] Tertiary study was often not encouraged, but her father was keen for his children (both boys and girls) to pursue their studies and sports.[12] Like many young women of her class and social standing she served with the Voluntary Aid Detachment in World War I then completed a secretarial course, becoming the private secretary to an aristocratic woman.[13] This practical experience equipped her to pursue a new career outside the home. When her mother became ill, she returned home where she cared for her siblings and worked as her father's secretary and medical assistant.

Mary Maddox exemplified the type of woman who was attracted to and chose to train as an orthoptist. Her advertisement for an assistant provides insight into the qualities she thought necessary - a 'Lady, [who was] capable and intelligent…teaching ability and good management of children necessary'.[14] English orthoptist Vivien MacLellan, who was

[10] Gill Roper-Hall, "The History of Orthoptics" in *The History of Strabismology,* ed. Gunter K von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 262. This is rare photo of Mary Maddox taken in her later years.

[11] Barbara Caine. *Victorian Feminists* (Oxford: Oxford University Press, 1992), 131. Similar attitudes were held in Australia. See for example: Katie Holmes and Sarah Pinto, "Gender and sexuality," in *The Cambridge History of Australia. Volume 2: The Commonwealth of Australia*, eds. Alison Bashford and Stuart Macintyre (Cambridge: Cambridge University Press, 2015), 308-31; Desley Deacon, *Managing Gender* (Melbourne: Oxford University Press, 1989), 147; Donald Edgar. *Introduction to Australian Society: A Sociological Perspective* (Sydney: Prentice-Hall of Australia Pty Ltd, 1980), 114-16.

[12] One of Mary's sisters, Ruth, played hockey for England. Before leaving school, Mary learnt cheese making, cake decorating and drawing from several of her father's patients. Gill Roper-Hall, "Historical Vignette: Ernest Edmund Maddox (1860-1933): Master Surgeon, Inventor, and Investigator," *American Orthoptic Journal* 59, (2009): 104-05.

[13] MacLellan, *Orthoptics - the early years,* 12.

[14] MacLellan, *Orthoptics - the early years,* 16.

trained by Sheila Mayou, Mary Maddox's successor, provided profiles of the first orthoptic trainees. Except for Eric Pemberton, all were women with shared aspirations and similar family backgrounds to Maddox. They were mature; they had completed other training such as physiotherapy, nursing, kindergarten teaching, or secretarial work.[15] Their families were able to financially support them to a degree, suggesting that their motivations for taking up orthoptics were not financial - perhaps community service, ambition for a career or the thrill of a new challenge. The characteristics of these women shaped the way orthoptics developed, in its practice, and in its relationship with ophthalmology. The profiles of early Australian orthoptists were similar.[16]

When Maddox taught his daughter orthoptic techniques and she opened her private orthoptic practice, she offered ophthalmologists the opportunity to relieve themselves of the assessment and on-going treatment of strabismus. In much the same way that physiotherapists treated patients to relieve orthopaedic surgeons of the on-going non-surgical treatments like exercise regimens.[17] But, like some orthopaedic surgeons who questioned the role of physiotherapists, not all ophthalmologists approved of medically unqualified practitioners treating patients. Maddox, though, recognised that appropriately trained lay assistants could be taught the skills to implement and supervise orthoptic diagnosis and therapy.

This delegation of responsibilities to female auxiliaries should not be interpreted as orthoptics being under-valued by surgeons. On the contrary. Mary Maddox showed ophthalmologists that a lay auxiliary could produce reliable and repeatable results when assessing eye movement disorders. She trained more lay auxiliaries who followed in her footsteps. Supported and encouraged by ophthalmologists, orthoptic clinics, both in public hospitals and in the private sector, flourished within a few years of her commencing practice in London in 1928.

[15] MacLellan, *Orthoptics - the early years,* 15-27.
[16] Shayne Brown and Jill Gordon, *Rear Vision: Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019).
[17] Philip Bentley with David Dunstan, *The Path to Professionalism. Physiotherapy in Australia to the 1980s* (St. Kilda, Victoria: Australian Physiotherapy Association, 2006), 6.

Orthoptists also provided on-going care to patients at a lesser cost than ophthalmologists. Maddox opened her private clinic in 1928. The 1929 Great Depression ushered in a period when access to expensive health services was restricted, an occurrence that does not appear to have adversely affected her practice. Maddox offered a more affordable eyecare service than did specialist ophthalmologists.[18] To provide the same level of care to public patients the Royal Westminster Ophthalmic Hospital (RWOH) opened an orthoptic clinic in 1929 with Mary Maddox in charge. Within three years the clinic became a full-time clinic which made orthoptic care freely available to public patients for the first time.

Ophthalmology and optometry: not seeing eye to eye

One significant question which remains is why British ophthalmologists championed the development of orthoptics as an ophthalmic sub-specialty in preference to referring patients to refracting opticians who were also practising a form of ocular therapy.[19] According to Emeritus Professor of Optometry, David Goss, in the latter part of the nineteenth century a distinction was made between *refracting* opticians (those who prescribed corrective lenses for refractive errors) and *dispensing* opticians, who made up the glasses.[20] It was the refracting opticians who became known as optometrists, a term which became popular in the first two decades of the twentieth century.[21]

In his history of orthoptic techniques, English optometrist Michael Revell suggested that Ernest Maddox was motivated to utilise 'lay assistance' for non-surgical intervention when he learned that optometrists were 'practising orthoptics at the London Refraction Hospital'.[22] One may wonder why Maddox did not refer his patients to optometrists. One

[18] I have been unable to find the cost of private ophthalmological and orthoptic consultations, but it is presumed that the cost of a consultation by a female orthoptist, a non-medical ancillary, was cheaper than that of a consultant male specialist medical practitioner.

[19] Swiss ophthalmologist Edmund Landolt in 1886 is thought to have been the first person to use the term optometry to describe the fitting of glasses.

[20] Refracting opticians were also known as sight testing opticians.

[21] From here on I shall refer to refracting opticians as optometrists.

[22] Revell, *Strabismus: a history of orthoptic techniques,* 41.

may also question if Maddox, and the ophthalmology fraternity, wanted to maintain control over orthoptics as it began its re-emergence, or were there other reasons. As I shall show some management regimens were practised by both groups while there was divergence in others.

In Britain at the beginning of the twentieth century ophthalmology and optometry had differing views on the delivery of the non-surgical management of strabismus. While a history of optometry is long and complex and outside the scope of this thesis, several theoretical differences in practice are relevant. I argue that these fundamental differences influenced ophthalmologists to create a sub-specialty to manage ocular motility disorders - orthoptics - rather than working with optometrists.

An essential difference lay in the sciences from which each branch of learning emanated. Ophthalmology, a medical discipline, had its roots in the biological sciences of anatomy and physiology, and in the physical science of optics. Ophthalmologists were university-trained surgeons with a post-graduate qualification in eye disease. Their expertise lay in the recognition and treatment of all ocular problems which included both surgical and non-surgical modalities. The non-surgical treatments included: refraction (the prescription of corrective lenses to correct long-sightedness, short-sightedness or astigmatism); medication and orthoptic therapy. In contrast, optometry originated from the optical sciences. While the University of London offered a course in optometry from the later nineteenth century, most optometrists were trained in technical colleges and it was not until 2015 that an undergraduate optometry degree in London was offered at the University of London.[23] The first 'sight testing' course was run in London in 1903.[24] (At that time sight testing was the term used to describe refraction). Some optometrists were also dispensing opticians who made up the spectacles. Both ophthalmology and optometry shared some common theoretical ground regarding refraction and the focusing mechanism of the eye (accommodation).[25] Two fundamental differences divided ophthalmology (and

[23] Charles Wigmore, "Looking back at Optometry," *City Magazine*, posted by University of London. Accessed 1 April 2016. http://www.city.ac.uk/news/2015/july/looking-back-at-optometry.
[24] Wigmore, "Looking back at Optometry."
[25] For definition of accommodation see the Glossary of Terms.

orthoptics) from optometry. One was that, not being medically trained, optometrists gained their skills in technical colleges and not in hospitals. Consequently, optometrists did not have the expertise to differentiate eyesight problems which were caused by a medical condition and those that were not. This situation was the basis for the ophthalmological argument that patients with ocular motility disorders should first be examined by an ophthalmologist to rule out any underlying pathological condition as the cause of a strabismus.

The other difference was the interpretation of the science of accommodation and how that translated into management of ocular motility disorders. Both ophthalmology and optometry drew from the work of physiologist Francisus (Franz) Donders who recognised the link between certain types of strabismus and uncorrected refractive errors. This discovery meant that, for some cases, the strabismic eye was straightened, partially or completely, by the prescription of corrective lenses, as demonstrated in Figure 2.3.

Figure 2.3: Child with a right convergent strabismus. Note how the child's right eye is deviated towards the nose and with glasses the eyes are straight.[26]

Based on Donders' theory, many optometrists also believed that all strabismus could be corrected by the prescription of glasses alone. Ophthalmologists however, with their detailed knowledge of anatomy and physiology, understood that the causes and treatment

[26] American Association of Pediatric Ophthalmology and Strabismus, "Accommodative Esotropia," American Association of Pediatric Ophthalmology and Strabismus. Last modified 4 July 2018. http://www.aapos.org/terms/conditions/9.

of strabismus were multi-faceted. Treatment involved one, or all, of a variety of modalities including the prescription of glasses, medication, orthoptic exercises and surgery.

Both groups shared some common ground in orthoptic therapy such as exercises to improve patients' binocular vision and depth perception. Both groups used many of the same exercise devices such as stereoscopes and synoptophores.[27] However, their theoretical framework underpinning the exercises differed. Optometric binocular vision training was influenced by the work of French ophthalmologists Andre Cantonnet, Henri Parinaud and Albert Remy who advanced the theory that the underlying cause of strabismus was psychological.[28] On the other hand, British ophthalmologists, and other European ophthalmologists, based their theories in physiology not in psychology.

The definitive physiological explanation of the binocular function of depth perception was not proven until the mid-twentieth century.[29] In retrospect, ophthalmologists in the early decades of the 1900s were right to deduce that the explanation of binocular vision lay in physiology and not psychology. In this period psychology was in its infancy and not yet considered a science. Psychologist and historian, David Devonis used 1927 as a landmark date when psychology moved from a theory to a science 'based on quantification and reproducibility of results' and was 'forging an alliance with medicine, specifically with psychiatry'.[30] For ophthalmologists developing a sub-specialty in non-surgical management, orthoptics was a natural extension of their discipline rather than a discipline whose roots were not based in the medical model.

In addition to a difference in theoretical approaches, there arose a demarcation dispute over who was qualified to treat patients with defective vision. In 1906, the British Medical Association and the Ophthalmological Society of The United Kingdom strongly

[27] For a description of the synoptophore see the Glossary of Terms.
[28] Lance, *Presidential Address,* 1954, 13; J H Austin, "The history of orthoptics," *British Orthoptic Journal* 4, (1949): 121.
[29] For a detailed history of stereopsis see Robert Crone. "The history of stereoscopy," *Documenta Ophthalmologica* 81, (1992): 1-16. Also see Bela Julesz, "Binocular depth perception without familiarity cues," *Science* 145 (1964): 356-62. The notable physiological discoveries were made by Canadian neurologist David Hubel and his co-worker Torsten Wiesel who were awarded the 1981 Noble Prize in Physiology or Medicine for their research into information processing in the visual system. For a detailed explanation of the physiology of stereopsis incorporating the work of Hubel and Wiesel see Peter O Bishop, "Binocular Vision," in *Adler's Physiology of the Eye* (St Louis: C V Mosby Company, 1985).
[30] David Devonis, *History of Psychology 101*, ed. James C Kaufman (New York: Stringer Publishing Company, 2014), 1-2.

opposed the proposed bill for the State Registration of 'Sight Testing' Opticians. The medical profession argued they were not opposed to increasing 'the proficiency of opticians in their technical work of manufacturing spectacles and other optical instruments'. But, because opticians had no medical training, they (the opticians) were not qualified to 'advise upon and treat defects of vision' claiming many 'constitutional diseases cannot be detected by sight testing or corrected by the use of glasses.'[31] The bill failed but exacerbated a demarcation dispute between ophthalmologists, who were part of the medical profession, and ophthalmic opticians (optometrists).

With a clever and conscientious daughter who took an interest in his work, Ernest Maddox saw the possibility that lay personnel could be taught orthoptics based on, and informed by, the medical model.[32] The stage was set for the establishment of the discipline of orthoptics where ophthalmology had over-sight of the curriculum, training and registration of orthoptic practitioners.

The first orthoptic clinics and training schools in England

Mary Maddox moved to London in 1928 and with her father's support and encouragement, she opened a private orthoptic practice, called the *Mary Maddox Clinic for Treatment of Squint and Heterophoria.*[33] The title is significant. Using her full name, *Mary Maddox*, had the effect of differentiating her clinic from her father's ophthalmic practice as well as marking the proprietor as a woman. The ophthalmic community was then small. Ophthalmologists would have known that Mary Maddox did not have a medical qualification. They may also have known that Ernest Maddox was instructing his daughter in orthoptic techniques. For her practice to be viable she required ophthalmological support and having the Maddox name gave her credibility. By using her first name, 'Mary'

[31] "Bill for the State Registration of "Sight Testing" Opticians," *Memorandum. British Medical Association and Ophthalmological Society of The United Kingdom.* Manuscript 63,12,349. May 11th, 1906, 1. Made available to the author by Richard Keeler, Honorary Curator, The Royal College of Ophthalmologists, London, England.

[32] Margaret Eldridge, *A History of the Treatment of Speech Disorders* (Edinburgh: E & S Livingstone Ltd, 1968).

[33] The term 'squint' is one of synonyms for 'strabismus', and heterophoria is the term for a latent strabismus. Note that 'orthoptics' was not in common usage at that time.

she signaled that the therapeutic work of orthoptics could be practised by women. It was a challenge embarking on a venture hitherto the domain of medical specialists. However, Mary Maddox was convinced that professionally trained women could work with ophthalmologists as skilled lay assistants, while developing therapeutic expertise of their own. Being a 'Maddox' may have helped allay any concerns ophthalmologists felt when they referred patients for therapy, but she still had to prove her worth, not just as a non-medically trained auxiliary but as a female one as well, and that she did very successfully.

But her practice was based in the knowledge that ophthalmological referral was a necessary requirement. A similar example was physiotherapy which could also only be practised under medical referral.[34] Orthoptists accepted that while orthoptics had emanated from ophthalmology and the discipline of orthoptics was subordinate, the working relationship with ophthalmologists was collaborative. Orthoptists recognised and accepted that there was a safety element in the requirement for an ophthalmological referral. As mentioned earlier, it was critical to establish that the strabismus and/or reduced vision (amblyopia) was not the result of a serious medical or ocular condition before orthoptic treatment could be initiated, and that required an ophthalmic examination. Ophthalmologists performed a full medical and ophthalmological examination, which included: taking a detailed history; an examination of the retina (the back layer of the eye) and a refraction test, to measure any degree of long or short sightedness or astigmatism. For paediatric patients this involved a cycloplegic refraction where the focusing power of the lens was paralysed pharmacologically to determine the full amount of long sightedness. A cycloplegic refraction was essential for children because it was known that a convergent strabismus could result from uncorrected long sightedness as Donders had shown. Atropine was the drug commonly used. It could only be prescribed by a medical practitioner as the drug has the potential to cause physical side effects ranging from mild irritation to fever and, in rare cases, death. Orthoptists did not have the medical

[34] Joan McMeeken, "From Massage to Physiotherapy: The Emergence of a Profession," In *The First World War, The Universities and the Professions in Australia 1914-1939*, eds Kate Darian-Smith and James Waghorne (Carlton: Melbourne University Press, 2019), 79.

qualification, nor the legislative right to diagnose eye disease, to prescribe medication or to refract. Optometrists did have the right to refract, but like orthoptists they did not have medical qualifications and could not prescribe drugs. They could not perform cycloplegic refractions. This meant that if children were examined by optometrists, they may have been prescribed the incorrect lenses, and without the correct lenses a patient's strabismus would not be fully corrected.

To promote her new clinic Mary Maddox sent a circular to ophthalmologists offering a range of treatments. She received support from renowned ophthalmologist Claude Worth who wrote that he wished she 'had settled in London when I was in active practice'.[35] High praise from the man whose research had set the standard for the understanding of binocular vision. Her practice was well supported and a year after she opened her rooms she moved to larger premises. Maddox's efforts showed positive results and her reputation grew. Ophthalmologists recognised the value she added by producing accurate, repeatable measurements and providing treatment. In 1929, scarcely a year after she had opened her private practice, she was invited to establish a part-time clinic at the Royal Westminster Ophthalmic Hospital (RWOH).[36] Within three years the clinic grew from part-time to full-time, staffed by four women Maddox trained. None of these women, including Maddox, were paid. As MacLellan rightly stated, 'it is salutary that these pioneer orthoptists initially received no pay at all'. She concluded that they were driven by a 'sense of vocation' and a firm belief in Maddox's methods.[37] There was also kudos to be gained from honorary work, especially for women, and if they operated like medical specialists, it allowed them access to patients which benefited their private practice.

A year after the establishment of the clinic at the RWOH, organisers of the 1930 Oxford Ophthalmological Conference invited Maddox to present a paper at the meeting and to demonstrate the use of the Maddox Cheiroscope, an apparatus used to treat binocular vision and one of her father's inventions.[38] It was a rare honour for a non-medically

[35] MacLellan, *Orthoptics - the early years*, 13.
[36] The RWOH was renamed and is now Moorfields Eye Hospital, High Holborn Branch.
[37] MacLellan, *Orthoptics - the early years,* 19.
[38] Sheila Mayou, " "M.C.M.","*British Orthoptic Journal* 30, (1973): 1.

qualified person to be an invited speaker at a prestigious ophthalmological conference; being female and non-medically qualified was even rarer. Maddox had mastered skills and techniques previously practised by ophthalmologists. This was an early public acknowledgement by ophthalmologists that a 'lay person' could, under their stewardship, be educated and entrusted to carry out medically approved investigations and non-surgical therapy for eye movement disorders.

By 1935 orthoptists, with ophthalmological support, established clinics at Birmingham Children's Hospital (1931); Birmingham and Midland Eye Hospital (1931-32); Royal Surry County Hospital (1933); Great Ormond Street Children's Hospital, London (early 1930s) and Manchester Royal Eye Infirmary (1935).

Orthoptic training was hospital-based, the training schools having grown out of orthoptic clinics within public hospital outpatient departments. By 1932 Maddox's strabismic clinic at RWOH was functioning in a full-time capacity, and also in 1932 the training centre within RWOH became the School of Orthoptics, the first of its kind to be formally established.[39] One of Maddox's protégés was Sheila Mayou (1913-2009) who, like Maddox, was the daughter of an eminent London ophthalmologist. She commenced studying medicine at University College in London but had to withdraw when she contracted pleurisy and her father suggested she study something 'less arduous'. She eventually took over Maddox's responsibilities and practised orthoptics all her working life both in the public sphere and in a successful private practice.[40]

[39] MacLellan, *Orthoptics - the early years,* 14.
[40] MacLellan, *Orthoptics - the early years,* 23-6.

Figure 2.4: H.M. Queen Elizabeth II during her visit to Moorfields Westminster and Central Hospital, 17 March 1955, on the 150th anniversary of the foundation of Moorfields Eye Hospital, seen here with Sheila Mayou.[41]

In response to increasing demand from ophthalmologists for orthoptic services in 1932, Maddox and Mayou established a second London training school at the Central London Eye Hospital.[42] From this point onwards the name 'orthoptics' (Greek, *orthos* straight, *ops* = vision) was adopted in preference to the phrase 'the treatment of strabismus and heterophoria' and the clinicians were referred to as 'orthoptists'.[43]

Clinical training was apprentice-style in much the same way that doctors gained clinical skills less than a century earlier.[44] Orthoptic trainees first spent time in the clinic learning how to use the instruments. They observed the qualified practitioner at work and then gradually took more control of examining and treating patients.[45] This training model was adopted in medicine, nursing and the other allied health disciplines of physiotherapy, occupational therapy and speech therapy.[46] By 1932 the theoretical basic sciences of anatomy, physiology, optics and orthoptic theory were added to the curriculum.[47] By 1934

[41] MacLellan, *Orthoptic - the early years*, 48.
[42] Now Moorfields Eye Hospital, City Road Branch.
[43] MacLellan, *Orthoptics - the early years,* 10.
[44] Felicity Allen, "Women and the profession of medicine," *The Politics of Health: the Australian Experience*, ed. Heather Gardner (Melbourne: Churchill Livingstone, 1995), 327.
[45] Mary Maddox, "Orthoptic Lecture Notes," *British and Irish Orthoptic Association, Box 1*, Wellcome Museum, London, 1931.
[46] Heather Gardner and Brigid McCoppin, "*Struggle for survival by health therapists, nurses and medical sciences*," in *The Politics of Health: the Australian Experience*, ed Heather Gardner (Melbourne: Churchill Livingstone, 1995, 371-427; specifically for nursing see Lynette Russell, *From Nightingale to Now: Nurse education in Australia* (Sydney: Harcourt Brace Jovanovich, 1990); for occupational therapy, see Barbara Anderson and Janet Bell, *Occupational Therapy: its place in Australia's history* (Melbourne: Brown Prior Anderson, 1988), 14-26; for physiotherapy education see Bentley with Dunstan, *The path to Professionalism*, 136-51; 1990)**;** for speech therapy see Margaret Eldridge, *A History of the Treatment of Speech Disorders,* (Edinburgh: E & S Livingstone Ltd, 1868).
[47] MacLellan, *Orthoptics - the early years,* 24. The anatomy textbook was Eugene Wolf's *Anatomy of the Eye and Orbit*, the same textbook used by ophthalmology trainees. Worth's *Squint: its causes and treatment* was the textbook Maddox used for orthoptic theory**.** Lucy Willoughby, "1937 Orthoptic student notes," held by the author.

ophthalmologists had set up the Council of Orthoptic Training.[48] The Council produced an orthoptic training syllabus and lengthened the course to one year.[49] In 1935 the Council of Orthoptic Training was re-named the British Orthoptic Board and was itself responsible to the Council of Ophthalmologists (later the Faculty of Ophthalmologists). English orthoptists trained before 1934 were issued a Certificate of Proficiency, which was later converted to the Diploma of the British Orthoptics (DBO); some also did extra teacher training and were awarded a teaching certificate allowing them to train orthoptic students in the Council of Orthoptic Training-approved orthoptic schools.

Australian Lucy Willoughby trained in London in 1938. Her student notes provide a rare insight into the details of the curriculum.[50] In addition to lectures in ocular anatomy (Figure 2.5), ocular physiology (Figure 2.6) and optics, the students' practical instruction covered examination techniques and theory, such as: vision testing; the detection and measurement of the strabismus, and the state of binocular vision using an array of instruments including the Diploscope, Maddox Wing and Rod, Myoculator, Myoscope, Priestly Smith Tape, stereoscopes, synoptophore (Figure 2.7), Tangent Scale, Worth's Lights, and techniques such as bar reading, the cover test, diplopia charting (Figures 2.8 and 2.9), ocular movements and prism exercises.[51]

[48] Gill Roper-Hall, "The Emerging Profession," in *The History of Strabismology,* ed. Gunter K von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 262.
[49] Lesley-Anne Baxter, *Orthoptics: 75 Years of History 1937-2012. British Orthoptic Society* (Crediton, UK: Hedgerow Print, 2012), 18.
[50] Willoughby, "1937 Orthoptic student notes."
[51] Willoughby, "1937 Orthoptic student notes." For a definition of diplopia see the Glossary of Terms.

Figure 2.5: Lucy Willoughby's anatomical drawing of the cross section of an eyeball[52]

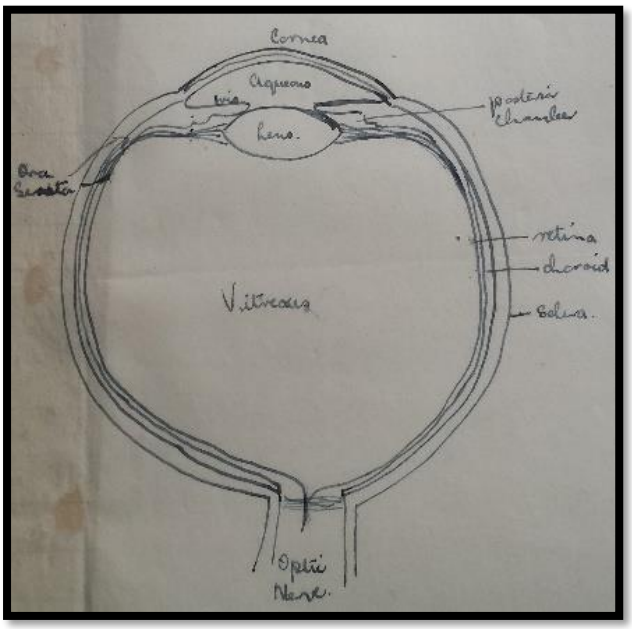
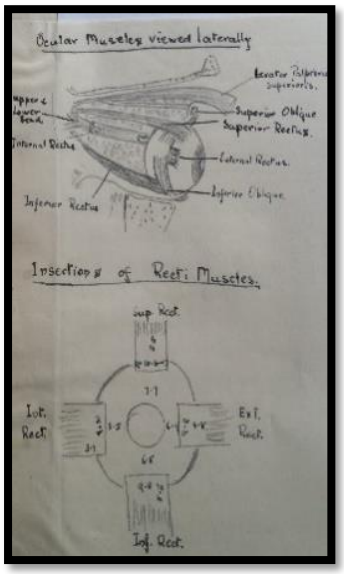


Figure 2.6: Lucy Willoughby's drawing of ocular musculature[53]



[52] Willoughby, "1937 Orthoptic student notes."
[53] Willoughby, "1937 Orthoptic student notes."

