

The History of Medicine and Healthcare

Selected Papers



Edited by
Lesley Bolton, William J. Pratt
and Frank W. Stahnisch

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Cover Image: A Women's College Hospital (Toronto) psychiatric team, 1959. Left to Right: Mrs. Diana Pilsworth (occupational therapist), Mrs. Charlotte Hannick (certified nursing assistant), Vivian Noble (student nurse), Dr. Betty W. Steiner (psychiatrist), Jennifer Urban (registered nurse), and Enid Paisley (registered nurse). Library and Archives Canada. Canada Department of Manpower and Immigration 1972-047 06274.1

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Cindy Ningfu Zhu.....	Western University

PREFACE AND ACKNOWLEDGEMENTS

This book brings together a set of chapters from young and emerging scholars in the history of medicine, while taking its origins from the 24th History of Medicine Days (HMDs) conference occurring on Friday March 6, 2015 and Saturday March 7, 2015 at the University of Calgary's Cumming School of Medicine in Alberta, Canada. Here, undergraduate and early graduate students from across Canada, the United States, Latin America, the United Kingdom and Europe gave paper and poster presentations on a wide variety of topics from the history of medicine and health care. In this preface, the editors would like to express their sincere and heartfelt thanks again to all of the contributors to the 24th HMDs student conference in 2015. The event was graciously introduced by the Vice Dean of the University of Calgary's Cumming School of Medicine, Dr. Glenda MacQueen, and the Vice Dean of the Faculty of Arts, Dr. Florentine Strzelczyk. Both gave their warm welcoming addresses to all delegates and contributing students from universities, medical schools, and public health colleges at the University of Calgary.

The resulting chapters in the first part of this volume provide many historical insights, which could be received from the 2015 conference event in Calgary. They are compiled in this book, to document the communication and deliberation at the annual academic event. The selected papers, which are published in the current volume, particularly comprise contributions on Public Health History, the History of Psychiatry, Biomedical Ethics in History, Military Medicine, and Changing Gender Roles in Modern Medicine.

Altogether thirty-seven oral presentations and twenty posters were presented at the 2015 conference. Furthermore, an exhibit of objects from the Alberta Health Services (AHS) historical archive collection (Chief Curator: Mr. Dennis Slater), in addition to one from the Mackie Family Collection in the History of the Neurosciences at the Health Sciences Library of the University of Calgary's Cumming School of Medicine (Library Director: Heather Ganshorn), were made available for viewing at the entrance to the Libin Theatre in the Health Sciences Centre of the Cumming School of Medicine in Calgary.

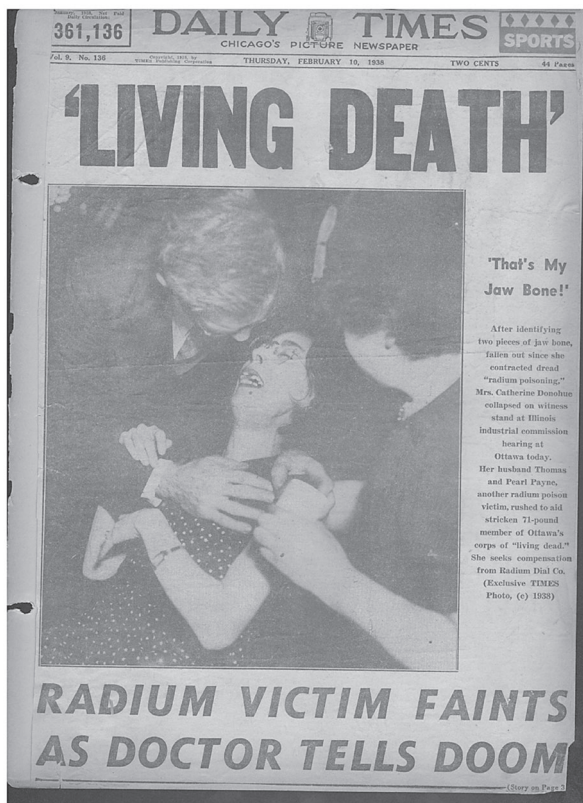


Figure 1-1: Anonymous: “‘Living Death’–Radium Victim Faints As Doctor Tells Doom,” *Daily Times* 9.136 (10 February, 1938). Photograph showing a radium-poisoned female dial worker at a contemporary industrial hearing.
Source: Public Domain.

Altogether, students from the University of Calgary delivered about one half of the presentations at the 24th History of Medicine Days conference. Many local students also actively volunteered on various organizing committees for the conference, which included hosting and billeting external student presenters in Calgary, as well as aiding with the organization of the program, and many other preparatory roles. Without their most valuable and gracious help, the organization of the conference would not have been as smooth and successful as it was. Over two hundred students and faculty colleagues attended the individual sessions from the University of Calgary campuses.

Additionally, many faculty colleagues from the Cumming School of Medicine, the Faculty of Arts, the Faculty of Science, and the Faculty of Nursing supported the HMDs by reviewing conference abstracts as they were submitted. They also contributed significantly to the chairing and judging of the numerous paper and poster presentations that were delivered at the conference. Furthermore, one faculty colleague, from the University of Calgary's Department of Geoscience, Faculty of Science, and Werklund School of Education, prepared an extra student panel entitled "Braiding History, Philosophy and Model-Based Learning in Science Teaching and Education." It saw four additional student presentations and discussions, with Emily Hurst, Simon Wiebe, Jessica Burylo, and Bryan Petryshen who presented on specific History and Philosophy of Science case studies from radiology and public health (see also Figure 1-1), palaeontology, and the geosciences. This featured session focused on teaching science with historical case studies, and it was made possible through the support of a grant by the Taylor Institute for Teaching and Learning and a Tamaratt Teaching and Learning Professorship co-funded project involving undergraduate student researchers researching and developing historical case studies for teaching science and the nature of science. The specific cases included "The De-mythologization of Alfred Wegener (1880– 1930)," "One of the Biggest Upheavals in Geology, that No One Ever Talks About," as well as "Tragedy in the Dial Painter Factory." This group around Dr. Glenn Dolphin examined historiographical and pedagogical methodology involved in creating case studies, provided brief synopses of the cases, and described an instructors' perspectives on implementing the case studies in real science classes.

Moreover, Mr. Dennis Slater, the Head of the Alberta Health Services Archives and Historical Collections in Calgary, Alberta, presented a featured lecture in line with Alberta Health Service's traveling exhibit shown at the conference venue. It was entitled "A History of Epidemics, Vaccines and Innovation" and addressed a perspective from recent media coverage about childhood diseases, vaccinations, and concerns over influenza that has reminded the Canadian public that infectious diseases are a real threat to us today.¹ These issues are in the forefront of public attention now, but it is important to remember that many of these threatening diseases were prevalent since the early 1900s. Noting these historic parallels helped in developing the available perspectives imbedded in the travelling exhibit about the history of infectious diseases in Alberta over the last century.

¹ See, for example, in: Terra Manca, "'One of the greatest medical success stories': Physicians' and nurses' small stories about vaccine knowledge and anxieties," *Social Science & Medicine* 196 (2017), 182-189.

Drawing on its substantial collection of historic medical artifacts and photographs, the historical exhibit has delivered an engaging informative story of this western Canadian province's response to the threat of disease, profiling notable physicians and discoveries from across the province, together with insightful artifact compilations from the contemporary period. Creating the travelling exhibit followed the process of standard museum exhibitions, yet with some unique challenges, since for travelling exhibits, other than for standing collections, artifacts must also safely travel over an extended period, being packed, unpacked, and transported from a variety of locations. Mr. Slater's featured lecture has explored the very steps taken in the development of this exhibit from idea and proposal, to key messages, research phase, storyline, and the factors unique to creating a museum-standard travelling exhibit.

The conference's keynote lecture, entitled "A 'Most Distressing Shortage': Organizing Occupational Therapy in the Ontario Hospitals," was given by the renowned medical historian, Dr. Peter L. Twohig, previous Canada Research Chair in Atlantic Canada Studies, Department of History, Faculty of Arts (St. Mary's University, Halifax, Nova Scotia). He presented on a very timely subject related to the constant challenges in medical staffing and human resources shortages in health care systems. Dr. Twohig has generously prepared his presentation as a chapter submission here for our 24th History of Medicine Days Proceedings volume. In 2015, Dr. Twohig's invited keynote lecture was again delivered as a co-sponsored event by the O'Brien Institute for Public Health (OIPH), the Calgary History of Medicine Society (CHOMS) and the Science, Technology, Environment and Medicine Studies (STEMS) colloquium at the University of Calgary, for which the organizers of this event have all been very grateful.

Dr. Twohig is currently a Professor of History at Saint Mary's University; and from 2003 to 2013 he was Canada Research Chair in Atlantic Canada Studies. Prior to that appointment, he was a member of the Department of Family Medicine and the Medical Humanities program at Dalhousie University in Halifax, Nova Scotia. He is the author of two books on health care work, *Challenge and Change: A History of the Dalhousie School of Nursing, 1949–1989* (1998) and *Labour in the Laboratory: Medical Laboratory Workers in the Maritimes, 1900–50* (2005), as well as numerous articles on health and medicine.

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Figure 1-2: Weekly pay packet of a Cape Breton coal worker from the Dominion no. 10 colliery, August 10, 1936. Deductions for doctor and hospital were 40 cents and 30 cents respectively. The balance, if payable would be inserted on the inside of the packet. Source: Courtesy of the University Archives, Dalhousie University, Halifax, Nova Scotia.

An established interdisciplinary researcher, his publications have appeared in the *British Medical Journal*, the *Canadian Medical Association Journal*, the *American Journal of Bioethics*, and a wide variety of historical journals. Professor Twohig provided important insights into the organization of healthcare work in Canada and how different parts of Canada responded to shortages of healthcare workers over time. His illustrative examples have offered an appreciation for the importance of historical perspectives on contemporary public policy issues, particularly

since the early twentieth century experienced numerous instances of health care staffing challenges and the needs for human resources in the health care system in Canada's provinces (figure 1-2). During the 1950s and 1960s, Canada faced a profound shortage of health care workers. The question of how hospitals would be staffed preoccupied local hospital authorities, provincial departments of health, and the federal government during these years. There was a widespread perception that both hospital beds and occupancy rates were increasing and that the availability of registered nurses, occupational therapists, and other workers was not keeping pace. While the question of a labour shortage was relative, subjective, and very much dependent upon context, the consistent narrative concerning a 'shortage' was a critical dimension of the reorganization of health care labour that took place in the middle of the 20th century. This chapter has examined strategies to expand services in a period of rapid and profound change.² We are thankful that Dr. Twohig has also offered and consented to the republication here of another chapter, entitled "Education, Expertise, Experience and the Making of Hospital Workers in Canada, 1920–1960" which previously appeared in *Scientia Canadensis*. Explicit permission for the reuse of this article was both perceived through the author and editor-in-chief as a recent communication in the history of medicine and full reprint in this volume (see pages 195-218). It appears next to another special communication contributed by conference attendee Anna Sarah Erem who submitted her research topic "Electroconvulsive Therapy – A History of a Shocking Topic" in lieu of her oral presentation at the conference (see pages 171-193).

Professor Twohig's chapter in the current volume thus provides important insights into both the constant challenges in the recruitment of adequate personnel for modern health care services and medical infrastructures in Canada, by also presenting some of the planning decisions, policy developments, and health care services programs that intended to cope with the historical challenges at hand.

Looking at the current volume, the editorial team is very grateful that a solid number of ten manuscript contributions could be included in this edited collection.³ This volume further includes the abstracts of all 2015

² For further reference, see also the following article: Peter L. Twohig, "Education, Expertise, Experience and the Making of Hospital Workers in Canada, 1920–1960," *Scientia Canadensis* 29 (2006), 131-153.

³ All of the contributions in this volume, for which the editors have received explicit *Copyright Transfer Forms* and *Author Consent Forms*, will also be made available online through the University of Calgary Internet Repository *Prism: History of Medicine Days Community Homepage*:

conference presentations in a separate appendix. It has been illustrated with images and diagrams pertaining to the various topics from the history of medicine as they are assembled here. Throughout the 24th conference of the History of Medicine Days in 2015 at the University of Calgary, research enthusiasm, oratory, and audiovisual competence of the speakers were again of an exceptional quality. The conference audience was not only greatly entertained, but the local and national delegates contributed further to a highly stimulating and engaging discussion throughout the whole event. The proceedings editors are grateful to all participants for their active contributions and support, which helped to make this academic conference a great success.

Our sincere thanks go to the Chief Executive Officer, Gail Paech of Associated Medical Services. Both the publication of the Proceedings Volumes and the organization of the 24th History of Medicine Days at the University of Calgary would not have been possible without the continued and sustained financial support through Associated Medical Services, Inc. in Toronto, Ontario,⁴ as well as through the Alberta Medical Foundation in Edmonton, Alberta for which we continue to be very grateful. However, the content is solely the responsibility of the authors and does not necessarily represent the official views of Associated Medical Services, Inc.

For their continued and important support, we would also like to thank the O'Brien Institute for Public Health in Calgary and the Cumming School of Medicine at the University of Calgary. Since last year (2014), the University of Calgary's Faculty of Medicine has been renamed as the Cumming School of Medicine, in recognition of a very generous donation of the Ontario-based entrepreneur Geoffrey Cumming. This was a gift to the university that was effectively matched by the Province of Alberta, in support of the Faculty's important and sustained activities in medical research, education, and scientific innovation. It intends to support emerging initiatives in research that may lead to transformative impacts on health as well as local, national and international applications. The Cumming School of Medicine will now attract top medical students and researchers to Alberta by extraordinarily investing in students, and it aims at making a difference for patients in Calgary and beyond.⁵

<https://dspace.ucalgary.ca/handle/1880/47439>.

⁴ Compare, for example, Anne Avery, "History of Medicine and Healthcare – History of Medicine Days," in: *Meet Our Hannah Chairs*, ed. Associated Medical Services, Inc. (<http://www.ams-inc.on.ca/history-of-medicine-and-healthcare/history-of-medicine-days/>); <Accessed on December 3, 2017>.

⁵ Todd Korol and Kelly Cryderman, "Businessman Makes Largest-Ever Donation to University of Calgary," *Globe and Mail*, June 17th, 2014, 11.

The editors and organizers of the 2015 History of Medicine Days themselves extend their warm thanks to Beth Cusitar and Donna Weich for the important support for the organization of the conference and additional editorial help they provided in finalizing this manuscript, as well as their tireless efforts in contributing greatly to the proceedings' success for yet another year. Fortunately, in 2015, we also saw the grateful donation by an anonymous donor, in conjunction with the O'Brien Institute for Public Health, of the Clara Christie Award for the Best Presentation on Women in the History of Medicine and Public Health. Apart from such luminaries as Margaret Sanger (1879-1966) in New York City, United States,⁶ and her work on family counselling and population control, there is not much scholarly work done on the specific and major contributions of women in the modern public health field explicitly. Yet, clearly, there is a lot that can be researched and also highlighted as role models and historical cases to modern public health researchers and activists, which form the rationale for this new annual award at the History of Medicine Days conferences.

The award was named in honour of Dr. Clara Christie Might (1895-1987),⁷ who was one of the founding female physicians of the family medicine program in Calgary, so that this award has a nice local touch (the other two named awards giving out at the HMDs conferences are the Dr. Peter Cruse (1927-2006) Award in the History of Surgery and the Dr. William A. Whitelaw Award in the History of Internal Medicine – highlighting their previous organizational contributions to the Calgary History of Medicine and Health Care program). The paper awarded the inaugural Clara Christie Award was presented by Ashley Frayne, MA, who has just joined the University of Calgary's first year Undergraduate Medical Education class from the University of Victoria, where she previously studied for the MA in English Literature. Her exceptional and well-received presentation was entitled "Generating New Metaphors: Gender Politics and Obstetric Medicine in 16th and 17th Century England" and her conference abstract is also included in this volume. In addition, we express our gratitude to the staff at Cambridge Scholars Publishing, Newcastle upon Tyne, United Kingdom—Deputy Editor Adam Rummens and Carol Koulikurdi, who have supported the editorial process and production of *The History of Medicine and Healthcare: Selected Papers* in very helpful and essential ways.

⁶ See, for example: David Kennedy, *Birth Control in America: The Career of Margaret Sanger* (New Haven, CT: Yale University Press, 1970).

⁷ Crystal Schick, "Six Notable Albertans Honoured in Latest Field of Honour Monument," *Calgary Herald*, September 15th, 2016, 1.

Since 1991, the annual Calgary History of Medicine Days Conferences bring together undergraduate and early graduate students from across Canada, the United States, Latin America, the United Kingdom and Europe to give paper and poster presentations on a wide variety of topics from the history of medicine and health care in an interdisciplinary perspective. The History of Medicine Days thereby offer an annual platform for discussions and exchanges between the participants over recent research findings, methodological perspectives, or work-in-progress descriptions of ongoing historiographical projects. A limited number of reviewed and edited conference papers are assembled in the annual volumes of the series, as in the current volume, and may comprise topics from the history of psychiatry, health care systems, medical sciences, neuroscience, public health, or historical issues of gender in medicine. Each of the books in the new peer-reviewed series of Proceedings Volumes from the Calgary History of Medicine Days conferences, published with Cambridge Scholars Publishing, further intend to include the manuscripts from internationally renowned keynote speakers from the history of health care, medicine, and science. The volumes also comprise all the abstracts of the respective conferences for documentation purposes (see pages 221-269) and are well-illustrated with diagrams and images pertaining to the history of medicine. Academic readership for this series includes the conference attendees, students and faculty members from History of Medicine, History and Philosophy of Science, Nursing History, along with Science and Technology Programs.

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(University of Calgary, July 13, 2020)

⁸ Frank W. Stahnisch, "Series Description – The Proceedings of the Annual History of Medicine Days Conferences at the University of Calgary's Cumming School of Medicine, Alberta, Canada," in: Cambridge Scholars Publishing, ed., *Series – Subject: Medicine* (Newcastle upon Tyne, England: Cambridge Scholars Publishing); <URL:<http://www.cambridgescholars.com/the-proceedings-of-the-annual-history-of-medicine-days-conferences-at-the-university-of-calgarys-cum-ming-school-of-medicine-alberta-canada>>; accessed on November 24, 2017.

HISTORY OF PSYCHIATRY

THE METAMORPHOSIS OF PSYCHIATRIC LANGUAGE AND THE EMERGENCE OF THE SCHIZOPHRENIA CONCEPT (1902–1911)

YAZAN ABU GHAZAL

SUMMARY: The context for the problem of psychiatric classification is not simply a scientific or a clinical one. It is a profoundly epistemological context which concerns the way in which concepts in mental pathology are shaped. At the turn of the twentieth century, Emil Kraepelin's dichotomy between *dementia praecox* (schizophrenia) and manic-depressive psychosis (bipolar disorders) yielded a new foundation for clinical psychiatry. However, this dichotomy imposed itself as a paramount approach for the classification of psychoses only because it was increasingly determined according to psychological criteria.

Eugen Bleuler's great contribution to psychiatry was his subtle reduction of all psychotic manifestations in schizophrenia to a set of specific dynamics, namely, the "tendency to autism" and the "aptitude for dissociation." Although Bleuler's major work, *Dementia praecox; or, The Group of Schizophrenias* (1911), gave psychoanalysis a monopoly on the understanding of symptoms in schizophrenia, his attitude toward this discipline has remained ambivalent. In this connection, the recently published correspondence between Bleuler and Freud sheds a new light on Bleuler's attitude toward psychoanalysis.

This chapter will illustrate the correspondence that led to the rupture between these two protagonists. This rupture involves diverse aspects: personal and metapsychological. I argue here that the articulation between personal experience, clinical experience and psychological theorization was crucial for the emergence of the schizophrenia concept.

KEYWORDS: Bleuler, Dementia Praecox, Griesinger, Kraepelin, Perspectives, Psychiatric Language, Psychopathology, Schizophrenia

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Introduction*

The psychopathology of the endogenous psychoses, i.e., schizophrenia and bipolar disorders, in the postwar period is a neglected topic in the history of psychiatry. In the last two decades, many historians of psychiatry have focused on the rise of psychopharmacology and monoamine theories of psychoses in the 1950s and 1960s.¹ This disregard for the developments in psychopathology, a discipline that has a long tradition in German-speaking countries for being the foundational science for psychiatry, can be attributed to the methodological one-sidedness of the current biologically-oriented psychiatry. This so-called biological psychiatry postulates that the problematic nature of the endogenous psychoses would be resolved once the physical underpinnings of these disorders are uncovered. However, such a view ignores a fundamental aspect: the emergence of the concepts of schizophrenia and manic-depressive psychosis at the turn of the twentieth century has presupposed psychopathological research. Therefore, the following study aims not only at deepening the historiography of postwar psychiatry, it sheds light on essential debates that have faded into oblivion amid the current orientation of psychiatry toward genetic and neurobiological research.

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¹ Viola Balz, *Zwischen Wirkung und Erfahrung – eine Geschichte der Psychopharmaka: Neuroleptika in der Bundesrepublik Deutschland, 1950–1980* (Bielefeld: Transcript, 2010); Jean-Noël Missa, *Naissance de la psychiatrie biologique: histoire des traitements des maladies mentales au XXe siècle* (Paris: Presses Universitaires de France, 2006); Alan A. Baumeister and Jennifer L. Francis, "Historical Development of the Dopamine Hypothesis of Schizophrenia," *Journal of the History of the Neurosciences* 11 (2002): 265-277; Alan A. Baumeister and Mike F. Hawkins, "The Serotonin Hypothesis of Schizophrenia: a Historical Case Study on the Heuristic Value of Theory," *Journal of the History of the Neurosciences* 13 (2004): 277-291; Alan A. Baumeister and Mike F. Hawkins, "Continuity and Discontinuity in the Historical Development of Modern Psychopharmacology," *Journal of the History of the Neurosciences* 14 (2005): 199-209; Alan A. Baumeister, "The Chlorpromazine Enigma," *Journal of the History of the Neurosciences* 22 (2013): 14-29.

In this context, this chapter investigates the circumstances behind the revival of holistic conceptions of psychosis in the postwar period. Moreover, it examines the perspectival framework that emerged in psychiatric research at the beginning of the twentieth century. The establishment of this new perspectival structure (perspectivity) in psychiatric knowledge cannot be separated from the controversies that accompanied the emergence and transformations of the schizophrenia concept. Equally, the debates regarding the unity and plurality of psychosis in postwar psychiatry took place within psychopathological research on schizophrenia. Therefore, the ways in which schizophrenia research constitutes the anchor point for the debates regarding conceptualization methods in psychiatry will be explored here.

The Psychological Turn of the Schizophrenia Concept

Emil Kraepelin's (1856-1926) distinction between "*dementia praecox*" (schizophrenias) and "manic-depressive insanity" (bipolar disorders) offered a new foundation for clinical psychiatry at the beginning of the twentieth century (see Figure 2-1). However, this dichotomy imposed itself as a paramount approach for the classification of psychoses only because it was increasingly determined according to psychological criteria and because its ties to the conceived disease entities were loosened.² As a matter of fact, the boundary separating these two spectra of psychoses was controversial from the very beginning.³ Surprisingly, the failure of all attempts to establish a differential diagnosis between dementia praecox and manic-depressive psychosis did not seriously affect the widespread acceptance of Kraepelin's nosological conception, nor did this failure hinder the orientation of psychiatric research toward the materialization of these hypostatized entities.⁴

² Werner Janzarik, *Dynamische Grundkonstellationen in endogen Psychosen* (Berlin: Springer, 1959), 2.

³ The debates regarding the differential diagnostic difficulties between dementia praecox and manic-depressive insanity and the study of the "Mischzustände" dominated German-speaking psychiatry in the first two decades of the twentieth century; see Maurycy Urstein, *Die Dementia Praecox und ihre Stellung zum manisch-depressiven Irresein. Eine klinische Studie* (Berlin: Urban & Schwarzenberg, 1909); Paul Schroeder, *Die Spielbreite der Symptome beim manisch-depressiven Irresein und bei den Degenerationspsychosen* (Berlin: Karger, 1920).

⁴ In this context, Karl Jaspers emphasizes that Kraepelin's disease entities should be considered as "ideas" in the Kantian sense; see Karl Jaspers, *Allgemeine Psychopathologie* (Berlin: Springer, 1913), 257ff.

Next to these nosological controversies, an intense endeavor to elaborate a psychology of schizophrenia dominated German-speaking psychiatry at the beginning of the twentieth century. This endeavor has its roots in the works of Carl Gustav Jung (1875-1961), Eugen Bleuler (1857-1939) and Josef Berze (1866-1958).⁵ In his article on “Die Prognose der Dementia praecox” from 1908, Bleuler (see Figure 2-1) coined the term “schizophrenias” as a substitute for the grammatically inconvenient term “dementia praecox.”⁶ However, soon afterward, the scope and the content of these two terms changed considerably. While dementia praecox received clinical connotations, schizophrenia was determined increasingly according to psychopathological criteria. The process that was supposed to be simply a renaming of dementia praecox conceals a complex psychological turn, which reveals the establishment of a perspectival structure in psychiatric knowledge.

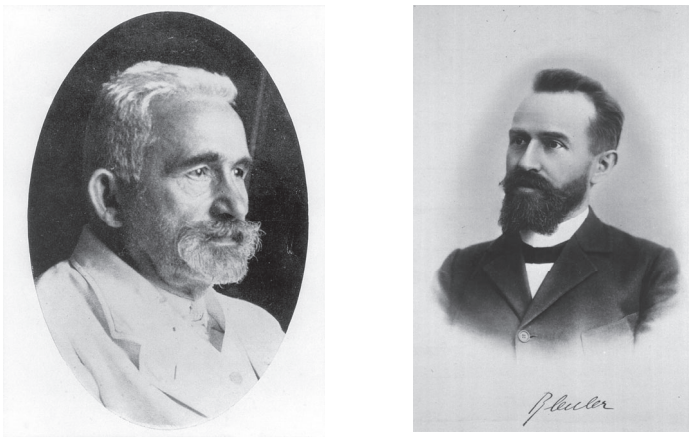


Figure 2-1: Photographic Portraits Emil Kraepelin (1856-1926) in his later years (l), Eugen Bleuler (1857-1939) (r). Dates Unknown.

(l) Wellcome Collection (CC BY 4.0); (r) US National Library of Medicine. Public Domain.

⁵ Carl Gustav Jung, *Über die Psychologie der Dementia praecox: ein Versuch* (Halle: Carl Marhold, 1907); Eugen Bleuler, *Dementia praecox, oder Gruppe der Schizophrenien* (Leipzig: Deuticke, 1911); Josef Berze, *Die primäre Insuffizienz der psychischen Aktivität* (Leipzig: Deuticke, 1914).

⁶ Eugen Bleuler, “Die Prognose der Dementia praecox (Schizophreniegruppe),” *Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin* 65 (1908): 436-464.

In this context, the characteristic feature of perspectivity does not consist in the simple coexistence of different points of view, namely the clinical, the psychological and the neurophysiological, which develop in parallel within psychiatric research on psychoses. Rather, perspectivity consists in the inevitable reference to a psychological set of concepts in order to delineate different clinical pictures. Despite the constant assertion of the primacy of the clinical view since Kraepelin's work, all attempts to delineate pure clinical groupings within the cohort of the endogenous psychoses proved to be impossible without recourse to the psychological analysis of symptoms. The psychological and the clinical standpoints have, therefore, the same value. Indeed, the psychological standpoint is indispensable to the clinical viewpoint.

The psychological turn of the schizophrenia concept led to the emergence of the question regarding the nature of the psychic "basic disturbance" ("*Grundstörung*"), which can account for the striking diversity of clinical manifestations in schizophrenia.⁷ This psychological question is completely different from the nosological problem of the "terminal states" ("*Endzustände*"), upon which Kraepelin based his conception of dementia praecox.⁸ In this context, the clinical-nosological entity "dementia praecox" is essentially different from the psychological-symptomatological unity "schizophrenia" insofar as these two notions involve different sets of criteria.

Kraepelin considered the clinical course and outcome as the main nosological criteria for the delineation of his "dementia praecox." Since the cases that he subsumed under this designation presented unlimited variations in their clinical course, Kraepelin had to consider the "terminal state" as the decisive criterion for the delineation of his dementia praecox. Nevertheless, he did not realize that his concept of schizophrenic

⁷ See Bleuler, *Dementia praecox*.

⁸ Kraepelin collected under dementia praecox a heterogeneous group of syndromes: catatonia, hebephrenia and primary insanity (or paranoid schizophrenia). Moreover, Kraepelin's concept of "dementia praecox" was closely associated with his concept of "*Verblödungsprozesse*," or process of mental deterioration. Under manic-depressive insanity Kraepelin placed simple mania, circular, periodic forms and a few others. Mania might precede or succeed depression; there could be a free interval or none; mania and depression might be present without the other. The facts in common were relapse and recovery and, less clearly defined, affective colouring. Particularly the similarity in outcome suggested a common underlying process; see Emil Kraepelin, *Dementia Praecox and Paraphrenia, Together with Manic-Depressive Insanity and Paranoia* (Birmingham, AL: The Classics of Medicine Library, 1989), 16 (notes from the editors).

“dementia” raises multiple psychological questions regarding the nature of schizophrenic deterioration.⁹ In this context, the psychological analysis of the terminal states leads necessarily to an examination of the problem regarding the nature of the basic disturbance in schizophrenia. Remarkably, the psychological analysis of symptoms cannot be bypassed within the framework of clinical psychiatry. The clinical-nosological standpoint depends constantly on the results of the psychological analysis of symptoms.

Further, the fact that dementia praecox and schizophrenia involve two different sets of criteria leads to the conclusion that these two designations do not correspond to the same clinical material. The cases that Bleuler subsumed under the “group of schizophrenias” present common psychological features regardless of whether or not these cases end in terminal deterioration.¹⁰ In this connection, it is remarkable that the attempts to define the basic disturbance led invariably to the broadening of the conceived basic disturbance.¹¹ This broadening reflects the inner problematic of the schizophrenia concept and is responsible for the several transformations that this concept has undergone through the twentieth century.¹²

Despite the major disagreements about the nature of the psychic basic disturbance, the main contribution of the attempts to elaborate a psychology of schizophrenia is to have placed emphasis on the primacy of the psychological analysis.¹³ In this context, the search for the psychic basic disturbance marked the entry of psychology in the history of schizophrenia

⁹ For details regarding the intense debates on the nature of schizophrenic deterioration, see Arthur Kronfeld, *Perspektiven der Seelenheilkunde* (Leipzig: Georg Thieme, 1930), 332-333.

¹⁰ Bleuler, *Dementia praecox*.

¹¹ This broadening of the basic disturbance determined the fact that the resulting schizophrenia concept lacked specificity. In this context, Bleuler and Berze conceived the basic disturbance in schizophrenia as “loosening of associations” (“*Assoziationstörung*”) and “insufficiency of psychic activity” (“*Insuffizienz der psychischen Aktivität*”), respectively; see Bleuler, *Dementia praecox*; Berze, *Die primäre Insuffizienz*.

¹² Werner Janzarik, “Wandlungen des Schizophreniebegriffes,” *Nervenarzt* 49 (1978): 133-139.

¹³ Compare the debates between Bleuler and Berze regarding the nature of the basic disturbance in schizophrenia. While Bleuler’s “loosening of associations” was a construct, Berze derived his basic disturbance directly from the symptoms structure; see Josef Berze, “Schizophrenie und psychologische Auffassungen,” *Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin* 77 (1921): 58-154; Josef Berze and Hans Walter Gruhle, *Psychologie der Schizophrenie* (Berlin: Springer, 1929).

research and opened the way for the psychological turn of the schizophrenia concept. However, the successful achievement of this turn does not necessarily mean the devaluation of the nosographic intention, which aims at delineating different disease entities. Nevertheless, it was unpredictable at that time if psycho-pathological research would promote such an intention or, on the contrary, if it would contribute to questioning its relevance.

The Origins of Perspectivity

This unpredictability that is inherent to scientific research on schizophrenia reflects the development of perspectivity as a new fundamental structure of psychiatric knowledge on psychoses. The origins of this perspectivity can be traced back to the developments of psychiatric theories in the last three decades of the nineteenth century. In his major psychiatric work, *Mental Pathology*,¹⁴ Wilhelm Griesinger (1817-1868) in Berlin, whose views transcended dogmatic one-sidedness, developed a psychopathologically oriented psychiatry that counteracted his neurophysiological program from the 1840s (see Figure 2-2). Shortly after Griesinger's death, the departure from the psychological standpoint underlying his system led to a restructuring of psychiatric knowledge. The reorientation of psychiatric research rested on Siegfried Kahlbaum's (1828-1899) clinical approach. Since 1863, Kahlbaum at the mental asylum in Görnitz saw the necessity to apply an empirical method to the classification of mental illnesses. This method considers the whole course of the disease and aims at describing different disease entities.¹⁵

¹⁴ Wilhelm Griesinger, *Mental Pathology and Therapeutics* (London: The New Sydenham Society, 1867).

¹⁵ Kahlbaum was the first to emphasize that the form of progression of the total disorders was essentially different from the form of progression of the more partial ones. His reference to the "*vesania typica*," which encompassed primary and secondary stages, aimed at showing that the disease processes affecting the psychic life in a considerable way presented a specific form of progression, which was characterized by the succession of different symptom complexes; see Karl Ludwig Kahlbaum, *Die Gruppierung der psychischen Krankheiten und die Einteilung der Seelenstörungen* (Danzig: A. W. Kafemann, 1863), 59-69. These symptom complexes represented different stages of the disease. In contrast to this type of progression, the more partial diseases showed a continuous course in which the character of the alienation remained the same. Moreover, Kahlbaum emphasized that the distinction between partial and total affections was true only with regards to the different symptom complexes. In this connection, it was not necessary that the disease process underlying the partial disorders be different from the one underlying the more total disorders. The consideration of the clinical course of the disease alone could decide



Figure 2-2: Wood Engraving Portrait Wilhelm Griesinger, published 1869 after his death.

Source: US National Library of Medicine. Public Domain.

Kraepelin remained independent from the psychiatry of the nineteenth century and followed Kahlbaum's way. Both psychiatrists however obstructed their own way over and over again with new forms of insanity.¹⁶ Nevertheless, despite the hindering nosographic intention, Kraepelin's dichotomy between "dementia praecox" and "manic-depressive insanity" succeeded in penetrating into the main common features

whether the psychiatrist was dealing with a partial or a total mental disorder. See Kahlbaum *Die Gruppierung*, 150ff. In this context, Kahlbaum was dependent on Griesinger's conception, according to which the basic forms of psychic diseases, namely, melancholy, mania, insanity ("Verrücktheit"), and dementia ("Blödsinn"), as well as their variants and transitions are different stages of one disease process; see Griesinger, *Mental Pathology*, 207.

¹⁶ In this context, Werner Janzarik (1920-2019) at the University of Heidelberg explored the ways in which the nosographic intention hindered considerably the progress in psychiatry during the last three decades of the nineteenth century; see Werner Janzarik, "Die klinische Psychopathologie zwischen Griesinger und Kraepelin im Querschnitt des Jahres 1878," in *Psychopathologie als Grundlagenwissenschaft* (Stuttgart: Enke, 1979), 60.

characterizing these two spectra of psychoses.¹⁷ Further, it is in conformity with Kraepelin's nosographic intention to substantiate the uniformity of dementia praecox based on the clinical study of later courses and eventual outcomes. However, he overlooked the important facts that the cases he studied progressed at different paces, and in so many diverse ways, and that the diagnosis of the presumed terminal states is uncertain once it needs to be deduced from the initial states of the illness. In this context, Kraepelin was one of the few psychiatrists who did not recognize the problem of the psychic basic disturbance in dementia praecox.¹⁸ This inner dialectic underlying Kraepelin's conception is responsible for the reorganization of psychiatric knowledge at the beginning of the twentieth century and for the entry of psychology into psychiatric research.¹⁹

Remarkably, psychiatry is not the only discipline that placed emphasis on the search for the psychic basic disturbance and the symptoms of first prominence. In the 1920s, the neurologists Kurt Goldstein (1878-1965) in Frankfurt and Otto Pötzl (1877-1962) in Vienna underlined the indispensability of the psychological analysis of symptoms for the study of neurological disorders. In their influential studies on aphasia, these authors emphasize the primacy of psychological analysis over the clinical standpoint in the conceptualization of this disorder.²⁰ However, during the 1930s, this neuro-psychological approach remained limited to the study of neurological disorders. The reasons why this approach did not prevail in psychiatric research are closely connected to the decline of psychopathological research in German psychiatry, which was clinically oriented.²¹ Meanwhile, the influential Heidelberg circle of psychiatrists

¹⁷ The recent results of cluster studies of syndromes have, on the whole, reproduced Kraepelin's groupings; see, for example, Kenneth S. Kendler, Laura M. Karkowski and Dermot Walsh, "The Structure of Psychosis: Latent Class Analysis of Probands from the Roscommon Family Study," *Archives of General Psychiatry* 55 (1998): 492-499.

¹⁸ See Emil Kraepelin, *Psychiatrie*, 4th edition (Leipzig: Ambr. Adel, 1893), 10 (notes from the editors): "Kraepelin traveled clinically with an extraordinarily small baggage of psychological ideas...Nowhere in Kraepelin's clinical work is his psychological background very obvious."

¹⁹ In 1927, Arthur Kronfeld devoted a monograph to the study of the interaction between psychology and psychiatry. See Arthur Kronfeld, *Die Psychologie in der Psychiatrie* (Berlin: Springer, 1927).

²⁰ Kurt Goldstein, "Über Aphasie," *Schweizer Archiv für Neurologie und Psychiatrie* 6 (1927): 1-68; Otto Pötzl, *Die Aphasielehre vom Standpunkte der klinischen Psychiatrie* (Vienna: Detické, 1928).

²¹ Wolfram Schmitt, "Biologismus und Psychopathologie: die Heidelberger Schule," in *Vom Umgang mit Irren: Beiträge zur Geschichte psychiatrischer*

developed a closed picture of schizophrenia, the boundaries of which are situated between Kraepelin's dementia praecox and Bleuler's broader schizophrenia concept. Moreover, the Heidelberg circle's conception of schizophrenia as an "endogenous cerebral disease" remains closely connected to Kraepelin's nosological conception.²²

The Psychopathology of Schizophrenia in the Postwar Period and the Revival of the "Unitary Psychosis"

In the years following the Second World War, clinical psychiatry particularly expressed the necessity that psychopathological research interpenetrates its results. This endeavour reached its peak with the psychiatric work of Kurt Schneider (1887-1967) in Heidelberg. The fundamental thesis of his seminal work, *Clinical Psychopathology*, is that "clinical psychiatry and clinical psychopathology share a methodological framework."²³ In this work, Schneider pointed out that Kraepelin's "dementia praecox" and "manic-depressive insanity" are not diagnoses in the medical sense.²⁴ Moreover, he emphasized that the distinction between schizophrenic and affective psychoses is still purely psychopathological in character and reflects purely psychological situations.²⁵

According to Schneider, the multiform schizophrenic pictures resist all efforts to integrate them under a unifying conception. They contrast, however, with the sharply contoured cyclothymic depression and, to a lesser extent, with the less frequent cyclothymic mania. By determining the "differential-typological" boundary between cyclothymic and schizophrenic psychoses according to psychological criteria, Schneider gave the Kraepelinian dichotomy a predominantly psychopathological character. In this context, the delineation of the boundary between schizophrenic and affective psychoses increasingly took a conventional character.²⁶

Therapeutik, ed. Johann Glatzel (Regensburg: Roderer, 1990), 121-131.

²² Karl Wilmanns, ed. *Die Schizophrenie: Handbuch der Geisteskrankheiten*, vol. 9, pt.5 (Berlin: Springer, 1932).

²³ Kurt Schneider, *Clinical Psychopathology* (New York: Grune & Stratton, 1959), 1.

²⁴ While stressing that the disease concept in psychiatry was a medical one, Schneider emphasized that the postulate of a disease process underlying endogenous psychoses was a working hypothesis: "So, too, we may speak of 'diagnosis' in this sphere of purely psychopathologically conceived structures, of 'existing state and subsequent course,' though, strictly speaking, this term also only has a place in medicine proper." *Ibid.*, 132.

²⁵ *Ibid.*, 89.

²⁶ "Actually, in the clinic, where the somatic nature of psychosis is in doubt, there is

The work of Kurt Schneider, who was one of the most inspiring figures of the Heidelberg School, has exerted a profound influence on psychiatric thinking in German-speaking countries, especially in the decade following the Second World War. Alongside Schneider's clinical psychopathology, holistic approaches around the mid-1950s were gaining ground.²⁷ Although these approaches were elaborated at the same time, none of them established themselves in the same way as Schneider's conceptions. Nevertheless, these approaches sought to embed the framework of Schneider's clinical psychopathology in a unifying conception which could integrate the results of the analytical description of psychopathological phenomena into a comprehensive holistic system of clinical psychopathology.²⁸ Within these approaches, it is the psychological concision of distinctions used in clinical settings, and not the nosological validity of such distinctions, that constitutes the main object of investigation.

Furthermore, holistic approaches in the mid-1950s emphasized that psychiatric research within the framework of clinical psychopathology turns inevitably in a "psychological-nosological circle" that hinders an unbiased understanding of the psychological rationality underlying pathological phenomena.²⁹ Therefore, these approaches sought to elaborate a psychological analysis of psychotic disorders independently from the clinical conventions prevailing in Kurt Schneider's clinical psychopathology. In this context, these approaches emphasized that the determination and comparison of psychopathological types within the group of the endogenous psychoses should be considered within a holistic framework and with reference to a common psychological set of concepts.³⁰ These two methodological requirements constitute the basis for these approaches, which aim at elaborating psychopathological conceptions that extend over the typological

an easy diagnosis nowadays of more or less typical cyclothymias, but everything else tends to get classed as schizophrenia. All the characteristics which will not fit into the cyclothymic picture are gathered together under this one term. There is nothing to which we can point as a common element in all the clinical pictures that are today christened schizophrenia." *Ibid.*, 5.

²⁷ Under holistic approaches we understand psychopathological approaches that endeavoured to apply holistic psychological theories in the symptom analysis of psychotic disorders. In this context, we refer to the works of German psychiatrists Klaus Conrad (1905-1961), Werner Janzarik (1920-2019) and Karl Peter Kisker (1926-1997).

²⁸ Johann Glatzel, "Die Psychopathologie endogener Psychosen in der Bundesrepublik seit dem Jahre 1945," *Fortschritte der Neurologie-Psychiatrie* 42 (1974): 576-596, esp. 583.

²⁹ Janzarik, *Dynamische Grundkonstellationen*, 10.

³⁰ *Ibid.*, 30.

boundaries within the group of endogenous psychoses, and, therefore, unify the distinctive features in a common framework. In this context, the question regarding the nosological unity in psychiatry occupied a central role in the psychopathological debates in that period.³¹

Psychopathological Dynamism and Schizophrenia Research

Despite their heterogeneity, these holistic approaches present at least two main similarities that are relevant for the discussions regarding conceptualization methods in psychopathology. The first similarity consists in the fact that these approaches are not limited to describing symptoms. Rather, they are characterized through the application of theoretical concepts, which are embedded in a complex web of epistemic prerequisites, to the analysis of psychopathological facts. The second similarity between these approaches consists in their reference to gestalt and structure psychological theories. In this regard, theoretical concepts derived from psychology, such as “structure,” “gestalt” and “wholeness,” play a central role within these approaches. Nevertheless, these concepts are subject to essential and profound adjustments in order to fit to the psychopathological material. In this connection, the heuristic value of these concepts resides primarily in their concretization that aims at converging with clinical realities.

In addition to these methodological characteristics, these approaches place particular emphasis on the conceptualization of psychic structure as a dynamic system. This consideration of the dynamic aspect of psychic disorders exerted a major influence over psychopathologic research around the mid-1950s and opened the way for the conceptualization of endogenous psychoses primarily as dynamic processes. In that period, psychotic manifestations were conceived as holistic moldings of such processes.³²

³¹ In the programmatic introduction to his article, Klaus Conrad sketched the conceptual framework of a comprehensive psychopathology. His approach, which he called “Gestaltanalysen,” aimed at elaborating a unitary system, from which the variety of disease forms can be deduced: „Aus einer Vielzahl beziehungslos nebeneinander stehenden Bilder, als welch sich uns die krankhaften Störungsformen auch heute immer noch darstellen, muss ein einheitliches System aufeinander bezogener Formen werden, die durchweg, gleichsam voraussehbar, aus der inneren Strukturgesetzlichkeit dieses Ganzen ableitbar sind.“ Klaus Conrad, “Strukturanalysen hirnpathologischer Fälle. Über Struktur- und Gestaltwandel,” *Deutsche Zeitschrift für Nervenheilkunde* 158 (1947): 350-351.

³² See Janzarik *Dynamische Grundkonstellationen*, 26; Karl Peter Kisker, *Der*

This new trend gained a considerable impulse through Conrad's (1905-1961) monograph *Die beginnende Schizophrenie*,³³ which constitutes the starting point for the elaboration of holistic conceptions that enable an understanding of the various forms of progression in schizophrenia from a dynamic perspective.³⁴ Within these holistic conceptions, the psychological analysis of schizophrenic symptoms faces substantial difficulties establishing a differential diagnosis between the clinical pictures presented in endogenous affective psychoses and in the early stages of schizophrenia. However, these difficulties of establishing a differential diagnosis between the affective psychotic and schizophrenic spectra are not new. As a matter of fact, this problem occupied a central place within nosological debates at the beginning of the twentieth century. Nevertheless, the solutions offered at that time differed essentially from those presented by the holistic approaches, which emphasize the dynamic aspect.³⁵

In this context, the application of holistic psychological theories to the symptom analysis of schizophrenia led unexpectedly to a revival of unitary conceptions of psychosis. These conceptions are mainly associated with Griesinger's influential psychiatric work, *Mental Pathology*, in which he similarly presupposed a unitary view of the endogenous psychoses. Remarkably, the adoption of dynamistic approaches in the postwar period reveals that psychopathological dynamism within holistic conceptions is not a replaceable method. Rather, it is a methodological requirement.³⁶

Erlebniswandel der Schizophrenen (Berlin: Springer, 1960), 20-26.

³³ Klaus Conrad, *Die beginnende Schizophrenie* (Stuttgart: Georg Thieme, 1958).

³⁴ Of relevance in this connection is Janzarik's study of the differential typology of delusional phenomena. In this monograph, the author identified four different "dynamic basic constellations" that enabled him to account for the fact that the two spectra of endogenous psychoses flow into one another, especially in manifold psychoses; Janzarik, *Dynamische Grundkonstellationen*, 36ff.

³⁵ Furthermore, the interest in the phenomenological study of the change of experience in schizophrenia should be embedded in the debates regarding the conceptualization methods in psychopathology in the postwar period. In this period, the neutrality in questions of etiology and physiopathology constituted a methodological requirement for the holistic approaches to schizophrenia. However, these approaches emphasized that the phenomenological consideration would be one-sided if it would limit itself to describing phenotypically similar processes without attempting to uncover the dynamic non-equivalence, which is responsible for the nosological ambiguity of such processes. Kisker, *Der Erlebniswandel*, 29.

³⁶ See Janzarik, *Dynamische Grundkonstellationen*, 27. In this connection, it is important to emphasize that, historically, it was the consideration of the dynamic aspect of psychic disorders that enabled Griesinger to integrate the one disease process into the form of progression of mental disorders. This, consequently, opened

Furthermore, Griesinger's original psychiatric work demonstrates how the uncertainty of knowledge regarding nosological questions does not necessarily hinder the elaboration of relevant psychopathological views on psychoses. In his *Mental Pathology*, Griesinger emphasizes the necessity of distinguishing between programmatic and established knowledge—a distinction that led him to discuss psychiatric illnesses according to psychological criteria. As a consequence, the relevant aspect in his work is the psychological concision of his descriptions of the different psychotic pictures. The validity of Griesinger's descriptions remains unaffected by differing nosological conceptions.

According to Griesinger's early psychiatric work, psychoses are one and multiple at the same time. They corresponded to symptom complexes. While their causes might be multiple, psychoses are the manifestation of a unitary disease process. Nevertheless, this conception of a plurality of causes that can lead to similar phenomena contrasts with the later view that Griesinger adopted in 1867.³⁷ In this respect, the year 1867, and not Griesinger's previous neurophysiological program from the 1840s, denotes the turn to the neuropathological approach that dominated psychiatric research in the 1870s and 1880s. A new psychiatry that is independent of Griesinger's conceptions began to establish itself first with the publication of the fourth edition of Kraepelin's *Psychiatrie* in 1893, from which the "secondary states of mental weakness" ("*die sekundären Schwächezustände*") are eliminated.³⁸

the way for his foundational thesis of contemporary scientific psychiatry, according to which mental illnesses are diseases of the brain. First, at the beginning of the twentieth century, psychiatrists designated this common and widely accepted framework in nineteenth century psychiatry with deprecation as "unitary psychosis," which became obsolete due to Kraepelin's new nosological conception; see Werner Janzarik, *Themen und Tendenzen der deutschsprachigen Psychiatrie* (Berlin: Springer, 1974), 8.

³⁷ Shortly before his death, Griesinger departed from the unitary theory, which was based on the idea that the basic forms of psychic illnesses constituted different stages of one disease process.

³⁸ The contemporary disagreement concerning the delineation of the schizophrenia concept depends essentially on the lack of consensus regarding the semiotic value of the productive and the residual components, which were assembled in the new designation schizophrenia at the turn of the twentieth century. These two components designated two distinct symptom complexes within the theoretical framework of nineteenth century psychiatry. While the productive component corresponded to the primary affective or dynamic disorders ("*Melancholie*" and "*Manie*"), the residual component corresponded to the secondary states; see Janzarik, *Themen und Tendenzen*, 8.

Conclusion

The distinction between primary and secondary states has a fundamental significance for nineteenth-century psychiatry.³⁹ In *Mental Pathology*, Griesinger perpetuated the existence of a “primary insanity” (“*primäre Verrücktheit*”). Furthermore, he underlined the “protogenetic” character of its emergence that he thought was independent from melancholy and mania. However, the revision of Griesinger’s system was not possible due to his premature death in 1868. Furthermore, Griesinger derived the “*Primordialdelirien*” (delusions) directly from the cerebral disturbance and not from the emotional ground as he did in his *Mental Pathology*.⁴⁰ This contradictory position that Griesinger adopted in his late psychiatric work was decisive for the further development of psychiatric theories. Among the German psychiatrists, who were altogether dependent upon Griesinger and the contradictions underlying the view he held in 1867, some, like Theodor Meynert (1833-1892) in Vienna and Carl Westphal (1833-1890) in Berlin, were oriented toward his neuropathological program, others, like Heinrich Schüle (1840-1916) and Richard von Krafft-Ebing (1840-1902) at the mental asylum of Illenau followed his clinical intuitions.⁴¹

³⁹ The reasons for this distinction were closely connected with the striking diversity that the residual states of psychic illnesses offered: „Die Formen, in welchen diese Krankheitszustände, die Ausgänge und Residuen der eigentlichen Krankheit, in der Erscheinung sich darstellen, erhalten durch die Individualität der damit Behafteten ein so verschiedenes und mannigfaltiges Gepräge, dass es außerordentlich schwer ist, sie auf bestimmte Grundformen zurückzuführen, und hierdurch wird, wie ich glaube, die Schwierigkeit einer wissenschaftlichen und naturgemäßen Classification der psychischen Krankheitsformen hauptsächlich herbeigeführt. Der Irrenarzt, welcher die mannigfaltigen, seinen Blicken sich darbietenden Formen zu ordnen und zusammenzustellen sich bemüht, sieht gleichsam ein Chaos vielgestaltiger und wechselnder Formen vor sich liegen, und so lange er die zurück gebliebenen Krankheitszustände, die Residuen der Krankheit, mit der Krankheit selbst vermenget und verwechselt, können seine Classificationsversuche nicht besser gelingen, als ein etwaiger Versuch zur Classification der Entzündungen demjenigen gelingen möchte, welcher die nachbleibenden Verhärtungen, Geschwüre und Afterorganisationen als ebenso viele Arten der Entzündung zu unterscheiden sich bestrebte.“ Peter Willers Jessen, “Ärztliche Erfahrungen in der Irrenanstalt bei Schleswig,” *Zeitschrift für die Beurtheilung und Heilung der krankhaften Seelenzustände* (1838): 628-632.

⁴⁰ See Wilhelm Griesinger, “Vortrag zur Eröffnung der psychiatrischen Klinik zu Berlin,” in *Gesammelte Abhandlungen*, Vol. 1, ed. Carl Reinhold August Wunderlich (Berlin: Hirschwald, 1872), 135.

⁴¹ See Janzarik, *Die klinische Psychopathologie*, 52.

According to Griesinger, the unclassifiable teaches us above all that classifications cannot be helpful in order to discover it. At first, it is necessary to describe it: "It would be well if our psychological knowledge of these states were only in a degree somewhat approaching to the rich opportunities afforded to us of studying them! The individual varieties are here still greater than in the forms we have already considered; they can neither be enumerated nor described. We must rest satisfied with stating and describing several principles types."⁴² Remarkably, these states were generally as striking for their retention of some faculties as for their loss of others. This contrast within the mental state stood as the most puzzling one and explains why schizophrenia has excited more interest and speculation than any other form of mental illness.

In this context, my chapter has aimed at shedding light on the problematic of the classification of psychoses, in which the unclassifiable plays a particular role. Moreover, it emphasizes the role of psychiatric classifications as tools to approach the difficulties resulting from the unclassifiable in mental pathology. Finally, by emphasizing the revival of holistic conceptions of psychosis in the postwar period, this chapter seeks to show that the significance of the psychiatric research on schizophrenia in the postwar period consists less in its concrete results. Rather, it consists in the view that psychiatric knowledge resulting from the consideration of only one point of view leads inevitably to incomplete representations of mental disorders. This fragmentary nature of psychiatric knowledge on schizophrenia since the emergence of this concept at the beginning of the twentieth century, can explain why, paradoxically, writing the history of schizophrenia inevitably involves writing the entire history of psychiatry.

⁴² Griesinger, *Mental Pathology*, 323.

KEYNOTE LECTURE

Professor Peter L. Twohig, Canada Research Chair in Atlantic Canada Studies at Saint Mary's University in Halifax, Nova Scotia, presented on a very interesting and timely topic to the participants at the 2015 conference. His keynote lecture, "How Mental Health Facilities Met Their Staffing Needs in an Era of Expanding and Changing Services," presented on 6 March, 2015, in the Libin Theatre of the Cumming School of Medicine, offered important insights into the organization of health care work in Canada and demonstrated how different parts of Canada responded to shortages of health care workers over time. His illustrative examples have offered an appreciation for the importance of historical perspectives on contemporary public policy issues, particularly since twentieth century experienced numerous instances of health care staffing challenges. Professor Twohig's subsequent chapter in this volume thus offers instructive insights as to how hospitals were staffed, how local hospital authorities responded to such shortages, and how stakeholders interacted with provincial departments of health, and the federal government.

In 2015, the invited keynote lecture was again presented as a co-sponsored event by the O'Brien Institute for Public Health (OIPH), the Calgary History of Medicine Society (CHOMS) and the Science, Technology, Environment and Medicine Studies (STEMS) colloquium at the University of Calgary, for which the organizers of this event have all been very grateful.

To this volume of *History of Medicine and Healthcare – Selected Papers*, Dr. Peter L. Twohig submitted a chapter from his recent work on the provision of occupational therapy services in Ontario in the 1950s and 1960s, which partially moves away from his actual keynote lecture at the History of Medicine Days 2015, yet is nevertheless thematically related and central part of his current overarching history research project looking at labour and staffing shortages in Eastern Canadian health care systems across many medical disciplines. We are grateful for his submission, which we include here.

A “MOST DISTRESSING SHORTAGE”: ORGANIZING OCCUPATIONAL THERAPY IN THE ONTARIO HOSPITALS

PETER L. TWOHIG

SUMMARY: In response to a shortage of occupational therapists (OTs) in the 1950s, the Ontario government initiated a training program for occupational therapy assistants. The program enjoyed the active support of the Canadian Association of Occupational Therapists and many hospital superintendents. These assistants played a key role in developing occupational therapy programs in mental health hospitals throughout Ontario. This chapter analyzes the origins of the assistants' training program and its impact on occupational therapy services in the Ontario Hospitals. The program's original intent—to have assistants working under university-educated occupational therapists—proved difficult to realize. Through the 1950s, the number of assistants grew dramatically, while the numbers of occupational therapists stagnated. The result was that in many settings, assistants were the only occupational therapy staff. The chapter concludes that the presence of these assistants permitted the expansion of OT services, even in the absence of university-educated OTs.