Figure 2.7: The Synoptophore (Clement Clarke Ltd.) circa 1950.[54]

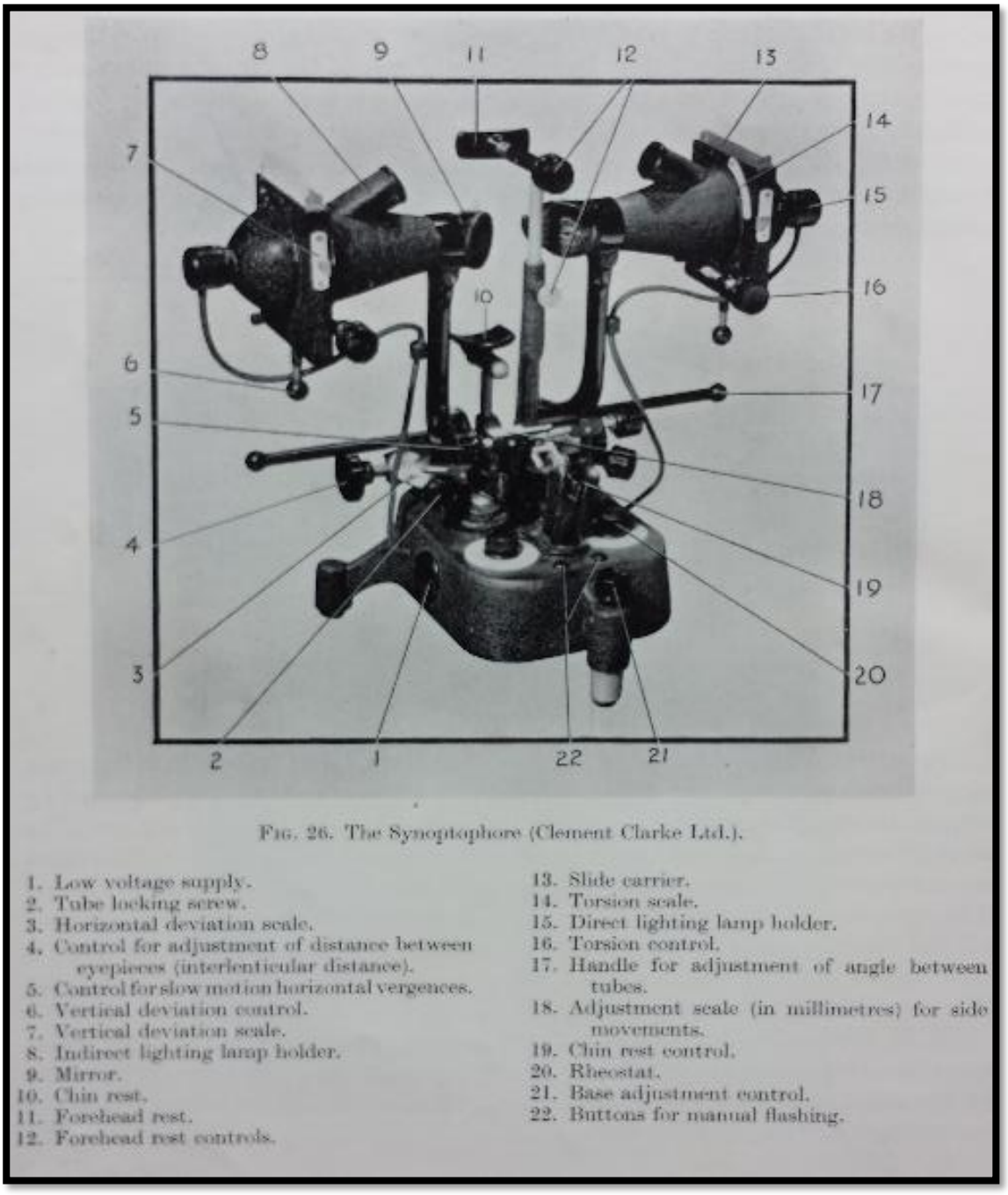


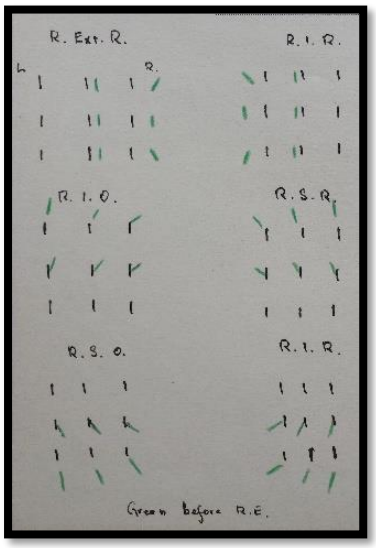
FIG. 26. The Synoptophore (Clement Clarke Ltd.).

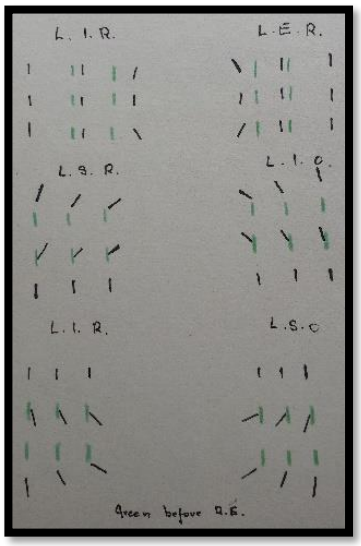
1. Low voltage supply.
2. Tube locking screw.
3. Horizontal deviation scale.
4. Control for adjustment of distance between eyepieces (interlenticular distance).
5. Control for slow motion horizontal vergences.
6. Vertical deviation control.
7. Vertical deviation scale.
8. Indirect lighting lamp holder.
9. Mirror.
10. Chin rest.
11. Forehead rest.
12. Forehead rest controls.
13. Slide carrier.
14. Torsion scale.
15. Direct lighting lamp holder.
16. Torsion control.
17. Handle for adjustment of angle between tubes.
18. Adjustment scale (in millimetres) for side movements.
19. Chin rest control.
20. Rheostat.
21. Base adjustment control.
22. Buttons for manual flashing.

[54] Lyle and Walker, *Lyle and Jackson's Practical Orthoptics in the Treatment of Squint*, 37.

Figure 2.8: Hand-drawn Diplopia Chart of extra ocular muscles parieses of the **right** eye by Lucy Willoughby.[55]

Figure 2.9: Hand-drawn Diplopia Chart of extra ocular muscles parieses of the **left** eye by Lucy Willoughby.[56]





One of the hallmarks of orthoptic practice, instilled by Mary Maddox from the discipline's inception, was a constant evaluation of the various treatment regimens. As she said in her 1939 Presidential address the principles of orthoptics were based on scientific work by ophthalmologists Javal and Worth, and adapted by orthoptists based on their experience and observation after studying individual cases:

> grouped together to form the basis of our rules of practice. These rules have therefore been evolved as a result of trial and error, while exploring every avenue within our reach. By this [method] those things which are of little value have been excluded from our treatment, and those which have been proved good have been retained. This has meant that new methods, new techniques, new apparatus, have constantly been added to our armament.[57]

[55] Willoughby, "1937 Orthoptic student notes." See definition of extra ocular muscles in the Glossary of Terms.
[56] Willoughby, "1937 Orthoptic student notes." See definition of extra ocular muscles in the Glossary of Terms.
[57] Mary Maddox, "President's Letter." *British Orthoptic Journal* 1, (1939): 6.

Maddox led by example. She designed a set of graded slides to be used in the synoptophore and recommended the addition of a flashing device. These improvements enabled the diagnosis of normal and abnormal binocular vision, information which affected the outcome of surgery.[58] As I shall show in the chapters which examine the development of orthoptics in the 1940s and 50s, Australian orthoptists followed Maddox's example and constantly evaluated orthoptic practice examination methods and therapy techniques. As early as the late 1930s, less than a decade after orthoptists took up the discipline, some of the tests, such as Priestly Smith's *Fusion Tubes* and *Heteroscope,* were no longer widely used having been superseded by the synoptophore. From the outset measurement devices and empirical assessment techniques were central to the formalised study and practice of orthoptics.

Conclusion

From 1900 to the early 1930s, British ophthalmology developed the discipline of orthoptics to meet medical needs, rather than working with optometrists. This meant there was now a fundamental divergence of theoretical opinion between ophthalmology and optometry. 'Ophthalmic' orthoptics was underpinned by the biological sciences of anatomy and physiology while orthoptics, as practised by optometrists, had its roots in psychology. Given that psychology was in its infancy in the early twentieth century, it is not surprising that ophthalmologists chose not to work with a group which held a fundamentally different concept of orthoptics. Additionally, there was an unresolved demarcation rift between the two disciplines. Optometrists wanted to work independently of ophthalmological control. Ophthalmologists posited that optometrists did not have the qualifications to separate defects of vision due to refractive errors from those due to a medical cause. This was the

[58] Abnormal Retinal Correspondence was first described by Helmholtz in 1867. Gunter von Noorden, "Panorama of Historical Landmarks," in *The History of Strabismology,* ed. Gunter K von Noorden (Oostende, Belgium: J P Wayenborgh, 2002), 294. It is a condition where the macula of the 'straight' eye is used in conjunction of the non-macular area of the 'turned' eye. Lyle and Walker, *Lyle and Jackson's Practical Orthoptics in the Treatment of Squint*, 351.

basis for the ophthalmological argument that optometrists, like orthoptists, should only manage patients on medical referral.

This standpoint opened the way for ophthalmology to establish the new discipline of orthoptics under its direction, including medical referral. When Ernest Maddox recognised that his daughter, Mary, was competent to carry out orthoptics, he encouraged her to open a private practice in London. She quickly showed her aptitude and within a short time, ophthalmologists referred patients to her. Ophthalmologists referred their patients to orthoptists who were lay practitioners, not because they under-valued orthoptics, but because it relieved them of a time-consuming activity for which they were not trained and for which they had little propensity. Orthoptic therapy may have been less lucrative than other aspects of ophthalmology, but there is no evidence that financial imperatives were a driving force behind entrusting orthoptists with the diagnosis, design and implementation of treatments regimens. The benefits of a partnership between ophthalmologists and medical auxiliaries practicing orthoptics spread quickly in Britain and by 1932 there were four schools in England, two in London and two in Birmingham. By 1934 a syllabus was drawn up by the governing body, the Council of Orthoptic Training.

There is no known record of what Mary Maddox said as she delivered her initial lecture to her first trainees, Gladys Irvine and Sylvia Jackson. Did she lay the ground rules for what orthoptics could and could not achieve? Maddox was aware of the advantages and limitations of the non-surgical management of eye movement disorders. She recognised that the discipline of orthoptics emanated from ophthalmology, that the working relationship between orthoptists and ophthalmologists while subordinate, would be collaborative.

She also recognised that females were eminently suited to orthoptics. The orthoptists she and Sheila Mayou trained demonstrated that they had the intellectual capability to master ocular anatomy and physiology and optics to a diploma level, the skills to learn and handle sophisticated instruments and the temperament to conduct time-consuming and sometimes repetitive therapy with patients of all ages. Writing in 2006 Vivien MacLellan observed, the first English trainees:

> were pioneers in a new profession facing careers in a rapidly changing and expanding medical environment. There were many difficulties to be overcome, and a great many lessons to be learnt…[but] these "career girls" (and one brave man Eric Pemberton) were full of optimism and a sense of vocation.[59]

Despite Pemberton successfully completing the course and presumably working as an orthoptist no other male students were accepted into the English orthoptic course until after Australia accepted its first male student in 1975. MacLellan made no comment that a male was amongst the first trainees. The only other reference to Pemberton was made by one of his contemporaries, Edna Claridge, who recalled him as being 'quiet and shy, but soon began to fit in.' Like MacLellan she gave no hint as to why there were no male orthoptist in those early years.[60] It seems that gender division of labour was so entrenched in this period, that it was taken for granted that orthoptics was a career for females.

[59] MacLellan, *Orthoptics – the early years*, 15.
[60] MacLellan, *Orthoptics – the early years*, 21.

CHAPTER 3. THE EMBRYONIC YEARS IN AUSTRALIA: 1931-39

> There was a certain amount of opposition…the older men were in general not in favour [of Maddox orthoptics] …they do not approve of [medically] unqualified people doing it. The great majority – and certainly all the younger doctors – seemed impressed.[1]

Introduction

Modern orthoptics was introduced to Australia in 1931 not long after new developments in British ophthalmology that favoured the rise of orthoptics as an auxiliary practice. It was only three years after orthoptist Mary Maddox opened her private practice and two years after the first orthoptic clinic was established at the Royal Westminster Ophthalmic Hospital (RWOH) in London that Australian ophthalmologists set up and conducted rudimentary training courses in Melbourne and Sydney. Based on the British orthoptic teaching model, the teaching method was apprentice-style in clinical environments, initially with ophthalmologists as educators until orthoptists gradually took over the teaching role. From available evidence 14 orthoptists trained between 1931 and the outbreak of World War II (WWII) in 1939.[2] They were practising in New South Wales (NSW), Victoria, South Australia and Tasmania with the largest concentration of orthoptists in Sydney and Melbourne.

This chapter examines how ophthalmologists introduced orthoptics into their Australian practices, how the early orthoptists responded to the opening of this new occupation in Australia and the early stages of its development as a profession, in particular, the hallmarks of credentials, registration, and the establishment of a professional society. I shall show that when Australian ophthalmologists opted to establish orthoptics, they followed the British model of ophthalmology-controlled training and registration, albeit with some modifications due to local circumstances. They also chose trainees who mirrored the

[1] British orthoptist, Sheila Mayou's comments after speaking at the 103rd British Medical Association conference in Melbourne in 1935. "B.M.A. Meets. Australia Honour at Melbourne," *Truth*, (Sydney, NSW: 1894 - 1954), September 8, 1935, 26.

[2] Shayne Brown and Jill Gordon, *Rear Vision: Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019).

profile of the English orthoptists. Despite these limits, by the end of 1939, the Australian orthoptists were gradually taking on the role as educators and from the 1940s they began to have input into student selection and registration matters. In eight short years through dedication and application, these early orthoptists created and sustained orthoptics as a desirable career option for Australian women, a profession that required some medical knowledge, technical expertise and good personal communication skills. Like the other allied health professions of occupational therapy, physiotherapy, social work and speech therapy, orthoptics offered a career choice for intelligent women interested in a more specialised training in the novel field of auxiliary medicine. Yet, unlike these professions, the Australian beginnings of orthoptics drew deeply from the English experience, especially the emerging expertise, theoretical knowledge and diagnostic techniques.

Nevertheless, there were differences and similarities between the development of orthoptics in Australia and England. A significant difference was that Mary Maddox was responsible for educating ophthalmologists, a rare example of a practitioner of an allied health discipline controlling the knowledge base in its formative years. Mary Maddox's followers, armed with this discreet knowledge, possessed a sense of both ownership and authority. Very quickly they gained the respect of ophthalmologists which gave them the confidence to obtain support from ophthalmologists to set up hospital clinics in other parts of England.[3] The situation in Australia was different. Australian ophthalmologists who were taught orthoptics in England became the educators. Consequently, from the outset, Australian orthoptists commanded less authority than their English counterparts. Nonetheless, orthoptics in England and Australian shared some commonalities. In both countries it was accepted that orthoptics was subordinate to ophthalmology and as a condition of practice, patients were treated on ophthalmological referral. Also, in both countries there were ophthalmologists who believed in the efficacy of orthoptics and those who did not, based on varying opinions of the available physiological knowledge at the time. While all orthoptists shared the problem of opposition from some sections of

[3] Orthoptists Vivienne MacLellan provides an insight into the establishment of orthoptic clinics in England. She captures the enthusiasm with which the early English orthoptists took up orthoptics and set about establishing clinics in areas outside London. Vivien MacLellan, *Orthoptics – the early years* (Keighley, Yorkshire: Ann Macvie, 2006), 15-27.

ophthalmology, Australians, with less authority than their English colleagues, had a greater struggle for recognition, both within ophthalmology and in the wider medical community.

The incorporation of orthoptics into ophthalmology practice

Before the establishment of the Royal Australian College of Ophthalmologists in 1969, most Australian ophthalmologists completed their specialist training in Britain. In the late 1920s those interested in eye movement disorders were exposed first-hand to the 'Mary Maddox Method' of the non-surgical management of eye movement disorders. They appreciated that the time-consuming and technically difficult orthoptic work could be handled by reliable, meticulous and conscientious women and were keen to establish orthoptics in Australia. There was a direct link between Mary Maddox's development of the field in Britain and the establishment of orthoptics in Australia, via Australian ophthalmologists who trained at the RWOH and were taught orthoptics by orthoptists working at the hospital.

The introduction of orthoptics to Australia differed from the origins of other allied health professions. Two examples are modern physiotherapy and social work which, unlike Australian orthoptics, had early female practitioners to promote and steer their disciplines.[4] The impetus for the emergence and early development of both groups came from within their own ranks, unlike Australian orthoptics where there were only one or two untrained orthoptists working as assistants, and who were in no position to take a leading role in founding a new occupation in Australia.

In the formative years Australian ophthalmologists were determined to control the way orthoptics in Australia developed, and this set the course for the relationship between orthoptists and ophthalmologists. There is no evidence that Australian ophthalmologists

[4] Joan McMeeken, "From Massage to Physiotherapy: The Emergence of a Profession." In *The First World War, The Universities and the Professions in Australia 1914-1939*, edited by Kate Darian-Smith and James Waghorne, Carlton: Melbourne University Press, 2019, 81; Lynsey T Cullen, "The First Lady Almoner: The Appointment, Position, and Findings of Miss Mary Stewart at the Royal Free Hospital, 189 -99," *Journal of the History of Medicine and Allied Sciences* 68, no. 4 (2012): 551-82; Bentley, Philip with Dunstan, David, *The path to Professionalism: physiotherapy in Australia to the 1980s* (Melbourne: Australian Physiotherapy Association, 2006).

considered inviting an English orthoptist to develop a training program. Ophthalmologists were responsible for the establishment of orthoptic clinics and all aspects of training and registration. In the initial stages, this path meant that Australian orthoptists had less autonomy and authority to direct the profession's growth compared to their British counterparts.

There is also no evidence of women ophthalmologists championing the cause of female orthoptists or assisting the development of orthoptics as a discipline. Between 1931 and 1960 there were 20 female ophthalmologists known to have practised at some time in Australia.[5] All worked in private practice, some in partnerships with their ophthalmologist husband, and the majority in the capital cities. Most held honorary positions at public hospitals and one (Ellen Day) was the Deputy Superintendent at the Victorian Eye and Ear Hospital (VEEH) from 1936-71. They were active in clinical practice but had little authority in the male dominated Ophthalmological Society of Australia (BMA) (the forerunner to the Royal Australian and New Zealand College of Ophthalmologists) where decisions about orthoptic training or further developments were made. Many showed support of orthoptics by referring patients who required orthoptic therapy. As Dr Zena Webster said: 'In my days with squints [strabismus] I was always grateful for the considered opinions and reports from orthoptists – pre and post-op surgery – and for the benefits my patients had from orthoptic treatment.'[6] But because none of these female ophthalmologists held any office in the Ophthalmological Society of Australia (BMA) (OSA), they were not actively involved in the development of orthoptics.

Australian ophthalmologists established orthoptic clinics at the hospitals where they were honorary surgeons. There were restrictions to the extent that hospitals were able and willing to accommodate new clinics or provide resources to expand existing ophthalmic clinics. Full-time eye clinics in Melbourne and Sydney operated at the VEEH and at Sydney Eye Hospital (SEH). Here, once established, orthoptic clinics operated on a full-time basis as

[5] Information obtained from the Barry Diletti, Executive Assistant, the Royal Australian and New Zealand College of Ophthalmologists, 3 March 2020.

[6] Zena Webster, retired ophthalmologist, in conversation with the author, 14 June 2016.

independent clinics within the hospital. There were also eye clinics at hospitals elsewhere in Australia which mostly ran on a part-time basis. Not all these part-time eye clinics included orthoptic services. For those which did, they too ran on a part-time basis, sometimes offering as little as one session per week, and depending on oversight by an ophthalmologist.

The situation in England was different. With a significantly larger population and more hospitals to service large patient loads, the demand for orthoptic services was greater and more full-time orthoptic clinics were created from the outset.[7] Australian orthoptists often complained that other disciplines did not understand the place of orthoptics, but it was difficult to have a profile within a hospital when the clinic was functioning for only short periods each week.

Another hurdle was securing funding for new clinics. Ophthalmologists had to negotiate with hospital boards for additional space and to purchase orthoptic equipment.[8] This was not an easy task. Ophthalmology was generally not a stand-alone department within general hospitals even in the large public hospitals in Sydney and Melbourne. The ophthalmology department usually came under the umbrella of the department of surgery and was considered a 'junior' specialty compared with others such as orthopaedics. Ophthalmologists had a constant battle competing with larger departments to fund routine ophthalmic requirements let alone arguing for clinic space and equipment for an untried discipline like orthoptics.

The outcome of this situation differed between Melbourne and Sydney. In Melbourne orthoptics was practised within existing eye clinics so there were almost no specifically designated 'orthoptic' clinics. Orthoptists only worked when the ophthalmically-staffed eye clinic was in session. The one exception was at the VEEH which had a dedicated orthoptic clinic. Sydney was different where there were designated orthoptic clinics. As in

[7] Full-time was defined as 10 sessions a week; anything fewer was defined as part-time. The situation was the same in Australia. There is insufficient evidence on the relative patient loads between the UK and Australia to make a meaningful comparison.

[8] Australia was not alone. British orthoptist, Vivien MacLellan alluded to difficulties funding the establishment of orthoptic clinics in England. MacLellan, *Orthoptics - the early years*, 17-19.

Melbourne, the Sydney orthoptic clinics operated when ophthalmologists were running the clinics, but as orthoptics expanded in Sydney in the mid to late 1930s orthoptic clinics ran independently and at times when ophthalmologists were not at the hospital.

The reasons for the difference between Sydney and Melbourne are unclear. It is possible that NSW hospitals were better funded, and ophthalmologists had more success in negotiating for additional resources. It could also have been due to a differing attitude between the Melbourne and Sydney ophthalmologists relating to how orthoptics should be practised. Sydney ophthalmologists more closely followed the British model where ophthalmologists referred patients to the orthoptist who was responsible for the unsupervised assessment and management of patients and referred them back to the ophthalmologist when the orthoptic therapy was finalised, when the orthoptist considered the patient needed an ophthalmological re-assessment, or once in a twelve month period, whichever was the shortest time frame. It was accepted practice in NSW that a patient should be reviewed by the referring ophthalmologist at least once a year. At this consultation the ophthalmologist reviewed the patient's refraction and treatment progress. In Melbourne, the orthoptist saw patients at the same time as the ophthalmologist who would then act on the orthoptist's report and instruct the orthoptists to initiate treatment. Melbourne ophthalmologists more closely controlled orthoptic therapy in those settings. However, in private practice in Sydney and Melbourne orthoptists had sole control of therapy until treatment reached the point where further ophthalmological intervention was required. Had Melbourne orthoptists been allocated more public hospital clinic time they may have developed more independent practice akin to private orthoptic practice.

At least in the early stages, public hospitals were spared the expense of orthoptic salaries. Before the mid-1930s, orthoptists in public hospitals in Melbourne and Sydney were appointed in an honorary capacity. Not until 1936 did orthoptists at the VEEH receive a salary. The date that NSW orthoptists were first paid in public hospitals is unknown but was probably at a similar time. This mirrored the situation in the first orthoptic clinics in

England.[9] Australia was simply three to four years behind.[10] While some orthoptists were supported by their wealthy families, others needed to provide for themselves. Without being paid in the public health service there were two options - to work in their own private orthoptic practice, or to work with, and be paid by, an ophthalmologist in his consulting rooms. Working with and being paid by an ophthalmologist was a common mode of practice for Melbourne but less so in Sydney where they were more likely to be self-employed.

From the scant records available, by the outbreak of war in 1939 orthoptic clinics had been established in Melbourne at the Alfred Hospital, the VEEH and possibly St Vincent's Hospital. In Sydney clinics were functioning at the Royal Alexandra Hospital for Children (RAHC), Medical Eye Service (MES), Sydney Eye Hospital (SEH), Far West Children's Health Scheme and the Royal Prince Alfred Hospital (RPA). Clinics had also been established at the Royal Hobart Hospital, the Adelaide Children's Hospital, and at the Broken Hill and District Hospital. In the 1930s, most of these clinics were run on a part-time basis.

Part-time clinics affected work patterns. Unlike in Britain where most orthoptists had full-time positions at one hospital, in Australia orthoptists had to work part-time in more than one clinic to make up a week of full-time work. In the 1930s it became increasingly common for an individual orthoptist to work in a public hospital clinic and in a their own private orthoptic practice. In Melbourne it was common practice for an ophthalmologist to employ an orthoptist to work in his private rooms. This type of employment was not followed in NSW to the same extent.

A major consequence of this haphazard employment was a lack of professional identity for these women orthoptists. Also, orthoptic training was not credentialled as other female professions, for example physiotherapy or teaching, were. These circumstances influenced the relationship between ophthalmologists and orthoptists and established a culture of master and apprentice, with the power in the hands of the doctors. Whether or

[9] MacLellan, *Orthoptics - the early years*, 19.
[10] MacLellan, *Orthoptics - the early years*, 20-1.

not a clinic was given the title 'orthoptic' may seem inconsequential, however having a title helps provide a professional identity. As they were not able to work in a designated 'orthoptic' clinic the profile of orthoptists In Australia was low and worked against their ability to lobby for the expansion of orthoptic clinics in the public health sector. Local orthoptic practice in Australia in the 1930s therefore remained largely defined by ophthalmologists, whereas in Britain orthoptists had more control of patient management.