KEYWORDS: Eastern Canada Health Care Systems, History of Medicine, Occupational Therapy, Staffing Shortages, Twentieth Century History

Introduction

In 1966, the *Toronto Daily Star's* Jim Lederman wrote an article entitled "A giant hospital and its giant tragedy" about the Ontario Hospital at Smiths Falls. This was a large institution, housing more than 2400 individuals with a variety of intellectual disabilities. The sprawling facility had been in the news often. Stephen Lewis, the Member of Provincial Parliament, had publicly criticized the state of affairs at the hospital the year before but it was the more recent drowning of one of the hospital residents while trying to "escape" the facility that prompted the piece by Lederman. He described the hospital as "hopelessly overtaxed, understaffed and overcrowded." Despite these difficulties, hospital administrator Morley Ferguson (1910-1997) stated that "it used to be a whole lot worse"; nevertheless, the staff shortage was acute, with the complement of the professional staff being only half of what it should have been. The result was tragic for the residents. Some had been transferred to nursing homes and even unused wings of tuberculosis sanatoria but the reality at Smiths Falls was that, "overcrowding still pushes patients into wards like cattle pens."¹ The hospital served the entire province, "from the St. Lawrence to the Lakehead," and there were more than 350 children on the waiting list, with some waiting upwards of two years to be admitted. The facility's residents had considerable needs, and this made the work challenging for the staff. Workers² had to provide personal care, keep the rooms and bedding in good order, prepare food and feed the residents, and give medication. One pavilion housed two wards, with 101 bed-ridden residents and only one attendant to meet their needs. The infant ward was designed for twenty-four children, yet it housed thirty-seven; the staff complement was supposed to be six but was often reduced to only three, as individual workers were frequently called to other areas of the hospital, where the staffing need was even more acute.³

The shortage of staff ran across all the services. When the pharmacist was out with an extended illness lasting five weeks, duties fell to the pharmacy assistant and the director of nurses' training. The two psychiatrists working at the facility spent a good deal of time fulfilling administrative responsibilities rather than providing clinical care. Three

¹ Jim Lederman, "A Giant Hospital and its Giant Tragedy," *Toronto Daily Star* (July 28, 1966).

² I am using the term "workers" consciously, to indicate my view of the hospital as a key site of employment, as well as health care. See also Peter L. Twohig, *Labour in the Laboratory: Medical Laboratory Workers in the Maritimes*, (Montreal and Kingston: McGill-Queen's University Press, 2005), 3-7.

³ Lederman, "A Giant Hospital and its Giant Tragedy," 1966.

“full-time hopelessly overburdened physicians” needed three additional full-time doctors but were, instead, assisted by five part-time general practitioners. The number of psychologists was insufficient, there was no physiotherapist and, as Lederman wryly noted, the institution “is probably the only children’s hospital anywhere with no staff pediatrician.” The occupational therapy program was directed by one “qualified occupational therapist,” Lena Spooner. She was assisted by fourteen occupational therapy assistants. The occupational therapy service was conducted in three small classrooms, but the residents were spread across a facility with fifteen miles of corridors, so it was not practical to do much therapy in this setting. The alternative was to provide occupational therapy on the wards but, in an overcrowded hospital, this too was impractical.⁴

Inadequate staffing levels, which directly affected the material conditions of the residents of the Smiths Falls facility, was a common lament in Canadian hospitals during the 1950s. Professional journals and mainstream media alike addressed the issue on a regular basis. While one should take a critical perspective of the claims of vested interests such as professional groups and hospital administrators, evidence of the shortage of workers can be found in every region of Canada and different occupational groups. Indeed, the shortage of personnel was considered “a major bottleneck in Ontario, as elsewhere in Canada, in developing new mental health services.”⁵ In 1951, Dr. L. O. Bradley, the Executive Secretary of the Canadian Hospital Council, “urged the formation of committees on local, provincial, and national levels, representative of all affected groups, as a means of solving the shortage” and also called for financial assistance from government to improve education capacity.⁶ By 1953, *Canadian Hospital* declared that “staff shortages are becoming an acute problem...One perhaps thinks first of the nursing shortage but reflection will bring to mind the fact that in many, if not most of our hospitals, x-ray departments, laboratories, administrative offices, kitchens, laundries, and other departments are understaffed...Canada requires health workers at every level from ward maids to neurosurgeons. While we undoubtedly need to continue and expand the training opportunities for graduate professional staff, we first must produce these graduates—and in increasing numbers.”⁷ A 1957

⁴ *Ibid.*

⁵ “Ontario and New Brunswick Present Health Survey Reports,” *Canadian Hospital* 29 (1952): 58.

⁶ “Maritime Hospitals Convene at St. Andrews, N.B.,” *Canadian Hospital* 28 (1951): 42.

⁷ “Obiter Dicta—Vital Need—More Training Grants for Hospital Staff,” *Canadian Hospital*, 30 (1953): 31.

editorial in the *Globe and Mail*, under the ominous banner “Dangerous Decline” pointed out that “with the prospect of hospital insurance, it is time attention was given to the provision of qualified personnel to meet the public demand which will of necessity arise,” adding that the Dominion Bureau of Statistics was reporting the “alarming fact that university enrollments in nursing and occupational therapy and physiotherapy have fallen each year for several years.”⁸

Like other areas of health care, occupational therapy was experiencing a profound shortage of personnel during the 1950s. This chapter will explore the use of occupational therapy assistants in the Ontario Hospitals in an effort to understand changes to the division of labour within health care and, specifically, to explore the response to the shortage of university-educated occupational therapists. The history of groups such as occupational therapy assistants provides interesting insight into the ways in which health care work was renegotiated in response to a variety of pressures. In her analysis of nursing practice, Julie Fairman pointed out that a variety of factors have shaped the organization of work, including “economics, the political circumstances, expectations and values of the patient.”⁹ Some of these issues have been profitably explored in recent studies of the many groups who make up contemporary health care, but few of these include an historical perspective.¹⁰ Understanding clinical care and the organization of health services must move beyond examinations of physicians and nurses, to encompass a broader range of occupations¹¹ and their relationships to one

⁸ Editorial, “Dangerous Decline,” *Globe and Mail* (March 20, 1957).

⁹ Julie Fairman, *Making Room in the Clinic: Nurse Practitioners and the Evolution of Modern Health Care* (New Brunswick: Rutgers University Press, 2008), 7.

¹⁰ In their work, Armstrong, Armstrong and Scott-Dixon focus on “ancillary workers” who perform a range of non-direct care work, as well as “personal care providers and homemakers.” The authors, to their credit, consider all such workers to be “critical to care.” Pat Armstrong, Hugh Armstrong, and Krista Scott-Dixon, *Critical Care: The Invisible Women in Health Services* (Toronto: University of Toronto Press, 2008). See also Eileen Boris and Jennifer Klein, *Caring for America: Home Health Workers in the Shadow of the Welfare State* (Oxford: Oxford University Press, 2012).

¹¹ Several authors have examined groups that contributed to nursing practice but who were not RNs. Linda Quiney has analyzed the role of volunteer nurses during the First World War. See Quiney, “‘Sharing the Halo’: Social and Professional Tensions in the Work of World War I Canadian Volunteer Nurses,” *Journal of the Canadian Historical Association*, NS 9 (1998): 105-24 and Quiney, “‘A Certain Education’: Wartime Voluntary Nursing and the Challenge to the Professional Ideal, 1914-1922,” in *Learning to Practise: Professional Education in Historical and Contemporary Perspective*, eds. Ruby Heap, Wyn Millar and Elizabeth Smyth

another.¹² While there are excellent studies of a variety of professional groups in health care and specific work settings, there is still a lack of attention to the myriad groups that make the health care system work, including large numbers of “allied health care workers” or various types of aides and assistants.

Canada’s health care system is complex and labour-intensive, with a wide array of occupational groups working in relationship to one another. Until recently, the historiography of health care in Canada has focused primarily upon physicians and nurses. Yet each of the occupational groups within health care have their own history, though these are surely interconnected in important ways. There is an emerging historiography that has begun to explore groups of health care workers typically conceptualized as “allied health professionals” (such as occupational therapy, physiotherapy, speech pathology),¹³ while analyses of “support staff” (such as cleaners,

(Ottawa: University of Ottawa Press, 2003), 93-123. Frances M. Gregor has analyzed the role of volunteers in health services. See Gregor, “Mapping the Demise of the St. John Ambulance Home Nursing Program in Nova Scotia: 1950-1975,” *Canadian Bulletin of Medical History* 21 (2004): 351-75. Kathryn McPherson briefly acknowledges the roles of practical nurses, nursing assistants, ward assistants and aides in the reorganization of nursing work in the face of a nursing shortage. See McPherson, *Bedside Matters: The Transformation of Canadian Nursing, 1900-1990* (Toronto: Oxford University Press, 1996), 221-25. See also Peter L. Twohig, “‘An Immediate Solution to Our Nurse Shortage’: The Reorganization of Nursing Work in Nova Scotia, 1940-1970,” *Journal of the Royal Nova Scotia Historical Society* 14 (2011), 138-155 and Twohig, “‘Are They Getting Out of Control?’ The Renegotiation of Nursing Practice in the Maritimes, 1950-1970,” *Acadiensis* XLIV (2015): 91-111. There are studies of contemporary nursing labour that focus on the division of duties between RNs and nursing assistants. See, for example, Nancy Foner, “Work Culture in the Nursing Home: Adaptation and Resistance among Nursing Aides,” *Frontiers: A Journal of Women Studies* 14 (1993): 44-67 and Steven Henry Lopez, “Culture Change Management in Long-Term Care: A Shop-Floor View,” *Politics & Society* 34 (2006): 55-79.

¹² Work by Julien Prud’homme, which examines the relationships among different groups, is an important exception. See Prud’homme, “What is a ‘Health’ Professional? The Changing Relationship of Occupational Therapists and Social Workers to Therapy and Healthcare in Quebec, 1940-1985,” *Canadian Bulletin of Medical History* 28 (2011): 71-94 and Prud’homme, “Local and Selective Appropriation: Circulation of New Diagnosis Categories is Speech Therapy in Quebec’s Clinical Practice, 1985-2002,” *Journal of Canadian Studies* 41 (2007): 150-165.

¹³ Judith Friedland, *Restoring the Spirit: The Beginnings of Occupational Therapy in Canada, 1890-1930* (Toronto: University of Toronto Press, 2011), Ruby Heap, “Physiotherapy’s Quest for Professional Status in Ontario, 1950-80,” *Canadian*

porters, kitchen workers) still await a sustained historical analysis.¹⁴ In the middle of the twentieth century, the effective delivery of health services came to depend upon a diverse range of workers in newly-expanding services such as occupational therapy. Yet few hospital histories shed much light on this service.¹⁵ In their studies of Lyndhurst Lodge, a rehabilitation centre for individuals with spinal cord injuries, both Mary Tremblay and Geoffrey Reaume detail the limited role of occupational therapy in the mid-1940s.¹⁶ Penny Salvatori offered a brief comparative analysis of occupational therapy assistants in Canada and the United States, covering the decade of the 1950s in a single paragraph. While this was a useful exercise, particularly insofar as it added an historical perspective to the ongoing use

Bulletin of Medical History 12 (1995): 69-99 and Heap, "Training Women for a New 'Women's Profession': Physiotherapy Education at the University of Toronto, 1917-40," *History of Education Quarterly* 35 (1995): 135-58. In Quebec, there have been studies of a number of allied health care workers. See, for example, Julien Prud'homme, *Histoire des Orthophonistes et des Audiologistes au Québec, 1940-2005: Pratique clinique, aspirations professionnelles et politiques de la santé* (Saint-Foy: Presses de l'Université du Québec, 2005), Lucie Piché and Nadia Fahmy-Eid, "À La Recherche d'un statut professionnel dans le champ paramédical: Le Cas de la Diététique, de la Physiothérapie et de la technologie médicale," *Revue d'Histoire de l'Amérique Française* 45 (1992): 375-401; Nadia Fahmy-Eid and Lucie Piché, "Le Savoir Négocié: Les Stratégies des Associations de Technologie Médical, de Physiothérapie et de diététique pour l'accès à une meilleure formation professionnelle (1930-1970)," *Revue d'Histoire de l'Amérique Française* 43 (1990): 509-34; Aline Charles and Nadia Fahmy-Eid, "La Diététique et la Physiothérapie Face au Problème des Frontières Interprofessionnelles (1950-1980)," *Revue d'Histoire de l'Amérique Française* 47 (1994): 377-408. For a broader discussion of health care workers in Québec, see Nadia-Fahmy-Eid, *Femmes, santé et professions: histoire des diététistes et des physiothérapeutes au Québec et en Ontario, 1930-1980* (Saint-Laurent: Fides, 1997).

¹⁴ Important exceptions would be Jerry P. White, *Hospital Strike: Women, Unions, and Public Sector Conflict* (Toronto: Thompson Educational Publishing, 1990) or, for the United States, Karen Brodtkin Sacks, *Caring by the Hour: Women, Work and Organizing at Duke Medical Center* (Urbana: University of Illinois Press, 1988).

¹⁵ In his analysis of the Toronto Hospital for the Insane for a slightly earlier period, Geoffrey Reaume mentions occupational therapy in passing. See Reaume, *Remembrance of Patients Past: Patient Life at the Toronto Hospital for the Insane, 1870-1940* (Don Mills: Oxford University Press, 2000), 159.

¹⁶ Geoffrey Reaume, *Lyndhurst: Canada's First Rehabilitation Centre for People with Spinal Cord Injuries, 1945-1998* (Montreal and Kingston: McGill-Queen's University Press, 2007), 45 and Mary Tremblay, "The Canadian Revolution in the Management of Spinal Cord Injury," *Canadian Bulletin of Medical History* 12 (1995), 125-55, esp. 140.

of occupational therapy assistants and their relationship with university-educated occupational therapists, a more robust analysis remains necessary.¹⁷ This chapter builds on these insights, through an examination of the development of one group of workers, occupational therapy assistants in the Ontario Hospitals, during a period of labour shortage in health care.

The Shortage of Occupational Therapists

Writing in the *Canadian Journal of Occupational Therapy*, the noted professional leader Helen P. LeVesconte, wrote of the “appalling shortage of occupational therapists” in Canada.¹⁸ At the same time, the Canadian Association of Occupational Therapy’s (CAOT) educational committee began to explore the possibility of a short course to “produce occupational therapists as quickly as possible to meet the present acute shortage.”¹⁹ Two options were being considered by the committee, including a hospital-based model that would be entirely practical in orientation, or an eighteen month course that would provide six months of basic training, followed by four clinical placements each lasting three months. Importantly, these accelerated programs were to be targeted at candidates who already held a university degree or who were registered nurses. The CAOT recognized that Canada suffered from a “lack of training schools and as a result, the lack of therapists” and encouraged the establishment of new OT program across Canada.²⁰ Reports from around the country consistently remarked upon the existing shortage of occupational therapists but acknowledged that establishing new university programs was not a practical solution to the immediate labour shortage in occupational therapy.²¹

¹⁷ Penny Salvatori, “The History of Occupational Therapy Assistants in Canada: A Comparison with the United States,” *Canadian Journal of Occupational Therapy* 68 (2001): 217-27.

¹⁸ Helen P. Le Vesconte, “Report of the Secretary,” *Canadian Journal of Occupational Therapy* 16 (1949): 137.

¹⁹ Margaret R. Hood, “Report of the Educational Committee,” *Canadian Journal of Occupational Therapy* 16 (1949): 139-140.

²⁰ *Ibid.*

²¹ As an example, Joan Curren reported that neither the Nova Scotia Hospital and the Victoria General Hospital, two of Nova Scotia’s largest hospitals, employed an occupational therapist. Joan C. Curren, “The Nova Scotia Society of Occupational Therapy,” *Canadian Journal of Occupational Therapy* 20 (1953): 119. In neighbouring New Brunswick, three occupational therapists served the entire province, while in Newfoundland there was only one. See Jane Bradshaw, “New Brunswick,” *Canadian Journal of Occupational Therapy* 20 (1953): 120 and “Newfoundland,” *Canadian Journal of Occupational Therapy* 20 (1953): 121.

In part, the labour shortage was the result of expanding occupational therapy services in different settings. The Toronto Association of Occupational Therapy's Bloor Street workshop, an important clinical service, grew dramatically in the years following 1945, servicing clients with a variety of needs, including cerebral palsy, varieties of arthritis, neuromuscular conditions and a range of other conditions. From 170 clients in 1945 it grew to more than 250 by 1950, which translated into more than seven thousand treatments provided by the four dedicated occupational therapists.²² When Ontario's Workmen's Compensation Board opened a new \$6 million facility for injured workers in 1958, the staff of 300 included twenty-two occupational therapists.²³ Occupational therapists were, in demand but the supply could not keep up. A striking example of this took place when polio struck Manitoba in 1953. That year, the shortage of physical and occupational therapists was so acute that twenty workers had to be flown in from England to meet the clinical service needs.²⁴

In an effort to alleviate such shortages, recruitment efforts to university occupational programs were routine, including open houses to expose high school students to such careers.²⁵ In 1959, for example, "sixty

²² Samuel Campbell, "Red Feather Assists in Treating Hundreds at Therapy Workshops," *Toronto Daily Star* (6 November, 1950).

²³ "Rehabilitation Hospital 'Most Modern on Continent,'" *Toronto Daily Star* (11 October, 1958).

²⁴ "Therapists to Display Techniques, Equipment," *Globe and Mail* (19 February, 1958). The movement of health care workers across international borders, in times of emergency or to pursue career opportunities, is an issue that merits further attention. Recent studies by David Wright and Sasha Mullally have explored the international recruitment of physicians to Canada. See Sasha Mullally and David Wright, "La Grande Séduction? The Immigration of Foreign-Trained Physicians to Canada, c. 1954-76," *Journal of Canadian Studies* 41 (2007): 67-89. It is also clear from many accounts that Canadian health care workers frequently acquired their education in the United States. At the same time, selected institutions in the US advertised their facilities in Canada. Susan Reverby has noted that when the Somerville Hospital in Boston struggled to attract local women to its nursing school in the 1920s, they resorted to advertising in Halifax, NS, newspapers. See Reverby, *Ordered to Care* (Cambridge: Cambridge University Press, 1987), 80. At the same time, when employment opportunities in Canada faltered, health care workers pursued opportunities in the US. For example, pioneer occupational therapist Mary Black went to Boston when she could not find a suitable position in Nova Scotia and her Canadian credentials posed no impediment to employment. See Peter L. Twohig, "'Once a Therapist, always a therapist': The early career of Mary Black, Occupational Therapist," *Atlantis: A Women's Studies Journal* 28 (2003): 106-17.

²⁵ "Encourage Recruits: Therapists Hold Open House," *Globe and Mail* (17 February, 1960).

pretty girls in green” recruited from OT and physiotherapy set up a display to recruit “freshies” to the University of Toronto. Helen P. LeVesconte, the director of occupational therapy, highlighted that there were “more vacancies than we have occupational therapists to fill them...Right now there are 14 jobs [in occupational therapy] in Toronto... How many more across the country I wouldn’t know.”²⁶ In 1956, a published query in the *Toronto Daily Star* asked whether there was anywhere except a university where one could become an occupational therapist. The letter-writer was informed of “training on the job” in Kingston.²⁷ Writing on the women’s page of the *Toronto Daily Star*, advice columnist Dorothy Lash had a query from a woman who had “always been interested in crafts” and who had been self-taught, wondering if she could pursue a career in OT. “I would be so happy in this work as I do like to teach also, but not enough education to teach school. I seem to have just ‘not enough’ of everything, don’t I?” wrote the correspondent, M.B. In her response, Lash acknowledged that it was unlikely that the M.B. would find a career in occupational therapy, since it required a university degree and that “it’s only under very exceptional circumstances that anyone over 30 is taken into the course.”²⁸

Another advice columnist, Mary Starr, fielded a question from a mother of an eighteen-year-old daughter who was “not a brilliant student” and who dreamed of being a nurse or a social worker. The financial circumstances of this family, however, precluded university. This reality was undermining the student’s desire to study and her academic performance, and the young woman was considering leaving school to find work. Starr recommended that the student consider being an occupational therapy assistant. The mother was encouraged to write to the mental health division of the Department of Health or to the CAOT. A career as an occupational therapy assistant (OTA), Starr wrote, would give the young woman “an opportunity to work in the field of mental health, and it would, in a sense, be a form of social work.”²⁹ Such a comment would likely have resonated with Helen LeVesconte. At a recruitment fair in 1959, she acknowledged that occupational therapy and physiotherapy “usually get the kind of girl to whom auxiliary medical service appeals, the girl who has the

²⁶ “They’re Wooing Prospective Therapists,” *Toronto Daily Star* (17 February, 1959).

²⁷ “Questions and Answers,” *Toronto Daily Star* (10 November, 1956).

²⁸ Dorothy Lash, “New Horizons: Think of Other Jobs,” *Toronto Daily Star* (3 May, 1960).

²⁹ Mary Starr, “If You Take My Advice: Occupational Therapy Assistant Job Urged for Sympathetic Girl,” *Toronto Daily Star* (15 January, 1963).

inclination to serve people in a practical way.”³⁰ The September 1953 edition of *Farmer's Magazine* also highlighted the role of the OTA. In the story, Anne declared that she wished she had had the opportunity to attend university and pursue occupational therapy but lamented that she “never got past Grade Ten” while adding that her family “just never had the money!” Another woman, Betty, commiserated with Anne, saying “I know just how you feel!” and continuing, “I always wanted to be a trained nurse but as soon as I finished school I spent two years nursing Mother while she was so ill!” Both of these women, the article noted, could realize their ambitions to work in health care through pursuing the newly-established occupational therapy assistant program in Kingston. While clearly intended to advertise the new program, this narrative also highlights that university education was beyond the pale for many young Canadian women, who may have lacked the necessary educational requirements or the financial resources to attend university.³¹ The *Toronto Daily Star* noted that many young women aspired to be nurses but a significant proportion, “through one circumstance or another have been unable to follow such a career.” In Prince Edward Island, concerns were expressed that admission standards to nursing schools were increasing. A career as a nursing assistant allowed “girls with a grade of education considerably lower than that which can qualify a girl for a course leading to an R.N.”³²

The role of the occupational therapy assistant alluded to both by Starr and in *Farmer's Magazine* was a relatively new employment opportunity. At the CAOT's executive meeting in November 1951, there was optimism that new programs in occupational therapy would be offered, perhaps in Manitoba or at a second Ontario university. Firm plans were already underway to organize a combined OT-PT (physical therapist) course at McGill University, which would help meet some of the need for occupational therapists. There was also discussion of accelerating the existing program at the University of Toronto, to provide instruction eleven months of the year. The CAOT also studied the “desirability of supplementing the lack of occupational therapists by some form of approved training of auxiliary personnel to serve as assistants.”³³ In early 1952, the

³⁰ “They're Wooing Prospective Therapists,” *Toronto Daily Star* (17 February, 1959).

³¹ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 I 495, Box 20, “Historical Material O.T. Assistants Course 1949-1971,” *Farmer's Magazine*, September 1953, “New Career's in O.T.”

³² “Bill Provides for Nursing Assistants,” *Charlottetown Patriot* (April 1, 1952). For further details on nursing assistants in PEI, see Twohig, “Out of Control,” 91-111.

³³ Library and Archives Canada, Canadian Association of Occupational Therapy

CAOT received a request from the Ontario Minister of Health encouraging some form of training for “auxiliary personnel,” though the graduates of these courses “will not receive any professional status.”³⁴

The need for more health care professionals in Ontario was profound. A *Toronto Daily Star* editorial highlighted efforts to expand outpatient services as the “false promise of therapy” because of the “acute shortage” of a variety of professionals, including occupational therapists. “The inclusion of therapy for outpatients in the Hospital Insurance services is a step forward,” the *Star* editorialized, but without sufficient professionals and enhanced facilities “the government’s pledge has little meaning.”³⁵ Another editorial lamented the neglected state of mental health care, acknowledging that “hospital after hospital in Ontario cannot afford to supply the staff or premises needed for effective ‘O.T.’”³⁶ The editorial noted that hospitals were “hopelessly hindered by dreadful overcrowding, inadequate facilities, shortage of personnel, and outdated procedures.”³⁷ The medical director of the Ontario branch of the Canadian Arthritis and Rheumatism Society, Dr. J. Norrie Swanson, described the “desperate shortage” of occupational therapy personnel, as well as nurses and physiotherapists, while acknowledging that there were insufficient education opportunities to meet the labour demand.³⁸

Occupational Therapy in the Ontario Hospitals

In 1950, Ontario’s Department of Health operated fourteen facilities that provided mental health services, known collectively as the “Ontario Hospitals.”³⁹ The hospitals treated the full spectrum of patients, including children with learning disabilities, people suffering from mental illness, and people labouring under alcohol or drug addiction. In 1950, the Ontario

Collection, MG 28 1 495, Box 21, “CAOT 1950s,” Report of the Secretary, November 10, 1951.

³⁴ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 21, “CAOT 1950s,” Report of the Secretary, November 8, 1952.

³⁵ “False Promise of Therapy,” *Toronto Daily Star* (14 February, 1964).

³⁶ “Mental Illness Neglected,” *Toronto Daily Star* (28 October, 1961).

³⁷ *Ibid.*

³⁸ Leonard Bertin, “More Hospital Beds or Patients Die at Door,” *Toronto Daily Star* (12 March, 1964).

³⁹ The facilities operating in 1950 were Brockville, Cobourg, Fort William, Hamilton, Kingston, Langstaff, London, New Toronto, Orillia, Penetang, Toronto, Whitby, St. Thomas, and Woodstock.

Health Survey Committee reported some bleak statistics.⁴⁰ The committee was appointed by an Order-in-Council in September 1948 and was to report on existing facilities and services and offer recommendations for the development of mental health services in the province. The Committee provided a “conservative estimate” that Ontario needed an additional thirty-one community mental health clinics, 157 more psychiatrists and over 11,000 additional beds. The effect of inadequate services on patients was profound. The committee reported “cases involving mentally ill persons, in need of immediate treatment, who have had to be held as long as 66 days in a local jail before admittance to an already overcrowded hospital could be obtained.” Ontario already had a robust service, comprised of fourteen “mental hospitals” (excluding the Toronto Psychiatric Hospital) that served over 16,000 patients, but existing facilities had long waiting lists. The training school in Orillia, for example, had a list of over 1500 children under sixteen on its waiting list. Among the twelve recommendations of the Ontario Health Survey Committee was that “universities of Ontario be granted sufficient funds to train psychiatrists and other professional personnel to relieve the present shortage and to make possible the recommended mental health program.” The cost of this additional training was estimated at half a million dollars. While the report explicitly mentioned psychiatrists, psychologists, social workers and nurses, it contained no specific mention of occupational therapists.

The state of occupational therapy was, however, especially dire. In 1955, Dr. H. Hoyle Campbell (1915-1998), the President of the CAOT, wrote to Dr. John T. Phair (1888-1965), Ontario’s Deputy Minister of Public Health, that the CAOT “has had great pressure brought to bear upon it by the psychiatrists of Ontario particularly, that it do something to alleviate the most distressing shortage of occupational therapists, particularly in the psychiatric institution... The Universities are unable to increase in sufficient numbers the graduates in Occupational Therapy.”⁴¹ In the mid-1950s, the CAOT’s Executive Council appointed a committee, “to look into the requirements of the mental hospitals in relation to the extreme shortage of occupational therapists available for this service.”⁴² The committee polled

⁴⁰ Ontario Health Survey Committee, *Report of the Ontario Health Survey Committee*, Vol. 1 (Toronto: Minister of Health, 1950).

⁴¹ Archives of Ontario, RG 10-22-0-1409, Box 86, “Special Course in Occupational Therapy,” letter from Dr. H. Hoyle Campbell, President Canadian Association of Occupational Therapy, to Dr. John T. Phair, Deputy Minister of Public Health, Province of Ontario, 16 May, 1955.