Orthoptic training in Australia before structured courses and a set curriculum

Before the first orthoptic clinics and training schools were established some ophthalmologists taught basic orthoptic skills to a small, but unknown, number of women. Two illustrative cases are Audrey Wormald and Diana Mann. Wormald (Figure 3.1) was secretary to Sydney paediatric ophthalmologist, Edwin Temple Smith in his Macquarie Street practice. Temple Smith taught Wormald some basic orthoptic test techniques in the late 1920s, which included assessing children's visual acuity and instructing parents whose children had an eye occluded as treatment for the child's amblyopia.[11] She accompanied Temple Smith to the Eye Clinic at the RAHC where she performed similar duties.

Figure 3.1: Audrey Wormald (née Roberts).[12]

Training was crucial to professional success. When orthoptist Emmie Russell commenced working at RAHC in 1933, she and Wormald worked together for a short while, but without further training Wormald very quickly ceased working with patients both at the hospital and at Temple Smith's private practice. Now that there was a trained

[11] Reuben Hertzberg, "The Emmie Russell Department of Orthoptics," Unpublished. Sydney Eye Hospital Library. (circa 1997): 2.

[12] "Recently Engaged," *The Sun (Sydney, NSW: 1910 - 1954)*, 14 February 1926:22.

orthoptist in Sydney, Temple Smith no longer had to rely on Wormald who had not received any formal orthoptic training.

Another example is Victorian Diana Mann who worked as a scientific secretary to ophthalmologist, Joseph Ringland Anderson in the early 1930s. Mann had a science degree from the University of Melbourne. Among her duties were data collection and some clinical work under Ringland Anderson's instruction.[13] Unlike Wormald, Mann later trained as an orthoptist and had a career of over 40 years. These stories provide a glimpse into the beginnings of orthoptics before formal training courses were established, and while the discipline itself was developing.

Australian ophthalmologists had intended to follow the British hospital-based training model, but this did not eventuate. In Britain orthoptic training schools were centred in the orthoptic departments at major teaching hospitals. By 1939, nine schools had been established.[14] From the outset British orthoptists were responsible for teaching orthoptic theory and clinical techniques. Later the basic sciences of anatomy, physiology and optics, taught by ophthalmologists, were incorporated into the courses. By 1934 the Council of Orthoptic Training (later the British Orthoptic Board) had produced a *Syllabus for Student Trainees* and also by-laws governing the practice of orthoptics.[15] Australian ophthalmologists envisaged following the British model.[16] However it became apparent that hospitals did not have the patient load to sustain individual training schools and while ophthalmologists in states outside NSW and Victoria wanted to work with orthoptists, only Melbourne and Sydney had the personnel and resources to establish training facilities. Ophthalmologists from the smaller states never lobbied for local training facilities, instead,

[13] Margaret Park, "Craig, Diana Sophy (1912-1992), *Dictionary of Biography*. Last modified 2016. Accessed 29 August 2018. http://adb.anu.edu.au/biography/craig-diana-sophy-21318; Julie Green, "Obituary: Diana Sophie Craig (née Mann) 1912-1992)," *Australian Orthoptic Journal* 28 (1992): 51.

[14] MacLellan, *Orthoptics - the early years*, 18.

[15] Lesley-Anne Baxter, *Orthoptics: 75 Years of History 1937-2012 British Orthoptic Society* (Crediton, UK: Hedgerow Print, 2012), 18.

[16] "Notes of activities leading up to formation of the Board" Section 4. Orthoptic," *Minutes of the First Meeting of the Orthoptic Board of Australia, 15 October 1941*, 1, held at the Royal Australia College of Ophthalmologists, Chalmers Street, Surry Hills, Sydney.

relying on orthoptists who had been trained in Sydney or Melbourne. The Sydney and Melbourne schools provided, and continue to provide, the orthoptic workforce for Australia.

From the outset training consisted of a six-month's apprenticeship under the direction of ophthalmologists. This 'on-the-job' training continued until more formal training courses were established in the early 1940s.[17] In the formative years patient treatment and trainee education were inextricably linked. When trainees were in hospital outpatient clinics ophthalmologists, and later orthoptists, taught orthoptic techniques while treating patients. Hospital eye clinics were busy places so there was no time for lectures in clinic hours. Until a formal curriculum was introduced in 1940, ophthalmologists taught orthoptic theory and basic sciences in their consulting rooms and often in their homes outside their hours of practice.[18] Initially orthoptics was not an academically credentialled program. In 1938 after the establishment of the state based Orthoptic Councils graduates from the Melbourne and Sydney training schools were awarded a Certificate of Proficiency. This certificate, issued in the name of the OSA, guaranteed the orthoptists' right to practice and that they had completed a *bona fide* course of training under the auspice of the OSA.

Orthoptic training in Melbourne

The first orthoptic clinic in Australia was set up within the ophthalmology department at the Alfred Hospital in Melbourne in 1931. The clinic was called the *Save Sight Class*. Ringland Anderson and Thomas a'Beckett Travers, both honorary ophthalmologists at the Alfred, trained orthoptists at the hospital and in their private practices. Ringland Anderson provided most of the tuition, including, and importantly, the use of the synoptophore, an essential piece of equipment for orthoptic diagnosis and therapy.[19] Travers and Ringland Anderson owned the only two synoptophores in the country, which possibly explains why

[17] Larsen, The historical development of knowledge in physiotherapeutic spinal manual therapy, 83.

[18] Rosemary Farrow (née Chapman), retired Melbourne orthoptist, interview for the Orthoptics Australia Interview Archive Project, 21 April 2016.

[19] Lance, "Presidential address," *1954:*16; Anne-Marie Mahoney, "Apprentice to Doctor: Orthoptic Education in Australia," Paper written as part of Graduate Diploma of Education, Contextual Studies in Adult Vocation Education, 23 October 1995.

training started in Melbourne rather than in Sydney. As in Britain, trainees spent their time in the clinic learning the examination and therapy techniques. The difference being that in Britain the clinical 'educators' were orthoptists. The Alfred remained the major Victorian training centre until the outbreak of the WWII. Clinical training was also carried out at the VEEH from 1933 until 1937 when the hospital was closed for 11 months due to a polio outbreak and then closed again for five years during WWII.[20]

Orthoptic training in Sydney

Temple Smith, the senior Honorary Ophthalmic Surgeon at the RAHC, 'prided himself on keeping up to date and was keen to establish an orthoptic clinic at RAHC before he retired.'[21] Around 1932 he tasked his junior colleague Gregory Roberts with establishing the new orthoptic clinic, which he did in 1933. This was the first orthoptic clinic in NSW and became the initial training hub. Orthoptic training in Sydney shared similarities with Melbourne, albeit with some differences. In contrast to the training in Melbourne, which centred around tuition offered by Ringland Anderson and Travers at the Alfred and in their private rooms, orthoptic education in Sydney was only undertaken at the RAHC. Otherwise the training scheme was similar. By the beginning of 1939, the orthoptic clinics at the Royal Prince Alfred Hospital and the Medical Eye Service were additional approved sites by the registration and education body, the Orthoptic Council of NSW.[22]

The orthoptists of the 1930s

Having to start a discipline 'from scratch' the ophthalmologists had to find and recruit trainees. They encouraged women within their social and work circles.[23] In the main, these

[20] Gardiner, *'The Eye and Ear': The Royal Victorian Eye and Ear Hospital Centenary History*, 1968, 45.
[21] D G Hamilton, *Hand in Hand: The Story of the Royal Alexandra Hospital for Children* (Sydney: John Ferguson; 1979), 158.
[22] "Minutes of the Orthoptic Council of NSW," RANZCO, Chalmers Street, Surry Hills, Sydney, 9 February 1939: 1.
[23] There were many social connections between the early orthoptists and ophthalmologists. As examples, in Melbourne Nancy Southey was J. Ringland Anderson's sister-in-law. Ringland Anderson was a friend of the families of Margaret Cumming, Margaret Fox, and Helen Bryant. In Sydney ophthalmologists Norman Gregg and Ringland Anderson were family friends of Emmie Russell; Temple Smith knew Ivy Martyn's family. For profiles of the first 76 Australian orthoptists, see Brown and Gordon, *Rear Vision*, 2019.

included family friends and nursing colleagues, not unlike the profile of the British orthoptists. They had to be mature, intelligent, patient and have good people skills, especially with children. There is no indication that males were ever considered as potential orthoptists. Orthoptics was thought of as an all-female career, akin to the other 'caring and nurturing' disciplines, the other allied health therapies, and nursing. An account of the first 76 women who worked as orthoptists shows how this profession emerged in Australia, as a close-knit network of women trained in Melbourne, Sydney and in Britain.[24] The following table encapsulates aspects of this generation of Australian orthoptists including how most had some formal training and/or professional experience prior to becoming orthoptists. The table also shows that by the latter part of the 1930s, most had acquired an official orthoptic qualification.

[24] For profiles of the first 76 Australian orthoptists, see Brown and Gordon, *Rear Vision*, 2019).

Table 3.1: List of orthoptists, their qualifications prior to studying orthoptics, their orthoptic qualification and places of work, 1931-39.

ORTHOPTISTS	PREVIOUS QUALIFICATION/S	PLACE & DATE of ORTHOPTIC TRAINING	ORTHOPTIC QUALIFICATION	PLACES of WORK
Nancy Southey (née McComas)	BA	Melbourne, 1931	No formal qualification	Private orthoptic practice; Alfred Hospital, Melbourne.
Emmie Russell	Home duties; Red Cross volunteer in WWI	Melbourne, 1932	Certificate of Proficiency 1938	Private orthoptic practice; RAHC, Sydney
Margaret Cumming (later MacKnight)	Unknown	Melbourne, 1932	No formal qualification	Private orthoptic practice; Alfred Hospital, Melbourne
Margaret Fox	BA (enrolled but unknown if she graduated)	Melbourne, 1932.	Certificate of Proficiency (date unknown)	Private orthoptic practice; Alfred Hospital, Melbourne
Ethel D'Ombrain	Secretarial experience	Sydney, 1933	Certificate of Proficiency 1938	RAHC, Sydney
Helen Bryant	School teacher	Melbourne, 1933	No formal qualification	Private orthoptic practice; Alfred Hospital and VEEH.
Lena Gilchrist	Nursing training	Melbourne, 1933	DBO (London) 1939; Certificate of Proficiency (date unknown).	Own private practice Royal Hobart Hospital
Irene Gluckman	Nursing training	Sydney, 1933	Certificate of Proficiency, 1938	RAHC; Medical Eye Service, Sydney.
Lillian Ives	Nursing training	Sydney, 1933	Certificate of Proficiency, 1938	Lillian Ives
Lucy Willoughby (later Retalic)	Kindergarten teacher	Melbourne, 1934	DBO, 1938; Certificate of Proficiency (date unknown).	Private orthoptic practice; Adelaide Children's Hospital.
Joan Atkinson (later Holland)	Nil	London 1935	DBO, 1935; Certificate of Proficiency, 1938	Private orthoptic practice; Medical Eye Service, Sydney.
Mary Peoples	Tresillian nursing training	Apprenticeship training with L. Willoughby, 1937	Certificate of Proficiency (date unknown)	Private orthoptic practice; Broken Hill Hospital
Diana Mann (later Craig)	BSC	Melbourne, 1938	Certificate of Proficiency, (date unknown)	J. Ringland Anderson's private rooms.
Ivy Martyn	Secretarial experience	Sydney, 1938	Certificate of Proficiency, 1941	Far West Children's Health Scheme, Sydney.

Melbourne-trained orthoptists

Figure 3.2: Ethel 'Nancy' Southey (née McComas) [25]

Ethel 'Nancy' Southey (née McComas) (Figure 3.2), a young Melbourne widow, was the first Australian-trained orthoptist.[26] She was an outstanding school student. She attended the University of Mebourne and graduated with a Bachelor of Arts degree in 1917. She married Allen Southey in 1920. What she did between her graduation and marriage is not known. Sadly, in 1929 she was widowed and left to raise their three young children. She was Ringland Anderson's sister-in-law and in 1931 he encouraged her to take up orthoptics.

The next to train were Emmie Russell from Sydney; Margaret Cumming and Margaret Fox from Victoria in 1932; and Helen Bryant, Lena Gilchrist, also from Victoria and South Australian Lucy Willoughby in 1933. Victorian Diana Mann was the last to be trained in the 1930s. She completed the course in 1938.[27]

These women ranged in age from the youngest, Lucy Willoughby at 26 years to the oldest, Lena Gilchrist at 37 years; the average was 31 years. All the students had previous qualifications. Margaret Fox and Nancy Southey had Arts degrees, and Diana Mann a science degree. Lena Gilchrist had a nursing background. Helen Bryant and Lucy Willoughby had been schoolteachers and Emmie Russell had administrative experience. Margaret Cumming was in her mid-twenties when she trained, but what she did beforehand is unknown. Nancy Southey was a widow with young children; Helen Bryant, Margaret Cumming, Margaret Fox, Lena Gilchrist, Diana Mann, Emmie Russell and Lucy Willoughby were unmarried as students. Margaret Cumming worked until she was married. Helen

[25] "Mrs Allen Southey, the newly elected president of the Victorian Women's Graduates' Association," *The Age (Melbourne, Vic.: 1854 - 1954)*, 17 December 1937: 3.

[26] Hugh Taylor, Nancy Southey's great nephew, did not know why she took on a new career but thought that while she had some independent means she may have needed some income. Hugh Taylor, ophthalmology professor and Nancy Southey's great nephew, interview for the Orthoptics Australia Interview Archive Project, 9 June 2016.

[27] For profiles of the first 76 Australian orthoptists, see Brown and Gordon, *Rear Vision*, 2019.

Bryant, Lena Gilchrist, and Emmie Russell remained single all their working lives. Lucy Willoughby married after World War II. She took time out to have children and then returned to work when they were young, which was unusual for women of that time.[28]

In Melbourne when Margaret Cumming, Margaret Fox and Nancy Southey completed their training, Ringland Anderson encouraged them to work with him at the Alfred Hospital, but as mentioned earlier, orthoptic positions in public hospitals were honorary at that time. To earn a living these three women opened a private orthoptic practice in the T & G Building in the heart of Melbourne. Nancy Southey worked at the practice for several years and retired between 1933 and 1934 possibly due to the demands of a young family.[29] Margaret Cumming retired in 1936 when she married which was in keeping with the social mores of the time. Margaret Fox had the longest career of the three and remained unmarried. She completed further training in London and returned to work in Melbourne until she retired in the 1950s.[30] Helen Bryant ran the private practice while Fox was overseas and had retired from orthoptic practice by the end of the 1930s. Diana Mann, too, set up her own private practice and by the end of the decade was also working at the Alfred Hospital with Ringland Anderson. Mann married late in her career. She did not have children. Lena Gilchrist and Lucy Willoughby, like Fox went to England for further orthoptic training. When they returned, Gilchrist went to Hobart where she set up a private practice and was employed at the Royal Hobart Hospital. Willoughby returned to Adelaide, set up a private practice and worked at the Adelaide Children's Hospital.

By the end of the decade five of the Melbourne-trained orthoptists were working – Emmie Russell in Sydney, Margaret Fox and Diana Mann in Melbourne, Lena Gilchrist in Hobart and Lucy Willoughby in Adelaide.

[28] For profiles of the first 76 Australian orthoptists, see Brown and Gordon, *Rear Vision*, 2019.
[29] Taylor, interview.
[30] "Impressive Ceremony at University Conferring of Degrees and Garden Party," *Table Talk (Melbourne, Vic: 1885 - 1939),* 19 September 1935, 47.

Sydney/NSW orthoptists

Sydney-based, Emmie Russell (Figure 3.3) completed her training in Melbourne in 1932 there being no training program in Sydney at the time. [31] She had family and social connections with ophthalmologist Norman Gregg who persuaded her to study orthoptics in Melbourne. When she returned to Sydney in 1933, she accepted an honorary orthoptic position at RAHC.

Figure 3.3: Thea Proctor's 1924 drawing of Emmie Russell[32]

In the same year Ethel D'Ombrain joined her and completed her training under Emmie Russell's tutelage. D'Ombrain was followed by Irene Gluckman and Lillian Ives in 1934 and Ivy Martyn in 1938. As a 20-year old, Joan Atkinson went to London where she trained in orthoptics.[33] She was the first Australian to be awarded the Diploma of British Orthoptics in 1935. Mary Peoples received preliminary training with Lucy Willoughby in Adelaide during 1937. The ages and the backgrounds of these trainees mirrored those in Melbourne. The NSW students ranged in age from the youngest, Joan Atkinson at 20 years to Lillian Ives at 44 years; the average was 35 years. Apart from Joan Atkinson, all trainees had previous qualifications. Irene Gluckman, Lillian Ives and Mary Peoples came from nursing backgrounds. Ethel D'Ombrain, Ivy Martyn had general secretarial experience. Of the NSW trainees, two married prior to training - Ethel D'Ombrain who became a single

[31] For detailed biography see "A Tribute to Emmie Russell," *Australian Orthoptic Journal* 26 (1990): 48-9; Margaret Park, Park, Margaret, 'Russell, Emmie (1892–1987)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University. Accessed 29 August 2018. http://adb.anu.edu.au/biography/russell-emmie-14188/text25200, published first in hardcopy 2012. Accessed 12 April 2016.

[32] Held in a private collection.

[33] What Joan Atkinson did between leaving school and going to England to study orthoptics is unknown.

mother early in her career and Irene Gluckman who did not have children. Joan Atkinson ceased work when she married aged 27 years; Lillian Ives, Ivy Martyn, and Mary Peoples remained single all their working lives.

In NSW the employment pattern paralleled that in Melbourne. Emmie Russell set up a private practice and worked at the RAHC as a clinician and as the orthoptist-tutor. Joan Atkinson, Ethel D'Ombrain, Irene Gluckman and Ivy Martyn set up private practices and worked in hospital clinics. Lillian Ives worked only at RACH where she had originally been a paediatric nurse. Mary Peoples returned to Broken Hill, set up a private practice and worked at the orthoptic clinic at the Broken Hill and District Hospital. Apart from Joan Atkinson who worked for almost a decade until she married and went to live in Melbourne, these women practised orthoptics all their working lives.[34]

By 1939 seven orthoptists were working in NSW - Joan Atkinson, Ethel D'Ombrain, Iren Gluckman, Lillian Ives, Ivy Martyn, and Emmie Russell in Sydney, and Mary Peoples in Broken Hill.

Further training in England

Until the ophthalmic registration and education boards were established in 1938, orthoptic education was not recognised with a qualifying certificate. As Lucy Willoughby's account shows, some Australian women wanted a formal credential, and went to England:

> After working for several years at the [Adelaide Children's] Hospital the desire to gain a qualifying certificate took me to London, where the experience of working amongst greater numbers of cases and with the most up to date apparatus greatly widened my knowledge.[35]

The London experience not only gave her a certificate of training but also broadened her experience in terms of clinical practice.

[34] For details of the working lives of these orthoptists see, Brown and Gordon, *Rear Vision*, 2019.
[35] "Farewell Party," *News (Adelaide, SA : 1923 - 1954),* 11 November 1937, 21.

Lucy Willoughby's lecture notes from 1937 provide details of the English course.[36] They show that it was well structured with lectures in the basic sciences of anatomy, physiology and optics given by ophthalmologists. It can be inferred that at least some, if not all, orthoptic theory was taught by orthoptists based on Mary Maddox's original notes.[37] As Lucy Willoughby noted one advantage England had, with its greater population, was access to a larger number of patients with a wide variety of eye movement disorders. Her comments also suggest that Australia did not have access to the latest equipment. It is presumed that the early Australian training included some basic sciences (anatomy, physiology and optics) and orthoptic theory, but no details survive to verify this assumption. Lucy Willoughby was one of four Australians who travelled to England in the pre-war period to gain a recognised qualification. Joan Atkinson completed the English course in 1935, Margaret Fox in 1937, Lucy Willoughby in 1938 and Lena Gilchrist in 1939.

Even with formal credentials, these early women orthoptists who did not have medical degrees could be placed in some disadvantage in sharing their professional expertise and knowledge to further the discipline. Before the introduction of the *British Orthoptic Journal* in 1937, lectures were the sole means of information sharing. Keen to keep abreast of the latest orthoptic clinical developments, Ringland Anderson organised orthoptist Sheila Mayou (Figure 3.4) to be invited to present a series of lectures at the 103rd British Medical Association's (BMA) meeting in Melbourne in 1935.[38]

[36] Willoughby, "1937 Orthoptic student notes."

[37] By 1937 Mary Maddox was no longer practicing in England. The head of the training school at Moorfields was Sheila Mayou assisted by other qualified orthoptists who had taken on teaching responsibilities.

[38] Mayou was the daughter of an eminent London ophthalmologist and was Mary Maddox's protégé and successor.

Figure 3.4: 'Miss Sheila Mayou. Eye Specialist, London'.[39]

The BMA awarded her a grant to pay her expenses. Nevertheless, as she was about to speak the organising committee discovered she did not have a medical qualification and prevented her from addressing the medical assembly. Ringland Anderson's support of Sheila Mayou was unqualified. At short notice he found an alternative venue. His action could be interpreted as wanting to avoid any embarrassment to Sheila Mayou and himself, but it seems more likely that he was keen to promote orthoptics, a discipline he believed in, and considered that Sheila Mayou's lectures would contribute to the most current knowledge of the management of eye movement disorders. Ringland Anderson was proved correct. Mayou gave her two scheduled papers, which were well received and by popular request she gave a third.[40]

There were several international female doctors invited to the meeting and along with them Sheila Mayou received newspaper attention. In one article, when describing orthoptic practice, she stated 'Our work is chiefly to train 'squints,' mostly in children, treating muscular imbalances in older people, and eye-strain cases.' The report continued: 'Among their patients have been candidates for the Air Force who with a few lessons have had their sight put sufficiently right to pass their tests.'[41] This comment foreshadowed the vital role orthoptists would play in aviation medicine in WWII both in Britain and in Australia.

As in Britain, some Australian ophthalmologists were opposed to lay assistants carrying out medical techniques. But as the epigraph at the beginning of this chapter states and as Sheila Mayou observed during her Melbourne visit:

[39] "Woman's Realm Medical Women Arrive. Advances in Child Welfare," *The Argus* (Melbourne, Vic.: 1848 - 1957), 10 September 1935:4.
[40] MacLellan, *Orthoptics - the early years, 24.*
[41] "Woman's Realm Medical Women Arrive. Advances in Child Welfare," *The Argus* (Melbourne, Vic.: 1848 - 1957), 10 September 1935:4.

> There was a certain amount of opposition…the older men were in general not in favour [of Maddox orthoptics] …they do not approve of [medically] unqualified people doing it. The great majority – and certainly all the younger doctors – seemed impressed.[42]

Despite any opposition from the organisers of the conference and some older ophthalmologists, the fact that Mayou's lectures were well received, was an acknowledgement that a non-medically qualified female could make a significant scientific contribution in a medical environment.

Orthoptic practice

The names of the clinics at the Alfred Hospital (the *Save Sight Class*), at the VEEH, (the *Squint Training Clinic*, or *Fusion Class*) and at the Royal Hobart Hospital (the *Sight Saving Clinic*), suggest the focus of the orthoptists' work was therapy to restore vision in cases of amblyopia and to re-establish binocular vision, of which fusion is a part, in patients with strabismus.[43] Details of the patient's age groups are not known, but it is presumed that paediatric patients made up the bulk of the orthoptists' work. Orthoptists also treated adults with heterophorias (latent symptom-producing eye movement disorders) who could benefit from orthoptic exercises.[44] From the outset the synoptophore was central to orthoptic practice. It revolutionised the measurement of eye movement disorders and the assessment and treatment of defective binocular vision. Accuracy was paramount and depended on both objective measurement and the ability to correctly interpret the patient's responses. The synoptophore was a difficult machine to master. Skill and patience were required to achieve reliable results especially when testing young children or those with an intellectual and/or physical disorder. So important was the synoptophore to orthoptic practice that when student training was discussed at the orthoptic association's first Council

[42] "B.M.A. Meets. Australia Honour at Melbourne," *Truth*, (Sydney, NSW: 1894 - 1954), September 8, 1935, 26.
[43] For a definition of fusion see the Glossary of Terms.
[44] Edward Clements, "Errors of vision as a factor in motor car accidents," *The British Medical Journal* ii, (1906): 1636; Edward Clements, "Visual Problems in regards to flying and industrial fatigue from a service standpoint," *Proceedings of the Royal Society of Medicine* XIX, no. iii (1925): 15-23; Philip Clermont Livingston, "Approach to the Phorias," *British Orthoptic Journal* 1, (1939): 71-104.

Meeting, Emmie Russell proposed that students required at least three months training to master the instrument. The regime she suggested consisted of firstly mastering the technical skills. Once this was achieved the students would then be allowed to examine patients in a clinical situation. The first step was to learn how to diagnose the state of binocular vision, followed by learning how to treat defects of binocular vision.[45] In all cases, not only was technical skill required, but also an ability to handle patients well. Orthoptists became experts at using the synoptophore which ophthalmologists acknowledged and used the orthoptist's findings to plan their surgical procedures.

The educational and registration bodies

By the late 1930s ophthalmologists and orthoptists recognised the need to standardise and regulate orthoptic training and orthoptic practice. The outcome was the establishment of two ophthalmology-run education and registration bodies, the Orthoptic Council of NSW and the Orthoptic Board of Australia (OBA).

In 1937 the Hospitals Commission of NSW (Hospitals Commission) had established the Committee for Standardisation of Accessory Hospital Services to oversee the qualifications and training of technical staff who were employed in NSW public hospitals. This was part of a general trend of state governments across Australia which recognised that hospitals delivered patient care and provided training grounds for those involved in delivering modern medical treatment.[46] There was a requirement for all staff delivering that care to have the relevant qualifications which resulted in the Hospitals Commission requesting the NSW Branch of the OSA to set up a body to train and register orthoptists to

[45] Emmie Russell, "Minutes of Council Meeting," *Orthoptic Association of Australia*, 1944: 2.
[46] James A Gillespie, *The Price of Health: Australian Governments and Medical Politics 1919-1960*, (Cambridge: Cambridge University Press, 2002), 17.

ensure they were trained and had the required technical skills to safely treat patients in public hospitals.[47] The Hospital Commission's express direction was that:

> the course for the training of orthoptic technicians will be twelve months and will be conducted by the Orthoptic Council appointed by the Ophthalmological Society of New South Wales which will issue certificates of proficiency to students who complete the prescribed course of lectures tutorial classes and demonstrations and pass the examinations.[48]

In response the OSA - NSW Branch set up a sub-committee, the Orthoptic Council of NSW. The Orthoptic Council held its first meeting on 1 March 1939. The objects were to regulate training and the qualification of NSW orthoptic trainees; to register orthoptists in NSW; to control orthoptists and the practice of orthoptics in NSW, and to maintain professional and ethical standards. No orthoptist was ever referred to the Orthoptic Council for malpractice or unethical behaviour, so its primary function was to oversee the NSW training program. Its first task was to examine and register practicing orthoptists in NSW. All orthoptists working in Sydney were required to sit an exam, which they all did, and all passed. They were awarded a Certificate of Proficiency. The Orthoptic Council of NSW recognised the Melbourne training program as *bona fide*. Consequently, Emmie Russell was not required to sit the exam.

Whether the OSA was influenced by the actions of the Hospitals Commission of NSW is unknown, but later in 1938, at the first meeting of the OSA the Society's Council appointed Norman Gregg convenor of the Orthoptic Committee, later known as the OBA. Gregg and his committee devised a comprehensive scheme, including a syllabus of training, regulations for entry, examination and ethical rules.[49] The proposed scheme included the suggestion that the Orthoptic Council of NSW should be merged with the OBA, but that was not realised immediately because the Orthoptic Council operated

[47] "Committee for standardization of accessory hospital services. Report of the Hospital Commission of New South Wales for the Years ended 30th June, 1937 and 30 June 1938, including the Statistics of the Hospital under the Public Hospital Act for the years 1936-37, and 1937-38," *Legislative Assembly of New South Wales*, (Sydney: Thomas Henry Tennant, Acting Government Printer: 1938):7.

[48] "Committee for standardization of accessory hospital services," 7.

[49] Darcy Williams, "A review of some of the affairs of the Ophthalmic Society of Australia (BMA)," *Transactions of the Ophthalmological Society of Australia* XIII, (1953): 32.

under the auspices of the Hospitals Commission. While the Orthoptic Council was an independent body, the constitution of the OBA allowed a smooth working relationship between the two entities. Effectively the Orthoptic Council of NSW acted as a sub-committee of the OBA.[50]

The OBA met for the first time on 15 October 1941 and comprised ophthalmologist representatives from each state.[51] Its functions were to set the curriculum, administer orthoptic training and to register orthoptists. Registration for those students who completed the course before the 18-month course was introduced in 1948 were awarded a Certificate of Proficiency. For graduates who completed the 18-month and 2-year course they were awarded the Diploma of Australian Orthoptics (DAO) and the Certificate of Proficiency. These qualifications allowed orthoptists to practice throughout Australia.[52] Orthoptists were not members of the OBA or the Orthoptic Council of NSW because the rules of the OSA precluded non-medical membership of Committees and Sub-Committees.[53] Nevertheless at the end of the 1940s, ophthalmologists entrusted and handed over responsibility for clinical training and examination of clinical skills to orthoptists.

By 1940 the OBA had designed a formal training program. At this point apprentice or 'on the job' training formally ceased and was replaced by a 12-month course with a set curriculum conducted in Melbourne and Sydney. Graduates were awarded a Certificate of Proficiency.[54] When students were accepted into the new training course, a requirement was to sign an ethical code prepared by the OBA. Orthoptists were very willing to formally adopt the ethical code and in doing so met one of Zachery Cope's hallmarks of a profession.[55]

[50] Williams, "A review of some of the affairs of the Ophthalmic Society of Australia (BMA)," 32.

[51] At the first meeting of the OBA on 15 October 1941, Norman Gregg outlined the steps leading to the establishment of the OBA in the period between March 1939 and October 1941. "Minutes of the First Meeting of the Orthoptic Board of Australia," 15 October 1941 held at the Royal Australia College of Ophthalmologists, Chalmers Street, Surry Hills, Sydney, 1-2.

[52] The DAO changed to the Diploma of the Orthoptic Board of Australia, DOBA in 1965.

[53] "Correspondence," *Minutes of the Thirteenth Annual Meeting of the Orthoptic Board of Australia*, 27 September 1958: 2.

[54] Lance, "Presidential Address," 1954, 16.

[55] V Zachary Cope, "Report on Medical Auxiliaries. Part 1." *Ministry of Health. Department of Health for Scotland* (London: His Majesty's Stationery Office, 1951): 1-2.

Conclusion

By the end of 1939, orthoptics in Australia was still in its embryonic stage. Ophthalmologists brought orthoptics to Australia to assist them in the management of eye movement disorders. Not all ophthalmologists were convinced that non-medical personnel should be treating patients, but those who supported orthoptics and orthoptists themselves 'soldiered on' and set a strong foundation for others to follow. Independent training schools were not established within a broad range of hospitals as in Britain because there was insufficient patient load with eye movement disorders to provide adequate clinical material to train students. Instead training was centred in hospitals in Sydney and Melbourne, the cities with the highest concentrations of ophthalmologists. Initially training in Victoria was conducted at the Alfred Hospital and at ophthalmologists' private consulting rooms. In Sydney training was conducted at RAHC and later at MES and RPA.

The 14 orthoptists who trained between 1931 and 1939 had responded to ophthalmologists' invitation to embark on a new career. This situation differed from Britain where Mary Maddox and those who followed her, championed and drove the development of orthoptics, albeit supported by British ophthalmologists who believed in the efficacy of orthoptics. Whether Australia not having a 'Mary Maddox' in these early years would have altered the development of orthoptics is hard to judge. The evidence indicates the main reason Australian orthoptics was slower to start compared to Britain was not because of the lack of dedication or commitment of the Australians, or to the medical referral system. which was identical. As noted earlier, patients could only be treated after they had been examined by an ophthalmologist and had glasses prescribed if necessary. The major limiting factor in Australia was the smaller and widespread population. In Britain the higher concentration of people in large cities meant that the local hospital had a sufficiently large patient load to justify staffing an orthoptic clinic. Whereas in Australia the smaller numbers and the widespread nature of Australia's population meant that the concentration of patients was insufficient to justify setting up orthoptic clinics except on a part-time basis. In some places the numbers were so small that orthoptists only attended the eye clinic when the ophthalmologist was in attendance as infrequently as for a one 3-4-hour session once a

week. So, for Australian orthoptists there would always be an uphill battle to grow the discipline. They had several options. One was to prove the worth and value of orthoptics to skeptical ophthalmologists. The other was to widen the scope of eye movement disorders for which orthoptics would be effective. In the early years, children made up the bulk of the patients but as time progressed orthoptists showed that adult patients could benefit from orthoptic therapy.

Before public hospitals paid their wages, some orthoptists donated their services to the hospitals and worked in an honorary capacity. This situation was not sustainable, and, like Mary Maddox, they opened their own private practice or shared the practice with colleagues. Ophthalmologists were initially responsible for all the training, theoretical and clinical. When orthoptists had demonstrated competence in clinical practice, ophthalmologists handed them the responsibility of teaching clinical techniques to the trainees. In line with the Ophthalmological Society of the United Kingdom, the OSA realised that the education should be standardised and rules for the registration be put in place. By the outbreak of war, ophthalmologists had established two education and registration boards, the Orthoptic Council of NSW and the OBA. Apprentice-style training ceased in 1940 when the new 12-month diploma course was developed and implemented by the education bodies.

CHAPTER 4. ORTHOPTICS AND ORTHOPTISTS: THE WAR YEARS: 1939-1945

> Orthoptists as ophthalmic auxiliaries have firmly established themselves. Their work is valuable and it is considered that the treatment which they provide produces results in properly selected cases which cannot be achieved by any other procedure. Livingston.[1]

Introduction

World War II (WWII) brought opportunities for the development of orthoptics both as a profession and a field of research. The catalyst was the increased importance of air forces to national defence. Aircraft design still required pilots to use visual skills in the operation of aeroplanes, especially for landings. Orthoptics offered the possibility of ensuring the optimal functionality of a pilot's visual motor system, and ophthalmologists began to introduce this allied health discipline as part of medical care of the aircrew of the Royal Australian Airforce (RAAF). Orthoptics was part of the physical fitness program in RAAF training, as well as delivering orthoptic services to aircrew. Observing that treatment provided relief to many affected pilots, there was a movement to subject the procedures and techniques to further research, which included the support and work of the same orthoptists. This chapter examines how orthoptics became a funded component of RAAF medical activity in the recruitment of aircrew. It also examines the beginnings of RAAF-supported research into orthoptics and the subsequent abandonment of the program when the war ended. This chapter concludes with evaluating the role and practice of orthoptics during the war period, how this contributed to our understanding of orthoptics in Australia and how the 1939-45 years influenced the development of orthoptics.

During WWII, at least nine orthoptists helped transform aviation medicine in Australia and, in doing so, orthoptics itself. Orthoptics was prescribed for RAAF aircrew who

[1] Philip Clermont Livingston, "Heterophoria in Aircrew: Its Clinical and Psychological Significance," *Transactions of the Ophthalmological Society of Australia (British Medical Association*) VI, (1946): 75.

were experiencing ocular fatigue and difficulty appreciating depth when attempting take-offs and landings. These symptoms were the result of aircrew having ocular muscle imbalance. Two of these orthoptists, Diana Mann and Lucy Willoughby, have left records for us to evaluate their contribution to the war effort. Problems associated with ocular muscle imbalance were not considered so important in the army so will not be dealt with in detail. However, it is interesting to note that ophthalmologist Major Bruce Hamilton conducted a study of 3,285 soldiers and found that 18.2 percent showed some degree of ocular muscle problems, problems similar to those in the RAAF. Soldiers with symptoms were treated with orthoptic exercises. [2]

As an all-female, and very new profession, the war offered orthoptists some new opportunities to extend their work beyond children to the orthoptic management of young men whose work relied on optimal ocular muscle co-ordination. In general, the war had differing effects on the working life of many women. For those in allied health professions the war expanded some areas of practice and opened others. For example, some 226 Australian physiotherapists are believed to have served during the war. Many more were involved in rehabilitation in the immediate post-war period and their wartime work raised their profile within the medical community.[3] Occupational therapists and speech pathologists were also called on in greater numbers to assist in the rehabilitation of military personnel wounded during the war.[4] For many women in allied health, medical and scientific professions, the war allowed them to work in areas where they had previously been excluded.[5] As I shall discuss, the war had a profound effect on raising the professional profile of orthoptists as a result of their work in aviation medicine, and enabled them to

[2] Bruce Hamilton, "Orthoptics in the field," *Australian and New Zealand Journal of Surgery*, 13, no. 2 (1943): 108-10.
[3] Philip Bentley with David Dunstan, *The path to Professionalism: physiotherapy in Australia to the 1980s* (Melbourne: Australian Physiotherapy Association, 2006), 111, 126-7.
[4] Barbara Anderson and Janet Bell, *Occupational Therapy: its place in Australia's history* (Melbourne: Brown Prior Anderson, 1988), 11-12 and Margaret Eldridge, *A History of the Treatment of Speech Disorders,* (Edinburgh: E & S Livingstone Ltd, 1968), 136.
[5] "High Hopes, Broken Promises, and Persistence: educating women for scientific careers," in *Women, Science, and Technology*, eds. Mary Wyer, Mary Barbercheck, Donna Giesman, Hatice Örün, Öztürk and Martin Wayne (New York: Routledge, 2001), 4-5.

take more control over their profession including contributing to its development as a useful application in the treatment of eye movement disorders.

What orthoptic historiography reveals and what is absent

There is a dearth of historical literature and material pertaining to Australian orthoptic involvement in aviation medicine despite the importance given to the place of orthoptics by the RAAF and specialist ophthalmologists during WWII. What has been recorded is largely scientific in nature and provides useful contemporary sources.

The primary sources include scientific ophthalmic and orthoptic papers; newspaper articles; RAAF Flying Personnel Research Committee (RAAF FPRC) Minutes; Vision sub-committee Minutes (a sub-committee of the RAAF FPRC); orthoptist Lucy Willoughby's personal papers, and the Operation Record Books from the RAAF's Initial Training Schools. Two illuminating items are a 1941 letter from Air Commodore Victor Hurley and the RAAF technical instruction booklet written by ophthalmologist Ringland Anderson and orthoptist Diana Mann.[6] Alan Walker's *Medical Services of the R.A.N. and R.A.A.F.* is a comprehensive exposé of the medical services of the Australian navy and air force during WWII.[7] The academic papers and articles in the ophthalmological journals set out the argument for and against the incorporation of orthoptics into the health assessment of RAAF personnel.

What the material fails to reveal are the voices of the orthoptists who worked with the RAAF; those who continued orthoptic practice in the community throughout the war; and female RAAF personnel and the volunteers who carried out orthoptic tasks. Feminist historian Judith Allen argued that history was predominately a male centric discipline 'constituted on the exclusion of women – literally, professionally, conceptually,

[6] Victor Hurley, "Orthoptic Training of Aircrew," copy of a letter to Squadron Leader A L Tostevin, 28 June 1941: 1-4, *Personal papers of Lucy Willoughby* held by the author; "Royal Australian Air Force. Medical Branch Technical Instructions." Issued by Directorate of Medical Services, Royal Australian Air Force Headquarters, c. 1942: 1-32 held at Point Cook RAAF Archives.

[7] Allan S Walker, *Australia in the War of 1939-1945. Series Five Medical. Vol. 1. Clinical Problems of War* (Canberra: Australian War Memorial, 1952).

methodologically and epistemologically.'[8] In other words, history interpreted through the male 'eye' and so women's stories were overlooked and written out of the discourse. In the case of orthoptics the silence has been more complete as no history about their contribution during WWII has been written. This is the first attempt to do so; to show the valuable contribution made to the advancement of orthoptics during the wartime period.

The wartime orthoptists

At the outbreak of war in September 1939, at least 14 orthoptists had been trained (nine in Melbourne; four in Sydney and one in England).[9] Three had ceased practising and 11 were still working - six in Sydney, two in Melbourne and one each in Adelaide, Hobart and Broken Hill. As far as can be ascertained there were no orthoptists in Queensland or Western Australia.[10] A further 10 women were trained in Australia from 1940-45. (See Table 4.1). At least eight orthoptists are known to have undertaken RAAF orthoptic work, possibly more.[11]

Diana Mann and Lucy Willoughby made the most significant contributions as practitioners; as Women's Auxiliary Australian Air Force (WAAAF) supervisors and teachers, and as researchers. In addition to Ethel D'Ombrain, Lena Gilchrist, Diana Mann, Emmie Russell and possibly Joan Atkinson, who had trained in the 1930s, Janet Arnold, Beverley Balfour and Celia Sklovsky are known to have worked with the RAAF in various roles. They provided orthoptic treatment and supervised WAAAF personnel or contributed to research projects. One WAAAF, Beatrice Barnes, who carried out orthoptic duties during the war

[8] Judith Allen, "Evidence and silence: feminism and the limits of history," In *Feminist Challenges: social and political theory*, eds C. Pateman and E. Gross (Sydney: Allen and Unwin, 1986), 173-89.

[9] As mentioned in previous chapters, orthoptic records before 1944 are non-existent so it is possible that more orthoptists were trained than my research has revealed.

[10] In the RAAF FPRC Minutes, there is mention of an orthoptist working in Brisbane but there are no orthoptic records to identify her. The RAAF FPRC minutes omit to say that there was an orthoptist in Adelaide, so it seems likely that the minutes are incorrect and should have recorded that there was one orthoptist in Adelaide, rather than one orthoptist in Brisbane. A newspaper report late in 1939 suggested orthoptist Margaret Fox went to Brisbane to work however this cannot be verified. "Social Notes," *The Age (Melbourne, Vic. : 1854 - 1954)*, 28 December 1939:3.

[11] Because WAAAF Beatrice Banes did not graduate as an orthoptist till 1945, she is not counted as one of the eight orthoptists who performed orthoptic duties during WWII.

undertook the orthoptic course and graduated in 1945 as the war ended. Others may have contributed but there are no records of their involvement with the RAAF.

Table 4.1: Women who trained from 1931 - 45[12]

WOMEN	GRADUATION YEAR & TRAINING SCHOOL	WORK PRACTICE 1940-44
Nancy Southey (née McComas)	1931 (Melbourne)	Retired circa 1934
Emmie Russell	1932 (Melbourne)	RAAF and civilian practice
Margaret Cumming (later MacKnight)	1932 (Melbourne)	Retired circa 1936
Margaret Fox	1932 (Melbourne)	Civilian practice*
Ethel D'Ombrain	1933 (Sydney)	RAAF and civilian practice
Helen Bryant	1933 (Melbourne)	Retired circa 1943*
Lena Gilchrist	1933 (Melbourne) 1939 (London)	Civilian practice
Irene Gluckman	1934 (Sydney)	Served as nurse; did not practice orthoptics in the army
Lillian Ives	1934 (Sydney)	Civilian practice*
Lucy Willoughby (later Retalic)	1934 (Melbourne) 1938 (London)	RAAF and (possibly) civilian practice
Joan Atkinson (later Holland)	1935 (London)	RAAF and (possibly) civilian practice.
Diana Mann (later Craig)	1938 (Melbourne)	RAAF and (possibly) civilian practice
Ivy Martyn	1938 (Sydney)	Civilian practice*
Janet Arnold (née Bowman)	1940 (Sydney)	RAAF
Mary Peoples	1940 (Adelaide)**	Civilian practice
Patricia Lance	1941 (Sydney)	Civilian practice
Beverley Balfour	1942 (Melbourne)	RAAF & civilian practice
Helen Chalmers (née Nugent)	1942 (Sydney)	Civilian practice*
Margaret Martin (née Gillespie)	1942 (Sydney)	Civilian practice*
Celia Sklovsky (née Weigall)	1942 (Melbourne)	RAAF & civilian practice
Bonnie West (née Ross)	1944 (Melbourne)	Civilian practice*
Barbara Mann (née Cooley)	1944 (Melbourne)	Civilian practice*
Audrey Baird	1944 (Melbourne)	Civilian practice*
Beatrice Barnes	1945 (Melbourne)	WAAAF

*There are no records of these orthoptists' activities during the war period, so whether they worked with the RAAF cannot be verified.

**Mary Peoples did initial apprentice training with Lucy Willoughby in Adelaide. She practised in Broken Hill and in 1945 completed the full orthoptic course in Melbourne.[13]

[12] For detailed profiles of these orthoptists, see Shayne Brown and Jill Gordon, *Rear Vision: Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019).

[13] Brown and Gordon, "Mary Constance Peoples" *Rear Vision, 34-6*.

Figure 4.1: Diana Sophie Mann[14]

When Diana Mann (Figure 4.1) was employed in Joseph Ringland Anderson's private ophthalmic practice as his scientific secretary in 1932, she already had a science degree from the University of Melbourne. Among her duties were data collection and clinical work assessing binocular vision and testing visual fields. She schooled herself in the theories of binocular vision and learnt her clinical skills from Ringland Anderson. In 1937 she travelled to England where she worked and studied with Sheila Mayou, chief orthoptist at the Central London Ophthalmic Hospital. On her return to Melbourne in 1938, she was appointed as an orthoptist at the Alfred Hospital in Melbourne, initially in an honorary capacity.[15]

Her involvement in war time orthoptic work spanned research, clinical examination and supervision of military personnel who conducted orthoptic tests and therapy. Initially Diana Mann worked with ophthalmologist Hugh Ryan at the Medical Centre in Spring Street, Melbourne. She tested and treated trainee RAAF aircrew who were experiencing difficulties learning to land planes because of defective stereopsis. She was later described as a leader in treatment which assisted the RAAF by 'salvaging borderline cases' and helping those who 'through fatigue, illness, or injury developed ocular muscle balance problems in the service'.[16] With Ringland Anderson, she co-authored the *RAAF Medical Branch Technical Instructions*. This official document was an RAAF publication which laid out the rationale for orthoptic services and how they would be delivered across Australia.

[14] Julie Green, "Obituary: Diana Sophie Craig (née Mann) 1912-1992," *Australian Orthoptic Journal* 28, (1992): 51.
[15] Green, "Obituary: Diana Sophie Craig (née Mann) 1912-1992," 51; Brown and Gordon, "Diana Sophy Craig (née Mann)," *Rear Vision*, 37-40.
[16] Margaret Park, "Craig, Diana Sophie (1912-1992)" *Dictionary of Biography*. Accessed 29 August 2018. http://adb.anu.edu.au/biography/craig-diana-sophy-21318.

Figure 4.2: Lucy Willoughby at the synoptophore.[17]

Lucy Willoughby (Figure 4.2) had been a kindergarten teacher in Adelaide before changing careers. She completed the Melbourne orthoptic course in 1934 and returned to Adelaide where she worked at the Adelaide Children's Hospital. She was granted 12 months' leave of absence to further her orthoptic studies in England where she gained the Diploma of British Orthoptics (DBO) in 1938. She returned to Adelaide in 1939. Having received some experience treating pilots in London, she was well equipped to work with the RAAF.[18] Like Diana Mann she was involved at many levels, as a clinician, as a supervisor of military nursing staff and in research.

The association between ocular muscle imbalance and inaccurate landings

Before exploring the contributions of Diana Mann, Lucy Willoughby and other orthoptists who worked with the RAAF during WWII, it is necessary to understand the context. Orthoptic examination and treatment of ocular muscle imbalance played an important role in the recruitment and treatment of RAF and RAAF aircrew.[19] It had its genesis in 1910 when British ophthalmologist, Edward Clements made an association between poor eyesight and motor vehicle accidents noting the relationship between reduced vision and inaccurate depth perception. Based on these findings, during the first world war, (then RAF Wing Commander) Clements investigated a group of pilots who were slow learning to fly.[20] He found a significant number who had accidents, either at take-offs or landings, had poor

[17] "Interest to Women. Straightening Eyes At Children's Hospital," *The Mail (Adelaide, SA: 1912-1954)*, 5 October 1940: 13.
[18] Brown and Gordon, "Lucy Escott Retalic (née Willoughby)," *Rear Vision*, 28-31.
[19] Testing techniques for ocular muscle imbalance and depth perception were similar in USA and Canada. Harry G Armstrong, *Principles and Practice of Aviation Medicine* (Baltimore: The Williams and Wilkins Company, 1943), 66, 74-114; John V V Nicholls, "The relationship of heterophoria to depth perception in aviation: with particular reference to the work of the Royal Canadian Air Force. Part II," *American journal of ophthalmology,* 33, 10 (1950): 1775-87.
[20] Edward Cecil Clements, "Errors of Vision as a Factor in Motor Car Accidents," *British Medical Journal* ii, (1906): 1636.

depth perception and that 'eye training' would be beneficial.[21] Philip Livingston, an ophthalmologist and later Air Vice Marshall, built on Clements' work in WWI.[22] He directly attributed ocular muscle imbalance to inaccurate depth perception.[23] He noted that small errors on approach to land 'of plus or minus five feet can end in a nasty accident, usually by the propeller catching the ground and turning the aircraft over'.[24] Livingston acknowledged that landing a plane safely was a multi-factorial exercise involving a large range of physiological and psychological attributes and was not solely reliant on a person's depth perception. However, he argued, good ocular muscle balance and accurate stereoscopic vision were essential elements.[25]

Inter-war collaboration

With the RAAF's involvement in aviation ophthalmology in the period between WWI and WWII, aviation medicine 'really became of age', according to physician-historian John Williamson.[26] The inter-war period signaled the beginnings of the collaboration between the British and Australian air forces' medical services. In 1921 Australian Squadron Leader Dr Arthur Poole Lawrence MC was sent to London's Moorfields Eye Hospital to study 'ocular medicine and surgery'.[27] The close ophthalmological ties continued and in 1936 Squadron Leader Dr Edward Daley was sent to Britain on exchange.[28] He worked closely with Livingston 'to rationalise the range of visual standards required for people learning to fly and for pilot and aircrew duties generally.'[29] Additionally, the RAF FPRC had kept Australia

[21] Edward Cecil Clements, "Visual Problems in regard to flying and industrial fatigue from a service standpoint, *"Proceedings of the Royal Society of Medicine* XIX, no. iii (1925): 23.
[22] Livingston was a Canadian born British trained ophthalmologist. He served in the Royal Navy during World War I (WWI) but transferred to the RAF where he joined the medical branch. After the war he completed a Diploma of Public Health, followed by specialist ophthalmology training in Edinburgh.
[23] Philip Clermont Livingston, "The Role of Heterophoria in Binocular Disharmony," *British Medical Journal*, August 28 (1937): 410.
[24] Livingston, "The Role of Heterophoria in Binocular Disharmony," 410.
[25] Livingston, "Approach to the Phorias," *British Orthoptic Journal* 1, (1939): 101.
[26] John Williamson, "Civilian Legacies of Air Force Medicine," *Health & History* 6 no. 2 (2004): 33.
[27] Williamson, "Civilian Legacies of Air Force Medicine," 43.
[28] D. S. Thomson, "Daley, Edward Alfred (Ted) (1901–1985)," Australian Dictionary of Biography, National Centre of Biography, Australian National University. Accessed online 15 September 2016. http://adb.anu.edu.au/biography/daley-edward-alfred-ted-12391/text22271, published first in hardcopy 2007.
[29] Edward Daley, "Orthoptists and the Royal Australian Air Force," *Australian Orthoptic Journal* 11, (1970-1971): 8.

informed of their activities. The acceptance of standards pertaining to ocular muscle treatment, however, was not accepted without debate in Australia.