⁴² Archives of Ontario, RG 10-22-0-1409, Box 86, “Special Course in Occupational Therapy,” Canadian Association of Occupational Therapy Report of Psychiatric

hospitals around the province, and of the thirty-three that replied, thirty had an OT program. Yet, only seventeen of the reporting institutions had “qualified occupational therapists,” while the remainder used craft workers, tradespeople or existing psychiatric staff to staff their occupational therapy departments. Perhaps more concerning was the committee’s finding that there were 256 occupational therapists working in Canada, with an almost equal number of vacancies. Of the 252 available positions, 135 of these were working in psychiatric settings.⁴³ As another illustration, Hoyle Campbell wrote to Phair in 1957 that only sixty-nine individuals would graduate from occupational therapy in 1957 and that “the normal loss to the profession by reason of marriage and other is 60% within two years.”⁴⁴ The other practical

Committee, presented at meeting of Executive Council, September 13, 1955. The committee was chaired by Dr. Wilfred E. Boothroyd (1912-1999). Members were Dr. Mary Jackson, Amy deBrisay (OT), Margaret Langley (OT) and Mrs. L. C. Smith (OT). The shortage of staff for psychiatric facilities was not restricted to Ontario. For example, the Regina *Leader-Post* noted in 1947 that “in the mental hospitals in Saskatchewan, as in other provinces, there is an extreme shortage of trained personnel for mental services.” *Leader-Post* (6 May, 1947).

⁴³ Archives of Ontario, RG 10-22-0-1409, Box 86, “Special Course in Occupational Therapy,” Canadian Association of Occupational Therapy Report of Psychiatric Committee, presented at meeting of Executive Council, 13 September, 1955.

⁴⁴ Archives of Ontario, RG 10-22-0-1409, Box 86, “Special Course in Occupational Therapy,” letter from Dr. H. Hoyle Campbell, President Canadian Association of Occupational Therapy, to Dr. John T. Phair, Deputy Minister of Public Health, Province of Ontario, 23 May, 1957. Gendered language permeates discussions of occupational therapists, as the frequent references to “girls” in the press attests. Men were admitted to the University of Toronto program beginning in 1956 but were not admitted to the occupational therapy assistants course in Kingston until 1969. That year, a report noted “for the very time in the history of the Course there are male trainees, one Hospital Attendant enrolled November 17th, 1969 and one Hospital Attendant who will enrol January 5th, 1970.” See Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “Historical Material O. T. Assistants Course 1949-1971.” The gendering of occupational therapy, a full analysis of which is beyond the scope of this chapter, also extended to the services offered to patients. In 1955, Dr. Thomas D. Cumberland (1922-2016?), the superintendent of the New Toronto facility, acknowledged: “Occupational therapy is not required at this hospital on the male wards as much as on the female wards, because we are able to get employment for a large number of male patients such as laundry, gardens, green house, poultry, etc. In fact, it is becoming difficult now with the admission of so many old people, to get a sufficient number to carry on the outside work in gardens, lawns, etc., in a therapeutic manner so that the patients will not be working very hard. I much prefer outside work and have adopted the policy where one man can do the work, to put two or three patients on the job. In that way we get more patients off the wards and

issue for occupational therapy was that the only university program in Ontario the early 1950s was at the University of Toronto, and it was a combined program encompassing both physio- and occupational therapy. The CAOT reported that only one quarter of the program's graduates between 1953 and 1958 assumed positions in occupational therapy.⁴⁵ Throughout the 1950s, Canada lacked the capacity to educate a sufficient number of occupational therapists. Thus, while Oakville "girl" Beverly Brockett, who was graduating from the University of Toronto with a degree in occupational therapy, was prominently featured with a photograph on the front page of the *Toronto Daily Star* in June 1951, there were simply not enough graduates to fill the employment vacancies, and this was especially true in psychiatric settings.⁴⁶ Issues of educational capacity and the resulting shortage of occupational therapists was also a global problem, according to Thelma Cardwell, the Canadian delegate to the first meeting of the World Federation of Occupational Therapists.⁴⁷

The 1950s were a period of dramatic expansion for mental health hospital services in Ontario, with an accompanying demand for staff. In 1949, there were 16,240 patients in the Ontario Hospitals and this number climbed to 20,570 by 1959.⁴⁸ More patients meant more staff. In 1949,

employed." Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, "Evaluation of Services of OTAs." At a more general level, "the use of male power to meet staff shortages in many areas of the health field has been suggested by many leading authorities during the last five years. The idea has not, however, captured the imagination of hospital administration and what might have been a useful weapon in the broad attack that must be made on the problem has been left resting in the armouries." "Men Needed in the Nursing Profession," *Canadian Hospital* 28 (1952): 28-29. Indeed, as early as 1956, some consideration was given to allowing men to take the OT assistant course at Kingston. See Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, "Training Men," memo from C. H. Lewis, Medical Specialist, Mental Health Division to All Superintendents of Ontario Hospitals, 24 January, 1956.

⁴⁵ Archives of Ontario, RG 10-22-0-1409, Box 86, "Special Course in Occupational Therapy," letter from Mrs. L. C. Smith, Executive Secretary CAOT, to W. Nichols, National Health Grants Administration, 7 April, 1958.

⁴⁶ "Girl Graduates All Set for Careers in Therapy, Dental Nursing," *Toronto Daily Star* (5 June, 1951).

⁴⁷ "Shortage of Therapists Worldwide," *Globe and Mail* (3 November, 1954).

⁴⁸ Reporting facilities for this period included Aurora, Brockville, Cobourg, Fort William, Hamilton, Kingston, Langstaff, London, New Toronto, North Bay, Orillia, Penetang, St. Thomas, Toronto, Whitby and Woodstock. The statistics that were compiled from *Mental Health Division of the Department of Health of the Province of Ontario Annual Reports, 1950-1959*.

3,770 people worked in Ontario Hospital facilities throughout the province. By the mid-1950s, this number climbed to over 6,000 and reached 9,221 by 1959 (see Table 1).

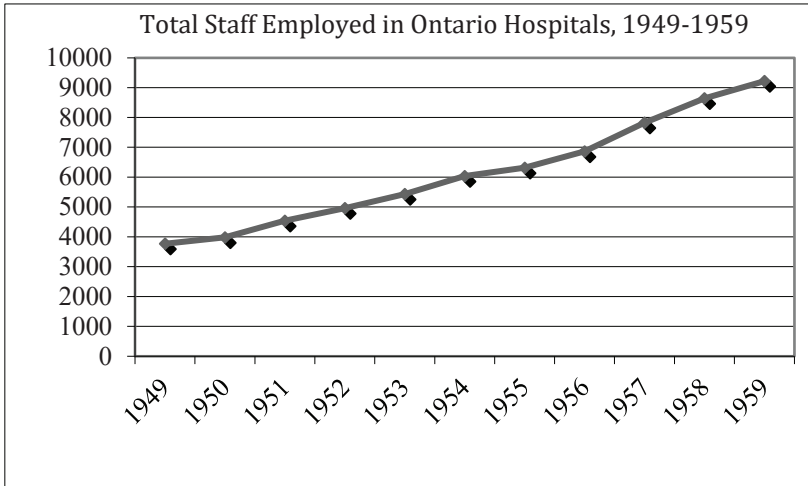


Table 1: Total Staff Employed in Ontario Hospitals, 1949-1959.

Source: *Mental Health Division of the Department of Health of the Province of Ontario Annual Reports, 1950-1959.*

Despite such growth, occupational therapy did not enjoy a similar expansion. Indeed, the number of occupational therapists employed actually declined from forty-nine in 1949 to a low of thirty-two in the mid-1950s, before rising to forty-one by 1959 (Table 2). Moreover, as a percentage of total staff, occupational therapy steadily declined throughout the decade, from a high of 1.3% in 1949 to only 0.44% a decade later (Table 3). Occupational therapists, educators, hospital administrators, department of health officials and others began to turn their attention to the question of staff shortages in occupational therapy departments (see Table 2).

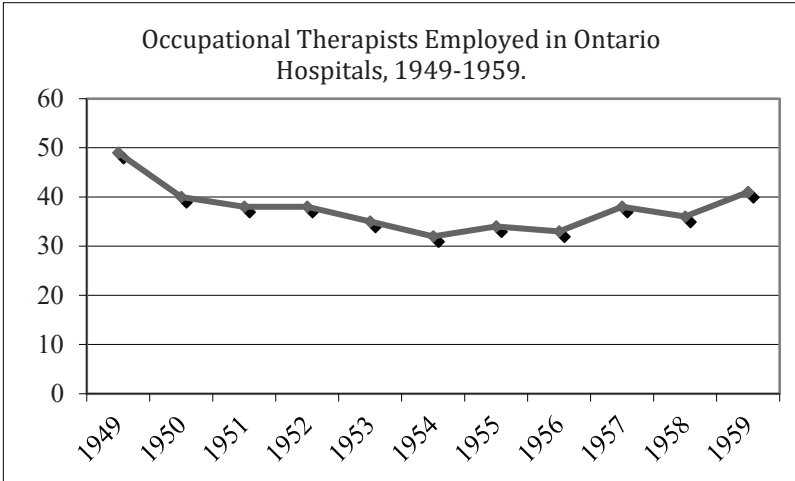


Table 2: Occupational Therapists Employed in Ontario Hospitals, 1949-1959.

Source: Mental Health Division of the Department of Health of the Province of Ontario Annual Reports, 1950-1959.

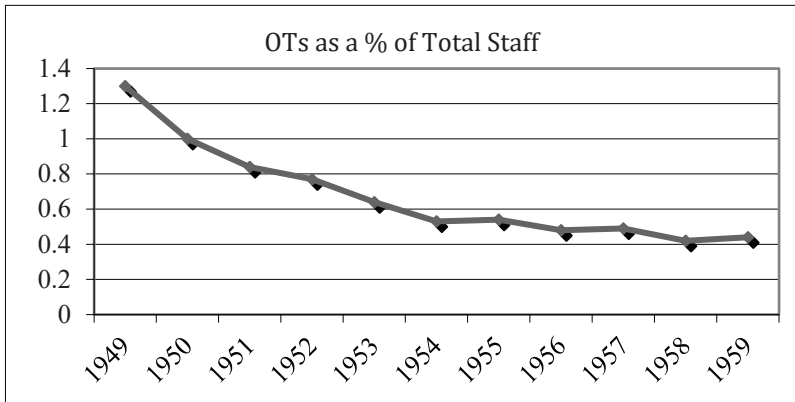


Table 3: Occupational Therapists Employed in Ontario Hospitals as a Percentage of Total Staff.

Source: Mental Health Division of the Department of Health of the Province of Ontario Annual Reports, 1950-1959.

The connection between occupational therapy and mental health services was an important one and, illustratively, when Dr. J. D. N. ("Jack") Griffin (1909-2001), the medical director of the Canadian Mental Hygiene Association, addressed the closing luncheon of the Canadian Association of Occupational Therapy, he declared that the "rehabilitation of the mentally ill is a major challenge to professional groups and citizens at large."⁴⁹ Dr. Mary Jackson, the chair of the CAOT's education committee, articulated the need for "auxiliary personnel" (see Table 3). On February 15, 1951, Jackson wrote to superintendents and chief occupational therapists of a number of Ontario hospitals that, "for some time the members of the Board of Management of the Canadian Association of Occupational Therapy have been concerned about the effect which the constant shortage of qualified occupational therapists is having upon the treatment programme for patients in all hospitals and clinics...The obvious answer would seem to be the training of auxiliary personnel."⁵⁰ To meet this need, the Ontario Department of Health, in conjunction with the Canadian Association of Occupational Therapy, initiated a series of brief, twelve-week training courses at the Ontario Hospital in Kingston, to create a corps of occupational therapy assistants (OTAs). In announcing the program in the *Globe and Mail*, it was noted that "with so many patients requiring instruction and the tempo of medical treatment increasing the number of trained occupational therapists available was far too small to meet the pressure of their work."⁵¹ The OTA training was funded under the Federal Health Grants (Project 605-5-170) and it was conceptualized to provide "sub-professional" training to fill an immediate employment gap. In the annual report for 1953-54, the need for these workers was acknowledged: "with the shortage of registered Occupational Therapists becoming increasingly acute, the need for continuation of this course grows accordingly. Only with qualified Occupational Therapy Assistants is the registered Occupational Therapist able to meet in any way today the increasing demands for an extension of the occupational therapy service to the psychiatric patient without lowering the standards of that special treatment."⁵²

⁴⁹ "Says Mental Illness 1st Canada Problem," *Toronto Daily Star*, November 14, 1951.

⁵⁰ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 11, "Occupational Therapy Assistants," letter from Mary V. Jackson MD, Chairman, Educational Committee CAOT, to Superintendents and Chief OT of various hospitals, February 15, 1951.

⁵¹ Mona Purser, "The Homemaker: Will Instruct Assistants in Occupational Therapy," *Globe and Mail*, June 18, 1953.

⁵² Library and Archives Canada, Canadian Association of Occupational Therapy

The role of these “auxiliary personnel” was never clearly defined, although the underlying assumption was that occupational therapists would supervise their work. Writing in 1956, Margaret (“Peg”) Langley, remarked that the course was established following “official recognition...of the fact that Canada was suffering from a shortage of occupational therapy personnel in the mental health field.”⁵³ Langley continued that, “for many years there had been university courses in Canada for Occupational Therapists...However, there were only so many occupational therapists to go around. Mental hospital populations increased in proportion faster than trained therapists were being turned out of the universities. Further, the advances being made in the treatment field made the pressure all the greater.”⁵⁴ There was a general shortage of occupational therapists in Canada and the problem of adequate staff for psychiatric hospitals was particularly acute. A five-month training program was proposed but this was reduced to three months at the request of the Ontario Minister of Health. In common with many other initiatives in the health sector, this program was supported through the federal health grants.

To meet the pressing need for personnel, three training programs were offered in Kingston each year. Students initially received eight weeks of classroom instruction in psychiatry, mental hygiene, theory and application of occupational therapy, weaving, woodwork, recreation, sewing and leatherwork. This was followed by four weeks of supervised clinical experience. Classes were limited to twenty students and were restricted to women at first. Entrance criteria were minimal. Applicants had to be eighteen, in good health, have a pleasant personality, a “special interest and aptitude for this type of work” and have completed grade ten. In many cases, students were drawn from existing hospital staff, though in the first year, several registered psychiatric nurses from Saskatchewan registered in the course.⁵⁵ During training, students received a living allowance of \$75

Collection, MG 28 1 495, Box 20, “OT Assistants Course”, Training of Occupational Therapy Aides Annual Report, December 1953-December 1954. Notice that in the text, reference is continually made to OT “assistants” and not “aides” despite the title of the report.

⁵³ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “Historical Material OT Assistants Course 1949-1971,” Margaret Langley, “How Ontario trains assistants to Occupational Therapists,” *Canada's Health and Welfare*, October 1956 [published by the Information Services Division, Department of National Health and Welfare].

⁵⁴ *Ibid.*

⁵⁵ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “OT Assistants Course.”

per month, and would earn between \$1,500 and \$2,160 after completing their course.⁵⁶ The first course began on January 5, 1953. The first report on the course noted that training such assistants was “only a partial solution to the problem of providing adequate occupational therapy . . . [and] provides the trainee only with the basic essentials to carry out, at the assistant level, duties under the supervision of a qualified occupational therapist.”⁵⁷

The course at Kingston trained 329 occupational therapy assistants from 1953 to 1960, thereby providing an immediate response to the labour shortage in occupational therapy services, if not to the shortage of university-educated occupational therapists. One of the first graduates of the programs was Gertrude Twilley. Twilley was already an experienced health care worker. A widow, she began working as a nurse’s aide nine years before, though she acknowledged that she liked her new role as an occupational therapy assistant much better, stating that “it’s not as heavy, and I love helping the patients.” She added that the “patients are so grateful to have a friend come in each day and it’s wonderful to watch them get better step by step.”⁵⁸ While clearly this captures only the provider perspective, and narratives from persons under care would likely reveal both pleasant and unpleasant relations with staff members, the view does come from an experienced hospital worker.⁵⁹ Students in the program came largely from Ontario, with the Ontario Hospitals sending 168 trainees to Kingston, while another 118 came from other hospitals in Ontario (See Table 4).

⁵⁶ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 11, “Occupational Therapy Assistants.”

⁵⁷ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, Training of Occupational Therapy Aides Annual Report, January 1953–November 1953.

⁵⁸ “Occupational Therapy Aides Trained,” *Globe and Mail* January 27, 1955.

⁵⁹ In an address to the American Psychiatric Association, Dr. Donald G. Greaves, of the University of Kansas medical centre, noted that while the efficacy of occupational therapy was gaining acceptance in psychiatric care, “occupational therapists have been pushed into fantastic speculations as to whether, and if so why, their particular talents are effective in the therapy of patients.” In his way, Greaves was questioning what today might be called the “evidence-base” for occupational therapy. Moreover, he noted that in the hospital of the 1950s, different groups of health care providers were jockeying for position, status and authority and this made claims to efficacy even more important. See David Spurgeon, “The Ontario Way: Urges Work for Mental Patients,” *Globe and Mail*, April 28, 1959.

Course #	Under 20 Years			20-45 Years			Over 45 Years			Totals			All Sources
	OH	OO	OP	OH	OO	OP	OH	OO	OP	OH	OO	OP	
1				14			3			17			17
2	2			19			2			23			23
3		1		6	5		3			9	6		15
4		2		5	3					5	5		10
5	1	1		7	3	2				8	4	2	14
6	2	5		3	5	2				5	10	2	17
7	1			5	4	2	1	1		7	5	2	14
8	1	5		4	3	3		1		5	9	3	17
9	1	2	1	1	2	5			1	2	4	7	13
10		2		1		3				1	2	3	6
11	1			8		2				9		2	11
12		2	1	7		3				7	2	4	13
13			1	2	1	1	1	1		3	2	2	7
14	3	2	1	5	2	2	1	1	1	9	5	4	18
15		4	2	6	4	3		1		6	9	5	20
16	2	9		4	2	1				6	11	1	18
17	5	4		5	5	6				10	9	6	25
18	5	2		7	7					12	9		21
19		6	3	7	7	1			1	7	13	5	25
20	4	6	1	7	7					11	13	1	25
Totals	28	53	10	123	60	36	11	5	3	162	118	49	329

OH = Ontario Hospitals, OO = Other Ontario hospitals, OP = Other Provinces

Table 4: Enrollments in OT Assistant Course, 1953-1960

Source: Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20.

Individuals were evaluated on such items as dependability, punctuality, regularity, regard for ethics and etiquette, adaptability, health, stability, judgment, ability to get along with people (co-operation, tact, understanding, rapport with patients, inter-staff relations), ability to take direction and correction, special abilities and interests, effort, initiative, interest and capability as an OT assistant, and knowledge of basic techniques taught (weaving, shop work, recreation, leather, domestic skill). These areas remained virtually unchanged through the 50s and 60s.⁶⁰

Hospital administrators were enthusiastic about the OTA program. For example, Woodstock superintendent J. J. Weber reported that his medical staff believed that the increased range and volume of occupational therapy available resulted in "quite an improvement in the general morale of our patients." Charles Henry Pratt (1890-1969), of the Ontario Hospital in Aurora, reported in November 1955 that one occupational therapy assistant was employed and that she "eased management problems by providing stimulating activities for many patients who formerly were idle, uninterested and often irritable." The occupational therapy department at the hospital had only opened on September 6, 1955, and was staffed by the assistant, who benefitted from the help of a hospital attendant when necessary. An occupational therapist supervised the department. C. E. Hanna, the Superintendent of the Brockville facility, had sent seven people for training in Kingston, four of whom were still employed at the hospital. Their tasks included "complete charge" of evening classes and parties and of summer recreation because there "is at present no full-time graduate." Hanna noted that "due to the drastic shortage of graduate staff (one part-time) they have taken over nearly all duties except the ordering of supplies, organizing administration and office work and disposal of articles." Their specific duties including rolling cigarettes, gardening, library and record rounds, care of the library, and cleaning. Hanna believed that the assistants who "had experience as ward aides, have proved much more competent." He also suggested that those who went to Kingston "feel that a longer course would greatly improve their training and confidence." Ethel Clark, the chief occupational therapist in Kingston, noted that the availability of assistants permitted "increase in number of wards covered, number of hours patients active are increased, more variety of activities." The superintendent for the Cobourg facility noted that "we had one therapist, now have two assistants and nearly double the number of patients are in contact with therapy on this account," but only female patients had access to occupational therapy. The

⁶⁰ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, "Evaluation of Trainees."

superintendent of the New Toronto facility, Dr. Cumberland, felt that occupational work would be performed by “graduate therapists if we had them on the staff.” He elaborated: “The whole question of assistants depends upon the number of graduates available. Naturally, [assistants] are not as efficient as graduates. However, they do a remarkably good job and I am highly pleased with them.”⁶¹

There is little doubt that support personnel permitted the expansion of occupational therapy services. Dr. Archibald McCausland (1891-1952), superintendent in London, described how activities in his hospital had expanded so that all wards effectively had some occupational therapy coverage, including both male and female wards. There were other benefits as well. When the patients went to their weekly downtown theatre excursions, the occupational therapy assistants escorted them, which freed up nursing staff. The assistants ran the movie projector for in-house films four times a week. Literary clubs and summer picnics also expanded under the assistants and one of them even filled in for the church organist. Summarizing, McCausland noted that the occupational therapy assistants “have brought . . . a great variety of interests and accomplishments which further the therapy in the hospital to which they are attached; former art students, recreational leaders, dressmakers, office workers, qualified music teachers, etc.” McCausland cautioned, however, that if these assistants were to be kept on staff, a “steep increase in pay” would be necessary: “Our patients have benefitted to such an extent by the addition of our Occupational Therapy Assistants, we feel they merit an increase in salary.”⁶²

The question of supervision was a key one. Dr. D. O. Lynch, superintendent of the Ontario Hospital in Toronto, wrote that “casual supervision” of assistants by an occupational therapist was sufficient for groups of long-term or geriatric patients, but that the number of assistants should be more clearly linked to the number of therapists. H. F. Frank, of the Ontario Hospital School in Smiths Falls was the only respondent to strike a discordant note. While he acknowledged that the presence of assistants greatly aided the work of the single occupational therapist on staff, Frank wrote that “assistants are of doubtful value unless professionally guided.”⁶³

The annual reports of the training course through the 1950s typically noted the persistent shortage of occupational therapists in mental health facilities and that the presence of assistants permitted the extension of

⁶¹ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “Evaluation of Services of OTAs.”

⁶² *Ibid.*

⁶³ *Ibid.*

services to more patients, while maintaining treatment standards. The duties of assistants expanded considerably, in large part because of the shortage of university-trained occupational therapists and the expansion of service to patients in the Ontario Hospitals. The combination of these two trends changed the ratio of assistants to therapists through the 1950s. In London, for example, there was a single occupational therapist and one assistant in April 1952, but in November 1955, there were three therapists and ten assistants employed. In Ontario Hospital facilities throughout the province, there were twenty-eight assistants and fifty-one therapists employed in June 1953. A decade later, the number of assistants employed increased to 181, while the number of therapists actually declined to thirty-five. Moreover, in six of the Ontario Hospital sites there was no therapist at all, leaving all the work to the twenty-five assistants employed in these locations.⁶⁴ In 1960, *Canadian Hospital* reported that occupational therapy services were provided in fourteen of the sixteen provincial mental institutions, staffed by thirty-six occupational therapists and 120 occupational therapy assistants, firmly illustrating the important role of the assistants in the expansion of clinical services.⁶⁵

The widespread use of occupational therapy assistants, often working without supervision by occupational therapists, was described as “inadequate,” but the directors of the Kingston course acknowledged that the trend was likely to continue. One interim solution was to extend the curriculum and provide more in-depth training to the occupational therapy assistants, to better prepare them for *de facto* independent practice. Alice Wilson, an occupational therapist in Port Arthur argued for supervision “by graduate therapists” and the Superintendent, J. R. Howitt, agreed, noting that only university-educated occupational therapists were qualified to oversee occupational therapy departments.⁶⁶ The reality was, however, apparent to everyone. The annual reports prepared by the training program noted that the demand for support personnel was strong. The 1956 report was typical: “With the shortage of registered occupational therapists remaining just as acute as in the preceding three years, the need for continuation of this course remains unaltered. Still, only with qualified occupational therapy assistants is the registered occupational therapist able to meet in any way today, the increasing demands for extension of the

⁶⁴ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “OT Assistants Course.”

⁶⁵ Margaret Langley, “Modern Concepts of Treatment. II. Activity Therapy,” *Canadian Hospital* 37 (1960): 44-45, 80-81.

⁶⁶ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 1 495, Box 20, “Evaluation of Services of OTAs.”

occupational therapy services to the psychiatric patient without lowering the standards of treatment.”⁶⁷ The expansion of services was dependent upon more assistants, with or without supervision from university-prepared occupational therapists.

By the late 1960s, the CAOT claimed a membership of 1100 and approximately 46% of the OTs in practice could be found in Ontario. There remained a “very serious shortage” of OTs in Canada both because of expanding employment opportunities in a range of settings, a supply problem stemming from the limited capacity of universities, and attrition “through marriage and through the large number of graduates of combined physiotherapy/occupational therapy courses who have elected to practice physiotherapy.”⁶⁸ According to the CAOT, the shortage of OTs had six effects, including frequent staff turnover, poor morale in “inadequately staffed departments,” too few “qualified” staff in OT departments, too much responsibility for inexperienced staff, a less than optimal therapist to patient ratio (though no figures were provided), and poor clinical training opportunities. Through the 1950s and 1960s, the CAOT undertook several activities to alleviate the labour shortage and its effects, including promoting OT among secondary school students and those in university, and helping inactive OTs return to active practice. Clearly, one of the most effective strategies involved the use of occupational therapy assistants to meet the very profound labour shortage in the Ontario Hospitals. Making liberal use of assistants allowed occupational therapy services to be established, or extended, in psychiatric settings, even in the absence of university-educated occupational therapists. While this was less than ideal, from the perspective of the CAOT and professional leaders, it at least allowed some measure of professional control and oversight. The alternative was “the employment of unqualified persons who function under the name of occupational therapy. This results in an inadequate service being interpreted as occupational therapy and is detrimental to patient care.” Occupational therapy assistants were, from the CAOT’s perspective, the lesser of two evils. They served as a kind of “placeholder.” Nevertheless, by the end of the 1960s, the CAOT was beginning to worry about the “professional supervision” of OTAs because there were not enough

⁶⁷ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 I 495, Box 20, “OT Assistants Course,” Training of Occupational Therapy Aides Annual Report, December 1953-December 1954.

⁶⁸ Library and Archives Canada, Canadian Association of Occupational Therapy Collection, MG 28 I 495, Box 21, “CAOT 1960s,” Department of National Health and Welfare, a submission from The Canadian Association of Occupational Therapists, n.d.

“qualified occupational therapists practicing to provide the necessary supervision.” The CAOT highlighted that such a situation “affects the quality of service being rendered to the patient, and the whole situation is regarded by [CAOT] as being detrimental to patient care.”⁶⁹

Auxiliary Workers in Canadian Health Care during the 1950s

Occupational therapy assistants were but one group of “auxiliary” workers in Canada’s health care system during the 1950s. Within nursing, for example, a range of personnel were used, including nursing aides, practical nurses, certified nursing assistants, and others.⁷⁰ The use of such personnel, according to one report in *Canadian Hospital* in 1953, “has largely offset the discrepancy between the increase in hospital beds and occupancy rate, and the smaller increase in available registered nurses.”⁷¹ The use of both regulated and unregulated labour in nursing was not without its detractors. One could hear “the murmur, from several sources, that the ratio of nursing auxiliaries to registered nurses has gone as high, or nearly as high, as advisable if professional care standards are to be maintained.”⁷² Others acknowledged that the appropriate use of a range of workers—which involved a critical reassessment of worker’s duties, the re-classification of some tasks and adequate supervision—could solve the immediate labour shortage but other strategies were necessary for the long term, including recruiting nurses from other countries.⁷³

⁶⁹ *Ibid.*

⁷⁰ Twohig, “Immediate Solution,” 138-155 and Twohig, “Out of Control.” See also Twohig, “The Second ‘Great Transformation’: Renegotiating Nursing Practice in Ontario, 1945-1970,” *Canadian Historical Review* 99 (2018):169-95.

⁷¹ “Obiter Dicta—What About This Nursing Problem?” *Canadian Hospital* 30 (1953): 31-32.