Before the outbreak of war, Britain sought assistance from Australia, Canada, New Zealand and South Africa to fill the demand for aircrew and formed the Empire Air Training Scheme in December 1939. This meant that RAF standards were adopted for all Commonwealth aircrew. By May 1940, the first Dominion training schools had opened. There were 26 training facilities across Australia. Six were Initial Training Schools (ITS) where the aircrew trainees received preliminary instruction. It was also where they were given a detailed ocular examination as part of assessing their eligibility to continue training as pilots, gunners or observers.[30] The RAAF Flying Personnel Research Committee (RAAF FPRC) was the body responsible for the oversight of trainee selection in Australia.

Required ocular and visual standards for RAAF aircrew

Potential airmen had to be generally fit. Because of stresses placed on the body by long hours of flying and the effects of high altitude and extreme cold, aircrew also had to be 'of sound stock, good personal history, reasonable physique with a stable nervous and vascular system, and physically and mentally alert' which included a high standard of ocular health.[31]

The necessity for high standards of visual health was especially true in WWII airplanes when there was less reliance on sophisticated instruments compared with the aircraft of today. Therefore, it was imperative that aircrew had no ocular defects. Good distance visual acuity was considered essential to enable accurate take-offs and landings in any conditions and to spot enemy aircraft. The set standard for pilots was visual acuity

[30] Before the trainees were selected for flight training, they were required to pass a basic medical examination conducted at the Recruiting Centres by full-time medical staff who were familiar with RAAF medical fitness requirements. Walker, *Australia in the War of 1939-1945,* 213. Apart from testing applicants' visual acuity it is not known if more detailed eye tests were performed.

[31] W D Counsell, "Air Force Eye Standards and Examination Procedure," *Transactions of the Ophthalmological Society of Australia (British Medical Association*) II (1940): 7.

better than 6/12 in either eye improving to 6/6 with glasses.[32] While a pilot could wear glasses the permissible degree of optical defect was minimal. The amount of allowable hypermetropia (long sightedness) could not exceed +2.25 dioptres and the amount of astigmatism (uneven curvature of the cornea, or the lens, of the eye which creates a distorted visual image) could not exceed + or -2.5 dioptres.[33] Airmen with the smallest amount of myopia (short sightedness) were rejected, or to use the RAAF term, 'scrubbed'. Good near vision (N5) was necessary for reading instrument panels and maps.[34] Good night vision was essential for night-flying missions. Colour vision had to be normal to recognise signals and flares.[35] A pilot's field of vision needed to be full to ensure obstacles could be detected in the periphery of their vision.[36] Because landings and take-offs were often performed without reference to instruments, accurate depth perception was essential.[37] An ocular precursor to precise depth perception was good binocular vision which was how well both eyes co-ordinated as a pair.[38] The main element of binocular vision was the accurate alignment of the visual axes. In other words, a pilot could not have a frank strabismus (turned eye).[39]

[32] The standard normal visual acuity is 6/6 (metric measurement used in Australia and the UK). This level equates to the American 20/20 (Imperial measurement). When the bottom fraction number is greater than 6, in the metric system, or greater than 20 in the Imperial system, the person is considered to have reduced vision.

[33] Counsell, "Air Force Eye Standards and Examination Procedure," 12. For a definition of diopter see the Glossary of Terms in the Glossary of Terms.

[34] Normal near visual acuity is N5. N5 relates to the printers' point system which ranges from N5 to N48. The higher the number the worse is the near visual acuity. For a definition of near vision see the Glossary of Terms.

[35] There is no measurement of colour vision. It is either 'normal' or 'defective.' If 'defective' various types of defects, can be then identified.

[36] Normal visual fields are recorded as 'full'. If a person's visual field is reduced the field defect is recorded either pictorially or by description of the extent and areas of visual loss.

[37] Depth perception or stereopsis was measured using the Howard-Dolman depth apparatus. An error of more than 30 mm was considered a failure.

[38] The amount of ocular muscle imbalance was measured using the Maddox Rod. The degree of allowable heterophoria differed between pilots and gunners. For pilots the amount of horizontal heterophorias was 6-10 dioptres (3-5 degrees); for vertical heterophorias it was 0.75-1 dioptre (0.35-0.5 degrees). For gunners the amount of heterophoria was not considered important. The strength of binocular vision was assessed by measuring the range of a person's fusion ability on the synoptophore. The considered normal range was convergence of 40 degrees and 5 degrees of divergence. Counsell, "Air Force Standards and Examination Procedure," 13.

[39] The test used to detect a muscle imbalance was the cover test. For detailed description of the testing method see John V Nicholls, "The Relationship of Heterophoria to Depth Perception in Aviation: with reference to the work of the Royal Canadian Air Force, Part 1, *American Journal of Ophthalmology* 33, no. 10 (1950): 1779.

RAAF Flying Personnel Research Committee – Vision Sub-Committee

At the beginning of the war, the surgeon Air Commodore (later Air Vice Marshall) Victor Hurley was appointed the Director of the RAAF Medical Services.[40] On his recommendation, the RAAF FPRC was set up late in 1940. Its functions were similar to the RAF's FPRC, 'to advise the [Australian] Air Board on the medical aspects of all matters which might conduce the safety and efficiency in flying and also on research into the scientific selection of personnel and maintenance of their physiological efficiency'.[41] The majority of the research was conducted at the Universities of Sydney and Melbourne with subsidiary work undertaken in Queensland and South Australia. The RAAF FPRC set up six advisory sub-committees, one of which was the Vision sub-committee. The sole ophthalmologist on this committee was Squadron Leader Joseph Ringland Anderson.[42] At the first meeting the other committee members were: Chairman, Dr JC Eccles FRS, Mr Rogers (Optical Munitions Panel, D.T.S. Branch), Flight Lieutenant Parry and Flight Lieutenant AE McIntyre (Secretary). Two visitors were also present, Flight Lieutenant PR Gardiner and Flight Lieutenant G Mathews.[43] The personnel on the committee varied over time seemingly depending on the major issue for discussion. At later meetings ophthalmologists Flight Lieutenant Walter Counsell and Squadron Leader and Flight Lieutenant Hugh Ryan contributed to the committee in the planning of orthoptic services.[44] These ophthalmologists were supported by RAAF ophthalmologists who worked closely with orthoptists during the war.[45] The exceptions were Queensland and Western Australia where there were no orthoptists.

40 In addition to setting up the RAAF FPRC, Hurley developed the RAAF medical service and was responsible for the formation of the RAAF nursing service. Diane Langmore, "Hurley, Sir Thomas Ernest Victor (1888-1958)", *Australian Dictionary of Biography*, Vol 14, (MUP), 1996. Accessed 19 June 2016. http://adb.anu.edu.au/biography/hurley-sir-thomas-ernest-victor-10579.

41 The Air Board was formed in November 1920 to control and administer the Air Force. Secretary to the Air Board, *Canberra, National Archives of Australia,* Series A705 Control 132/1/573 Part 1, 11 October 1940, 415.

42 Ringland Anderson had been a Major in the army but was seconded to the RAAF.

43 Apart from JC Eccles who is recorded as 'Dr', the credentials of the others on the Committee was not recorded.

44 Counsell was an ophthalmologist and a pilot. As early as 1928 he held an appointment as a medical officer at the RAAF base at Point Cook in Victoria. Walker, *Australia in the War of 1939-1945,* IV, 177. From the 1930s he had been interested in standards for trainee selection and had worked with Daley on this issue. Walker, *Australia in the War of 1939-1945,* IV, 324.

45 These ophthalmologists include, Squadron Leader Colin Blakemore in NSW; Squadron Leader James Leontine Roy Carter in Tasmania; Squadron Leader Douglas Reginald Gawler in Western Australia; Squadron Leader Edward Oswald Marks in Queensland; Squadron Leader Thomas a'Beckett Travers in Victoria; Squadron Leader Alfred Tostevin in South Australia, and the only full-time ophthalmologist, Flight Lieutenant Ronald William Hazelton in NSW.

Debating the standards and relevance of orthoptics

The Vision sub-committee was responsible for the safety and efficiency of aircrew and so selection of trainees came under its purview; it was also responsible for research.[46] For the ophthalmology members, the accuracy of a person's depth perception was an important element of the selection process. However, from the outset Hurley, who had medical but not ophthalmological training, was skeptical of the 'supposed' relationship between ocular muscle imbalance and depth perception and the necessary skill to land aircraft. This relationship also prompted debate amongst the general ophthalmological fraternity. Hurley was later persuaded that orthoptics could benefit pilots with poor depth perception. Orthoptists contributed to this debate by producing data and presenting their research results at ophthalmological scientific conferences.

At the ophthalmologists' scientific meeting in Melbourne in 1940, Ringland Anderson, Lucy Willoughby and ophthalmologist Squadron Leader Alfred Counsell presented information about orthoptic standards set for RAAF personnel and argued strongly for the inclusion of orthoptic tests as part of the selection process and orthoptic treatment for appropriate cases.[47] Not all ophthalmologists agreed. Some were unconvinced that (relatively) minor ocular motility problems would cause depth perception problems for the pilot, significant enough to cause him problems when landing aircraft safely. Discussions continued at the 1941 scientific conference. Counsell and Ringland Anderson's findings mirrored the overseas experience concluding that ocular muscle imbalance 'can be remedied by orthoptic training and that great improvement in flying ability follows'.[48] Squadron Leader and ophthalmologist Alfred Tostevin was less convinced reporting on research he and Lucy Willoughby had conducted on RAAF trainees in South Australia.[49]

[46] AK McIntyre and SW Morson, "Eye Movements and their relationship to depth perception," *Canberra National Archives of Australia*, Series A705 Control 43/1/527. Part 1, 16 April 1942, 379.

[47] Walter D Counsell, "Orthoptics and Depth Perception: a review of some of the more readily available literature," *Transactions of the Ophthalmological Society of Australia* 3, (1941): 130-44; Joseph Ringland Anderson, "Aviation and Orthoptics," *Transactions of the Ophthalmological Society of Australia* 3, (1941): 151-159; Lucy Willoughby, "Research into the effects of ocular conditions in pilot training," *Transactions of the Ophthalmological Society of Australia* 3, (1941): 147-50.

[48] Ringland Anderson, "Aviation and Orthoptics," 158.

[49] A L Tostevin, "Orthoptics and Aviation," *Transactions of the Ophthalmological Society of Australia* 3, (1941): 145; Willoughby, "Research into the effects of ocular conditions in pilot training," 147-50.

They showed that ocular defects as the principal cause of pilot failure were negligible and that landing faults were due to a myriad of causes. But even they did not entirely dismiss the idea of screening, conceding that their sample was small and advocating continued research.

In fact, the debate centred on what tests should be administered as a screening tool and what cases would benefit from orthoptic exercises rather than any intrinsic clinical objection to the assessment of ocular muscle balance. The debate continued at the Vision sub-committee of the RAAF FPRC. By June 1941 Ringland Anderson had convinced Hurley who agreed to incorporate orthoptic testing as part of the ocular assessment of trainees.[50] Hurley's proviso was that depth perception was one of the matters which required 'further investigation'.[51] In line with Hurley's call for analysis, but against Ringland Anderson's wishes, there was a majority agreement to assess the outcomes of orthoptic therapy. Ringland Anderson was not against scientific analysis *per se* but he was so convinced of the beneficial results of orthoptic therapy that he thought a research project would take up valuable time and would put trainees at risk of accidents. Efforts were made to analyse the outcomes in 1944**.** When the Air Board planned an evaluation of the wartime orthoptic program it consulted orthoptists Emmie Russell and Diana Mann on the methodology, but the war ended before enough data could be accumulated. [52] Consequently, the evaluation was never completed.

The implementation of orthoptic services in the Initial Training Schools (ITS)

Unlike their British counterparts the Australian orthoptists who worked for the RAAF did so as civilians and not as service personnel.[53] Life for Australian clinical orthoptists was not

[50] Edward A Daley, "Joseph Ringland Anderson," *Australian Journal of Ophthalmology* XXI, (1961): 7.
[51] Victor Hurley to Secretary to the Air Board, *Canberra, National Archives of Australia,* Series A705 Control 132/1/573 Part 1, 11 October 1940: 40.
[52] Medical – General – Flying Personnel Research Committee, *Canberra, National Archives of Australia,* Series A705 Control 132/1/956, 1941:225 and 168.
[53] British orthoptists working with RAF personnel were initially employed as civilian staff. When their numbers rose to over 30, the authorities decreed they be incorporated into the Service. Most entered the Women's Auxiliary Air Force

immediately affected by the war. No orthoptic clinics had been closed as in Britain. More or less, life went on as usual in Australia as the population was in no immediate danger compared with those in Britain and Europe. The situation changed in 1942 when the Japanese entered the war and the Asia Pacific became a battleground. However, there is no evidence that Japanese involvement in the war impacted orthoptic civilian or hospital practice. The second reason relates, in part, to the small numbers of trained orthoptists in Australia. The RAAF preferred to employ trained orthoptists but recognised early on that there were too few for requirements at the ITSs. Some orthoptists may have been torn between their responsibility to their civilian patients and to the war effort, but for others it may have been a financial decision. Working part-time for the RAAF and part-time in a civilian capacity was an option, but the Air Board, at this early stage in the war, was not in favour of employing civilians. This changed in the ensuing years. With insufficient numbers of available orthoptists, the Air Board elected to establish 'orthoptic clinics at the ITS, [which] should be staffed by a medical officer who had received eye training and answering to him would be one or two nursing sisters and WAAAF personnel who would carry out the orthoptic work.'[54] By the middle of 1941 Ringland Anderson had trained six WAAAFs. It is not known how many courses he conducted, or how many WAAAFs completed the truncated courses of instruction. The intention was never to train these military women to the standard of a qualified orthoptist, but to provide them with enough skills to provide basic investigation and treatment techniques under supervision of a medical officer, ophthalmologist or orthoptist (Figure 4.3).

(WAAF) as Non-Commissioned Officers. Vivien MacLellan, *Orthoptics – the early years* (Keighley, Yorkshire: Ann Macvie, 2006): 31-33; Philip Clermont Livingston, "The Present Position of Orthoptics in Aviation Ophthalmology," "Appendix A. FPRC Minutes." *Canberra National Archives of Australia,* Series A705 Control 132/1/956, 18 October 1941: 280.

[54] "Royal Australian Air Force. Medical Branch Technical Instructions," 1942, 10.

Figure 4.3: RAAF trainees doing eye exercises using stereoscopes supervised by a WAAAF nursing sister.[55]

Hurley, persuaded by Ringland Anderson's and Livingston's research, that orthoptics would help improve the accuracy of trainee pilots' skill (where depth perception was an issue), recommended the establishment of an orthoptic team. Hurley's letter of 26 June 1941 to Squadron Leader Alfred Tostevin explains how orthoptic services were to be rolled out. Hurley clearly understood that conditions would vary 'so much in the various States no one plan will suit them all …Therefore the special conditions of each State must be considered.' Aware that Lucy Willoughby was the sole orthoptist in South Australia when training was extended from Parafield airport on the outskirts of Adelaide, in South Australia, to include the Southern Australian coastal town Victor Harbour, he proposed that 'when practicable a suitable medical officer or two nursing sisters trained in orthoptics or some other suitable person(s) will be sent there.' Hurley's instructions to Tostevin detailed Lucy Willoughby's responsibilities, the esteem in which she was held, and the value of orthoptics to the trainees:

> …it is suggested that the excellent [orthoptic] work already done at Parafield be extended. The results are visible in the men who have been examined at Point Cook. I would be glad if you would express your opinion on the following plan-:
>
> 1. That all L.A.C's [Leading Aircraftman] …be tested by a team consisting of yourself…Miss Willoughby, another orthoptist if available, and two partly trained lay assistants. At this initial test those requiring training are picked out. Their training will be carried out at subsequent visits to Parafield.
> 2. That you and Miss Willoughby select and train two or more women to become partly trained assistants. It is found that if a suitable person is trained she will very soon become capable of measuring stereopsis, training convergence and even using a synoptophore under supervision.

[55] "'Eyes Right' Order Saves Lives. RAAF Leads the World in Eyesight Training," *Advertiser* (Adelaide, SA: 1931 - 1954), 9 January 1943: 3.

3. That the orthoptist be paid on the basis to be approved by the Air Board, probably of 12/6 for three hours or more work in a day. The assistants would not be paid but would do this in place of Red Cross or other honorary War work.[56]

While the Air Board had originally decreed it was not in favour of having paid civilian orthoptists, Lucy Willoughby's involvement in mid-1941 indicates that it had reversed its decision. As other orthoptists became involved, they too were employed by the RAAF as civilians. By October 1941, the RAAF FPRC Minutes noted the services of the professional orthoptists who were currently 'engaged should be retained indefinitely irrespective of the capacity in which they were serving' to oversee the WAAAFs performing some orthoptic tasks.[57] Civilian orthoptists worked at the ITSs in NSW, Victoria and South Australia. At least eight orthoptists are thought to have been employed by the RAAF in a civilian capacity across Australia. Janet Arnold (née Bowman), Joan Atkinson, Ethel D'Ombrain and Emmie Russell performed orthoptic duties in Sydney.[58] Janet Arnold had completed the orthoptic course in 1940. She married in 1941, stopped practising and did not expect to work again, given the social mores of the time where married women gave up work to take care of their households and their families.[59] However, because of the shortage of trained orthoptists at the ITS at Bradfield Park in Sydney, she returned to work. Even when pregnant, she worked three days a week. Arnold was in a fortunate position. Her family was able to mind her small baby enabling her to return to work for the RAAF. The lack of childcare was a big issue in this period. Without her family support, returning to the workforce would not have been an option.

Diana Mann, Beverley Balfour and Celia Sklovsky worked for the RAAF in Victoria.[60] They tested and treated RAAF trainee aircrew and provided training for the WAAAFs at the ITSs' orthoptic clinics as well as acting in a supervisory role. Diana Mann's role also included

[56] Hurley, "Orthoptic Training of Aircrew," 1-4.
[57] "Orthoptic testing and training experiment," *Canberra National Archives of Australia,* Series A705 Control 132/1/956, 269.
[58] Patricia Lance, "Presidential Address: a history of the Treatment of Strabismus," *Transactions of the Orthoptic Association of Australia* 11, Part 1 (1954): 17**;** Margaret Park, "Russell, Emmie (1892-1987)," *Dictionary of Biography*, Vol 18 (MU) 2012. Accessed 12 April. http://adb.anu.edu.au/biography/russell-emmie-14188.
[59] Sue Maple Brown, daughter of orthoptist, Janet Arnold, interview for the Orthoptics Australia Interview Archive Project, 7 June 2017.
[60] Beverley Balfour and Celia Sklovsky (née Weigall) completed their training in Melbourne in 1942.

research. In addition to data she collected for RAAF ophthalmologists, she worked with physiologist Professor Frank Cotton, a specialist in the effects of physical strain on the human body. She examined depth perception and the effect of eye muscle imbalance on trainees' performance in a low-pressure chamber. This research was designed to ascertain the state of visual function when the level of oxygen was low and when trainees were in the dark.[61] Later Diana Mann and Emmie Russell were invited to comment on the criteria for the research project set up to measure the effectiveness of orthoptic treatment. Lena Gilchrist in Tasmania never worked with the RAAF, but she assisted Counsell in gathering data from a series of her patients.[62] He used her results to argue for the inclusion of orthoptic treatment for RAAF trainees.[63] As already mentioned, Lucy Willoughby worked for the RAAF in South Australia. In Queensland and Western Australia, where there no orthoptists, it is likely that the medical practitioner in charge of the ITS supervised the personnel responsible for treatment.

Other orthoptists who were servicewomen during WWII, but not known to have practised orthoptics in Australia's defence forces include Mary Bailey (née Officer), Joan Baldick, Win Brown, Irene Gluckman (née Forrester) and Helen Minnett (later Lang). Bailey was a Sergeant in the Australian Women's Army Service (AWAS). Her duties in the AWAS are unknown.[64] Baldick served in the RAAF where she initially worked as a clerk in the Wireless and Gunnery School and was later 're-mustered' to become a dental nurse.[65] Brown served in the Middle East as part of the Voluntary Aid Detachment providing nursing care.[66] Gluckman, who was a trained nurse prior to becoming an orthoptist, was a Captain in the Australian Army Nursing Service. While it is possible, there is no evidence that she was involved in orthoptic work with RAAF trainees during the war.[67] Minnett was a member

[61] "Hazards in the air. Tests for R.A.A.F. trainees," *The Age* (Melbourne, Vic: 1854-1954), 19 October 1943:2. Accessed 6 March 2016. http://trove.nla.gov.au/newspaper/result?1-state=Victoria&q=synoptophore.
[62] Brown and Gordon, "Lena Gilchrist," *Rear Vision*, 25.
[63] Counsell, "Air Force eye standards and examination procedure," 1940.
[64] Brown and Gordon, "Cecily Mary Louise Bailey (née Officer)," *Rear Vision*, 76.
[65] Brown and Gordon, "Joan Robertson Baldick," *Rear Vision*, 74. Baldick was in the first intake of orthoptic students post-war and completed her orthoptic training in Sydney in 1946.
[66] Brown and Gordon, "Winifred Holton Brown," *Rear Vision*, 124-5. Brown was not a registered nurse having completed a St John Ambulance training or training with the Red Cross. She completed the Melbourne orthoptic course in 1950.
[67] Brown and Gordon, "Irene Bessie Gluckman (née Forrester)," *Rear Vision*, 26-7. Gluckman completed the Sydney orthoptic course in 1934 or 35.

of the Women's Royal Australian Naval Service in a secretarial role, initially as an Assisted Writer and after several promotions she rose to the rank of Third Officer.[68]

By war's end there were at least 24 orthoptists in Australia, 10 having trained between 1940 and 1945. Most practised in Sydney and Melbourne and those employed by the RAAF did so on a part-time basis so were, most probably, also involved in civilian clinical practice. Because no records have survived, and there is no evidence indicating otherwise, it can only be presumed that civilian clinical practice carried on in much the same way as before the war.

Military personnel and volunteers who performed orthoptic tasks

There were various female military personnel and volunteers who performed orthoptic tasks during WWII. Sister Eve Ahlston, a member of the Royal Australian Air Force Nursing Service (RAAFNS), had trained as a nurse at the Alfred Hospital in Melbourne before the war, and undertook some orthoptic duties at several ITSs. Her specific tasks are not recorded but in July 1945 she was involved in a research project 'to test the test-retest reliability of some of the Orthoptic Tests' which suggests a degree of proficiency.[69] After the war she worked at the Medical Eye Service (MES) in Melbourne. In a letter to the editor of the *Age* newspaper, she signed it as the *Secretary* of MES so it is probable that she worked there in an administrative capacity. As her name does not appear on the OBA's register of orthoptists it is unlikely that she performed orthoptic duties in the post-war period.

The number of WAAAFs who provided orthoptic exercises during the war is unknown. Of the women where some information exists, one, Maureen Quinton (later Giddings) performed orthoptic duties.[70] There is no evidence that she practised after the

[68] Brown and Gordon, "Helen Patricia (née Minnett)," *Rear Vision*, 82-83. Minnett completed the Sydney orthoptic course in 1947.

[69] "Orthoptics," *Canberra National Archives of Australia,* Series A705 Control 208/97/7, July 1945: 19.

[70] "Stirrers with Style! Presidents of the National Council of Women of the National Council of Women of Australia and its Predecessors. Maureen Giddings." Australian Women's Register. Accessed 23 August 2018. https://www.womenaustralia.info/exhib/ncwa/presidents-12.html, 23 August 2018.

war and was not registered with the OBA. Three mentioned in connection with the proposed evaluation of orthoptics in 1945 were Sister Kennedy and Sergeants Bouchier and Beatrice Barnes.[71] The evaluation was never completed and so it is unknown what became of Kennedy and Bouchier, but Barnes went on to become a qualified orthoptist.

In the immediate post-war period, the OBA agreed to register WAAAFs who had completed the truncated orthoptic course. The OBA also agreed that registered orthoptists could provide additional training to ex-WAAAFs who wished to work as orthoptists.[72] A 'Mrs M Fisher' is listed on the OBA register. The date of her registration is 1945. There is no record of her having completed civilian orthoptic training so it is possible that she was a WAAAF, but no records can be found to verify whether she served in the armed forces.[73] Beatrice Barnes is the only WAAAF known to have completed the orthoptic training course.[74] She was the first servicewoman in Australia to obtain the Diploma of Orthoptics.[75] She was registered by the Orthoptic Board of Australia in 1945 and worked as a clinical orthoptist in Melbourne for some years after the war.[76] Apart from Beatrice Barnes, no evidence has been located of any WAAAFs or air force nurses practising in peace time. What became of the WAAAFs trained by Ringland Anderson, or any member of the RAAFNS who carried out orthoptic work during the war is a mystery. It is probable that they fulfilled their duty working at ITSs during the war but did not pursue a career in orthoptics in peace time.