⁷² *Ibid.*

⁷³ Angus C. McGugan, “Chief Problems Confronting Hospital Administration Today,” *Canadian Hospital* 30 (1953): 33-34. On the recruitment of internationally-educated nurses, see Agnes Calliste, “Women of “Exceptional Merit”: Immigration of Caribbean Nurses to Canada,” *Canadian Journal of Women and the Law* 6 (1993): 85-103 and Karen Flynn, *Moving Beyond Borders: A History of Black Canadian and Caribbean Women in the Diaspora* (Toronto: University of Toronto Press, 2011). On the migration of women from the Philippines, see Catherine Ceniza Choy, *Empire of Care: Nursing and Migration in Filipino American History*, (Durham and London: Duke University Press, 2003) and Charlene Ronquillo, “Leaving the Philippines: Oral Histories of Nurses’ Transition to Canadian Nursing Practice,” *Canadian Journal of Nursing Research* 44 (2012): 96-115.

While hospital administrators were enthusiastic, at least some nurses resisted being alienated from aspects of their work. According to one administrator, it took him six years to convince the operating room nurses that personnel who were not registered nurses could fold draping or sterilize equipment. At the same time, the shortage of registered nurses and the emerging professional confidence of nursing as a whole were considered to be important elements in promoting the use of other kinds of workers.⁷⁴ In describing a formal, nine-month course for nursing assistants established with the co-operation of the Registered Nurses' Association of Ontario and the Ontario Department of Health, Betty-Mae Davidson (1922-2017) wrote that "at all times, the assistant works under the direction of the physician or registered professional nurse...May I emphasize that this worker is intended to supplement the registered nurse, not replace her. On many occasions the registered nurse and the nursing assistant will work side by side in a co-operative plan of care for patients."⁷⁵ Three nursing assistant programs were operating in Ontario, in Fort William, Toronto and Kingston, and these workers were, like the OTAs, intended to help maintain or even extend nursing services in a period of profound labour shortage. Since 1946, when the program was established, more than 1000 nursing assistants had taken their place at the bedside.⁷⁶

Conclusion

The example of occupational therapy assistants in the Ontario Hospitals illustrates one response to the shortage of health care workers. The strategy of preparing OTAs quickly for clinical work was an outcome of both the limited capacity of universities to meet the need for occupational therapists, the choices of students themselves, and the profound need to enhance the clinical services available for the patients of the Ontario Hospitals. The history of occupational therapy assistants can be situated within a historiography that, rather than focusing upon the exclusivity of health care work and the professional struggle to establish and maintain occupational boundaries, instead emphasizes the shared histories and the ways in which the scope of practice of various groups of workers was both dynamic and contested.⁷⁷ Indeed, training programs were established in the 1940s and

⁷⁴ Lillian R. Flight, "Categories of Auxiliary Nursing Personnel," *Canadian Hospital* 36 (1959): 49-50, 76, 78.

⁷⁵ Betty-Mae Davidson, "Training the Nursing Assistant," *Canadian Hospital* 29 (1952): 44, 108.

⁷⁶ *Ibid.*

⁷⁷ Peter L. Twohig, "Education, Expertise, Experience and the Making of Hospital

1950s to meet the labour shortage head on, preparing a wide array of workers who would assume their place in the health care system. At the same time, national organizations of health care workers struggled to understand their relationship to these new groups of workers. The occupational therapy assistants who provided clinical care in the Ontario Hospitals, frequently without oversight from university-educated occupational therapists, suggest that health care work was subject to a delicate balance and negotiation of a variety of imperatives. In the end, there is a profound need to situate health care work within specific settings and analyze how these histories are themselves connected to the broader question of the development of health services and the structural limits of this expansion.

Of course, any effort to redraw or redefine professional boundaries prompts debate, particularly if there is an effort to substitute “unlicensed,” “paraprofessional” or support personnel for tasks formerly performed by “professionals.” Historical case studies, such as this examination of occupational therapy assistants in Ontario during the 1950s, offer insights into such debates. The education, licensure, roles and responsibilities that delineate the boundaries among occupational groups are not fixed but shift in response to a variety of demands. The training of occupational therapy assistants, and the support they received from the CAOT, was a pragmatic response to the rapid demand for services and limited human resources. The occupational therapy assistant, and support workers in other areas of clinical care, had to fulfill a wide range of duties integral to the health care's “modern” identity and had significant levels of responsibility, often working alone. Understanding the conditions under which professional boundaries become fluid has important implications for our understandings of health care work in Canada, providing much needed perspective from beyond the boundaries of medicine and nursing. In the final analysis, the presence of these assistants permitted the expansion of occupational therapy services to new or more wards and enriched the Ontario Hospitals. Their independence and the lack of supervision by university-educated occupational therapists, rather than an affront to occupational therapy's emerging professionalism, was a pragmatic response to a dire service need.

Workers in Canada, 1920-1960,” *Scientia Canadensis* 29 (2006): 131-53 and Twohig “Innovating Expertise: X-Ray and Laboratory Workers in the Canadian Hospital, 1920-1950,” in Carsten Timmermann and Julie Anderson, eds. *Devices and Designs* (London: Palgrave, 2006): 74-94.

BIOMEDICAL ETHICS IN HISTORY

A HISTORY OF MILITARY HUMAN EXPERIMENTATION AND CHEMICAL WEAPONS RESEARCH IN CANADA SHAPED BY THE BIOMEDICAL RESEARCH RELATIONSHIP OF CANADIAN AND AMERICAN MILITARIES

LAUREN TAYLOR

SUMMARY: The military-oriented biomedical research relationship between the United States and Canada emerged primarily in the 1940s with the need for internationally collaborative defence research during World War II. Following the formation of government institutions in both nations supporting defence research, and alignment with Britain through the Geneva Protocol in 1925, Canada presented a favourable research partner for the Allied development of military technology and biomedical research efforts. The history of the Canadian military, in a medical context, has been largely influenced by its biomedical research programs and alignment with the Allied nations. In this work, the United States-Canadian biomedical research relationship is explored within the context of military research on chemical and biological agents conducted on human subjects, specifically human experimentation at the Suffield Experimental Station in Alberta in the 1940s and post-World War II period. This chapter aims to establish how a research partnership with the United States, initiating Canadian chemical and biological warfare research trials, was pivotal to the Canadian development of a reputable military research program and fostered ongoing ties between the two defence research programs.

KEYWORDS: Chemical and Biological Warfare, Allied Military Research, Suffield Experimental Station, Canada, United States of America

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Introduction

The biomedical research relationship between the United States and Canada emerged primarily in the 1940s with the need for internationally collaborative defence research during World War II (WWII). During the mid-twentieth century, Canada developed biomedical military research programs through participation in, and collaboration with, American research programs and through the tripartite agreements of the era. This chapter argues that mutual national security concerns largely shaped the formation of Allied biomedical research programs. The shift in focus of research programs and experimental aims involving human subjects from those involving exposures to genuine chemical agents during WWII to simulants in the post-WWII period will be explored within the context of an emerging biomedical research relationship between Canada and the United States. This investigation will use the specific example of the trials conducted at the Suffield Experimental Station in Alberta, Canada. Finally, I will address primary outcomes of human experimentation trials conducted at Suffield and address shifts in attitudes towards collaborative research strategies as reflective of changes in the political climate during the twentieth century alongside shifts in the focus of biomedical research programs during WWII and in the post-war period.

Historical studies of the factors that instigated biomedical research programs in a military context and the relationships involved in the carrying out of these programs can inform modern military programs. Active research in this area ought to involve historians of medicine and military projects, military professionals, and ethicists. To address its goals, this chapter is organized into the following sections: (1) a historical overview of the military biomedical research establishments and pivotal events and characters that encouraged collaboration between US and Canadian military programs based on common national security concerns; (2) the use of human experimentation for defence research in WWII shaped by the US-Canadian biomedical research partnership at Suffield Experimental Station; (3) an exploration of the shift towards simulant-based rather than toxic exposures in military human experimentation at Suffield Experimental Station as political and defence research focuses shifted; and (4) the outcomes and responses to the use of human subjects in joint American and Canadian biomedical research programs.

How National Security Concerns during Twentieth Century Wars Shaped Allied Biomedical Research Efforts

The early twentieth century saw the emergence of a military research partnership between Canada and the US following the horrific effects of chemical gas warfare in World War I (WWI). As a result of the physical atrocities incurred by military personnel being exposed to chemical agents such as mustard gas, a powerful chemical vesicant used offensively in WWI, the governments of Canada, the US, and Britain were prompted to align in defence tactics against chemical warfare. Under the Geneva Protocol, the US, Canada, Britain (the Allies) and others agreed to limit gas warfare and ban its offensive use, but not in retaliatory capacities.¹ This international agreement prompted the Allied nations to engage in collaborative research efforts such that chemical and bacteriological weapons of war could be anticipated, prepared for, and countered.

War times offered an unprecedented opportunity for the Allies to work towards advancements in biomedical research related to chemical and bacteriological weaponry. National support for such programs was initiated through the establishment of government-funded research boards and councils which prompted the development of technology and defence research interests, particularly through the military. These establishments contributed to the institutionalization of defence research in the Allied nations, a concept which has persisted into the twenty-first century. In the US, government support was pledged towards research through the founding of the National Research Foundation and Council of National Defence in 1916, which aimed to find further applications for science in strengthening national defence and security.² In Canada, the National Research Council (NRC) was established in 1916 as a war-time request from Britain and aimed to advance large-scale medical research efforts and chemical warfare planning under the guidance of Toronto-based physiologist Sir Frederick Banting (1891-1941). In 1947, nearly thirty years later, the Defence Research Board (DRB) was established in Canada, aiming to coordinate all defence research, support applied research programs run by the military, and medical defence research in university laboratory settings. Biomedical research was a key interest for the British, Canadian, and American militaries and became an even greater priority

¹ "Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare," (Geneva: United Nations Office for Disarmament Affairs, 1925).

² Paul Martin, "Medical Research in Canada," *Canadian Journal of Public Health* 45 (1954): 447-454.

following the threat of chemical and bacteriological warfare post-WWI and into World War II (WWII).

In addition to military defence programs being a priority for national security, war provided the Allied nations with opportunities to conduct highly classified research experiments. These were made possible due to access to government financial assistance through the aforementioned governmental research institutions, access to participants—their own soldiers—for experiments conducted on human subjects, and encouragement to fast-track research efforts by their respective governments in preparation for future enemy attacks. The allocation of resources towards biomedical military projects, including human experimentation, became of great importance in both the US and Canada under the assumption that such projects would improve national welfare and security, regardless of short-term health ramifications incurred upon participants in human trials, such as those involved in chemical weapons testing.³

At the beginning of the Second World War, Canada began to assert itself on the world stage in terms of both military involvement and research. In addition to an array of technological contributions to the war effort, Canada contributed to biological, chemical, and toxic warfare research. The US and Britain resumed production of chemical weapons in the late 1930s.⁴ Coordinated war efforts between Britain and Canada for defence purposes are argued to have been the driving force for Canada's initial engagement in scientific research programs and drove Canadian biomedical research to the forefront of international defence research efforts.⁵ From the mid-1930s into the 1940s in Canada, these research programs were set in motion by the pivotal roles of civil engineer Chalmers Jack Mackenzie (1888-1984), Minister of Defence General Andrew G. L. McNaughton (1887-1966), Sir Frederick Banting, and physical chemist Otto Maass (1890-1961).⁶ As president of the NRC, Mackenzie conferred with Maass, an influential

³ Susan L. Smith and Stephen Mawdsley, "Alberta Advantage: A Canadian Proving Ground for American Medical Research on Mustard Gas and Polio in the 1940s and 50s," in *Locating Health: Historical and Anthropological Investigations of Health and Place*, eds. Erika Dyck and Christopher Fletcher (London: Pickering and Chatto Publishers, 2011), 89-106.

⁴ Donald H. Avery, *The Science of War: Canadian Scientists and Allied Military Technology during the Second World War* (Toronto: University of Toronto Press, 1998), 122-129.

⁵ Christopher R. Paige, "Canadian Chemical Warfare Preparations to December 1941," in *Canada and Chemical Warfare* (PhD diss., University of Saskatchewan, 2009), 23-55.

⁶ Avery, *The Science of War*, 122-129.

Canadian scientist, and member of the NRC; in 1939, Mackenzie appointed Maass to establish chemical warfare research in Canada.⁷

During WWII, chemical warfare research in Canada was centralized around two establishments: the Canadian Directorate of Chemical Warfare and Smoke, which established the Chemical Warfare Laboratories (CWL) in Ottawa in August 1941, and Suffield Experimental Station (SES), established in June 1941 near Suffield, Alberta. The institutionalization of CWL and SES were instigated by McNaughton in 1940, who requested the establishment of a Canadian laboratory towards chemical weapons research with the looming threat of chemical warfare.⁸ Thus, the CWL was approved by the Canadian government in 1941 under the NRC. Meanwhile, a British representative and member of the Canadian Chemical Warfare Committee who was the Superintendent of Experiments at Porton Experimental Station in England, E. L. Davies (b. 1897), also requested the establishment of a large collaborative research base in Canada, where greater space and geographical isolation was accessible.⁹ At the time, England had its own well-established chemical defence program at Porton in the 1940s which manufactured chemical weapons for defence research. The NRC and Canadian scientists, including Otto Maass, were eager to engage in internationally collaborative defence research while setting themselves apart from sole British direction. Agreement between Canadian and British governments to assume equal financial support of the establishment led to the opening of SES in June of 1941.¹⁰ In a letter to Mackenzie in 1942, McNaughton writes:

It is most satisfactory to note that all goes well with the development of Suffield. I am certain that chemical warfare will be used by the enemy on a large scale...for this reason we must be on the alert against all new forms of gas and we must put ourselves in a position to retaliate with even greater effect.¹¹

⁷ John Bryden, *Deadly Allies: Canada's Secret War, 1937-1947* (Toronto: McClelland and Stewart, 1989), 27.

⁸ Letter from General McNaughton to C. J. Mackenzie, August 6, 1942 in Chalmers Mackenzie and Andrew McNaughton, *The Mackenzie-McNaughton Wartime Letters* (Toronto: University of Toronto Press, 1975), 113-114.

⁹ Clement H. Laforce, "The Use of Human Subjects in Chemical Warfare Agent Experiments: An Ethical Perspective," Canadian Forces College NNSC 8 (National Securities Studies Course), 2006, unpublished, archived at <https://www.cfc.forces.gc.ca/259/281/278/laforce.pdf> (accessed on 11 August, 2020).

¹⁰ Library and Archives Canada, file number 4354-6-5-1, microfilm reel C-5003.

¹¹ Mackenzie and McNaughton, *Wartime Letters*, 113-114.

[illegible]

Source: The Military Museums Library and Archives (University of Calgary), Canadian Women's Army Corps (1943) Series 1, Box 3, Item 60. Copyright Expired.

¹² James Emson and the British Army Training Unit Suffield (BATUS), *Dinosaurs to Defence: A Story of the Suffield Block* (London: BATUS, 1986).

Collaboration between Canada and the US in chemical defence research was essential approaching and during the WWII period with knowledge that any threat to the North American countries during WWII must be counteracted as a collaborative effort (see Figure 4-1). Through the mediation of Otto Maass, as representative of the Canadian and British chemical warfare establishments, the British, Canadian, and American scientists agreed to exchange chemical warfare information in 1940.¹³ Canada and the US formed an official research partnership in 1940 through the establishment of the Permanent Joint Board of Defence as a result of the Ogdensburg Agreement, which allowed for the exchange of liaison officers between nations and sharing of chemical warfare research information.¹⁴ As such, military personnel from Canada and US Army Chemical Warfare Service (CWS) were stationed at the US Dugway Proving Ground and SES, respectively. Although Canadian cooperation in chemical warfare planning was reported to be poor by the US Chemical Warfare Service at the beginning of WWII, the stationing of the international liaisons led to a greatly improved sharing of technical information, transport of chemicals, and quality of official site reports.¹⁵ The US defence research program was a major supplier of chemicals such as mustard gas to SES, which did not have plants established for the synthesis of mustard gas due to its connection with Britain. However, Canadian scientists observed the operation of US plants to gain knowledge of chemical weapons synthesis for defence research, and subsequently established a Canadian plant at CWL in Ontario, Canada, with the technical support of US research officials.¹⁶ Through Allied defence strategies, Canada made its primary contribution to defence research through the establishment of SES in Alberta and CWL in Ottawa. Through SES, Canada formed a military medical research partnership with the US and became involved in American defence research testing and programs during and post-WWII.

¹³ Library and Archives Canada, file number 4354-11-1, "Report of Canadian Mission, 16 October, 1940, Chemical Warfare Laboratories."

¹⁴ Robin Ranger, *The Canadian Contribution to the Control of Chemical and Biological Warfare* (Toronto: Canadian Institute of International Affairs, 1976), 21.

¹⁵ Avery, *The Science of War*, 133.

¹⁶ Library and Archives Canada, file number 4354-6-5-1, microfilm reel C-5003.

US-Canada Research Relations during WWII: Human Experimentation for Defence Research at Suffield Experimental Station (SES), Alberta

Due to the major threat mustard gas posed to soldiers in WWI, with its debilitating vesicant effects in both liquid and vapour form, developing defences against this chemical weapon was of primary concern to the Allied nations. The development of neutralization agents and protective clothing that was not excessively cumbersome for soldiers in combat as well as amassing knowledge of the effects of chemical agents in the battlefield context were priorities for the US, Canada, and Britain before WWII. This section will address the use of human-subject-based experimentation in the Canadian military for defence research during WWII through the investigation of trials at SES between 1941 and 1945. As twentieth century war saw a shift towards the “militarization of medicine and medicalization of defence research,”¹⁷ developing research against chemical weapons used in war also approached the forefront of political and military defence agendas in both the US and Canada. The US offered Canada the opportunity to engage in American-based defence research programs as an opportunistic venture: SES provided ideal environmental conditions for mustard gas experimentation and Canadian scientists running the establishment, under the direction of Davies as Superintendent of Research, were willing to conduct relatively extreme exposures on human subjects. The chemical defence research programs of Canada and the US sought to determine the effects of these agents on the human body and study the efficacy of different levels of protective equipment in order to develop counterstrategies and technologies for use by the Allied nations. Human subjects—soldiers stationed at the experimental sites—were recruited for experimental trials. Therefore, these historical defence research programs have become keen areas of study by medical and military historians and have prompted a range of ethical discussions.¹⁸

Human experimentation for biomedical research endeavours was not a novel concept to American military programs. An extensive series of American chemical warfare experiments were conducted at Dugway Proving Grounds in Utah, where American soldiers were subjected to chemical agents, primarily mustard gas. Exposure was incurred, and

¹⁷ Mark Harrison, “The Medicalization of War – The Militarization of Medicine,” *Social History of Medicine* 9 (1996): 267-276; <https://doi.org/10.1093/shm/9.2.267> (accessed on 11 August, 2020).

¹⁸ Laforce, “The Use of Human Subjects,” 25-54.

physical effects studied during open-air field trials, in which soldiers were exposed to aerially deployed mustard gas, gas chamber tests, and patch tests on the limbs with varying levels of protective clothing and under strict military protocols. The US military defence research programs conducted over 60,000 chemical exposure tests on human subjects in the early 1940s at Dugway and other US locations, with similar programs “outsourced” to countries such as Australia and Canada. Mustard gas testing in the US was sanctioned through the National Office of Scientific Research and Development and CWS of the US Army, which stockpiled nearly 200 million pounds of mustard gas for defence research purposes in the early 1940s.¹⁹

American researchers investigating the effects of exposure to mustard gas were keenly interested in the reaction of the vesicant under tropical and extreme weather conditions, and the Canadian establishment at SES offered a unique opportunity for the governments to collaborate. To American researchers, SES was a prime location in which to initiate collaborative experimental programs due to its isolated and large location, geography, and variable climate, as well as the Canadian military’s willingness to conduct full-body exposures during open-air field tests on human subjects with the chemical agents. Beginning in 1942, shortly after the establishment of SES, Canadian researchers collaborating with the US defence research program at the establishment conducted a series of mustard gas trials on approximately 2,000 Canadian soldiers at SES through its participation with the American defence research program. The primary aims of this project were to assess the effects of chemical warfare agents on human subjects in a battlefield setting, to assess the effectiveness of the agents studied, and to determine the efficacy of protective equipment, protective ointments, and countermeasures.²⁰ Human experimentation at Suffield was first conducted under the auspices of this partnership. While American research programs historically involved human subjects in several military-based trials, such as the yellow fever experiments on human subjects coordinated and deployed by the US Army Yellow Fever Commission in 1900-1901,²¹ the experiments conducted at Suffield on human subjects were the first of their kind in a Canadian military context and can largely be attributed to the connection between the Canadian and US military scientists.

¹⁹ Smith and Mawdsley, “Alberta Advantage,” 89-106.

²⁰ Laforce, “The Use of Human Subjects,” 10, table 1.

²¹ Susan E. Lederer, *Subjected to Science: Human Experimentation in America before the Second World War* (Baltimore: Johns Hopkins University Press, 1995), 73-100.

Although Allied trials previously involved animal experimentation, such as in trials in Australia and the US, conducting human exposure trials to chemical weapons was viewed by Allied researchers and governments as the most effective way through which accurate data could be obtained to research the effects of chemical agents—including vesicants such as mustard gas—on the human body and provided the closest simulation of a true battlefield simulation. Approval for the experiments involved the US-UK-Canadian Chemical Warfare Advisory Community and Chemical Warfare Inter-Service Board.²² Soldiers involved in the trials were offered \$1.00 compensation per test to a maximum of \$10.00 daily. They were recruited voluntarily and conducted anti-gas training for the highly classified trial.²³ Exposures to chemical warfare agents were delivered in the form of open-air field trials, patch tests, and gas-chamber simulations, in which varying levels of protective clothing were worn, mirroring the American trials on which they were based. Medical treatment at the on-site infirmary staffed by nurses was provided to subjects after the desired duration of the exposure was complete (often over six hours of direct exposure to the skin), which led to the reporting of severe discomfort and injuries due to the extreme nature of the exposures. Contributing to the nature of these experiments, a Chief Medical Officer observed all trials, often a military physician. The trials conducted at SES were of particular interest to US military personnel and head scientists of defence research as the Canadian program offered a greater deal of direct, potent exposures than were conducted or allowed in the American experiments. For these reasons, Canada became a prime partner for collaborative defence research to its American counterparts.

Canadian Biomedical Military Research Programs at SES Post-WWII: A Shift Towards Simulant-Based Experimentation

Biomedical military research programs experienced a shift in both their protocols and focus in the US and Canada in the post-WWII era as a result of the changing threats to national security that defence researchers aimed to combat and the political tensions at the time. In 1960, Archie Munro Pennie (1916-2013), Chief Superintendent of Suffield, stated that the shift towards ultimate international control of nuclear armament

²² Avery, *The Science of War*, 122-150.

²³ Laforce, "The Use of Human Subjects," 13-14.

[brought] the possibility of BW [biological warfare] and CW [chemical warfare] more to the fore. There is the threat at least of a large-scale BW attack, yes. And the present concepts of the next war do give biological warfare the edge over chemical.²⁴

and Joe Perry, Research Chief at SES in 1960 stated that:

the tripartite countries – the U.S., the U.K., and ourselves – have become increasingly aware that vast areas could be affected by a clandestine biological attack.²⁵

Therefore, with the major concern of the neighbouring nations' national security aims at the forefront of military research program decisions, the US and Canada made collaborative movements towards increasing research pursuits of both biological warfare and defence research. While still collaborating with the CWB, SES became a hub for defensive research programs after 1945, where experiments were conducted involving biological and chemical weapons such as sarin gas, which the US had stored in its military arsenal since the late 1940s.²⁶ Nearly two decades following its inception, SES remained the primary site for the military-based testing of toxic chemicals and bacteriological agents with which American CWB-based programs such as Dugway continued to collaborate. Using the self-sufficient program that Suffield offered with nearly all of the resources necessary, military researchers aimed to continue amassing data towards gas and germ warfare defence advancements, which was certainly not the public's focus amidst the looming threat of nuclear war in the 1960s. However, in comparison to the trials conducted at Suffield between 1941 and 1945, the US-Canadian research programs saw a major shift in the focus and protocols used in their research programs, in part due to the conducting of such experiments after the WWII-period, in which results were aimed to be produced immediately for application to defence strategies for use in the war (see Figure 4-2). The use of simulants rather than the true toxic chemical weapons such as mustard gas was emphasized through these research programs. Arguably, this was result of changing political and military agendas in the American programs that worked closely with Canadian researchers.

²⁴ Stephen Franklin, "I Visit our Super-Secret Germ War Defence Base," *Weekend Magazine* 10.6 (1960).

²⁵ *Ibid.*

²⁶ Martin O'Malley, "CBW," *Globe Magazine* (January 31, 1970).



Figure 4-2: Suffield Experimental Station researchers in 1960 who studied nerve gas agents such as Sarin gas featured in 1960 Weekend Magazine article on germ war defense research at SES.

Source: Stephen Franklin, "I Visit our Super-Secret Germ War Defence Base," *Weekend Magazine* 10, no. 6 (1960).

Of the trials conducted at SES in the post-war period, no experiments have been reported to study the effects of chemical agents or simulants on the human body,²⁷ and experiments for the simulation of realistic battle conditions, protective clothing, and equipment design were emphasized, under the umbrella project of "Exercise Vacuum".²⁸ Exercise Vacuum, a SES-based trial on over 2000 Canadian soldiers stationed at the establishment aimed to assess defence research doctrine, training agents, clothing, and equipment. Vacuum (1968) used no chemical agents, as were used in 1941-1945. The instalment of this project not only reflects the changes in national threats which required response through military defence research programs between 1941 and 1945 and the post-WWII period of the 1960s,²⁹ but also the interest of Canadian military researchers in conducting individual research projects that were not connected with the American programs. As Canada began to assert itself as a capable nation for generating biomedical defence research after the mid-1950s and research projects of the NRC and DRB in Canada were announced as a national priority in 1954,³⁰ the Canadian research programs relied less on the technical

²⁷ Laforce, "The Use of Human Subjects," 10, table 1.

²⁸ Department of National Defence, Canada, "EX VACUUM Visitors Brochure." DRDC Suffield Record #2003-4266 (1968).

²⁹ O'Malley, "CBW."

³⁰ Martin, "Medical Research," 447-454.

support from their American Allies or provision of resources. This phenomenon was also reflected by the self-sufficiency of SES documented in newspaper articles at the time,³¹ and maps documenting the growth of SES and access to resources (see Figure 4-3.).³²

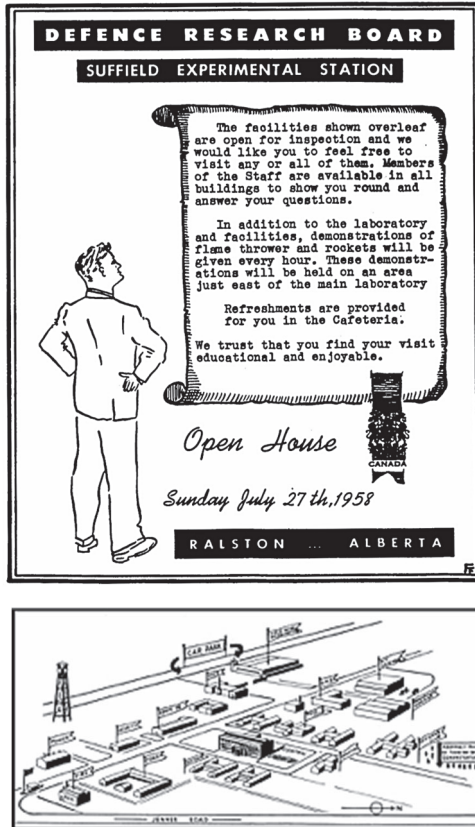


Figure 4-3: Images from Open House brochure, with map, issued at Suffield Experimental Station, Ralston, Alberta: July 27, 1958.

Source: Courtesy of the personal archival documents of Jim Powell, Calgary, Alberta.

³¹ Franklin, "War Defence Base."

³² National Research Board, Open House brochure, including map, issued at Suffield Experimental Station, Ralston, Alberta (July 27, 1958). Courtesy of the personal archival documents of Jim Powell, Calgary, Alberta.



Figure 4-4: Magazine cover (“Canada knows the creepy ways to end us all...”) for the article “CBW” in the *Globe Magazine*, published January 31, 1970, which discussed the research activities at Suffield Experimental Station, Ralston, Alberta, on chemical and biological warfare; original photograph Martin O’Malley. Source: Courtesy of the personal archival documents of Jim Powell, Calgary, Alberta.

With regards to the human experimentation trials conducted at SES in the post-WWII era, a major shift can be observed from experiments involving direct exposures to chemical agents towards simulant- and laboratory-based biomedical research.³³ This observation can be attributed to a combination of factors related to the fact that Canadian scientists were responsible for designing the protocols they carried forth rather than assisting with the US-based trials as was observed between 1941 and 1945, shifting of the desired outcomes of research program in light of changing political factors and defence research requirements of the post-war period, and increased public knowledge of the programs at SES (see Figure 4-4.).³⁴ Although this observation may be a function, in part, of the high toxicity of

³³ Laforce, “The Use of Human Subjects,” 10, table 1.

³⁴ O’Malley, “CBW.”

the chemical agents under study in the post-WWII period at SES, such as sarin gas, a highly toxin nerve gas,³⁵ no direct exposures with chemical agents were documented and the majority of experiments investigated the battlefield effects of chemical warfare agents using non-toxic simulants of chemical agents. Studies on highly toxic agents, such as sarin gas, were conducted solely in laboratory settings in order to avoid direct exposures to staff and military personnel. Therefore, the evidence supports a shifted framework of defence research tactics in Canada between the early 1940s and the post-WWII era in projects conducted at SES. Necessities for results applicable for immediate use during the war were changed and the establishment relied less on the direction and resources of US-based defence research programs.

Military Biomedical Research Outcomes: Responses to Biomedical Experimentation on Human Subjects and the Shift from Secrecy to Disclosure

Comparisons between military defence research trials involving human subjects during WWII and in the post-war period of the twentieth century must be made with respect to assigned exposures and outcomes. The SES biomedical research trials on chemical agents were conducted with similar aims between the two time periods: to gain an understanding of agent effects on the human body, effectiveness of protective equipment, development of effective countermeasures, and simulation of battlefield effects.³⁶ However, the trials involving human subjects produced different outcome profiles over time. While simulant-based trials had primarily utilized laboratory settings and subjected involved parties to non-toxic exposures, the trials that utilized mustard gas, a known toxic agent, produced horrific and long-lasting physical effects to the human subjects on which they were used.

The human experimentation trials subjecting individuals to direct exposures with mustard gas in 1941-1945 at SES have resulted in a myriad of ethical discussions.³⁷ Due to the toxicity of the agent, long-lasting health issues were sustained by human subjects of these trials, including cancer, chronic bronchitis and respiratory problems, reproductive dysfunction, sexual dysfunction, and mental health disorders.³⁸ With the declassification

³⁵ *Ibid.*

³⁶ Bryden, *Deadly Allies*.

³⁷ Laforce, "The Use of Human Subjects," 13-14.

³⁸ Government of Canada, "Complaints Concerning Chemical Agent Testing During World War II." (Archived). *National Defence and Canadian Forces Ombudsman*.

of military information on these trials that occurred close to the turn of the century,³⁹ a compensation of approximately \$24,000 was issued to participants in these chemical warfare trials at SES in 2004.⁴⁰ A necessary series of ethical debates have arisen surrounding the use of human subjects for national defence research involving chemical and biological exposures. Retired flight sergeant William (“Bill”) Tanner (b. 1920?), a former research subject in Suffield involved in the mustard gas experiments of 1941-1943 and modern proponent of veterans’ rights actively denounces the use of human subjects for defence research:

The remarks often made to me are ‘Our country actually did this?’ Believe it. Had the government done this during the war, to prisoners of war, Canada would have been convicted of war crimes. But it did it to its own men.⁴¹

Issues surrounding classification of military research data and government secrecy question produced questions regarding the US-Canadian research relationship. Through this article, it has been observed that use of toxic chemical agents (mustard gas, specifically) on human subjects via direct exposures at SES was largely influenced by the Canadian establishment’s aim to prove the competency of its defence research program to its American counterparts. With regards to the secrecy surrounding chemical and biological defence research, Seymour Hersh (b. 1937), whose investigative journalism in the 1960s and 1970s was unpopular among military defence researchers and was known to provide deliberately inaccurate descriptions of defence research programs, stated that American CBW research was

...overclassified. The aim of this policy has not been to keep information away from the Soviet Union or any other potential adversary, but to keep information away from the American people.⁴²

Canada, 2014. <http://www.ombudsman.forces.gc.ca/en/ombudsman-reports-stats-investigations-chem-testing/index.page> (accessed on 11 August, 2020).

³⁹ Bryden, *Deadly Allies*.

⁴⁰ “Canadian War Vets Exposed to Mustard Gas Receive Compensation,” *CBC News*, May 11, 2004. <http://www.cbc.ca/news/canada/canadian-war-vets-exposed-to-mustard-gas-receive-compensation-1.515527> (accessed on 11 August, 2020).

⁴¹ *Ibid.*

⁴² Seymour Hersh, *Chemical and Biological Warfare: America’s Hidden Arsenal* (Indianapolis: Bobbs-Merrill, 1968).

However, the errors of the past must be considered within the context of the historical time periods in which these research programs existed. The involvement of SES in chemical trials that subjected human subjects to toxic chemical agents cannot completely define its reputability as a biomedical research entity, as these trials were carried out as defensive war-time measures and involved collaboration between the tripartite nations and, in particular, the US military. Secrecy and classification of data by military defence research programs is necessary, if conducted ethically, for national security measures. Although the effects of the chemical trials of 1941-1945 involving human experimentation at SES have tainted its reputation historically, the sum of its collaborative efforts with the US CWS and modern defence research establishments were productive for both nations. They yielded world-class data towards effective defence research as establishments such as SES moved towards simulant- and laboratory-based biomedical research trials in the latter half of the twentieth century.

Conclusions

Despite the ethical ramifications and future tensions of the US-Canadian research partnership as the nations approached nuclear research towards the end of the twentieth century, it remains that the research relationship formed between the US and Canada in the mid-twentieth century defined a collaborative partnership that has persisted to modern times and, for the most part, has been productive towards their aims of defence research. Collaborative research partnerships persist between the US Dugway Proving Grounds and Canadian Suffield Experimental Site. Advancing research into chemical and biological warfare agents is an important element of Canadian medical and military history, and the historical role of Canadian researchers and programs helped assert the nation as a leading research body internationally and among the Allies. Without its close ties to the US in military research programs that have shared data findings and technological advances, it is unlikely that Canada or SES would have achieved the international reputation it holds today. According to a former meteorological technician at Suffield in the 1960s with familial ties to the site, the alliance between Canada and the US was pivotal for Canada in a research capacity.⁴³ The use of human subjects in chemical warfare trials has been a defining element of biomedical research history in the Canadian military. Calls are being made for the continued declassification of secret military data of the historical trials conducted by the Canadian military,

⁴³ Jim Powell, interview held by Lauren Taylor, Calgary, Alberta.

particularly through collaborations with the Allies, in order to ensure that Canadian scientists are engaging in ethical defence research programs.

A REVIEW OF THE INCREASING USE OF THE HIPPOCRATIC OATH AT NORTH AMERICAN MEDICAL SCHOOLS IN THE TWENTIETH CENTURY

STEVEN THOMSON

SUMMARY: The Hippocratic Oath is an ancient document whose exact authorship and date remain unknown. The original use of the Oath almost certainly differs from its current reincarnations and appears to have been applied to a varying degree throughout history. In this chapter, I will focus on the resurgence of the use of the Oath in medical schools in the twentieth and twenty-first centuries.

In general, swearing an oath signifies a solemn commitment made in public by an individual to a set of ideal principles to guide their conduct for the duration of their life. An oath is not legally binding, nor can it ensure ethical behaviour. The way the Oath is used appears to be changing rapidly in the modern era. Further, the very nature and wording of the Oath is being modified, or abandoned entirely in favour of alternative pledges. The creation of the so-called “White Coat Ceremonies” also appears to be having an impact on the popularity of the Oath.

A number of surveys have been done in the past on the types of ethical statements used in medical schools over the last ninety years. I will review the findings of these studies, examining trends over time. I will also address gaps in our understanding of the usage patterns and examine a more collaborative research strategy which could give future studies better insight into the use of the Oath and the factors involved in changing the usage patterns.

KEYWORDS: Hippocratic Oath, Medical Ethics, Medical Schools, North America, Canada

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

Introduction¹

From a historical and medical humanities perspective, this chapter provides insights into the historical use of the Hippocratic Oath in America. I intend to address the gaps in our understanding of the ethical traditions in medicine in Canada and elsewhere.² In modern medicine, many graduating medical students still swear an oath based on equally ancient traditions. My chapter is hence widely applicable to academic physicians, medical students, institutional leaders and ethicists alike. Indeed, it is my hope that this chapter would spur much ongoing debate and interest in the oaths used in Canada as well as the factors that impact their content.³

The Hippocratic Oath

Modern medicine is a social profession with many cultural and scientific responsibilities. These obligations arise in a number of important ways. Some of these responsibilities are a direct consequence of how physicians are trained and compensated. In Canada, the government heavily subsidizes the training of new physicians both financially and with the formation of research funding institutions like the Medical Research Council (MRC) in 1938 and then the Canadian Institutes of Health Research (CIHR) in 2000.⁴ Additionally, medical schools have, of course, an important function in producing future physicians who are reflective of and responsive to societal needs. This is, for example, represented in their changing enrolment criteria and curricula, which include students' work assignments in underserved

¹ The author wishes to thank Dr. Dorian Deshauer at the *Canadian Medical Association Journal*, as well as Mr. Pablo Fernandez from the University of Calgary's O'Brien Institute for Public Health for their constructive criticisms and suggestions on an earlier version of the manuscript for this chapter. He is further thankful for a Margaret Hutton Summer Research Scholarship in the History of Medicine and Health Care from the Alberta Medical Foundation in Edmonton, Alberta.

² Audiey Kao and Kayhan P. Parsi, "Content Analyses of Oaths Administered at U. S. Medical Schools in 2000," *Academic Medicine* 79 (2004), 882-887.

³ Lycurgus M. Davey, "The Oath of Hippocrates: An Historical Review," *Neurosurgery* 49 (2001), 554-566.

⁴ Health Canada, "Overview of the Cost of Training Health Professionals: Research Report prepared by Official Languages Community Development Bureau, January 2008," http://publications.gc.ca/collections/collection_2009/sc-hc/H29-1-2009E.pdf (accessed on 24 June, 2019); Chester B. Stewart, "The Founding of Canada's Medical Research Council," *Canadian Medical Association Journal* 134 (1986), 711.

areas and with vulnerable populations.⁵ It is noteworthy in this regard that one Ontario university has different admission standards for applicants from rural southern Ontario homes in an attempt to recruit graduate physicians who are more likely to practice in those areas. Further, several medical schools (including the University of Calgary's Cumming School of Medicine) have attempted to persuade at least 50 percent of their medical graduates to enter family practice over specialty training programs to respond to immediate societal needs.

Given the social context in which medical practice occurs, doctors need to call for society's input in a more direct way. In particular, the ethical oaths taken by physicians must be made more publicly visible. I would argue that physician ethics, primarily the Hippocratic Oath, should be made more open and transparent to the public and invite discussion from the various stakeholders comprising the medical community itself.⁶ The *Oxford English Dictionary*, for example, offers the following for a definition of "oath," in our context; "a solemn or formal appeal to God (or to a deity or an entity something held in reverence or regard), in witness of the truth of a statement, or the binding character of a promise or undertaking...a statement or promise corroborated by such an appeal, or the form of the words in which such a statement or promise is made."⁷

In an article on this subject, bioethicist Sulmasy⁸ compares an oath to a promise with nine important differences. These differences are in the duration, the magnitude of commitment or moral obligation, to whom the oath is given, and the public nature of oath declaration. Also, oaths carry specific consequences, specificity, and they usually require the alteration of the swearer's personhood. Sulmasy uses the concept of a "performative utterance," meaning that saying the words in the appropriate context does something beyond saying the words. He also goes on to separate the term "oath" from ethical code. The details of his thesis are beyond the scope of this chapter, but suffice it to say that, in a general sense, swearing an oath

⁵ Caroline Abrahams and Jean Bacon, "A Collective Vision for Postgraduate Medical Education in Canada," in *Trends and Issues in Postgraduate Medical Education: Inputs, Outputs and Outcomes*, ed. Member of the FMEC PG Consortium (Ottawa, ON: The College of Family Physicians of Canada, 2011), https://www.afmc.ca/future-of-medical-education-in-canada/postgraduate-project/pdf/FMEC_PG_Final-Report_EN.pdf (accessed on 24 June, 2019).

⁶ Davy, "The Oath."

⁷ Oxford University, *Oxford English Dictionary*, 2nd ed. (Oxford, England: Oxford University Press, 1950), s. v. "Oath."

⁸ Daniel P. Sulmasy, "What is an Oath and Why Should a Physician Swear One?" *Theoretical Medicine and Bioethics* 2 (1999), 329-346.

signifies a person's commitment to a way of acting and thinking, taken publicly, and committed to for the duration of the promiser's life.

The Hippocratic Oath in its original form is almost certainly not written by the man whose name it bears, but by pupils who studied under Hippocrates (460-370 BCE) and then wrote the volumes sometime later. The oldest known section of the Hippocratic Oath exists on the Oxyrhynchus papyrus (Papyrus Oxyrhynchus 2547) dating to the third century BCE. It is only a small fragment of the Oath, with both spelling and grammatical errors. Since then, it has been modified innumerable times. Each historical period changed the wording and appearance of the oath to suit the prevailing social values and the needs of the profession. As an example, the Oath's contents were modified and rewritten in the shape of the Christian cross in the fourteenth century, so that it became acceptable for Christians to embrace it as well.⁹ The Oath was translated into Arabic, and Syriac in the twelfth or thirteenth century.¹⁰ The exact migration of the oath through North America in the more recent past however is largely unclear.

Its core principles were the confidentiality between patient and physician. It also stressed the importance of respect for all human beings. It urged all physicians to live their lives in the most upstanding manner including admonishing sexual relations with patients. All of these directives were pledged to a host of powerful ancient gods. The original Oath in its English translation from the Greek, as made by Jones, is reproduced here for convenience:

I SWEAR by Apollo Physician, by Asclepius, by Health, by Panacea and by all the gods and goddesses, making them my witnesses, that I will carry out, according to my ability and judgment, this oath and this indenture. To hold my teacher in this art equal to my own parents; to make him partner in my livelihood; when he is in need of money to share mine with him; to consider his family as my own brothers, and to teach them this art, if they want to learn it, without fee or indenture; to impart precept, oral instruction, and all other instruction to my own sons, the sons of my teacher, and to indentured pupils who have taken the physician's oath, but to nobody else. I will use treatment to help the sick according to my ability and judgment but never with a view to injury and wrong-doing. I will never administer a poison to anybody when asked to do so, nor will I suggest such a course. Similarly, I will not give to a woman a

⁹ William Henry Samuel Jones, *The Doctors Oath: An Essay in the History of Medicine* (Cambridge, England: Cambridge University Press, 1924), 26-27.

¹⁰ *Ibid.*, 29.

pessary to cause abortion. But I will keep pure and holy both my life and my art. I will not use the knife, not even, verily, on sufferers from stone, but I will give place to such as are craftsmen therein. Into whatsoever houses I enter, I will enter to help the sick, and I will abstain from all intentional wrong-doing and harm, especially from abusing the bodies of man or woman, bond or free. And whatsoever I shall see or hear in the course of my profession, as well as outside my profession in my intercourse with men, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets. Now if I carry out this oath, and break it not, may I gain for ever reputation among all men for my life and for my art; but if I transgress it and forswear myself, may the opposite befall me.¹¹

It is worth noting that the Hippocratic Oath, as given above, is not the only medical oath. The Geneva Declaration (first version 1948), Declaration of Helsinki (first version 1964), Oath of Louis Lasagna (1923-2003, oath written in 1964) and the Prayer of Maimonides (1135-1204, oath most likely not written by Maimonides) have all been, and some, interestingly, continue to be, used in schools all over the world. Internationally, about 50 percent of the British schools use an ethical document of some sort, and new ones are being added even in the twenty-first century.¹² The same can also be said for schools in Australia and New Zealand.¹³

A second reason for medicine's social obligations comes from the profession's long history, exemplified by the Hippocratic Oath. It tells us about rules a physician should obey.¹⁴ It has been modified innumerable times since its creation. Each time it has been adjusted and changed, however, this was done to fit the values of different groups who used it. The medical oaths sworn by modern medical students appear to be the longest standing and most visible representation of the tradition of social responsibility.¹⁵

¹¹ *Ibid.*, 9-11.

¹² Kaji Sriharan, Georgina Russell, Zoe Fritz, Davina Wong, Matthew Rollin, Jake Dunning, Philip Morgan, and Catherine Sheehan, "Medical Oaths and Declarations," *British Medical Journal* 7327 (2001), 1440-1441.

¹³ Paul McNeill and S. Bruce Dowton, "Declarations Made by Graduating Medical Students in Australia and New Zealand," *Medical Journal of Australia* 176 (2002), 123-125.

¹⁴ Stephen Pow and Frank W. Stahnisch, "Ludwig Edelstein (1902-1965): A German Historian of Medicine in North American Exile and the Emergence of the Modern Hippocratic Oath," *Journal of Medical Biography* 24 (2016), 527-537.

¹⁵ Ludwig Edelstein, *Ancient Medicine: Selected Papers of Ludwig Edelstein* (Baltimore, MD: Johns Hopkins University Press, 1967), 5.

Surveying the Use of the Hippocratic Oath in Modern North American History

Returning to the use of medical oaths in Canada, no study has ever been published that captured the use or disuse of oaths in every medical school in this country. A number of American studies have sampled a portion of the Canadian schools, but no specific wording was reported in them.¹⁶ What emerges from several cases surveyed, is that once an oath is chosen, institutions usually remain faithful to it. Two cases in point are the University of Glasgow in the United Kingdom, where between 1924 and 1952, the oath changed only grammatically, and the University of Western Ontario in Canada, where between 1948 and present, the oath remained unchanged.¹⁷ As the oath forms part of the basis for medicine's social contract, an understanding of the Hippocratic Oath and its variations is imperatively necessary. For the remainder of this chapter, "the oath" will be used to refer collectively to all variations of medical oaths or declarations made by students whether ancient or modern and "Oath" specifically to the use of the Hippocratic Oath itself. These oaths, taken by most graduating physicians reiterate the obligations of physicians to their patients and society including non-maleficence, confidentiality, avoidance of prejudice, and justice.¹⁸

With recent surveys showing that nearly 100 percent of students graduating in Canada take or read an oath, why is so little known about these oaths and the manner in which they are used?¹⁹ It is incredibly difficult for the public to obtain the oaths sworn by students graduating from medical schools, and it is equally difficult for researchers and physicians interested in the area to access this material. Additionally, we know from prior

¹⁶ Kao and Parsi, "Content Analyses"; Robert D. Orr, Norman Pang, Edmond D. Pellegrino, and Mark Siegler, "Use of the Hippocratic Oath: A Review of Twentieth Century Practice and a Content Analysis of Oaths Administered in Medical Schools in the US and Canada in 1993," *Journal of Clinical Ethics* 8 (1997), 377-388; Pow and Stahnisch, "Ludwig Edelstein"; Eben J. Carey "The Formal Use of the Hippocratic Oath for Medical Students At Commencement Exercises," *Bulletin of the Association of the American Medical Colleges* 3 (1928), 159-166; Walter J. Friedlander, "Oaths Given by US and Canadian Medical Schools, 1977: Profession of Medical Values," *Social Science & Medicine* 16 (1982), 115-120; Donald P. Irish and Daniel McMurry, "Professional Oaths and American Medical Colleges," *Journal of Chronic Disease* 18 (1965), 275-289.

¹⁷ Kao and Parsi, "Content Analyses"; University of Glasgow 1952-1958 Beta Club, "History of Club," <https://1952gubetaclub.org/> (accessed on 23 June, 2019).

¹⁸ Kao and Parsi, "Content Analyses," 883.

¹⁹ Orr, Pang, Pellegrino, and Siegler, "Use of the Hippocratic Oath."

scholarly research that most schools use their own different version of the oath, and it has been this way for many years.²⁰

In Canada, the use of the oath varies, and in some instances, is accompanied by detailed rituals (including selection of a reader, active repetitions, music recitals). Most institutions have used a variation of the “white coat ceremony.” This is typically a ceremony where students are given their first white laboratory coat and take the oath as a welcoming to the profession in front of family and friends. Some institutions have changed the name of the white coat ceremony to the “stethoscope ceremony,” reasoning that white coats are alienating while stethoscopes encourage listening.²¹ Other institutions use the oath at graduation. As an exceptional example, the students at Queen’s University in Kingston, Ontario arrange an annual oath ceremony, held with a historical tour of the campus, after dark by candlelight with stories about the history of the profession. This tour ends with a recitation of an English translation of the Greek Oath. The entire event is organized and run by the students in upper years for new incoming students.²²

The first information we have about oaths taken by Canadian medical students dates to the early 1920s thanks to an article published by Dr. Eben Carey (1889-1947), then Dean of the Marquette University School of Medicine. This was the first and last time the specific wording of any Canadian oath was explicitly published in the literature. We have no accessible written record of the use of an oath or its impact on medical ethics before that time, despite the fact that Canada’s oldest medical schools at McGill University and the University of Toronto have been in existence since 1829 and 1843 respectively. More recent research shows that the number of oaths being used is increasing at a dramatic rate, likely a reflection of the changing multi-cultural environment in which medicine is practiced (see Tables 5, 6 and 7).²³

²⁰ Carey, “The Formal Use of the Hippocratic Oath.”

²¹ Personal communication with undergraduate medical education administrators, not yet published.

²² Jacalyn Duffin, “A Sweet Tradition: The Oath of Hippocrates on Lake Ontario,” in Allan Peterkin and Pamela Brett-MacLean, eds., *Keeping Reflection Fresh—A Practical Guide for Clinical Educators* (Kent, Ohio: Kent State University Press, 2016), 225-228.

²³ Kao and Parsi, “Content Analyses.”

	1928	1958/ 1965	1977/ 1982	1989/ 1991**	1993/ 1977**	2000/ 2004**
Percentage of Schools Using an Oath–North America						
North America	43%	74%	94%	100%	98%	93%
Type of Oath Used–North America						
Hippocratic***	13/19	21/69	51/115	60/127	69/147	60/141
Geneva	0	12/69	30/115	47/127	34/147	28/141
Maimonides	0	0	11/115	14/127	4/147	2/141
Louis Lasagna	0	0	0	4/127	5/147	2/141
Other	6/19	36/69	23/115	2/127	35/147	49/141
Percentage of Schools Using an Oath–Canada only						
Canada	40%*	58%	63%	?	80%	?
Total Number of Schools	10	12	16	16	16	17
Type of Oath Used–Canada only						
Hippocratic***	0	0	2/10			
Geneva	0	1/7	1/10			
Maimonides	0	0	0			
Louis Lasagna	0	0	0			
Other	4/4	6/7	7/10			
* Author calculated values ** No Canadian data *** Including modified and modern versions						

Table 5: Summary of use of oaths in North American medical schools

Variations in modern medical oaths from the original oath would be interesting as they presumably reflect the ethical/moral values of the time and people that changed them. Similarly, how the oath is administered can tell us about the value each school places on ethics and tradition. From the preceding review, new reviews of the use of the oath have been done about every twenty years, more recently with increasing frequency. The ongoing study I am conducting is also interested in why institutions have changed the oath that they use, and how and in what ways the oath is used. The lack of specific details from the institutions and the oath that they use from each preceding study makes interpreting this data around the use of the oath difficult. The necessity to protect the institutions “privacy,” mandated by ethics review boards further complicates the issue. The use of the Oath is an ongoing development in the history of medicine.

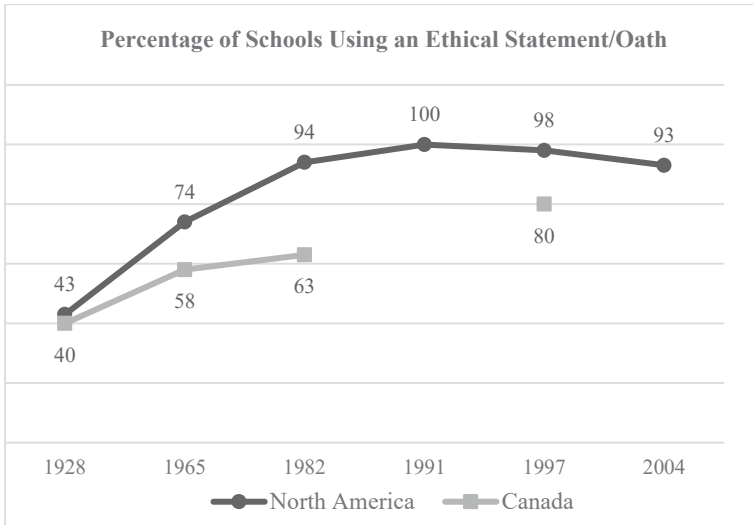


Table 6: Summary of all the studies conducted on the use of an oath in North America and Canada during the twentieth century. We see a clear trend of increasing use during the first ninety years (though the Canadian data is incomplete). In more recent years however, the trend seems to be reversing. The cause of this pendulum swing is unclear.

Historical projects are usually not subjected to ethics processes, but since a living person must complete the questionnaires, the Health Research Ethics Board must give their approval to our studies. Keeping anonymized data and publishing only trends makes a deep analysis of the data nearly impossible. Researchers in the area need to find a way to balance the needs for detailed institution-specific data and the attempt to protect their anonymity.

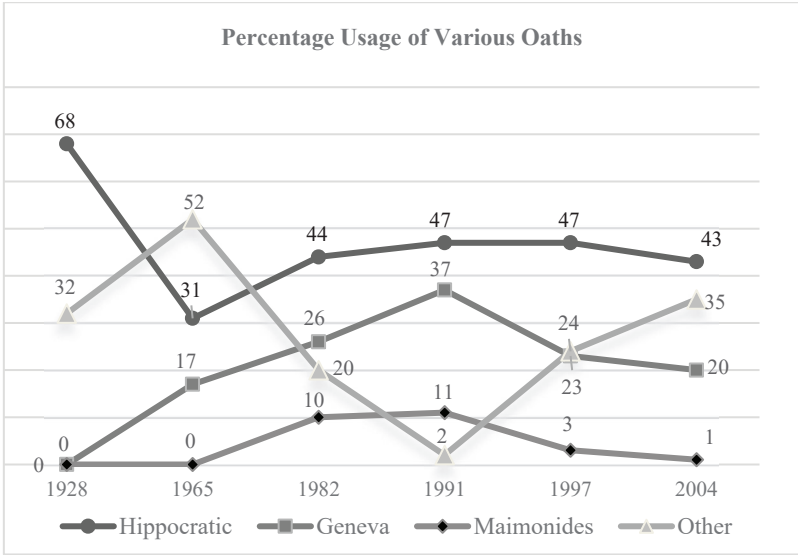


Table 7: A synopsis of data from the available studies on oath-taking at North American medical schools. All of these studies broke down the types of oaths used: the Hippocratic Oath (including modified versions), the Geneva Declaration, the Prayer of Maimonides, and other various oaths, showing the diversity in oaths used across North America. No singular trend can recently be made out. For the sake of clarity, the ‘Louis Lasagna Oath’ has been excluded here; the relevant percentages for the six time periods in order are: 0%, 0%, 0%, 3%, 3%, 1%.

Modern Uses of the Hippocratic Oath in Medical School Settings

The University of Western Ontario provides an example of the modern uses of the Hippocratic Oath in Canada. The same Oath has been used there since at least 1948. It is likely to have come from the United States in the early twentieth century,²⁴ since it is nearly identical to Oaths used at Columbia University College of Physicians and Surgeons and Cornell University Medical College (both in New York), as well as the Hahnemann Medical College and Jefferson Medical College (both in Philadelphia) in about

²⁴ Cf. Nathan Gamble, Benjamin Holler, Steven Thomson, Steven Murata, Frank W. Stahnisch, and Guel A. Russell, “Is the Writing on the Wall for Current Medical Oaths? A Brief Historical Review of Oath Taking at Medical Schools,” *Medical Science Educator* 9 (2019), 1-5, DOI: 10.1007/s40670-019-00704-6.