Conclusion

During WWII at least eight orthoptists worked in some capacity with the RAAF. Lena Gilchrist, Diana Mann and Lucy Willoughby provided research material which, in conjunction

[71] "Orthoptics," *Canberra National Archives of Australia,* Series A705 Control 208/97/7, July 1945: 18.
[72] "Report to Council," *Minutes of First Council Meeting, Orthoptic Association of Australia*, 11, October 1944: 1.
[73] I searched the WAAAF war records and without details of her first name and possible maiden name, I was unable to find anyone I could identify as the person registered with the OBA.
[74] Beatrice Barnes joined the WAAAF in 1942 as a sick-quarter attendant, having previously studied pharmacy. *"How Sydney Celebrated," The Dubbo Liberal & Macquarie Advocate (NSW: 1894 - 1954)*, 23 August 1945, 4.
[75] "Interesting People," *The Australian Women's Weekly*, 1 September 1945, 10.
[76] Brown and Gordon, "Beatrice Lilian 'Blue' Barnes," *Rear Vision*, 62-3.

with ophthalmological research, persuaded the Air Board to include orthoptic examination and therapy for trainee pilots with defective depth perception who were having trouble with take-offs and landings. Diana Mann and Emmie Russell were commissioned to help assess the orthoptic program, but the war ended before the project could be implemented. Other orthoptists (including Janet Arnold, Joan Atkinson, Beverley Balfour, Ethel D'Ombrain, Diana Mann, Emmie Russell, Celia Sklovsky and Lucy Willoughby), and one WAAAF, Beatrice Barnes who became an orthoptist, were involved in treating trainee aircrew.

In the pre-war period the efficacy of orthoptic treatment had been debated by the ophthalmology fraternity. Many remained unconvinced despite the positive results reported by ophthalmologists such as Livingston with the RAF and Ringland Anderson and other ophthalmologists who had served with the RAAF. As Livingston's epigraph at the beginning of this chapter states 'Orthoptics as ophthalmic auxiliaries have firmly established themselves'.[77] It is telling that even today part of the eye examination for RAAF personnel is an assessment of their ocular motility status, specifically the examiner is requested to provide measurement of heterophorias, convergence and accommodation (focusing ability).[78]

During the war orthoptists had demonstrated that symptom-producing heterophorias responded to orthoptic therapy. Pilots with symptoms of general eye strain could be treated well and cost effectively and those with depth perception could be treated in a way that allowed them to execute take-offs and landings with greater accuracy. War experience gave orthoptists the confidence that treating heterophorias 'produces results in properly selected cases which cannot be achieved by any other procedure' as Livingston argued. The FPRC had planned to measure the effectiveness of orthoptic treatment, but the project was never completed. In retrospect, the failure to complete this analysis using

[77] Livingston, "Heterophoria in Aircrew: Its Clinical and Psychological Significance," 75.

[78] For a definition of heterophoria, accommodation and convergence see the Glossary of Terms. One of the currently-practising ophthalmologists certified to test RAAF aircrew supplied me with a copy of the Medical-in-Confidence form he is required to complete. On 31 March 2017 I emailed Dr Julie Simes, the Chief Medical Officer, Defense Force Recruiting Headquarters to ask for the current visual standards for RAAF aircrew. She responded that 'It is classified information, so we sent your request to Joint Health Command, as need authorization to release to you.' I never received a response from Joint Health Command.

scientific methodology, was a lost opportunity.[79] The project would have analysed a large number of subjects and could have scientifically confirmed the anecdotal evidence that orthoptics assisted aircrew in the difficulties that surrounded the landings without reference to instruments. Had the results shown the benefits of orthoptic treatment for symptom-producing heterophorias, more ophthalmologists may have been convinced. Without the scientific verification some ophthalmologists remained skeptical.

[79] To my knowledge, a large-scale scientific assessment of the efficacy of orthoptic treatment of heterophorias remains to be conducted.

CHAPTER 5. CONSOLIDATION: 1946 - 1960

> I had my eyes opened about orthoptics when 'putting the tiger in the cage' stopped my crippling headaches as a medical student in 1963, and yet for reasons unknown to me none of my colleagues are aware of the major difference orthoptics can make to quality of life. Robert Clancy[1]

INTRODUCTION

From 1946 to 1960 was a period of consolidation for Australian orthoptics. By the end of the war 24 orthoptists had been trained between 1931 and 1945. By 1960, an additional 90 women graduated bringing the total trained to 114. The post-war growth was due to increased professional interest which included the introduction of a new diploma level training program, the expansion of the professional association and its work in expanding orthoptic knowledge and expertise, the opening of orthoptic clinics in all Australian states and additional clinics starting up the NSW, Victoria, South Australia, Western Australia and Tasmania. By 1960 orthoptics had established a firm foundation from which the profession has gone from strength to strength.

Pre-war orthoptic practice focused on the assessment and treatment of predominantly paediatric patients with strabismus. The war experience demonstrated the orthoptists' ability to assess and manage a wider range of eye movement disorders, specifically the treatment of heterophorias (latent deviations) in the adult population. Robert Clancy's case is an example. When Clancy was a medical student at Royal North Shore Hospital in Sydney in the 1960s he was treated by orthoptist, Jane Russell. He said that the treatment he received 'saved his life' because he was experiencing debilitating headaches which were relieved by orthoptic treatment. The 15 years of the post-war period was a time of growth and consolidation. It was the period when orthoptics fulfilled the final two elements Zachery Cope had posited as requirements for a

[1]Shayne Brown and Jill Gordon, "Elizabeth Jane Grey Russell" *Rear Vision*: *Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019), 93; Robert Clancy, interview for the Orthoptics Australia Interview Archive Project, 30 July 2016, at Clancy's home, Sydney.

discipline to be considered a profession, to have their own standard of training, their own esoteric knowledge and principles of practice. The Orthoptic Board of Australia (OBA) consolidated. In consultation with orthoptists it developed a formal curriculum and oversaw the transition from a 12-month to an 18-month diploma course and then in 1957 extended it to a 2-year program.[2] The Orthoptic Association of Australia (OAA) which had been founded in 1944 consolidated its constitution, set up its administration, held annual scientific meetings and annually produced the scientific *Transactions of the Orthoptic Association of Australia*, the forerunner to the *Australian Orthoptic Journal*.

This chapter examines the post-war era, from 1946 to 1960. The developments in this period add to the understanding of the growth of orthoptics as an allied health discipline with a female workforce of orthoptists who sustained and developed its professional focus. These women established a professional association and successfully worked within the confines of the ophthalmologically-run registration and training authorities to further scientific expertise and knowledge in orthoptics and produce world-class orthoptists.

This chapter also explores the key forces which dictated the development of orthoptics as a feminised profession. It examines the increase in orthoptists' expertise and scientific knowledge in the post-war period until the end of 1959 when there were signs that orthoptists were developing orthoptics with decreasing ophthalmological control and supervision. It includes an exploration of the scientific advancements as well as Australia's relationship with British orthoptics and orthoptists; orthoptists' relationship with the registration and training bodies; the expansion in orthoptic clinical practice; and an overview of the workforce and workplaces. It also examines student selection and, in particular, it covers orthoptic training from 1945 to 1960 which shows how the course came to be credentialled as a diploma program based on scientific and clinical principles with students supported by Commonwealth scholarships as part of Australia's national reconstruction.

[2] Graduates of the 12-month course were issued with a Certificate of Proficiency.

The establishment of the Orthoptic Association of Australia

The OAA is the third oldest orthoptic association in the world. It was founded in 1944, 11 years after the British Orthoptic Society and only six months after the American Association of Certified Orthoptists. Australian orthoptists had long understood the importance of a professional association to ensure the profession's development and to create a structure through which they could consolidate authority over this emerging profession. Diana Mann, Emmie Russell (Figure 5.1) and Ethel D'Ombrain (Figure 5.2) drove the establishment of the association, the OAA.[3] These women were daughters of families with professional backgrounds who understood the connection between a strong association and professional authority based on expertise.[4]

The prime objective of the women who founded the OAA was to provide a platform for further research and for the interchange of scientific and clinical knowledge. They were cognisant that not all ophthalmologists were supportive of orthoptics. They also knew that providing sound scientific research would increase the credibility of this new allied health science. Also advantageous was the power a professional association had on its ability to successfully negotiate on behalf of its members. As orthoptist Julia Kelly has argued, when orthoptists 'spoke' as a united body it gave them more authority and influence in the development of the profession and practice of orthoptics.[5]

[3] Brown and Gordon, "Diana Craig (née Mann)," *Rear Vision*, 37-40; Brown, Gordon, "Ethel D'Ombrain (née Ladd)," *Rear Vision*, 22-3; Brown and Gordon, "Emmie Russell," *Rear Vision,* 16-18. A photograph of Diana Mann (later Craig) can be found in Chapter 4, page 72.

[4] Kate Darian-Smith and James Waghorne, "The War, the Universities and the Professions" in *The First World War, The Universities and the Professions in Australia 1914-1939*, eds. Kate Darian-Smith and James Waghorne, James (Carlton: Melbourne University Press, 2019), 4.

[5] Julia Kelly, "Industrial and Professional Issues in Health Services," Paper written as part of requirement for Masters' degree in Health Services Management, Charles Stuart University, Bathurst, 2002.

Figure 5.1: Emmie Russell **Figure 5.2:** Ethel D'Ombrain

Orthoptists envisaged a federal association from its inception.[6] This was partly for practical reasons as there were too few orthoptists in some states to set up a viable state branch. The founding orthoptists foresaw that a national association would assist communication between members with the benefit of hosting a wider discussion about orthoptics than was possible within individual states. This differed from other professional associations which were essentially federations of state bodies. Perhaps the OAA's most distinctive feature was its constitution which ensured orthoptists, not ophthalmologists, oversaw the direction of the association including establishing a mechanism whereby orthoptists could participate in and contribute to scientific debate.

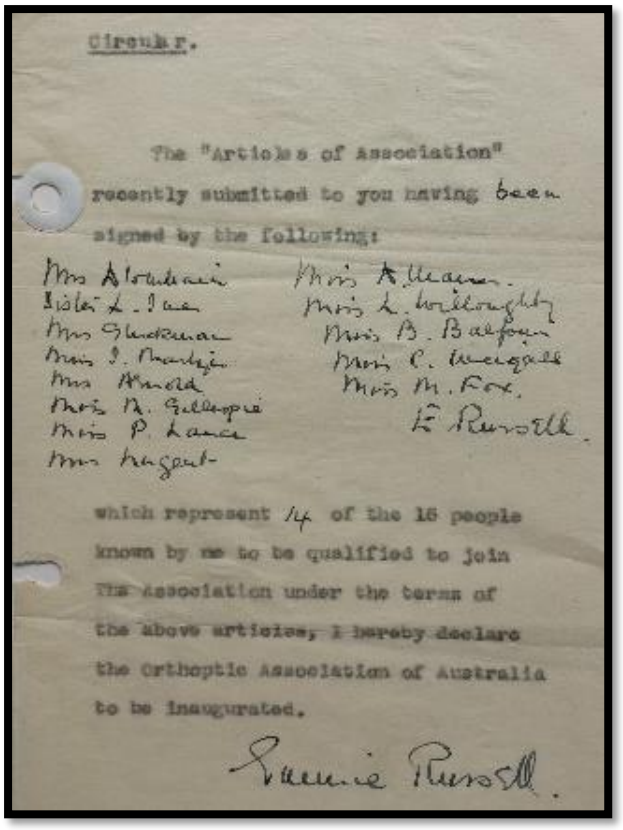
On 1 March 1944 a group of 11 orthoptists met to consider the draft constitution (Figure 5.3).[7] They agreed that the association would be a national body with state representation, made up of ordinary members who were holders of the orthoptic qualification, and allowing honorary membership to be conferred on distinguished ophthalmologists and international orthoptists, and associate membership for orthoptists not currently in the workforce. The objects of the association were to: advance the study of orthoptics; safeguard the interests of members; provide a medium for scientific exchange; for fee setting, and ethical matters outside the remit of the

[6] Philip Bentley with David Dunstan, *The path to Professionalism: physiotherapy in Australia to the 1980s* (Melbourne: Australian Physiotherapy Association, 2006), 130; 1991-2.

[7] The 11 orthoptists who attended the meeting were: Janet Bowman (later Arnold), Patricia Chalmers (later Nugent), Ethel D'Ombrain née Ladd), Margaret Gillespie (later Martin), Irene Gluckman (née Forrester), Lillian Ives, Patricia Lance, Ivy Martyn from NSW; Victorian Diana Mann; South Australian Lucy Willoughby (later Retalic): and Tasmanian Lena Gilchrist.

registration body; co-operate with similar overseas bodies, and for the eventual production of a scientific periodical.[8]

Figure 5.3: Signatures of the founding members of the OAA[9]



Circular.

The "Articles of Association" recently submitted to you having been signed by the following:

which represent 14 of the 16 people known by me to be qualified to join The Association under the terms of the above articles, I hereby declare the Orthoptic Association of Australia to be inaugurated.

The OAA Council comprised a President and State Representatives. The President was elected annually from the OAA's membership by all financial members at the Annual General Meeting. Thus, the president was an orthoptist. The Council consisted of representatives from each state based on a system of proportional representation, one state representative for every six members residing in the state. The Vice-President, Secretary and Treasurer were elected by the Council from among

[8] "Minutes of meeting held on 1st March 1944 at Miss Russell's Rooms, 135 Macquarie Street, Sydney, NSW." *Orthoptic Association of Australia*, 1944:1-2, held at Orthoptics Australia, Melbourne.

[9] "Circular," *Orthoptic Association of Australia Minutes*, Patricia Lance's personal papers, held by the author.

members, as were other representatives to outside bodies, for example to the OBA. In other words, the Council was constituted entirely of women.

Victoria and NSW, where most orthoptists resided, established state branches of the OAA in 1946. The state branches were autonomous with their own constitution which mirrored the federal constitution. They held regular business and clinical meetings. There were too few orthoptists in Queensland, South Australia, Tasmania and Western Australia to justify setting up state branches. The orthoptists in those states met from time to time to select their state representative, to deal with local issues and organise clinical meetings.

Organising local scientific meetings and contributing to the annual national scientific conference was the association's main activity. In NSW and Victoria student training was another significant issue. The main concern was providing enough clinical experience as the number of students grew. Fee-setting for private patients was an important matter which concerned those who ran a private practice. Each state determined the fee schedule on a roughly annual basis.

The OAA was officially inaugurated on 25 September 1944 and Emmie Russell was elected the first president. The structure of the OAA included the role of patron which was to be filled by an ophthalmologist in order to continue the professional relationship between orthoptics and ophthalmology. This was a significant move as allied health professional organisations were often structured to have a medical professional in the chair, such as the professional association for physiotherapy.[10] Eminent ophthalmologist (later Sir) Norman Gregg was the first patron. The OAA envisaged the patron as its liaison person with the OSA; a powerful ally when lobbying governments, or hospitals for additional orthoptic services, and as a symbol of medical credibility. However, there is no evidence that the patron acted in any formal role between the OAA and the OSA. Rather issues were raised by individual orthoptists with the relevant ophthalmologist responsible for a particular matter. The position of patron

[10] Bentley with Dunstan, *The path to professionalism*, 192

was largely symbolic and the main duties were ceremonial, to address and officially open the annual scientific conference.

Between 1944 and 1960, the OAA meetings dealt with a range of matters including fine-tuning the constitution, overseeing the conference organisation, producing the *Transactions of the OAA* after each scientific conference, administrative issues, and, working with the OBA on matters relating to the orthoptic training program, an issue I return to later in this chapter. From the outset orthoptists ran the OAA on a voluntary basis. There were insufficient funds to establish a permanent office, or to pay for administrative services except on an *ad hoc* basis. Practicing orthoptists gave willingly of their time out of working hours to run meetings, take care of the finances and organise scientific conferences.

One of the prime objectives of the OAA's constitution was to advance the study of orthoptics. It devoted its major resources to scientific advancement and member continuing education at a national and local level. The association aimed to align orthoptics with the scientific/medical model in a similar way to doctors. Orthoptists organised all aspects of the annual scientific conference - the venue and the scientific program including the speakers and the social program. The bulk of the papers and presentations were given by orthoptists. At each national conference a prominent ophthalmologist was generally invited to give a paper on a topic of current interest. Between the first orthoptic conference in 1944 and the 1959 conference, 142 presentations were given. Orthoptists presented 130 (92%) of them, and 12 (8%) were given by ophthalmologists. From the outset the presentations were a mixture of case histories and observations of a condition's characteristics, as well there was a small number of papers which evaluated the outcomes of treatment. An early example is Lucy Willoughby's 1944 paper 'Observations on hyperphoria' where she reported on the characteristics of 100 cases of hyperphoria (a vertical eye movement disorder), a condition not widely understood at the time.[11] As the orthoptists' expertise increased,

[11] Lucy Willoughby, "Observations on hyperphoria," *Transactions of the Orthoptic Association of Australia* 1 (1944): 5-10.

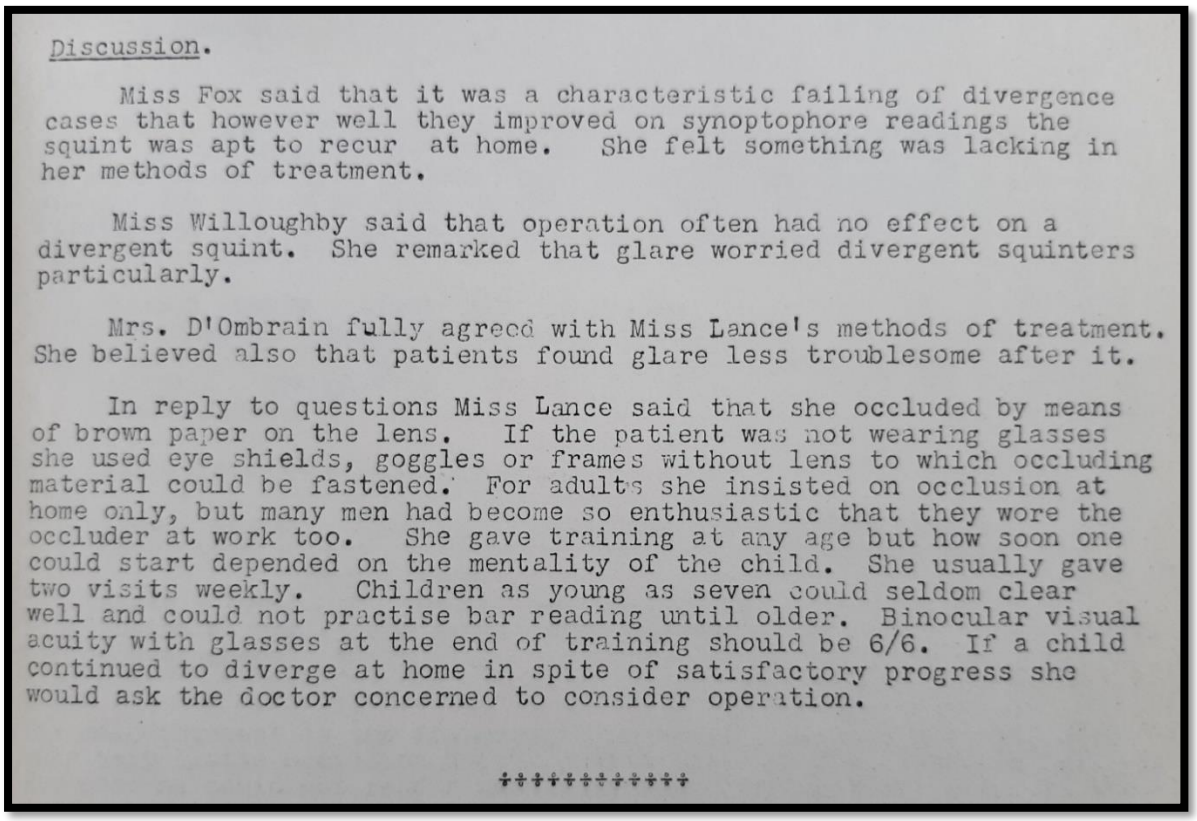
the standard of the papers reflected the increased knowledge. While there was less emphasis on case histories there was an increase in the presentation of scientific analyses to evaluate the success and failure rates of treatment. Elizabeth York's assessment of the treatment for amblyopia, one of the most common conditions orthoptists treated, is a good example of a comparative study where she evaluated different treatments prescribed for a cohort of 119 patients.[12] Orthoptists also organised smaller scientific meetings throughout the year in their local area where a mixture of orthoptists and ophthalmologists presented papers.

Following each national scientific conference, the OAA published a set of annual transactions commencing from the first conference in 1945 until the publication of the *Australian Orthoptic Journal* in 1959. The transactions contained all presentations (scientific papers, case histories and clinical demonstrations). At the end of each presentation is a record of the discussion. Figure 5.4 provides an example of the type of discussion which took place. In this instance there was general agreement with clinician and lecturer, Patricia Lance's approach to the treatment of intermittent divergent strabismus (a condition which responded well to orthoptics), but in other cases colleagues openly disagreed about forms of treatment. These debates were an accepted form of discussion aimed to improve orthoptic clinical practice and to share clinical experiences for the ultimate benefit of improved patient care. Orthoptist, Elizabeth York, spoke for many orthoptists when commenting on the effectiveness of orthoptic therapy. She said:

> It is my opinion that occlusion of amblyopes is our greatest purpose and the cure of an amblyope our greatest achievement. To me it is most satisfying to think that I have helped to save what would have been a partially or wholly blind eye, especially in a child. For this reason it [amblyopia treatment] deserves all our interest and research.[13]

[12] Elizabeth York, "Occlusion Clinic," *Transactions of the Orthoptic Association of Australia* 9 (1952): 8-10.
[13] York, "Occlusion Clinic," 10; Elizabeth Cameron (née York) reiterated these sentiments during an interview for the Orthoptics Australia Interview Archive Project, 6 November 2017.

Figure 5.4: 'Discussion' following paper read by Patricia Lance in the 1946 Transactions.[14]



Discussion.

Miss Fox said that it was a characteristic failing of divergence cases that however well they improved on synoptophore readings the squint was apt to recur at home. She felt something was lacking in her methods of treatment.

Miss Willoughby said that operation often had no effect on a divergent squint. She remarked that glare worried divergent squinters particularly.

Mrs. D'Ombrain fully agreed with Miss Lance's methods of treatment. She believed also that patients found glare less troublesome after it.

In reply to questions Miss Lance said that she occluded by means of brown paper on the lens. If the patient was not wearing glasses she used eye shields, goggles or frames without lens to which occluding material could be fastened. For adults she insisted on occlusion at home only, but many men had become so enthusiastic that they wore the occluder at work too. She gave training at any age but how soon one could start depended on the mentality of the child. She usually gave two visits weekly. Children as young as seven could seldom clear well and could not practise bar reading until older. Binocular visual acuity with glasses at the end of training should be 6/6. If a child continued to diverge at home in spite of satisfactory progress she would ask the doctor concerned to consider operation.

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Within its first year, the OAA had set up three libraries for the use by orthoptists and orthoptic students, in Sydney, Melbourne and Adelaide funded from membership subscriptions.[15] An initiative to encourage academic endeavour was the establishment of the Emmie Russell Prize. It was first awarded in 1957 to Margaret Doyle (née Kirkland) for her paper, 'Aspects of Vertical Deviation'.[16] The Emmie Russell Prize continues to be one of the association's most prestigious orthoptic awards.[17]

The OAA also lobbied authorities on issues that related to the practice of orthoptics. The issue of private health fund rebates, first raised in 1955, was significant for those in

[14] *Transactions of the Orthoptic Association of Australia* 3, (1946): 12.
[15] "Council Minutes," *Council of Orthoptic Association Minutes*, 3 October 1945: 4.
[16] Margaret Kirkland, "Aspects of Vertical Deviation," *Transactions of the Orthoptic Association of Australia* 14, (1957): 18-32.
[17] Recipients of the Emmie Russell receive a certificate and an instrument donated by Device Technologies, an optical company.

private practice. Hospital pay was poor. As retired orthoptists Jennifer Stern said when reflecting on her orthoptic wage in the 1950s 'we were paid a pittance' and there is evidence in the Medical Eye Service records that nurses were better paid than the orthoptists working at that clinic.[18]

Many orthoptists, like their predecessors in the 1930s and 1940s either ran or were employed in private practice. It was vital for the continued viability of the practices that privately insured patients could recoup some of their expenses. The OAA successfully negotiated rebates on behalf of its members for orthoptic therapy, although the rebates varied across the country. Private health funds were run on a state-by-state basis so the OAA could do little to assist other than share information amongst its members.

The association negotiated with the OSA, through the OBA, for the restructuring and implementation of the orthoptic training programs in Melbourne and Sydney. And, as was noted earlier, by 1957 the orthoptists were responsible for the training programs under the supervision of the OBA's state branches, the Orthoptic Councils of NSW and Victoria.[19]

When the OAA was founded all working orthoptists became members of the OAA and the trend of (almost) universal membership continued. With few orthoptists in Australia, some may have felt peer pressure to join the OAA. However, it is more likely that membership of one's professional organisation was a mark of being a professional as opposed to a member of a trade. For those who were not members of the OAA, it is possible that the cost of the membership was a barrier especially for those who were

[18] Jennifer Stern, retired Sydney orthoptist, interview for the Orthoptics Australia Interview Archive Project, 26 February 2016; "181st Council of Management Meeting," *Medical Eye Service*, 20 February 1950, 85. Minutes held at RANZCO, Chalmers Street, Surry Hills.

[19] "Secretary' Report to Council," Council of Orthoptic Association Minutes, 24 October (1955): 3.

working part-time.[20] By 1960 there were 63 full members and 16 associate members which represented 77 percent of the workforce.[21]

Expertise and knowledge

From the start, the OAA organised annual national scientific conferences to advance knowledge and clinical expertise in orthoptics. The first conference was held in Melbourne in 1944 in the Council Rooms of the Royal Australasian College of Surgeons.[22] The conference took place over three days and was a mixture of papers and practical sessions with the latter conducted at the Orthoptic Department of the Victorian Eye and Ear Hospital (VEEH). Conferences were generally held in the same city as the ophthalmologist held theirs which allowed orthoptists and ophthalmologists to attend each other's meetings, a practice which has continued to this day. The conferences were mainly held in Sydney and Melbourne (Table 5.1). Initially, the orthoptic conference format was a mixture of papers and clinical demonstrations. With time and improvement in clinical teaching, the need for clinical demonstrations declined. Emphasis was placed on case histories which were an important method of building a body of knowledge in a new science, a method also adopted by medicine at the time. States also held regular scientific meetings. These scientific meetings were on a smaller scale than the national conference but catered to the local orthoptists who were unable to attend the national conference and enabled orthoptists to keep abreast of the latest scientific developments.

[20] The cost of membership compared to salary rates for this period is not known. However, in my experience as late as the 1960s and 70s the cost of membership was often given as a reason for orthoptists not joining the OAA.

[21] "Treasurer's Report," *Orthoptic Association of Australia Council Minutes*, 17 October 1960: 1. Some non-working members retained their membership for varying periods of time.

[22] "Secretary's Report to Council," *Council of Orthoptic Association Minutes*, 24 October (1955): 3.

Table 5.1: Venues of Annual Conferences of the OAA, 1944-60

YEAR	LOCATION	VENUE
1944	Melbourne	Council Room, Royal Australasian College of Surgeons; Victorian Eye & Ear Hospital
1945	Sydney	Sydney Eye Hospital
1946	Melbourne	Victorian Eye & Ear Hospital
1947	Sydney	Medical Eye Service
1948	Sydney	Medical Eye Service
1949	Melbourne	Victorian Eye & Ear Hospital
1950	Sydney	Women's Club
1951	Hobart	Private Orthoptic Rooms of Lena Gilchrist
1952	Sydney	Sydney Eye Hospital & Women's Club
1953	Adelaide	Adelaide Children's Hospital
1954	Sydney	RAHC, Quay Street, Sydney
1955	Melbourne	Victorian Eye & Ear Hospital
1956	Brisbane	Chelmsford, 33 Wickham Terrace
1957	Melbourne	Victorian Eye & Ear Hospital
1958	Adelaide	Private Orthoptic Rooms, Lucy Willoughby
1959	Broken Hill	Broken Hill & District Hospital

This table was compiled from OAA Minutes (1944-60), from the *Transactions of the Orthoptic Association of Australia* (1944-58) and from the 'List of Clinics and Private Practices' in the *Australian Orthoptic Journal* (1959-60).

Orthoptic practice

Before WWII orthoptists focused on the assessment and non-surgical management of all aspects of strabismus. Specifically, orthoptists measured the level of visual acuity in

patients of all ages; measured the size of the strabismus and assessed the state of binocular vision, information which influenced ophthalmologists' surgical decision-making. From the mid-1940s to 1960, knowledge increased and opened new fields of endeavour.

Of significance was the efficacy of prolonged binocular vision training. With the development of the synoptophore assessment was more accurate, but, as in the 1930s and early 1940s, there were cases of patients undergoing needlessly lengthy treatments which caused some ophthalmologists to question the value of orthoptics in restoring binocular vision. Norman Gregg considered the difficulties were, in part, due to poor consultation between orthoptists and ophthalmologists, and unreal expectations of ophthalmologists. He attributed some blame to ophthalmologists who did not always provide 'full details and [their] point of view' presumably resulting in conflicting modes of treatment.[23] By the end of the 1940s, it was orthoptic clinical research which had improved the criteria for patient selection and reduced the incidence of unnecessary ineffectual treatment.[24]

At the meeting in 1947 where Gregg made his comments Emmie Russell presented the current clinical research to inform ophthalmologists of the true value of orthoptics and to correct any misunderstandings. She referenced the orthoptic work with the RAAF trainees during WWII which had highlighted the value of orthoptics in the treatment of latent deviations. Apart from Air Vice Marshall Philip Livingston's publications this topic had not been well researched. Emmie Russell posited the management of heterophorias opened a new field of practice and a new area of scientific investigation. She was congratulated by the President of the OSA who stated her contribution 'was certainly of great value'.[25]

[23] Norman Gregg, "Discussion," *Transactions of the Ophthalmological Society of Australia* VI, (1947): 111.
[24] For examples see Diana Mann "Application of Research in Orthoptics," *Transactions of the Ophthalmological Society of Australia (BMA)* VI, (1946): 118-20 and Diana Mann, "The Role of Orthoptic Treatment," *Transactions of the Ophthalmological Society of Australia (BMA)* VI, (1946): 76-81; Lucy Willoughby, "To What Extent do Orthoptics Help Accommodative Squints?," *Transactions of the Orthoptic Association of Australia* 3, (1946): 3-6.
[25] "Discussion," *Transactions of the Ophthalmic Society of Australia (British Medical Association)* VI, (1947): 112.

Orthoptists realised that such well-meaning comments were insufficient to convince ophthalmologists who remained skeptical. They understood the need to develop a body of scientific knowledge based on their own clinical experience to strengthen the veracity of orthoptics as a scientific discipline. In the 15 editions of the scientific transactions from 1944-60, over 50 percent of the papers dealt with strabismus. Significantly almost 20 percent dealt with orthoptic assessment techniques and management of all forms of heterophorias (Table 5.2).

Table 5.2. Number of scientific papers covering oculo-motor topics published in *Transactions of the OAA*, 1944-60

Scientific Subject Matter	**Number of Papers N=176**
Strabismus - diagnosis & treatment	94 (53%)
Latent strabismus - diagnosis & treatment	34 (19.3%)
Binocular vision & its anomalies	21 (12%)
Amblyopia – diagnosis & treatment	10 (5.7%)
Refractive conditions	6 (3.4%)
Miscellaneous	6 (3.4%)
Examination techniques	2 (1.1%)
Surgery	2 (1.1%)
Terminology & classification	1 (0.6%)
Total	**176**

This table was compiled from the *Transactions of the Orthoptic Association of Australia* (1944-58) and from the *Australian Orthoptic Journal* (1959-60).

The management of amblyopia - a consequence of late diagnosis of strabismus - in paediatric cases occupied a significant part of orthoptic practice. It was known that

early treatment provided the best chance of restoring good vision, and if left untreated amblyopia could not be reversed leaving the child with permanently reduced vision. The treatment was the complete occlusion of the 'good' eye to encourage use of the amblyopic eye. Orthoptists designed therapeutic exercises to be carried out in the clinic and at home. Treatment could take several months, sometimes up to a year. Based on orthoptic research orthoptists developed a regimen of treatment to ensure the maximum vision had been restored before therapy was discontinued and/or unnecessarily prolonged. The end of the 1950s marked the introduction of a new form of amblyopia therapy, pleoptics, developed in Switzerland. With it came new equipment which had to be mastered. It held much promise, but by the late 1960s enough cases had been treated to show that pleoptic treatment did not live up to its early promise and failed to yield sufficiently good results to justify its continuance.[26]

Despite efforts by orthoptists to validate their work, by the mid-1950s there remained a difference of opinion between orthoptists and some ophthalmologists as to the value of orthoptics and how it could enhance the outcome of strabismus management. For some ophthalmologists the proof was not there, and perhaps for others there remained a question of the legitimacy of orthoptics as a branch of ophthalmology. Diana Mann's scientific response was to conduct a study in 1958 which aimed at defining the differences of opinion between ophthalmologists and orthoptists.[27] The results highlighted the debate over the place of binocular vision in the management of strabismus, one which is still ongoing. As is treatment for heterophorias, with some ophthalmologists believing the condition is not-symptom producing and simply a psychological manifestation of over-work, a debate which continues to this day.

[26] This was confirmed by Margaret Doyle (née Kirkland) who was Head of the Orthoptic Department at Sydney Eye Hospital during the period pleoptics was practised. Margaret Doyle (née Kirkland), interview for the Orthoptics Australia Interview Archive Project, 26 February 2016.

[27] Diana Mann, "Opinion Poll," *Transactions of the Orthoptic Association of Australia* 15, (1958): 37-40.

*The intermediate clinic, Medical Eye Service in Sydney is included because it was the largest employer of orthoptists in Sydney. The clinic ran from 9am till 4pm (later till 7pm) from Monday to Friday and employed up to 4 equivalent full-time orthoptists.

A limiting factor to orthoptic practice was the OBA's ethical rule, 7B. It stated that 'All work must be carried out only under the direction of legally qualified medical practitioners engaged in the practice of Ophthalmology'.[28] The rule was based on the premise that a full medical assessment was required to rule out any serious medical condition causing the eye movement disorder as has been discussed in earlier chapters. This dominance by the medical profession was common in other allied health professions such as medical science, occupational therapy, physiotherapy and speech therapy.[29] Some orthoptists believed the rule was restrictive and that referrals could also come from other medical specialists such as neurologists and paediatricians. In 1952 the NSW Branch of the OAA questioned the rule. The response reiterated that orthoptists should only treat patients referred 'by a recognised ophthalmic surgeon'.[30] The reaction from the association is not recorded. It is likely the response was expected.

Why orthoptists complied with the Rule 7B and did not defy the Board related to the OAA's relationship with the OBA and through it, the members of the Ophthalmological Society of Australia. The Society had mandated that ophthalmologists refer only to orthoptists registered with the OBA. Some orthoptists may have been concerned that defiance of Rule 7B could jeopardise their registration. This situation was never tested. Additionally, the OAA valued its registration with a professional medical body like the OBA, one with an official imprimatur akin to state government registration.

The orthoptists also saw few alternatives. They accepted medical authority. Alison Bashford argued that the female-led occupations of nursing and midwifery have examples where 'masculine medical and health practices have been questioned and challenged', but they failed to change the status quo. As Bashford notes 'Despite such localised confrontations, nursing and midwifery came to be regulated within a system

[28] This quote is taken from undated Minutes of the OBA circa 1940. When the OBA rules for formalised, the Rule became Rule 7B, but the wording remained unchanged. "Orthoptic Board of Australia, Appendix "C", Ethical Rules: (b)", circa 1940. Orthoptic Board of Australia Minutes, RANZCO archives, Chalmers Street, Surry Hills, circa 1940.

[29] Heather Gardner and Brigid McCoppin, *Struggle for survival by health therapists, nurses and medical sciences* In *The Politics of Health: the Australian Experience*, ed. Heather Gardner (Melbourne: Churchill Livingstone, 1995), 371-427.

[30] "Business." *Minutes of the Orthoptic Council of NSW*, RANZCO archives, Chalmers Street, Surry Hills, 31 January 1952:1.

dominated (in terms of influence, if not numbers) by medical and masculine ideas and individuals.'[31] Orthoptics on the other hand attracted women who accepted that orthoptics was practised under ophthalmology control. Orthoptists may not have gone against the OBA and Orthoptic Council directives, but instead they directed their efforts to developing a body of science as the way to determine the profession's progress.

Training

Between 1945 and 1960, the registration and education bodies, OBA and the Orthoptic Councils of NSW and Victoria, oversaw the training programs in Sydney and Melbourne and maintained a register of qualified orthoptists.[32] The major change over this period was the transition in 1948 from a 12-month course to an 18-month one and finally in 1956 to a 2-year program which had its first student intake in 1957. This program ran until orthoptics joined with other allied health courses in colleges of advanced education in the 1970s.[33] Orthoptists had an increasing input to these bodies despite the rules of the OSA precluding orthoptic membership.

The syllabus for the new 12-month course, developed by the OBA, was in place from 1940 to 1947. The motivation for the new course was to formalise the theoretical and clinical training and the examinations to ensure consistencies between the courses in Sydney and Melbourne training schools. In these seven years, 28 orthoptists were trained – 10 in war time and 18 had qualified by the end of 1947. The course was divided into Parts I and II based on the division of subjects in the ophthalmology training program. Part I comprised lectures and tutorials in eye movement theory; ocular anatomy; general and ocular physiology and elementary optics and ophthalmic optics.

[31] Alison Bashford, "Medicine, nursing, and health." In *Australian Feminism: a companion*, eds. Barbara Caine, Moira Gatens, Emma Grahame, Jan Larbalestier, Sophie Wilson, Elizabeth Webby (Melbourne: Oxford University Press, 1998), 224.

[32] The Victorian OBA members oversaw the Melbourne training program until the Victorian Orthoptic Council was set up in 1956.

[33] Orthoptics became part of the NSW College of Paramedical Studied (later Cumberland College) in 1973 and part of Lincoln Institute in Melbourne in 1975.

Part II consisted of lectures, tutorials, demonstrations and clinical work. The content covered methods of eye movement investigation and management including the use of instruments and treatment regimes. The students also received instruction in medical etiquette and hospital procedures. Graduates were awarded a Certificate of Proficiency.

During this period, there was no 'academic year' as such; some courses were run when candidates could be mustered. Ten orthoptists were trained during the war period from 1940-45.[34] In the post war period training in Sydney got off to a quicker start than in Melbourne.[35] This was partly demand-driven. It took time for life to return to some sort of normality, and neither ophthalmologists nor orthoptists wanted to train students if there were limited job prospects. Additionally, in both states there was a lack of teaching resources, difficulty finding ophthalmologists to give specialist lectures and limited clinical placements.[36] Available records show between 1940-47, 18 students completed the 12-month course, 13 in Sydney and five in Melbourne.[37]

A significant indicator of the standard of orthoptic training was the granting of reciprocity of Australian and British qualifications. In 1947, the 'British Orthoptic Board had formally agreed to affiliation with the OBA and to reciprocity between the two countries.'[38] Reciprocity allowed British-trained orthoptists to work in Australia and vice versa. Orthoptists welcomed this milestone because it validated the level of Australian training and offered opportunities for the interchange of ideas.[39] It was also the age

[34] The orthoptists who qualified during wartime were: Janet Arnold (née Bowman), 1940; Patricia Lance, 1941; Beverley Balfour, 1942; Margaret Martin (née Gillespie), 1942; (Celia Sklovsky (née Weigall), 1942; Patricia Nugent (née Chalmers), 1942; Barbara Mann (née Cooley), 1944; Audrey Baird (née Cochrane), 1944; Bonnie West (née Ross), 1944; Beatrice Barnes, 1945; Shayne Brown and Jill Gordon, *Rear Vision: Celebrating Australia's Early Orthoptists* (Orthoptics Australia, Sydney, 2019), 43-61.

[35] Patricia Lance, "Orthoptic Association of Australia (A newsletter received by air mail from Miss P. Lance (Secretary)," *British Orthoptic Journal* 5, (1948): 16.

[36] The Victorian Ear and Ear Hospital (later the Royal Victorian Eye and Ear Hospital) had been closed twice because of a polio epidemic, once for 11 months in 1937-8 and then for five years during the war. It reopened towards the end of 1944 for four half days a week. Lindsay Gardiner, *'The Eye and Ear': The Royal Victorian Eye and Ear Hospital Centenary History* (Melbourne: Robertson and Mullens, 1968), 45.

[37] Data was compiled from student numbers published in the Minutes of the OBA, Orthoptic Council of NSW and the OAA.

[38] "Secretary's Report," *Minutes of the Fifth Meeting of the Orthoptic Board of Australia held at Royal Australian College of Physicians, Sydney*, 24 September 1947: 1. Minutes held at RANZCO, Chalmers Street, Surry Hills.

[39] Patricia Lance, "Presidential Address: a history of the Treatment of Strabismus," *Transactions of the Orthoptic Association of Australia* 11, Part 1 (1954): 17.

when young Australian women aspired to a working holiday in what was then considered very much the "home country" for this class of women.[40]

By 1946 the OBA was considering an extension to the 12-month course. There were two motivating factors. The Board was cognisant of the expanding knowledge base of orthoptics as a scientific discipline. Secondly, Britain had expanded its training course to a 2-year course and the OBA realised that without an increase in the knowledge base, the reciprocity of qualifications between Britain and Australia could have been jeopardised. An expansion of the course was fully supported by the orthoptists. There was a unanimous vote at the OAA's AGM in 1947 for orthoptic training to be increased to a 2-year course, a decision which was conveyed to the OBA.[41] Why the OBA opted for a six months and not a 12-month extension is not recorded. The 1947 OBA Minutes simply state 'It was decided to extend the course of training for student orthoptists to 18 months instead of 12 months.'[42] Without orthoptic representation on the OBA there was nothing the OAA could do other than accept the decision. Even if the OAA had voiced its objection, the OBA would not have considered the matter until its next meeting. As the OBA only met once a year it is most likely that the OAA decided not to pursue the matter as the introduction of the 18-month course was a *fait accompli* and was set to commence in 1948.

The 18-month diploma course had its first intake of students in 1948 and ran for nine years. For the first time graduates were awarded a diploma - the Diploma of Australian Orthoptics (DAO) - as well as a Certificate of Proficiency. Available records show 50 students completed that course, 38 in Sydney and 12 in Melbourne.[43]

As early as 1955 the OBA was considering extending the course to a 2-year training program. As with the extension of the course from a 12-month to an 18-month course the motivating factors were to accommodate new clinical and theoretical

[40] Ros Pesman, *Duty Free. Australian Women Abroad* (Melbourne, Oxford University Press, 1996), 208.
[41] "Business arising out of the annual report," *Minutes of the Annual General Meeting of the OAA*, 22 September 1947: 14.
[42] *Minutes of the Fifth Meeting of the OBA*, 24 September 1947: 1.
[43] Data was compiled from student numbers published in the Minutes of the OBA, the Orthoptic Council of NSW and the OAA.

knowledge and to maintain the reciprocal arrangements between orthoptics in Britain and Australia. The OBA tasked Diana Mann 'to obtain details from Britain about the syllabus in use there.'[44] The OBA approved the 2-year diploma course in 1956 which commenced in 1957.

The 2-year course better accommodated the additional amount of theory with the required clinical hours, though it was still a demanding program. The course comprised three terms per year, with a week's holiday between terms and a month between first and second year. Overall students worked four and a half days per week from 9am to 4pm. The first course in Sydney was held in 1957 and in Melbourne in 1958. While the new course was run solely by orthoptists, the academic content (anatomy, physiology, optics and theoretical orthoptics) was conducted 'under the supervision of the Orthoptic Councils, which would be responsible for Examination standards,…, supervision and correction of all examination papers'.[45] Orthoptists continued to examine the orthoptic clinical examination.

As with the 18-month course graduates were awarded the DAO and issued with a Certificate of Proficiency. By the end of 1959, two cohorts of students had completed the program – nine in Sydney three and in Melbourne. Ten students were in training, six in Sydney and four in Melbourne. By this time the OBA had altered its constitution and was 'now solely a registration board [with] only registration and supervisory capabilities' having passed on the supervisory role to the state branches, the Orthoptic Councils of NSW and Victoria.[46]

Orthoptic educators

I highlight the significant contribution of four orthoptists, Patricia Lance, Helen Hawkeswood, Louise Bryden-Brown (later McDade) and Leonie Collins (née Beck) who

[44] "General Business," *Minutes of the Eleventh Meeting of the OBA*, 14 October 1955: 1.
[45] "Business," *Minutes of the Orthoptic Council of NSW*, RANZCO archives, Chalmers Street, Surry Hills, 5 January 1957:3.
[46] "Secretary's Report to Council," *Council of Orthoptic Association Minutes*, 24 October (1955): 3.

were exemplars of determination and who played pivotal roles in orthoptics gradually taking control of orthoptic education. While concentrating on these four orthoptists, it must be acknowledged that all orthoptists working in the public sector, and some in private practice, had students in their clinics for practical training. This clinical instruction was voluntary and orthoptists accepted this as their contribution to furthering their profession.

The OBA and its state bodies, the Orthoptic Councils of NSW and Victoria, may have devised the curriculum, but gradually from the introduction of the 12-month course in 1940 orthoptists assumed responsibility for the implementation of the training program. Initially Emmie Russell in Sydney and Diana Mann in Melbourne worked voluntarily with the local ophthalmologists to run the program. This involved the administrative activities of scheduling lectures given by ophthalmologists. But it also involved the academic activities of giving orthoptic lectures and clinical tutorials and arranging clinical placements in hospital settings and in orthoptic private practices.

In 1948 the Orthoptic Council of NSW appointed orthoptist, Patricia Lance as a part-time orthoptic educator. She organised the course as well as teaching the introductory lectures in anatomy, general physiology and optics, and the bulk of orthoptic theory while continuing her private practice. The Orthoptic Council of NSW paid her from revenue raised from student fees. Diana Mann filled a similar role in Melbourne until 1957, but the details of her appointment are unknown. These appointments helped ensure the course was more structured than the 12-month course. This situation continued through the life of the 18-month course with orthoptists devoted to its management. With the introduction of the 2-year course Patricia Lance and Melbourne orthoptist Leonie Collins (née Beck) were appointed as Heads of the training schools.

Patricia Lance (Figure 5.5) worked as a clinician for much of her long career but as time progressed orthoptic education became her life's work. She was appointed Head of the Sydney training school with the introduction of the 2-year training program though she had been carrying out these duties from 1948. She held this position until her retirement in

the 1987. She was a founding member of the OAA and served a record six terms as its President.

Figure 5.5: Patricia Mary Lance MBE

Her long and devoted service to her profession was recognised in 1973 when the OAA made her a Fellow of the OAA and in 1979 she was awarded an MBE for services to health.[47]

In 1957 Patricia Lance was assisted by clinical tutor, Jan Alexander (née Jones) who taught practical skills and prepared students for their clinical work.[48] It is presumed that she was also paid by the Orthoptic Council of NSW from student fees. These two orthoptists were supported by Louise Bryden-Brown (later McDade) (Figure 5.6) who organised the clinical placements in the various hospital clinics and Helen Hawkeswood (Figure 5.7) who took charge of administration including the finances. Whether these women received payment is unknown but as others who followed were not paid for performing similar duties, it is presumed that they undertook these roles voluntarily.[49] All these women made significant contributions to orthoptics.[50] Louise Bryden-Brown (later McDade) was a clinician, researcher and served in various capacities in the orthoptic association. Helen Hawkeswood was also a clinician and researcher. She was the OAA's President on three occasions. When she was invited onto the Orthoptic Council of NSW in 1959, she was the first orthoptist to be appointed to any of the OSA's committees. This appointment was the result of OBA member, Ronald Lowe, raising the matter of orthoptic representation on the OBA in 1957. It was noted that the OSA's rules did not allow non-medical personnel to be members of committees.[51] The OBA reached a

[47] Brown and Gordon, "Patricia Mary Lance, MBE," *Rear Vision*, 45-8.
[48] Brown and Gordon, "Janet Alexander (née Jones)," *Rear Vision*, 130-2.
[49] In a conversation with Louise McDade (née Bryden-Brown) on 21 May 2020, she does not recall being paid.
[50] Brown and Gordon, "Louise Ann McDade (née Bryden-Brown)" *Rear Vision*, 98-100; Brown and Gordon, "Helen Ray Hawkeswood" *Rear Vision*, 83-86.
[51] "Correspondence," *Minutes of the Thirteenth Annual Meeting of the Orthoptic Board of Australia*, 27 September 1958: 2.

compromise solution the following year when members agreed that if orthoptists could not be members of the OBA that they 'be allowed to sit on State orthoptic committees.'[52] Helen Hawkeswood was made a Fellow of the OAA in 1976 in recognition of her contribution to the orthoptic profession.[53]

Figure 5.6: Louise Bryden-Brown (later McDade)

Figure 5.7: Helen Hawkeswood

The introduction of the 2-year course in Melbourne experienced some disruptions. Diana Mann was the orthoptist-in-charge of the Orthoptic Department at the Victoria Eye and Ear Hospital, Melbourne's training hub. She was also in charge of the orthoptic training course from around the mid-1940s, where she worked closely with Drs Fred Fenton and Joseph Ringland Anderson, two members of the OBA. She held these positions until 1957, but just as the 2-year course was to be introduced, she took time off to care for her elderly parents.[54] Alison Syme (Figure 5.8) replaced Diana Mann and was responsible for the orthoptics students' clinical training. Leonie Collins (née Beck) was placed in charge of the theoretical training.

[52] "Correspondence," *Minutes of the Fourteenth Annual Meeting of the Orthoptic Board of Australia*, October 1957: 1.
[53] Brown and Gordon, "Helen Ray Hawkeswood," *Rear Vision*, 83-86.
[54] Julie Green, "Obituary: Diana Sophie Craig (née Mann) 1912-1992)," *Australian Orthoptic Journal* 28 (1992): 51-52.

Figure 5.8: Alison Syme (far right) with orthoptic students at the orthoptic clinic at the Victorian Eye and Ear Hospital, Melbourne.[55]

Figure 5.9: Leonie Collins (née Beck)

When Leonie Collins (Figure 5.9) was appointed Head of the orthoptic school in January 1957, the Orthoptic Council of Victoria gave her one month to draw up the 2-year syllabus with five students ready to start in March. Not surprisingly later that year she acknowledged that 'the School in Victoria was under re-organisation [and] there are many points that have not yet been resolved.'[56] Leonie Collins was a clinician at heart but stepped in as Head of the Victorian training program to replace Diana Mann. Unusually for her time she continued to work with a young family. She worked with ophthalmologists to establish the Orthoptic Council of Victoria. In recognition of her contribution to the professional association at a federal

[55] Reference: Photograph of Alison Syme in Donovan, Peter, *'An Ornament To The City': The Royal Victorian Eye and Ear Hospital* (Melbourne: Royal Victorian Eye & Ear Hospital, 1992), 124. Date of the photograph is unknown.