1924.²⁵ Some of the wording of the oath from the University of Western Ontario's Commencement Ceremony of 1948 can be seen as having its origins in similar oaths used in the United States before:²⁶

You do solemnly swear, each man by whatever he holds most sacred

That you will be loyal to the Profession of Medicine and just and generous to its members

That you will lead your lives and practice your art in uprightness and honor

That into whatsoever house you shall enter: it shall be for the good of the sick to the utmost of your power, you are holding yourselves far aloof from wrong, from corruption.²⁷

If we view the oath as a reminder of our collective medical history, of the work done by our predecessors to augment medicine's scientific values and trustworthiness, a loss of the Hippocratic Oath or the dilution into a plenitude of distinct traditions could lead to the loss of a unifying medical tradition. It risks the loss of physicians' attachment to those they serve: the patients.²⁸ Medicine today is practiced in a multi-cultural world, with many stakeholders. One of the most interesting and insufficiently understood traditions around the oath is the emergence of the White Coat Ceremony.²⁹ It is a ritual where new medical students recite an oath and are given their first white coat, as a welcoming to the profession. It is unclear when and how this tradition started. We know that it gained popularity in the early 1990s and is already being phased out at some institutions.

A second interesting fact that we as a community have not fully explored is that some institutions allow students to write their own oaths, or choose from a number of pre-selected oaths from which to recite. This exposes two key concepts, those of ethical "universality" and "pluralism."

²⁵ Carey, "The Formal Use of the Hippocratic Oath."

²⁶ Medical School, *The Hippocratic Oath* (Ithaca, NY: Cornell University, 1928).

²⁷ From the 1948 Oath from the Convocation Program at the University of Western Ontario.

²⁸ Marilyn Margaret Walton and Ian Kerridge, "Do No Harm: Is It Time to Rethink the Hippocratic Oath?" *Medical Education* 48 (2014), 17-27; Richard Cruess and Sylvia Cruess, "Updating the Hippocratic Oath to Include Medicine's Social Contract," *Medical Education* 48 (2014), 95-100.

²⁹ Orr, Pang, Pellegrino and Siegler, "Use of the Hippocratic Oath."

The first is the idea that there must be some system of ethics and beliefs that should apply to all similarly situated individuals. The second, and seemingly prevailing opinion based on the number of oaths used, is that there are different ethical beliefs and ideas which are opposite or in conflict with each other but are equally valuable. To our knowledge, no formal effort has been made to evaluate the content of the oaths through either of these frames. Similarly, no effort has been made to unify the oaths into one overarching oath used universally in Canada.

It is striking to see that in the field of Veterinary medicine, by comparison, both the Canadian and American Veterinary Medicine Associations (CAVM and AVMA respectively) have one official and easily available oath and, although it is not sworn universally by veterinarians graduating in their respective countries, the two oaths are very similar.³⁰ They are both modern documents and were recently re-ratified without change. The AVMA has a standing commitment to re-examine their oath every five years, with the last revision in 2010.³¹ The corresponding Canadian and American Medical Associations each claim responsibility for ethical guidelines, and both provide long lists of rules demanding adherence, but there is no overarching or standardized statement.

Numerous calls have been made in the literature for some time to rewrite the Hippocratic Oath to reflect the role that medicine plays in modern society, or to abolish it altogether.³² Before we commit to making any changes to the professional obligations taken or recited by physicians, we should first understand what oaths are currently used, why they are used, and why over time we have tended toward pluralism as opposed to unity as modelled by the veterinary world.

I argue in the light of the practice of veterinarians and in answering to the above-mentioned calls for a rewrite or abolition of the oaths, that we must make our oaths better publicly visible and need to call for society's input in a more direct way. This increased transparency is not only in keeping with community accountability, which is traditionally strongly emphasized in Canadian society, but is a first step to forming an approach

³⁰ CVMA: Canadian Veterinary Medical Association Oath 2004, <https://www.canadianveterinarians.net/about/veterinary-oath> (accessed on 20 May, 2015); AVMA: Veterinarian's Oath Reaffirmed 2004, <https://www.avma.org/KB/Policies/Pages/veterinarians-oath.aspx> (accessed on 20 May, 2015).

³¹ R. Scott Nolen, "Veterinarian's Oath Revised to Emphasize Animal Welfare Commitment," JAVMANews 2011, <https://www.avma.org/News/JAVMANews/Pages/x110101a.aspx> (accessed on 20 May, 2015).

³² Walton and Kerridge, "Do No Harm."

to the issue created by ethical pluralism. While one oath may not be feasible for all medical schools, a standard of transparency and an approach to addressing concerns over the oaths sworn should be considered our professional obligation.

We could send to our students a much stronger message of ethical conduct if all students nationally took an oath, or engaged in a training practice that would reflect on the ethical and social values embedded in the oath(s) over time. It could be a further reflection of the universality of Canadian healthcare and a next step to forming an approach to the issue created by ethical pluralism and multi-culturalism.

Conclusion

With the present chapter, I have aimed to review the state of the literature on the use of the Hippocratic Oath in North America. The changes over time were reviewed as reported by previous authors. I could also point out the difficulty in conducting this review without the text from the actual oaths collected by previous authors. Further, we have seen that there were many times during history when we know very little about the Oath and its use. With this ongoing study, it is my hope to publish and preserve our traditions for future generations. In collaboration with other North American medical schools,³³ we are endeavouring to complete a survey of the North American schools again and we will attempt to make available online and in archival form, the content of the oath from each of the schools, if applicable.

The use of a database may provide a solution to this work moving forward. We are attempting to assemble both an online and physical repository of all of the oath material we can collect from medical institutions. We are in contact with the authors of other modern reviews of the oath, asking for their surveys, and responses, which could be collated centrally. This would allow a better overview of what is changing in the swearing of Oaths in North America. It would allow future researchers to simply update the oath content from future surveys. More importantly, it would allow researchers to begin data mining and asking more detailed questions about how the oath influences medical ethics and ethical conduct or vice versa. In future publications, an attempt to explore the circumstances around the use of the oath at each institution in detail will be conducted, and that will be a combined effort from individuals at each institution involved.

³³ Gamble, Holler, Thomson, Murata, Stahnisch, and Russell, "Is the Writing on the Wall."

This is an evolving area in the history of medicine and medical ethics, and much more work is needed.

In summary nevertheless, it can be stated that medicine in Canada is a socially sponsored profession with multiple cultural and scientific obligations. Students at Canadian medical schools are taking or reciting a variety of ethical documents (oaths) with largely unknown content as a result of often contingent institutional histories to both the profession and the public. Calls for the abolition or rewriting of the Oath have been made in the recent literature.³⁴ Yet any change would be difficult because of the lack of understanding due to the very limited access to, and lack of, a central repository for the oaths and the rituals around their use. This situation is counter to the very social obligations which the oaths are likely to support. For both public interest and research facilitation, increased transparency and reflection around the Oath would be a great first step on a journey to unify our modern approach to physician ethics.

³⁴ Health Canada, “Overview of the Cost of Training Health Professionals.”

MILITARY MEDICINE

PIONEERS IN CANADIAN PLASTIC SURGERY EDUCATION: FULTON RISDON, STUART GORDON, AND ALFRED FARMER

MALIKA LADHA

SUMMARY: Reparative operations occurred in Canada even before the establishment of plastic surgery as a distinct medical specialty towards the beginning of the twentieth century. However, a clear divide from other surgical areas did not define the development of plastic surgery; rather, it was an inevitable process as young surgeons undertook the surgical challenges of their time. In particular, three prominent surgeons of the twentieth century were critical to this process: Dr. Fulton Risdon (1880-1968), Dr. Stuart Gordon (1903-1986), and Dr. Alfred Farmer (1904-2002).

While these pioneers had their primary background in general or dental surgery, Sir Harold Gillies (1882-1920), a founding figure of plastic surgery, provided each of them with their initial training in plastic surgery. Risdon, Gordon, and Farmer worked tirelessly to build the specialty in Canada in unique capacities, ranging from establishing the first Canadian post-graduate plastic surgery training program to founding the *Canadian Society of Plastic Surgeons*. They also played significant medical roles during the world wars at home and abroad. In addition, their clinical contributions have furthered our understanding of various conditions and refined therapeutic approaches in many realms such as the treatment of jaw fractures, burn healing, and management of Dupuytren's disease. As surgeons, leaders, innovators, and mentors, the contributions of Risdon, Gordon, and Farmer still remain significant today.

KEYWORDS: Canada, Alfred Farmer, William Gallie, Harold Gillies, Stuart Gordon, Fulton Risdon, Subspecialization, Plastic Surgery

PRECEPTOR: Dr. Robertson Harrop and Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

Introduction

Reparative operations were occurring in Canada even before the establishment of plastic surgery as a distinct medical specialty towards the beginning of the twentieth century. An early case example was reported at the November meeting of the Medico-Chirurgical Society of Montreal in 1887. Here, Dr. James Bell (1852-1911), a Montreal-based surgeon, detailed the principles of the surgical technique developed by German surgeon Karl Thiersch (1822-1895) at the University of Erlangen and Leipzig in 1874.¹ Thiersch's technique involved degranulation of an unhealthy tissue bed, application of skin from a remote area and provision of conditions which then enabled ingrowth of blood vessels. This approach is known today as "split thickness grafting." Bell successfully applied this method to treat six cases of chronic ulcers which otherwise could not be induced to heal, often leading to amputations.²

Over one hundred years later, this procedure—with minimal modification—is still in widespread use in burn and reconstructive surgery.³ Bell's application of Thiersch's technique represents an instance of how general surgeons and other non-specialized physicians contributed to some of the modern repertoire of plastic surgery.⁴ In fact, many of the early pioneers of plastic surgery had their initial training and professional careers in other specialties, such as general or dental surgery. This followed a pattern of specialization within medicine in general which had occurred towards the end of the nineteenth century, a process that went hand-in-hand with new forms of medical education, the industrialization of hospital care and medical research, as well as new economic pressures on medical communities and the health care system at large. McGill historian of medicine, George Weisz, has examined this in his seminal book *Divide and Conquer: A Comparative History of Medical Specialization*; he notes:

pressures to identify competent specialists began with surgery, the area of medicine that had changed most radically during the previous half-century. Not only were the surgeons now attempting many new

¹ William Bishop, *The Early History of Surgery* (London: Hale, 1960), 172-173.

² George Ross, Thomas Roddick, and James Stewart, "A Review of Medicine, Surgery, and Obstetrics, and Chronicle of Hospital Practice," *Canada Medical and Surgical Journal* 16 (1888): 737.

³ Jay W. Granzow and J. Brian Boyd, "Grafts, Local and Regional Flaps," in *Plastic and Reconstructive Surgery*, eds. Maria Siemionow and Marita Eisenmann-Klein (London: Springer London, 2010), 67-72.

⁴ Roy Porter, "Hospitals and Surgery," in *The Cambridge Illustrated History of Medicine*, ed. Roy Porter (Cambridge: Cambridge University Press, 1996), 202-245.

and extremely dangerous procedures, but the number of full-time surgical specialists...was growing rapidly due to the widespread creation of new hospitals. Furthermore, general surgery was gradually losing large areas of practice to narrower surgical specialties, including gynecology, ophthalmology, and neurosurgery.⁵

A clear divide from other surgical areas did not define the development of plastic surgery; rather, it was an inevitable process, as young surgeons undertook the surgical challenges of their time. The period 1921 to 1939 has been described by the well-known University of Toronto plastic surgeon, Dr. William K. Lindsay (1920-2008), in his historical account of early Canadian plastic surgery:

It is well documented that the history of modern plastic surgery is intimately related in general to the two recent major wars, World War I, 1914–1918, and World War II, 1939–1945, and in particular to the advent of explosive bullets and other missiles.⁶

As the clouds of World War I loomed over the world, only a small number of surgeons had experience with reconstructive surgical techniques, often stemming from treating industrial disasters, burns and, in certain cases, previous wartime experiences such as in the American Civil War (1861–1865) and the African Boer Wars (1880–1881 and 1899–1902).⁷ The sheer number of WWI casualties and the previously unseen injuries involving soldiers' heads, limbs, and bodies, created an enormous strain on the military surgeons who were called to respond. These devastating injuries prompted a need for new techniques and procedures, beyond the scope of general surgery in the 1910s and 1920s.

Canadian Surgeons' Experiences in World War I

Trench warfare during WWI resulted in a large number of maxillofacial wounds, the likes of which had not been seen previously. Fighting conditions led to the exposure of soldiers' faces to injury from small arms and artillery, which in turn resulted in horrific facial fractures and soft tissue

⁵ George Weisz, *Divide and Conquer: A Comparative History of Medical Specialization* (New York: Oxford University Press, 2006), 3-86, 135.

⁶ William K. Lindsay, "History of the University of Toronto Plastic Surgery Training Program," *Annals of Plastic Surgery* 22 (1989): 182-183.

⁷ Frank W. Stahnisch, "Military Medicine," in *Oxford Bibliographies in Military History*, ed. Dennis E. Showalter (New York: Oxford University Press, 2013), doi: 10.1093/obo/9780199791279-0130.

injuries.⁸ At the outset of the war, there was a limited understanding of specialized treatment of these injuries and a lack of appropriate treatment facilities. This shocked Sir Harold Gillies (1882-1960), an otolaryngologist from New Zealand serving in the Royal Army Medical Corps.⁹ Gillies set up a specialized “Jaw and Face” unit at the Cambridge Military Hospital in Aldershot, England. Prior to WWI, neither the University of Cambridge nor Oxford University had clinical medical faculties; it was soon realized, however, that it was necessary to also include the scientific and medical researchers present at those institutions in the war effort. These academics were thus called upon to assist in development of new diagnostic and therapeutic options for contemporary military medicine. Throughout the four years of WWI, numerous barracks, auxiliary hospitals and specialized rehabilitative units, similar to Gillies’ unit, were developed in the vicinity of the two traditional English universities allowing fruitful scientific and clinical collaborations to emerge (see Figure 6-1).¹⁰

Gillies and his colleagues developed innovative methods of tissue transfer for treating facial wounds, as highlighted in his post-war book entitled *Plastic Surgery of the Face Based on Selected Cases of War Injuries of the Face Including Burns*.¹¹ These new techniques and surgical approaches noticeably advanced the state of reconstructive surgery at the time.¹² Given the overwhelming volume of casualties sustained by trench warfare, this unit grew and was eventually transferred to Queen Mary’s Hospital in Sidcup, Kent in 1917.¹³ It was here that Gillies was introduced to the Canadian surgical unit under the command of Major Carl Waldron (1887-1977), a Johns Hopkins-trained otolaryngologist from the University of Toronto. Waldron’s patient load had increased substantially, and he had thus sent for Dr. Fulton Risdon (1880-1968) of Toronto who was serving with

⁸ Richard Gabriel, *Between Flesh and Steel: A History of Military Medicine from the Middle Ages to the War in Afghanistan* (Washington: Potomac Books, 2013), 1, 174, 218; Seth Thaller and W. Scott McDonald, *Facial Trauma* (New York: Marcel Dekker, 2004), 88, 439-440.

⁹ Neil Shastri-Hurst, “Sir Harold Gillies CBE, FRCS: The Father of Modern Plastic Surgery,” *Trauma* 14 (2012): 179-187; Paolo Rugiu and Philip J. Sykes, *A History of Plastic Surgery* (Berlin: Springer Verlag Berlin Heidelberg, 2007), 97-104.

¹⁰ Steve Sturdy, *Medicine, Health, and the Public Sphere in Britain, 1600-2000* (London: Routledge, 2002), 123-144.

¹¹ Harold Delf Gillies, *Plastic Surgery of the Face Based on Selected Cases of War Injuries of the Face Including Burns* (London: Henry Frowde at Oxford University Press and Hodder and Staughton, 1920).

¹² Thaller and McDonald, *Trauma*, 88, 339-440; Rugia and Sykes, *Plastic Surgery*, 97-104.

¹³ Rugiu and Sykes, *Plastic Surgery*, 97-104.

the Royal Canadian Army Medical Corps (RCAMC) in Britain.¹⁴ This facilitated the meeting of Gillies and Risdon.

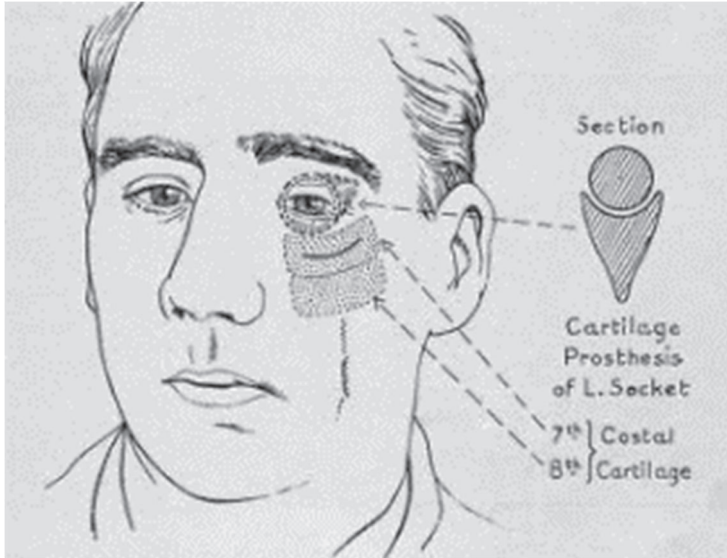


Figure 6-1: Gillies' illustration showing the use of costal cartilage grafts for orbital support.

Source: Gillies, *Plastic Surgery*, 45. Public Domain (retrieved through archive.org).

Born in St. Thomas, Ontario in 1880, Risdon had pursued his scientific and medical education at the University of Toronto. Rather unusual at the time, he had a dual education, graduating in both dentistry (1907) and medicine (1914).¹⁵ He joined the RCAMC when the war broke out in 1914 and soon emerged as a commissioned Captain. He became the first Canadian to train under Gillies at his specialized reconstructive surgery unit and surely learned a great deal during this time.¹⁶

¹⁴ Conrad I. Karleen, "Carl William Waldron, M.D., D.D.S. 1887–1977," *Plastic and Reconstructive Surgery* 60 (1977): 317–319.

¹⁵ Robert H. Ivy, "Obituary: E. Fulton Risdon, 1880–1968," *Plastic and Reconstructive Surgery* 44 (1969): 214–216.

¹⁶ John R. Taylor, Hoyle Campbell, A. Ross Tilley, and William D. Butt, "As I Remember: Dr. Fulton E. Risdon," *Annals of Plastic Surgery* 3 (1979): 88–93 (introduction by Taylor, individual perspectives by Campbell, Tilley and Butt).

Translating War Experiences to Civilian Surgical Practice

Following WWI and Risdon's release from the army in 1919, his clinical experience was transferred from the battlefield to his private practice in Toronto. This marked his personal and scientific commitment to the newly emerging field of plastic surgery, becoming "the first in Canada to devote himself to practice of plastic surgery, at a time when general surgery opposed subspecialization of any kind."¹⁷ Canadian pioneers in neurosurgery, cardiovascular surgery and thoracic surgery experienced similar opposition, even though these areas had already been accepted as specialized fields in many European countries.¹⁸

During the interwar years, Risdon, like many scientific-minded physicians and surgeons, went to the United States for two years to pursue post-graduate training at the Manhattan Infirmary in New York City and St. Joseph's Hospital in Chicago. He then returned to Toronto in 1921 with appointments as a professor of Oral Surgery with the University of Toronto and a staff member at the Christie Street and Toronto Western Hospitals, remaining on staff at the latter for forty-five years. Dr. Risdon became well-known among surgeons of the head and face for his description of a technique of using wires to provide fixation of the mandibular fractures—the so-called "Risdon Wire" (see Figure 6-2). Prior to this, it had been difficult to fixate mandibular fractures and achieve reliable bone healing.¹⁹

In hindsight, it may seem puzzling that Risdon received more recognition internationally than he did at home.²⁰ He was a founding member of two of the world's earliest plastic surgery organizations located in the United States: the American Association of Plastic Surgeons in 1921 and the American Board of Plastic Surgery in 1932.²¹ Yet despite his commitment to the field, Risdon was unable to attain a position related to plastic surgery with the University of Toronto. This was likely due to the

¹⁷ *Ibid.* 88.

¹⁸ Edward Shorter, *Partnership for Excellence—Medicine at the University of Toronto and Academic Hospitals* (Toronto: University of Toronto Press, 2013), 146-179.

¹⁹ *Ibid.*, 170-171.

²⁰ Leith G. Douglas, *History of the Canadian Society of Plastic Surgeons* (Canada: Anita Wood, Can Woods Communication Ltd, 1983), 11. This work is also available online with, in some instances, different page numbers; all page numbers cited here refer to the print version; <https://tspace.library.utoronto.ca/bitstream/1807/24714/1/history%20of%20canadian%20plastic%20surgeons.pdf> (accessed on 11 August, 2020)

²¹ Karleen, "Waldron," 317-319.

relations between Dr. William Gallie (1882-1959) and Risdon.

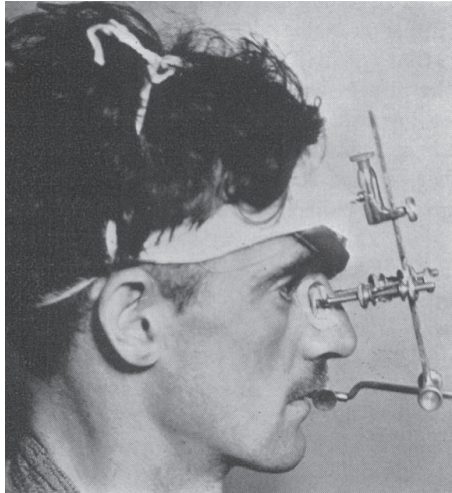


Figure 6-2: An external forehead splint in combination with the “Risdon Wire” (internal) applied to the upper and lower teeth.

Source: Fulton Risdon. “The Surgical Treatment of Facial Injuries,” *Canadian Medical Association Journal* 38 (1938): 33.

In his historical account of the development of the Canadian Society of Plastic Surgeons, Toronto-based plastic surgeon Leith Douglas (1930-2011) highlighted the climate within the surgical community at the time:

The most influential surgeon in Toronto during that time was W. E. Gallie, head of the department of surgery at the University of Toronto. Several surgeons who knew Risdon and Gallie have said there was little love lost between the two men.²²

In his role as Head of the Department of Surgery, Gallie significantly influenced the development of surgery in Toronto. Prior to Gallie’s appointment, medical graduates wishing to become surgeons sought mentors under whom they could apprentice. Gallie established a formalized and structured approach to surgical training such that the University’s curriculum would be much more than an accumulation of hospital programs. He introduced, for example, common learning rounds for

²² Douglas, *History*, 11.

residents and took steps to ensure that teaching did not differ among hospital sites. Referred to as the “Gallie course,” it was the first of its kind in Canada and served as a model for other Canadian universities.²³

While Risdon was one of the first surgeons in Canada to develop a specialized operational and therapeutic portfolio in plastic surgery, he unfortunately did not have a direct successor.²⁴ Instead of consulting Risdon to train young medical trainees, Gallie selected two promising surgeons from Toronto, Dr. Stuart Gordon (1902-1986) and Dr. Alfred Farmer (1904-2002) to train under Sir Harold Gillies. The responsibility of securing the future of the field in Canada thus fell to these two surgeons.

Stuart Gordon, born in Fernie, British Columbia, in 1902, was an honours student at Markham High School in Ontario.²⁵ Alfred Farmer, often affectionately called “Farm,” was born in Florida, USA, in 1904. As a child, his family first moved to Boston, then to England before eventually settling in St. Catharines, Ontario, as a result of his father’s desire to pursue peach farming.²⁶

Gordon graduated from medical school at the University of Toronto in 1926 and subsequently trained there in general surgery. Farmer also graduated from the University of Toronto in 1927 and then completed his rotating internship at the Hospital for Sick Children and the Toronto General Hospital. He began his surgical residency in 1930.²⁷

Gallie recognized the need for surgeons in Canada trained in reconstructive procedures. As such, he made arrangements for Farmer and Gordon to train under Gillies in England. Gillies and Gordon formed a strong mentor-mentee relationship and friendship during this time.²⁸ Farmer, on the other hand, chose to spend some of his training time at other centres on the European continent, perhaps due to his disagreement with some of Gillies’ teachings.²⁹

Meanwhile in Toronto, Gallie was introducing many changes, including reorganization of the Department of Surgery by specialty to increase the independence and the success of the individual operational teams.³⁰ In 1930, Gallie expressed in a report to the Dean of Medicine:

²³ Shorter, *Partnership*, 43-46, 116-118.

²⁴ Douglas, *History*, 10-12.

²⁵ Shorter, *Partnership*, 171.

²⁶ William K. Lindsay, “Alfred Wells Farmer, C.M., M.B.E., M.B., F.R.C.S.C., 1904 to 2002,” *Plastic and Reconstructive Surgery* 112 (2003): 911-913, esp. 912.

²⁷ Shorter, *Partnership*, 171.

²⁸ Douglas, *History*, 12-13.

²⁹ Lindsay, “Alfred Wells Farmer,” 911-913.

³⁰ Shorter, *Partnership*, 146-147.

During this year, an experiment has been tried of placing all the fractures under the care of a small group of surgeons... the result has been arousing of greater interest in fractures, the establishment of the first surgical follow up clinic in the hospital and, it is hoped, the more successful treatment of patients.³¹

In 1932, the returning Drs. Gordon and Farmer, equipped with new skills and clinical knowledge in reconstructive surgery, accepted positions as active staff at the Toronto General Hospital and the Sick Children's Hospital, respectively.

Stuart Gordon and Alfred Farmer Emerge as Pioneers and Mediators of a New Surgical Subspecialty

The return of Gordon and Farmer to Canada coincided with the emergence of surgical subspecialties. By 1932-1933, Gallie had officially organized a fracture ward in which a specialized group of physicians treated fractures. Three focused clinics were subsequently organized: one for varicose veins and ulcers of the leg under Dr. Robert Janes (1894-1966), one for rectal surgery under Dr. Joseph MacFarlane (1894-1966) and one for plastic surgery under Dr. Gordon. In his research on the history of medicine in Toronto, historian Edward Shorter notes, "it was the best and brightest whom Gallie was selecting for these new specialized services."³²

As Gordon was developing this specialized ward, the Royal College of Physicians and Surgeons of Canada in 1939 certified Farmer in three surgical specialties: general, orthopedics, and plastic surgery. In addition, Farmer focused on the treatment of burns, in particular the fluid and blood requirements of these patients. This, in combination with his technique of applying aluminum powder to burn wounds, greatly improved the care of burn patients at that time.³³ For the young Drs. Gordon and Farmer, these experiences sharpened their clinical techniques and their ability to lead other colleagues—skills which would prepare them for their future involvement in the next war.

The onset of World War II presented yet another medically demanding period within the same generation, prompting further medical specialization, advanced surgical techniques, as well as more refined and

³¹ *Ibid.*, 146.

³² *Ibid.*, 147.

³³ Douglas, *History*, 13.

faster emergency care chains.³⁴ Early in WWII, Dr. Gordon joined the RCAMC and served in England. In recognition of the previous war's need for reconstructive surgery, Gordon established and led an autonomous Canadian Unit for Plastic and Reconstructive Surgery at Basingstoke, Hampshire, England. Between the years of 1942 and 1945, Dr. Farmer served as the Chief Surgeon of the Royal Canadian Air Force (RCAF) which, under his direction, "established the Plastic Surgery and Jaw Injury Unit at East Grinstead, Sussex, England... where modern plastic surgery is said to have begun... [and] many patients, including Battle of Britain casualties, received major reconstructive surgeries at these two Canadian units."³⁵ Farmer, at this time, was also responsible for the creation of specialty medical services within the Army, Navy, RCAF, and the Department of Veterans Affairs.