[56] Leonie Beck, "Training of Orthoptists in Victoria," *Transactions of the Orthoptic Association of Australia* 14, (1957): 14-15.

and state level in 1986 she was made a Fellow of the OAA, for her contribution to the profession.[57]

By the beginning of 1960, a total of 114 orthoptists had been trained in Australia. Of those, 90 had graduated in the post-war period. Orthoptists were then in control of orthoptic training marking the time when orthoptics reached one of Zachery Cope's elements of a profession, that of responsibility for its own standard of training.[58]

Student selection and profiles

Initially there was no systemic method of student selection. Ophthalmologists, and later orthoptists, actively sought out women as potential trainees from among their social and work spheres. In 1938 with the establishment of the OBA a formal selection process was adopted. Ophthalmologists from the NSW and Victorian Orthoptic Councils made up the selection panels. The selection criteria were for potential students to be over 18 years of age with a sound grounding (School Certificate or higher) in subjects such as English and mathematics and/or a science such as biology. They also had to be in good health, have good vision and no obvious strabismus. Ophthalmologists and orthoptists thought that an unsightly strabismus would be a 'bad advertisement'. They also believed that an orthoptist with a strabismus would not be able to teach patients how to perform the curative exercises when they could not do them themselves. By 1955 advertisements were placed in newspapers, in the *Australian Medical Journal* and in careers' advice literature in high schools which opened up the profession to women from a wide socio-economic group.[59] When the number of applicants outstripped the number of student places, Leaving Certificate holders were given priority and the entry

[57] Brown and Gordon, "Leonie Anne Marie Collins (née Beck)," *Rear Vision*, 117-18**.**

[58] V Zachary Cope, "Report on Medical Auxiliaries. Part 1," *Ministry of Health. Department of Health for Scotland* (London: His Majesty's Stationery Office, 1951), 1-2; Gerald Larkin, "Regulating the Professions Allied to Medicine," *Regulating the Health Professions* (2002).

[59] "General Business," *Minutes of the Orthoptic Association of Australia, NSW Branch*, 6 November 1956:2; "Business," *Minutes of the Orthoptic Council of NSW*, RANZCO archives, Chalmers Street, Surry Hills, 27 September 1955: 1-2.

age was lowered to 17 years for the 1957 intake.[60] No reason was given to explain the reduction in age at entry. It is possible that the selection committee focused on academic attainments and so wanted to attract school leavers before they decided on another course of study.

There was no orthoptic input into student selection until the 1958 intake in NSW. The Orthoptic Council Minutes simply record that an orthoptic member of the NSW Branch of the OAA would be invited to 'be present' at the interviews.[61] There is no record of the part the orthoptist played, so it is not known whether she was there as an observer or took any active part in the selection process.

By this time the profession encouraged applications from women from a wider socio-economic group than the ophthalmologists' and orthoptists' personal circles. No longer did orthoptics attract just women from well-to-do families with connections to the medical fraternity, but women who had experienced orthoptics first-hand as patients, and others who heard about orthoptics and thought it a worthwhile and interesting career for young intelligent women.[62]

Students were required to pay tuition, examination fees and to provide their own uniforms, to be worn on hospital clinical placements. With the introduction of Commonwealth Scholarships in 1951, a scheme devised by the Commonwealth government to encourage an expansion of higher education and professional expertise, it was not long before the scholarships were extended to orthoptic education, with the

[60] "Secretary's Report," *Orthoptic Association of Australia NSW Branch, Minutes,* 23 October 1956: 2.

[61] "Business," *Minutes of the Orthoptic Council of NSW*, RANZCO archives, Chalmers Street, Surry Hills, 5 January 1958: 2.

[62] As a complimentary project, I have written the profiles of orthoptists who trained in Australia up to 1953. I was able to hold interviews for the Orthoptics Australia Interview Archive Project with 12 women profiled in the book and another 12 who trained after 1953. Common themes for their choice of orthoptics was a desire to take up a caring occupation where they could help people and that the course was intellectually stimulating. They were in general agreement orthoptics, like other allied health professions such as speech therapy and occupational therapy was a career best suited to women. Orthoptists who were drawn to orthoptics because they had orthoptic treatment as a child include, Ann Macfarlane (née Fleming), Mary Mills (née de Salis), Janette Smith (née Stanton-Cook) and Judith Burfitt-Williams (née Davies). Ann Macfarlane (née Fleming), interview for the Orthoptics Australia Interview Archive Project, 4 February 2016; Mary Mills (née de Salis), interview for the Orthoptics Australia Interview Archive Project, 5 April 2016; Janette Smith (née Stanton-Cook), interview for the Orthoptics Australia Interview Archive Project, 21 July 2016; Judith Burfitt-Williams (née Davies), interview for the Orthoptics Australia Interview Archive Project, 5 February 2019.

first awarded to Sydney student Ann Fleming (later Macfarlane) in 1953.[63] This showed greater recognition of orthoptics as important to Australia's national postwar recovery. In another sign of increased recognition, in the same year, the Commissioner of Railways granted concession fares to orthoptic students on all railways in Australia.[64]

The orthoptists

The profiles of the women who trained between 1946 and 1960 mirrored those who trained before them, but with some significant changes. For the first time, school-leavers made up the bulk of the trainees. Like their pre-war counterparts, many orthoptists heard about orthoptics through family and friendship connections with ophthalmologists. This gradually changed as orthoptics became better known to careers advisors at schools. One thing did not change. When women married, they stopped work to become homemakers. As the *Beveridge Report* stated 'The attitude of the housewife to gainful employment outside the home is not and should not be the same as that of the single woman. She has other duties...as Mothers have vital work to do…'[65] This was an English report, but the sentiments were shared in Australia in the immediate post-war period, as evidenced by retired orthoptist, Patricia Dey who commented that when she continued to work after she was married, the superintendent at Sydney Eye Hospital remarked that married women were expected to stop work immediately after marriage to look after their home.[66] By the mid-1950s minor changes were evident. A small number of married women remained in the workforce at least till they were pregnant. A few returned to work after they had children, most often when the children were school age. Returning to work with a young family was sometimes frowned on as exemplified by Lyn Brent (née Lipman) who worked in a private practice in Armidale in country NSW in the early 1960s and was castigated for doing so by

[63] Macfarlane, interview.
[64] "Secretary's Report 1953," *Minutes of the Orthoptic Board of Australia,* 9 October 1953: 1.
[65] William Beveridge, *Social Insurance and Allied Services* (London: His Majesty's Stationary Office, 1942), paragraphs 114 and 117, https://www.parliament.uk/about/living-heritage/transformingsociety/livinglearning/coll-9-health1/coll-9-health.
[66] Patricia Berry (née Dey), interview for the Orthoptics Australia Interview Archive Project, 20 April 2019.

the matrons of the town. Such were the cultural and social mores of the time that she was socially ostracised because she worked. As she recalled working was 'not the done-thing by people of her status!'[67]

The numbers of orthoptists who trained between the post-war period up to 1960 was evidence that orthoptics was a career for single women. In this 15-year period, 90 had completed the course. Of this number, 47 (52%) were working by the end of 1959 and 43 (48%) were no longer practicing in Australia. Of those no longer in the orthoptic workforce, 30 women had ceased working to marry; five were working as orthoptists overseas; two women had changed careers and in six cases whether they were working is unknown (Table 5.3).[68] By 1960, there were only three who were working once married. Post 1960, one of them had children and stopped work at that stage. One continued to work with a young family and one never had children.

[67] Brown and Gordon, "Lynette (Lyn) Brent (née Lipman)," *Rear Vision*, 141-42; Lyn Brent recounted her experiences as a working married orthoptist, interview for the Orthoptics Australia Interview Archive Project, 10 March 2016.

[68] In interviews for the Orthoptics Australia Interview Archive Project with 19 retired married orthoptists all confirmed they retired from orthoptic practice when they married. Berry, interview; Jill Boorne (née O'Dillo Maher), in conversation with the author, 30 October 2017; Louise Brierley (née Strangward) in conversation with the author, 15 October 2018; Louise Bryden-Brown (later McDade), interview for the Orthoptics Australia Interview Archive Project, 14 January 2016; Burfitt-Williams, interview; Elizabeth Cameron (née York), interview for the Orthoptics Australia Interview Archive Project, 6 November 2017; Helen Coles (née Goddard), interview for the Orthoptics Australia Interview Archive Project, 18 September 2018; Doyle in conversation with the author; Rosemary Farrow (née Chapman), interview for the Orthoptics Australia Interview Archive Project, 21 April 2016; Marion Gyaw (née Gardner) in conversation with the author, 4 April 2019; Gisela Heinze in conversation with the author 17 May 2016; Denise Heron (née D'Ombrain), interview for the Orthoptics Australia Interview Archive Project, 9 August 2017; Joan Krstic (née Hamberg), interview for the Orthoptics Australia Interview Archive Project, 7 February 2019; Mills interview; Faye Parker (née Elliott) in conversation with the author on 20 November 2019; Betty Reid (née McGee & McDougall), interview for the Orthoptics Australia Interview Archive Project, 21 May 2019; Jennifer Stern (née Pritchard) in conversation with the author, 26 February 2016; Mary Snepp (née Dowling), interview for the Orthoptics Australia Interview Archive Project, 3 February 2019; Smith, in conversation.

Table 5.3: Reasons orthoptists, who trained post-war, had stopped work by 1960

REASONS POST-WAR TRAINED ORTHOPTISTS WERE NOT IN AUSTRALIAN WORKFORCE BY 1960	**NUMBER and % IN EACH CATEGORY**
Marriage	30 (69%)
Working overseas	5 (12%)
Changed careers	2 (5%)
Unknown	6 (14%)
TOTAL	**43 (100%)**

This table was compiled from OAA Minutes (1940-60).

Workplaces

Between 1946 and 1960, 90 orthoptists had trained in that period. By 1960, 47 of those who trained post-war were working and a further 11 who had trained before 1946 were still in practice. The workforce was increased by four British-trained orthoptists bringing the total workforce to 62. Thirty-eight were working in NSW; 16 in Victoria; three in South Australia; two in Queensland; two in Western Australia and one in Tasmania. In total these orthoptists worked in 44 places (26 hospital clinics; 17 private practices and one intermediate clinic).[69] Gradually some new graduates took up positions outside the metropolitan areas and by 1960 orthoptists were working in Brisbane, Launceston, Perth, and country towns in NSW and Victoria. Many travelled and worked with ophthalmologists at periodically held clinics intra and inter-state (Table 5.4).

[69] "List of Clinics & Private Practices," *Australian Orthoptic Journal* 2, (1960): 48-50.

Table 5.4: The geographical locations of orthoptic workplaces in 1960

GEOGRAPHICAL AREAS	HOSPITAL CLINICS	PRIVATE PRACTICES	INTERMEDIATE CLINIC (Medical Eye Service)
Sydney & suburbs	10	7	1
Country NSW	2	2	
Melbourne & suburbs	6	2	
Country Victoria	2	2	
Adelaide, SA	2	1	
Hobart, Tasmania	2	1	
Perth, WA	1	1	
Freemantle, WA	1	1	
Total (N=44)	26	17	1

This table was compiled from OAA Minutes (1940-60).

Australia's relationship with British orthoptics and orthoptists

Britain was the 'home' of orthoptics and from the outset Australian orthoptists forged strong ties with their British colleagues to be well informed of the latest scientific developments. By 1940, five Australians were members of the British Orthoptic Society.[70] Membership entitled them to attend scientific conferences, but more importantly, it included an annual subscription to the *British Orthoptic Journal* (BOJ) which was first published in 1939. The OAA had an annual subscription to the BOJ for members' use.

As previously mentioned, in 1947 the OBA negotiated reciprocity with the British Orthoptic Board. Australian orthoptists were readily employed in Britain as locums in hospital clinics and private practices, and many took up that opportunity to combine work

[70] MacLellan, *Orthoptics – the early years*, 2006, 43.

experience and holiday in Britain and Europe. The prospect of working overseas was not the sole reason for overseas travel. Historian Ros Pesman posits that for women of that generation and background, travel in the post-war period was an opportunity to see the sights, and like the generation before them, was also a statement of status, refinement and culture.[71] Orthoptists such as Joan Baldick, Beverley Balfour, Louise Bryden-Brown (later McDade), Mary Carter, Bernice Chapman, Denise D'Ombrain, Mary Eyres and Diana Mann made trips to Britain to work or to visit clinics.[72] For these women their family background was mainly British, and the fact that orthoptics had its foundation in England, served to reinforce the ties between Australia and Britain. Patricia Lance built especially strong relationships with several British orthoptists, who subsequently made regular visits to Australia and spoke at conferences. Close relationships between British orthoptists and Australian orthoptists were forged and Australian orthoptics was well-regarded. When the International Orthoptic Association was formed in 1967, Australia was one of its founding members with Patricia Lance as Australia's representative.[73]

As noted above, it was not all 'one-way traffic'. British orthoptists also visited Australia - some to work and some to lecture. Doreen Balance was in Hobart from 1935-36 presumably working with Lena Gilchrist, who had just returned from gaining her British qualification. Ruth Holt spent a year in Sydney in 1949. She was invited to be the Head of the Orthoptic Clinic at Medical Eye Service. Both Patricia Dey (later Berry) and Mary Eyres recalled that Holt was well-liked and warmly received during her time in Sydney.[74] They both considered that she made an important contribution to orthoptics in Sydney by her participation at the scientific meetings and by sharing her clinical knowledge. Ann Mitchell lived in Perth in 1958 but it is not known where she worked.

[71] Pesman*, Duty Free. Australian Women Abroad*, 24, 87.
[72] Joan Baldick, Mary Eyres and Louise McDade (née Bryden-Brown) related their personal experiences when working in England. Baldick, interview; Eyres, interview; McDade, interview.
[73] Brown and Gordon, "Patricia Mary Lance, MBE," *Rear Vision*, 45-48.
[74] Brown and Gordon, "Patricia Marie Berry (née Dey)," *Rear Vision,"* 106-7; Brown and Gordon, "Mary Eyres," *Rear Vision*, 90; Eyres, interview; Berry, interview.

Two British-trained orthoptists, Patricia Dunlop and Megan Lewis made Australia their home and each made important contributions to Australian orthoptics.[75]

Conclusion

As orthoptics entered the 1960s, it had much to be proud of - the profession was still small, but it had achieved a great deal. The two training courses had been established with a standard curriculum and by 1960 the training was run by orthoptists with input from ophthalmologists reduced to teaching and examining the basic medical sciences. The OAA was flourishing. A large percentage of the working orthoptists were members. It had upheld the main aim, set out in 1944, to advance the study of orthoptics by holding annual national conferences and producing an annual scientific periodical. The study of orthoptics had progressed. With greater knowledge orthoptists were better equipped to select the appropriate treatment for patients. Intellectual tensions between ophthalmologists and orthoptists still existed over specific therapy choices. On an individual level differences of opinion could often be overcome by reasoned argument. On a macro-level, the orthoptic community strove to verify debatable aspects of orthoptic therapy by evidenced-based research. Some debates continue to this day. By taking control of orthoptic practice and furthering its own esoteric knowledge through research, orthoptics had fulfilled Cope's components necessary to achieve the level of a profession.[76]

It had not been an easy task for those orthoptists. To use orthoptist Keren Edwards' word, they had to 'battle' to grow the science of orthoptics in spite of opposition from some ophthalmologists who did not believe in the non-surgical treatment of strabismus.[77] They built on the work of the founding orthoptists to

[75] Brown and Gordon, "Patricia Dunlop (née Maquire)," *Rear Vision*, 109-112; Brown and Gordon, "Megan Gwyneth Lewis," *Rear Vision*, 103-5.

[76] V Zachary Cope, "Report on Medical Auxiliaries. Part 1." *Ministry of Health. Department of Health for Scotland* (London: His Majesty's Stationery Office, 1951); 1-2; Gerald Larkin, "Regulating the Professions Allied to Medicine," *Regulating the Health Professions* (2002).

[77] Keren Edwards, "Presidential Address," *Australian Orthoptic Journal* 19, (1982): iv.

progress the profession. While working within the limitations imposed by ophthalmology, Australia produced world-class practitioners evidenced by those who found no difficulty working in Britain, the home of orthoptics. By 1960 most of the working orthoptists were unmarried but it was the beginning of change. Most students were still drawn from the 'private school' mould but this too was changing as orthoptics as a professional career choice became more widely known and supported by Commonwealth scholarships. As Keren Edwards said in her 1982 Presidential address, the founding orthoptists:

> took on the task of establishing orthoptics as an important paramedical science, at a time when there was much skepticism about our work, and few proven facts. To win the battle they had to extend their knowledge to improve their systems of treatment and be prepared to discard methods that were unsuccessful.[78]

[78] Edwards, "Presidential Address," iv.

CHAPTER 6. CONCLUSION

My thesis has examined the development of Australian orthoptics from its beginnings in 1931 to 1960. By 1960 the all-female profession controlled its education, was responsible for outcomes of its clinical practice and research and had celebrated 16 years since the formation of its professional association, the Orthoptic Association of Australia (OAA). These achievements were the result of the dedicated efforts of a group of women who believed in the science of orthoptics and the value it could add to the non-surgical management of eye movement disorders. They utilised a scientific approach to validate their work and standing. Despite some opposition from ophthalmologists and the control they had over some aspects of clinical practice, the founding orthoptists worked within these confines to provide a firm platform, one from which the profession has grown and cemented its place in the eye health care of this country. By 1960 there were signs that orthoptists had begun to expand their skills which enabled them to branch into other areas of ophthalmology and manage a wider range of ophthalmic disorders. Orthoptics shares some commonalities with other allied health professions and so my research also adds to the historiography of allied health care in Australia, and being an all-female workforce, to the place of women in Australian allied health professions, and women in the professions more generally.

Orthoptic practice commenced in Melbourne when Australian ophthalmologists, who had trained in Britain and understood the value of orthoptic therapy for their patients, brought orthoptics to Australia. The first orthoptic clinic was opened in Melbourne in 1931 closely followed by a clinic in Sydney in 1933. Orthoptic training was initially hospital-based apprentice-style. This was the norm for allied health disciplines such as occupational therapy, physiotherapy, speech therapy and nursing, and medicine itself until the middle of the nineteenth century. The founding ophthalmologists had envisioned that orthoptic training would follow the British model and be based in the major teaching hospitals across

Australia. However, there was insufficient patient load to run more than the two training programs, one in Sydney and the other in Melbourne.

Over the 30-year period orthoptic training evolved from a six-month apprentice style course run solely by ophthalmologists to a two-year diploma course run by orthoptists. Within the first few years, when orthoptists gained the necessary academic knowledge and technical skills involved in orthoptic management, they took on the clinical training. Gradually they also taught the academic subjects with ophthalmologists providing lectures in specialty subjects so by the late 1940s orthoptists were responsible for delivering the major part of the curriculum. The impetus for curriculum development originated with ophthalmology but orthoptists recognised the need for the extension of the course and worked with ophthalmologists to lengthen the course from a 12-month, to an 18-month training period and then to a 2-year course in 1956. This was achieved by negotiations with the Ophthalmic Society of Australia (BMA) through the OAA to extend the course. The curriculum came under the auspices of the Orthoptic Board of Australia (OBA) and its state councils, but orthoptists gradually became gained more control in developing and executing the training programs. While this is not covered in the timeframe of this thesis, in the late 1960s discussions had begun between the OAA and the federal education department and following the release of Werner Report in 1970, orthoptics joined other allied health course in special colleges of paramedical studies in 1973. By 1991 orthoptics gained degree status when orthoptic education, along with other allied health courses moved into universities.

By 1960 the OBA had been in existence for 22 years. Set up in 1938, the OBA was run by the ophthalmologists as a sub-committee of the OSA. Its roles were to register orthoptists, set the curriculum and administer orthoptic training. A condition of registration was adherence to a code of ethics which ensured that orthoptists acted in the patient's best interests, kept patient confidentiality, and accurately and truthfully maintained medical records. There is no evidence that orthoptists did other than embrace the ethical code and to this date no orthoptist has been referred to the OBA (now the Australian Orthoptic Board) for any ethical breach. Initially, there was no input into the OBA from orthoptists**.** By 1956 orthoptists were responsible for orthoptic teaching, but the curriculum and exams

remained under the supervision of the state branches of the OBA. Today the independent Australian Orthoptic Board is the registration body for orthoptists in Australia. Its chairman is a retired orthoptist.

The founding orthoptists recognised the importance of setting orthoptics on a professional footing to further the science of orthoptics, to argue for its place in Australia's eye health care, and for the continuing education of its workforce. They had established the professional association, the OAA (now Orthoptics Australia) in 1944, the third oldest in the world. Membership was considered important and a professional responsibility. During the period covered by this investigation membership of the professional association was almost universal. Unlike some of the other allied health professions such as physiotherapy which were initially state-run, from its inception, orthoptics was set up as a national organisation with state branches. While its aims were to further the science of orthoptics and to provide continuing education for its members, the association also negotiated with government bodies on behalf of its members. The OAA organised an annual scientific conference which it does to this day. Following the first scientific conference held in Melbourne in 1944, the OAA produced transactions of the scientific content. In 1959, these transactions were replaced by the *Australian Orthoptic Journal* which continues to be an annual publication of the association. In addition to running scientific meetings, the OAA worked with the OBA to extend the length of the training course, from a 12-month to an 18-month course and finally to a 2-year course in 1956. The OAA also worked with the Commonwealth Government in 1953 to improve access to the course by offering Commonwealth Scholarships to eligible students. In the same year the Commissioner of Railways granted student concession fares on all railways in Australia. Of importance to orthoptists in private practice was the successful negotiation between the OAA and the private health funds for rebates for orthoptic therapy. This was achieved in the mid-1950s. By 1960 the OAA had proved itself to be a strong advocate for its members and provided opportunities for collegiate information and scientific sharing.

Émile Javal, the French ophthalmologist is often credited with being the father of modern orthoptics, but orthoptics as practised by today's orthoptists was based on the

treatment regimen devised by English ophthalmologist Ernest Maddox and put into practice by his daughter Mary Maddox. Ernest Maddox is rightly credited with appreciating the benefits of orthoptics for his patients and providing his daughter with the skills to carry out effective therapy. However, without Mary Maddox's passionate belief in the effectiveness of orthoptics and that non-medically trained women with the required skill sets could carry out the therapy, orthoptics as an allied health discipline may not have developed into a discreet discipline nor would it have survived. As I have posited, ophthalmologists found orthoptics required on-going commitments to patients and many did not have the time to devote to orthoptic therapy, which would have taken them away from their surgical practice. Mary Maddox through her diligence and strong advocacy was able to demonstrate to the ophthalmological community, and convince a sufficient number of them, that not only was orthoptics a worthwhile effective health discipline, but that ably trained females could take on the role of therapist at a time when women were not encouraged to further their careers and when some in the medical profession were against non-medically trained personnel providing medical care.

Mary Maddox set out the basis for the practice of orthoptics. Originally, she designed five courses of treatment; three for different aspects of strabismus which included pre- and post-operative treatment; one for heterophorias, and one for 'feeble vision' (amblyopia). Her lecture notes show that while methods and instruments have changed, the principles underpinning the therapy have remained largely unchanged. Maddox encouraged continual re-appraisal, a strength which has been followed and this continuous re-assessment has ensured that orthoptic therapy remains as relevant today as it did in 1928 when Maddox opened her orthoptic private practice in London. From that time, it was orthoptists and no longer ophthalmologists who designed and carried out orthoptic therapy. It was orthoptists who held the esoteric knowledge, their own standards and principles of practice.

After her initial success and positive acknowledgement by enough ophthalmologists, Maddox taught others and imbued them with her knowledge and enthusiasm for orthoptics. In doing so she created a new allied health discipline that has grown and developed over

time from one specifically focused on eye movement disorders to a profession which deals with a wide range of ocular conditions as it does today. In that respect orthoptics in Australia is unlike orthoptics in other countries which have restricted their practice to the field of eye movement disorders. However, from the experiences of some of the early orthoptists, such as Diana Mann, there were signs from the outset that Australian orthoptists were open to expanding their skillset beyond their involvement purely with eye movement disorders.

As in Britain, orthoptics in Australia would also not have developed and flourished without the dedication and foresight of the all-female workforce. Australia followed Mary Maddox's example and sought women who were intelligent and prepared to invest time in orthoptic therapy. They also had a determination and a belief in the science underpinning orthoptics, the key to gaining ophthalmologists' approval. They had many hurdles to overcome. Despite the science of orthoptics having emanated from ophthalmology, not all ophthalmologists were supportive. Some were not in favour of non-medically trained personnel dealing with patients and some did not believe in the non-surgical management of ocular motor disorders. In the face of this opposition, the early orthoptists persevered and provided orthoptics with a firm platform from which it continues to grow. These early orthoptists had the foresight to form the third oldest professional orthoptic association in the world. They forged the advancement of orthoptic scientific knowledge. They were motivated, not by any financial reward, but a firm belief in the effectiveness of orthoptics for the benefit of their patients. These orthoptists were open to new ideas and continually adapted when new knowledge called for changes in clinical practice. While not a major focus of this thesis, it should be noted that by 1960 orthoptics could rightly claim to have gained professional status. It had fulfilled the elements Zachery Cope's requirements for a profession: its own standard of training; its own principles of practice and a set code of professional ethics.

Orthoptics started in Britain but the orthoptists who built the profession in Australia must be commended for their tenacity, their devotion and belief in the science of orthoptics. Australian orthoptics today is considered world-class. It was the first country in

the world to have gained degree status education and is one of the counties with the largest percentage of practitioners with post-graduate degrees. Its research is also world-class. It has diversified its practice compared with other countries. Today's orthoptics is no longer confined to working in the field of eye movement disorders and is now involved in the care of patients with eye disease such as cataracts, glaucoma, diabetic eye disease, age related macular degeneration, systemic or neurological vision disorders and low vision. With this involvement orthoptics has responded to the needs and requirements of the eye health care system in Australia. Without the early orthoptic practitioners who worked between 1931 and 1960, the profession would not have had the firm platform from which it has been able to grow and flourish.

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