Dr. Farmer also recognized the need for specialty medical services in Canada for returning soldiers. Upon returning to his home country after the war, he recommended the formation of a Plastic Surgery Unit at the Toronto Veterans Affairs Hospital at Sunnybrook in 1943.³⁶ Under a similar vision, Gordon organized a unit for veterans at Christie Street Hospital in Toronto.³⁷ Following the war, Farmer returned to the Hospital for Sick Children and also performed surgeries at the Wellesley and Toronto General Hospitals. Farmer's colleagues and peers remember his boundless enthusiasm in approaching his hectic schedule:

He became one of the busiest surgeons in the city...He would finish an operation in one hospital and then be seen running to his car to get to the next hospital and the next operation.³⁸

Farmer was appointed as a Queen's Honorary Surgeon for two years and was thus selected to provide medical services to members of the British royal family. Meanwhile, Dr. Gordon served as the chief of plastic surgery at the Toronto General Hospital, which had strong academic connections to the University of Toronto. He worked tirelessly to establish a section for plastic surgery within the Royal College of Physicians and Surgeons of Canada and became its first committee examiner in plastic surgery, with the

³⁴ Frank W. Stahnisch, "Putting Experimental Dynamics into the Field: The German 'Ostfeldzug' and the Creation of Emergency Care Chains in Military Neurology and Neurological Surgery, 1941–1945," *European Neurology* 72 (2014): 333–339.

³⁵ Lindsay, *History*, 183.

³⁶ Lindsay, "Alfred Wells Farmer," 912–913.

³⁷ Douglas, *History*, 13.

³⁸ *Ibid.*

inaugural certifying examination taking place in 1947.³⁹ He accomplished this despite resistance from the specialty of general surgery.

The formation of new specialties within medicine at the time was met with ambivalence from established fields. For example, the development of geriatrics in Canada faced constant opposition from internal medicine, perhaps due to the perceived threat from existing practitioners.⁴⁰ Plastic surgery was no exception, experiencing similar opposition from general surgery. As Douglas has highlighted in his *History of the Canadian Society of Plastic Surgeons*:

It was only natural for the general surgeons of the time to resist the development of specialties that would take many areas of surgery out of their hands...To say one wanted to become a plastic surgeon then was at once to risk incurring the wrath of other surgeons jealous of their territories.⁴¹

Despite this opposition, Gordon, Farmer and other surgeons interested in the new field of plastic surgery met on November 7, 1947, at the Queen Mary Veterans' Hospital in Montreal to form the *Canadian Society of Plastic Surgeons* (CSPS).⁴² The establishment of the society became a major landmark for the discipline's cohesion, proliferation, and acceptance in Canada. Plastic surgeon and founding member Dr. Hoyle Campbell (1915-1998) recounted the practical circumstances fueling the formation of the society:

Forming the Society consolidated the gains made for the field during the war... It wasn't nationalism that led us to form our own group. It was because we'd go to an American meeting and they'd be concerned about problems in some part of the United States that had no real application to us...With our own society we could have our own forum that would apply to the Canadian scene.⁴³

Despite not being present at this founders meeting, Risdon was selected to serve as the inaugural CSPS president. Under Risdon's leadership, it was decided that the society would host annual meetings which included a scientific program. The annual meeting continues to date,

³⁹ Lindsay, *History*, 183.

⁴⁰ David Hogan, "History of Geriatrics in Canada," *Canadian Bulletin of Medical History* 24 (2007): 131-150.

⁴¹ Douglas, *History*, 10.

⁴² *Ibid.*, 9.

⁴³ *Ibid.*, 21.

with the sixty-eighth annual meeting having recently being held in Montreal, Quebec, in June 2014. Dr. Farmer became the third president of the CSPS president in 1950 and Gordon served as the fourth president in 1951.

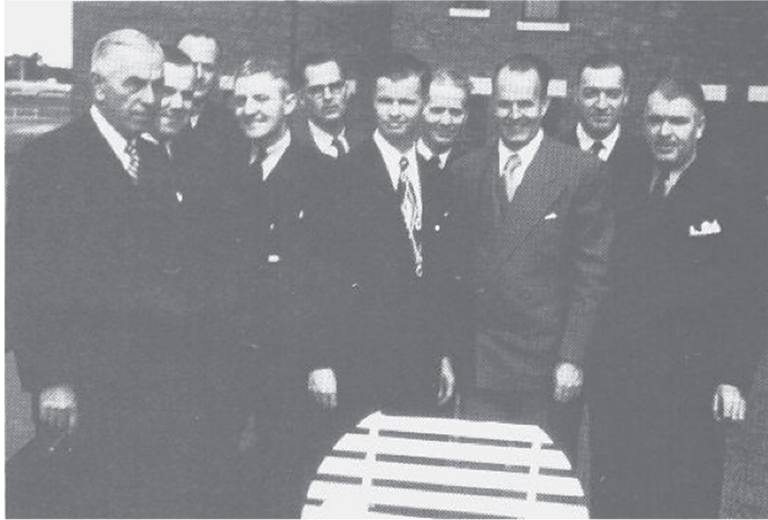


Figure 6-3: CSPS members at the 1949 annual meeting in Montreal; Fulton Risdon stands far left.

Source: Douglas, *History*, 61; with kind permission of the Canadian Society of Plastic Surgeons.

In his historical account of the CSPS, Douglas details some of its early undertakings, including: acquiring an affiliation with the *Canadian Medical Association*, appointing a committee to communicate with the *Royal College of Physicians and Surgeons of Canada*, and providing recommendations regarding resident training programs and examinations (see Figure 6-3). In addition, the society sometimes provided formal opinions on social issues. For example, they encouraged Blue Cross and other insurance companies to assist with funding of treatment of congenital deformities.⁴⁴ The CSPS also took on the responsibility of communicating with the public about the role of plastic surgeons in Canada.

⁴⁴ *Ibid.*, 24.

After the Formation of the Canadian Society of Plastic Surgery

As the society grew in numbers and sophistication, Farmer was appointed as the chief of surgery at the Hospital for Sick Children in Toronto in 1956. His contributions there included the reorganization of the department of surgery into seven divisions: general surgery, plastics, orthopedics, urology, neurosurgery, cardiac surgery, and research. He and his clinical associates developed an outpatient surgery facility—the first in Canada—which in turn decreased the length of hospital stays.⁴⁵ Farmer also became the chairman of the medical advisory committee of the Ontario Society for Crippled Children, later renamed the Easter Seals Ontario.

Meanwhile, Gordon developed the country's first post-graduate training program in plastic and reconstructive surgery in 1958. Called the *Inter-Hospital Coordinating Committee for Plastic Surgery*, this program was initially shared between the University of Toronto and McGill University.⁴⁶ Residents admitted to this training program spent portions of their residency at each institution. Toronto and Montreal soon after established their own residency programs in plastic surgery.⁴⁷ In addition, the CSPS recommended to the *Royal College of Physicians and Surgeons of Canada* that the training period be extended to five years, consisting of two years of general surgery, two years of plastic surgery and another year in either one of the aforementioned fields or another surgical specialty.⁴⁸ After retiring from the Hospital for Sick Children, the University of Toronto invited Farmer to return to work at the University's newest addition, Sunnybrook Hospital. Here his role was to set up the Department of Surgery and its subspecialty divisions which still exist today.⁴⁹

⁴⁵ Lindsay, "Alfred Wells Farmer," 913.

⁴⁶ Lindsay, *History*, 183.

⁴⁷ *Ibid.*

⁴⁸ Douglas, *History*, 82.

⁴⁹ Robin Humphreys, *Department of Surgery—Our History: Milestones from 1875 to the Present*, <http://www.sickkids.ca/Department-of-Surgery/OurHistory/index.html> (accessed on 7 November, 2014).

Conclusion

During their distinguished careers, Risdon, Gordon and Farmer made significant contributions to the emerging field of plastic surgery both in Canada and abroad. Each contributed not only to the knowledge of treatment of plastic surgery conditions, but also to the creation of plastic surgery as a defined specialty in Canada.

Risdon's legacy includes the use of wires for stabilization of the mandible, the use of bone grafting in the treatment of difficult mandibular injuries, and the "Risdon approach" for mandibular fractures and arthroplasties of the tempo-mandibular joint.⁵⁰

Gordon devised a method of prosthetic joint replacement⁵¹ and advanced research and clinical management of Dupuytren's Disease.⁵² In conjunction with Toronto-trained histologist Dr. Arthur Ham (1902-1992) of the University of Toronto's Department of Anatomy, Gordon explored the fate and physiology of free-grated bone. They demonstrated that autogenous cancellous chips inserted in muscle could undergo osteogenesis, giving rise to new bone.⁵³

Farmer pioneered a method of transferring bone from one leg to the other such that the donor bone never lost its blood supply for the treatment of pseudarthrosis of the tibia.⁵⁴ He studied the use of cartilage grafts for tracheal deformations⁵⁵ and conducted early research in burn management.⁵⁶

⁵⁰ Shorter, *Partnership*, 170-171; Carl W. Waldron and E. Fulton Risdon, "Mandibular Bone Grafts," *Proceedings of the Royal Society of Medicine* 12 (1919): 11-21; E. Fulton Risdon, "Treatment of Nonunion of Fractures of Mandible by Free Autogenous Bone Grafts," *Journal of American Medical Association* 79 (1922): 297-299; E. Fulton Risdon, "Arthroplasty of the Temporomaxillary Joint," *Journal of American Medical Association* 85 (1925): 2011-2013.

⁵¹ Douglas, *History*, 12.

⁵² Stuart Gordon, "Dupuytren's Contracture: Recurrence and Extension Following Surgical Treatment," *British Journal of Plastic Surgery* 9 (1957): 286-288; Stuart Gordon and William Anderson, "Dupuytren's Contracture: Plantar Involvement," *British Journal of Plastic Surgery* 14 (1961): 129-131; Stuart Gordon "Dupuytren's Contracture Following Injury," *British Journal of Plastic Surgery* 17 (1964): 421-423.

⁵³ Arthur Ham and Stuart Gordon, "The Origin of Bone that Forms in Association with Cancellous Chips Transplanted into Muscle," *British Journal of Plastic Surgery* 5 (1953): 154-160.

⁵⁴ Alfred W. Farmer, "The Use of a Composite Pedicle Graft for Pseudoarthrosis of the Tibia," *Journal of Bone and Joint Surgery, American Volume* 24 (1952) 591-600.

⁵⁵ Douglas, *History*, 13.

⁵⁶ Alfred W. Farmer, "Treatment of Burns," *Canadian Nurse* 49 (1953): 605-609; William A. Brown, Alfred W. Farmer, and Wilbur R. Franks, "Local Application of

His research was reported in sixty-four peer-reviewed publications and eventually resulted in his being awarded of the Order of Canada.⁵⁷

Outside of their hospital research careers, Risdon, Gordon and Farmer are also remembered for their personalities and social amiability. Risdon, who held memberships at various social clubs, also spent time on the best golf courses of the cities at which he attended scientific meetings, sometimes even missing academic sessions on this account.⁵⁸ Gordon, an avid fisherman, would generally not eat what he caught, preferring to share his catch with his friends.⁵⁹ Following in his father's footsteps, Farmer and his wife landscaped their farm near Ontario's Blue Mountain with peach trees.⁶⁰

Risdon, Gordon, and Farmer were seemingly ahead of their time. By tackling the challenges of their era with innovation and relentless motivation, they inevitably became part of the process which advanced subspecialization in medicine and surgery. They also trained and sculpted young minds of the next generation's plastic surgeons, such as Dr. Lyman Barclay (1900-1972), Dr. Hoyle Campbell, and Dr. William K. Lindsay, who further matured the specialty in the post-war phase of plastic surgery development. As noted by Douglas, the work of Risdon, Gordon and Farmer laid the foundation for the next generation:

These were great years in plastic surgery, for at last the personnel was available to permit research to go ahead and to allow the men with ideas to try them out... The seeds of the specialty had been sown and were flourishing in the majority of the hospitals at this time, where preparations were in place for this new surge of knowledge.⁶¹

Today, the specialty of plastic surgery in its modern form has grown further into areas of subspecialization. Canada's eleven accredited residency programs continue to train future generations of plastic surgeons. The *Royal College of Physicians and Surgeons of Canada* recognizes the following as critical components to these training programs: congenital defects,

Aluminium Foil and Other Substances in Burn Therapy," *American Journal of Surgery* 76 (1948): 594-604; Alfred W. Farmer, Jarold S. Maxmen, Leslie R. Chasmar, and Wilbur R. Franks, "Aluminium Powder a Dry Dressing in Exposure Treatment of Thermal Burns," *Plastic Reconstructive Surgery* 14 (1954): 171-177.

⁵⁷ Lindsay, "Alfred Wells Farmer," 913.

⁵⁸ Ivy, "Obituary," 214-216.

⁵⁹ Douglas, *History*, 13.

⁶⁰ Lindsay, "Alfred Wells Farmer," 913.

⁶¹ Douglas, *History*, 59-60.

maxillofacial surgery, benign and malignant tumor surgery, breast reconstruction, burns and wounds, hand surgery, traumatic and reparative surgery, aesthetic surgery, and microvascular surgery. In addition, the *Canadian Society of Plastic Surgeons* remains the voice of the specialty of plastic surgery in Canada in its continued development in clinical expertise, research, education, and public awareness. By laying conceptual and practical foundations upon which the specialty was built, Drs. Risdon, Farmer, and Gordon ensured a bright future for plastic surgery in Canada.

CHILDREN, WOMEN, AND CHANGING GENDER ROLES IN MODERN MEDICINE

THE FORGOTTEN WORLD OF CHILDREN'S TEETH: THE MEDICAL CASE HISTORIES OF JOSEPH HURLOCK

ESTHER E. ATKINSON

SUMMARY: Eighteenth-century Britain is often described as a child-centred nation, where medical practitioners, increasingly concerned with children's health, began to pen medical texts and advice books aimed at parents, offering practical information on childcare. Unlike earlier authors who had repeated ancient theories, eighteenth-century writers established authority over children's bodies through first-hand observations and experiences, presented in patient case histories. In 1742, the surgeon Joseph Hurlock published a treatise devoted entirely to children's teeth, the first of its kind published in English. Despite its primacy as the first children's dental textbook, *A Practical Treatise Upon Dentition; or, the Breeding of Teeth in Children* has received little attention from scholars in the history of childhood, medicine, or dentistry. This chapter argues that Hurlock's use of case histories contributed to the construction of his medical authority. It considers how his patients' cases fashioned Hurlock into an expert by presenting his observations and experiments in lancing infants' gums to save them from death during teething. Narrating twenty cases, Hurlock uses evidence of this remedy's success to challenge established medical theories, argue against the destructive influences of wet-nurses, and convince parents of the important role he played in their children's survival. Based on examination of Hurlock's medical cases, this chapter considers the discursive structure of his patient histories to investigate how authority was constructed in the context of children's medical care in eighteenth-century Britain.

KEYWORDS: Joseph Hurlock, Medical Authority, Dentistry, Teething, Childcare, Paediatrics, Eighteenth-Century Britain, Case Histories.

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Introduction

On January 30, 1742, the *Daily Gazetteer* announced a forthcoming publication by the surgeon, Joseph Hurlock (1680?-1769?).¹ The book, *A Practical Treatise Upon Dentition; or The Breeding of Teeth in Children*,² providing “many useful Notes on the Coincidence of the most acute Diseases of Infants, with their Dentition”, was released for sale to the public the next month.³ Historians of dentistry and paediatrics claim this text is the first book about children's dentistry published in English.⁴ At first glance, Hurlock's treatise does appear to be an early example of such a text, but upon closer inspection it also offers historians something beyond the care of the mouth and teeth. Hurlock explains that his “enquiry” into a “dangerous period” of a child's life is not about teeth *per se*, but to the process of teething, which he argues is a leading cause of infant mortality in the eighteenth century.

Joseph Hurlock is a rather elusive figure in British medical history, making it difficult to trace his life's story.⁵ According to published sources, he was likely trained by one of the eighteenth century's better-known anatomists and man-midwives, James Douglas (bap. 1675-d. 1742).

¹ *Daily Gazetteer*, January 30, 1742.

² Joseph Hurlock, *A Practical Treatise Upon Dentition; or, the Breeding of Teeth in Children: Wherein the Causes of the Acute Symptoms Arising in that Dangerous Period are Enquired into; the Remedies both of the Ancients and Moderns for the Cure of those Evils, and the Prevention of their Fatal Effects, are Examined Impartially; Some Errors of Consequence Corrected; Objections Answered; and a Right Practice Recommended Upon Observation and Experience. The Whole Illustrated with Proper Cases and Remarks* (London: privately printed for the author, 1742).

³ *London Evening Post*, February 13-16, 1742.

⁴ Some authors cite Hurlock's work as the first children's dental text published in English. However, it is not the first text to discuss children's teeth, as others appeared in other languages. See Harry Bloch, “History of Pediatrics: Part 2,” *Southern Medical Journal* 86 (1993): 85-90; Ashley Densham, “A Review of the Progress of Dental Science and Literature from the Earliest Ages,” *Proceedings of the Royal Society of Medicine* 2 (1909): 71-98; Aletha A. Kowitz and Hannelore T. Loevy, “Paediatric Dentistry: Fauchard and Before,” *International Dental Journal* 43 (1993): 239-244; John Rendle-Short, “The History of Teething in Infancy,” *Proceedings of the Royal Society of Medicine* 48 (1955): 132-138.

⁵ According to the National Trust's history of the A la Ronde estate, Joseph Hurlock was born in 1680 and died in 1769. National Trust, “The History of A La Ronde,” <https://www.nationaltrust.org.uk/a-la-ronde/features/the-history-of-a-la-ronde>, <https://www.nationaltrust.org.uk/a-la-ronde/documents/discover-the-people-behind-a-la-ronde.pdf> (accessed on 11 August, 2020).

According to Helen Brock, among Douglas' publications was a list of "able assistants," one of whom was Joseph Hurlock.⁶ Additionally, it is to Douglas that Hurlock dedicates his book, *A Practical Treatise* (see Figure 7-1.), which appeared the same year Douglas died. At the time Hurlock published his text, he had already been a practicing surgeon for several years. The historian of paediatrics, George F. Still, identified Hurlock in a list of qualified surgeons from 1747, but since the published case notes in *A Practical Treatise* were dated much earlier, Hurlock was likely in practice before this date.⁷

Hurlock was also the head of a successful middle-class family. In 1706, he married Elizabeth Constable and together they had at least three children.⁸ His two sons, Philip Hurlock, FRS (1713-1801) and Joseph Hurlock II, FRS (1714-1793) followed in their father's footsteps and became licensed surgeons.⁹ They were elected Fellows of the Royal Society in 1780 and 1782, respectively.¹⁰ In 1748, Hurlock's younger son accepted an opportunity to work overseas. It was announced in the press that "Joseph Hurlock, Esq.; Son of Mr. Joseph Hurlock, an eminent Surgeon in Coleman-Street" was appointed by the Directors of the East India Company to be "their Governor of Fort Marlborough, Bencoolen."¹¹ Another of Hurlock's children, a daughter, married the surgeon Mr. James Broughton (d. 1760?) in 1749. At the time of her marriage, she was described in the newspaper announcement of her wedding as "a young Lady of great Merit, and a considerable Fortune."¹²

⁶ Helen Brock, "Douglas, James (bap. 1675, d. 1742)," *Oxford Dictionary of National Biography* (Oxford University Press, 2004).

⁷ George Frederic Still, *The History of Paediatrics; the Progress of the Study of Diseases of Children up to the End of the 18th Century* (London: Dawson, [1931] 1965), 363.

⁸ National Trust, "The History of A La Ronde" n.p.

⁹ Peter John Wallis, Ruth V. Wallis and Thomas D. Whittet, *Eighteenth Century Medics: Subscriptions, Licenses, Apprenticeships*, 2nd ed., (Newcastle upon Tyne: Project for Historical Biobibliography, 1988), 311.

¹⁰ Royal Society, "List of Fellows of the Royal Society, 1660–2007," www.royalsoc.ac.uk/library (accessed on 11 August, 2020).

¹¹ "News," *London Evening Post*, July 23-26, 1748.

¹² "News," *Whitehall Evening Post or, London Intelligencer*, June 27-29, 1749.

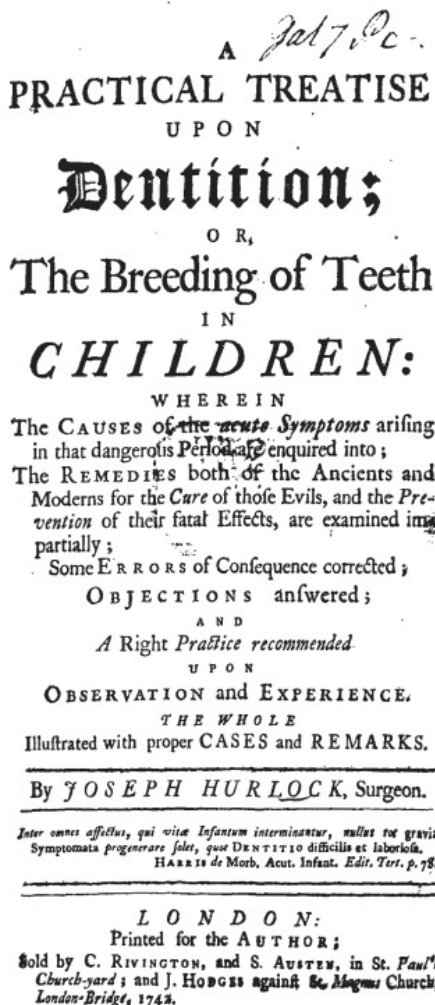


Figure 7-1: Title page of Hurlock's *A Practical Treatise Upon Dentition; or The Breeding of Teeth in Children*, privately printed for the author in 1742.

Source: Public Domain.

These brief accounts indicate Hurlock had a successful career as a London surgeon. Although he only published one book, his text is an excellent illustration of the genre of medical publications that were gaining in popularity over the course of the eighteenth century. *A Practical Treatise* was one of the many publications specifically devoted to the specialized management and care of children. As this chapter shows, Hurlock's text is part of the ongoing practice of medical practitioners to position the child as a special category of medicine, which was already underway since the end of the seventeenth century in Britain.¹³ It argues that, like other texts of the period, the work reflects the intellectual shift away from older authorities to a reliance on new knowledge gained from collecting and recording medical cases and observations. Through an examination of Hurlock's case reports, this chapter describes how the publication of these case observations allowed Hurlock to position himself as an expert in the care of infants during the precarious stage of teething, using the knowledge acquired through first-hand experience.¹⁴

This chapter begins with a brief overview of dental care in eighteenth Britain, to provide the context in which *A Practical Treatise* was published, followed by a brief overview of how the book has been analysed in the scholarship of paediatric and dental history. In order to examine Hurlock's treatise through a different analytical framework, this chapter then highlights aspects of the text that are indicative of how eighteenth century medical practitioners asserted their authority as experts in caring for the young. This includes voicing their concerns over the high rate of infant mortality, the erasure of women as knowledgeable caregivers, and the presentation of medical case observations.

Dental Practice in Eighteenth-Century Britain

Hurlock published his text at a time when dentistry in eighteenth-century England was occupied by a number of different practitioners willing to offer their services in the care of the mouth. This included physicians, surgeons, blacksmiths, corn-cutters, watchmakers, apothecaries, hairdressers, and

¹³ See, for example, Hannah Newton, "Children's Physic: Medical Perceptions and Treatment of Sick Children in Early Modern England, c. 1580–1720," *Social History of Medicine* 23 (2010): 456–474; Hannah Newton, *The Sick Child in Early Modern England, 1580–1720* (Oxford: Oxford University Press, 2012), especially Chapters 1 and 2.

¹⁴ Lorraine Daston, "The Empire of Observation, 1600–1800," in *The Histories of Scientific Observation*, eds. Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 81.

individuals from a number of other unclassified professions.¹⁵ Some of the services offered include cleaning and extracting teeth, making a custom set of artificial teeth, and selling tinctures and solutions intended to cure bad breath among other ailments.¹⁶ Many of those engaged in the treatment of the public's teeth were itinerants, travelling around the country seeing patients (see Figure 7-2). The movements of these practitioners have been traced through the advertisements placed in local newspapers, announcing to the public when they would arrive, where they would stay, what procedures they offered, and the costs of treatment.¹⁷ Since these individuals were operating in a marketplace that was driven by a demand for a wide range of services, no one group maintained control over care of the mouth before 1750 in Britain; competition remained open and adaptive to the needs of the public.¹⁸

The fact that individuals from different occupations devoted themselves to the care of teeth in Britain meant the British public could choose from a variety of options. This diversity, however, meant that the formal education of practitioners for teeth was variable and relied on experience rather than written textual sources.¹⁹ Although this allowed those from a range of backgrounds in Britain to fashion themselves as tooth-drawers or adapt their training to care for the mouth, other parts of Europe adopted a very different approach.

¹⁵ Anne Hargreaves, *White as Whales Bone: Dental Services in Early Modern England* (Leeds: Northern Universities Press, 1998), 152-171; Anne Hargreaves, "Dentistry in the British Isles," *Clio Medica* 72 (2003): 175-176; Christine Hillam, *Brass Plate and Brazen Impudence: Dental Practice in the Provinces 1755-1855* (Liverpool: Liverpool University Press, 1991), 11.

¹⁶ John F. Beal, "'Only Here for a Few Days': Peripatetic Dentists in Yorkshire in the Eighteenth Century," *Dental Historian* 29 (1995): 46-62.

¹⁷ *Ibid.*, 46; Hargreaves, "Dentistry in the British Isles," 178-181; Hillam, *Brass Plate and Brazen Impudence*, 16.

¹⁸ Hargreaves, *White as Whales Bone*, 180.

¹⁹ *Ibid.*, 182.



Figure 7-2: Itinerant dentist of the seventeenth century. A street scene. An orator is standing on a table. People are lined up behind another man who is sitting with two dental instruments, one in his hand and the other in his mouth. The rest of the town is going about business as usual.

Source: Leonaris Jacopo, 1723-ca.1782. US National Library of Medicine.
<http://resource.nlm.nih.gov/101393993>

The French, for example, were moving towards a more formalized practice of dentistry. As Colin Jones argues, the skill and techniques of eighteenth-century French practitioners were far more sophisticated than their English counterparts. Despite the fact that French immigrants brought their skills to England and were some of the most visited dental carers of the period, their efforts were not enough to overcome the Britain's "laggardliness" in caring for teeth.²⁰

One of the reasons for the delay was British practitioners' lack of awareness of the differences in practice in Europe. Jones claims English dentists likely did not read French physician Pierre Fauchard's (1678-1761)

²⁰ Colin Jones, "French Dentists and English Teeth in the Long Eighteenth Century: A Tale of Two Cities and One Dentist," in *Medicine, Madness, and Social History: Essays in Honour of Roy Porter*, ed. Roberta E. Bivins and John V. Pickstone (Basingstoke: Palgrave Macmillan, 2007), 81-83.

seminal work, *Le Chirurgien Dentiste* (1728), and the subsequent literature this text encouraged about oral care.²¹ As a result, English publications were “feeble,” fewer in number, and failed to incorporate what historians consider the more modern approach that was developed by the French.²² Jones does point out that English practitioners did eventually publish texts that were exclusively devoted to diseases of teeth and the mouth. This includes, Thomas Beardmore’s (b. 1711?) *Treatise on the Disorders and Deformities of the Teeth and Gums* (1768), Robert Wooffendale’s (1742-1828) *Practical Observation on the Human Teeth* (1783), and even John Hunter’s (1728-1793) *The Natural History of Human Teeth* (1771). Yet, by comparison to the French who were displaying early evidence of a “solidly based academic tradition with appropriate scholarly protocols,” Jones describes these authors of English dental texts as “academic lightweights compared with Fauchard.”²³

This is the marketplace into which Joseph Hurlock’s *A Practical Treatise* made its debut; oral care was practiced by a diverse group of individuals who, by comparison to their foreign colleagues, were considerably less sophisticated. Certainly, when evaluated against the accomplishments of French dental practitioners, Hurlock’s text confirms Jones’ claim that English texts offer little to the history of dentistry. It does not meet the high standards set by the French who, some believe, were the first country to “recognize dentistry as a distinct, specialized branch of medical science” when it created a division within the guild of surgeons, the “surgeon-dentists.”²⁴ As such, when *A Practical Treatise* was discussed by modern historians, it was listed as one example in a catalogue of works ranging from antiquity to the present,²⁵ or used merely to establish that the practice of lancing infant gums as the treatment of choice for a number of ailments.²⁶ Other authors cite Hurlock as the source for the age at which babies were weaned in the eighteenth century, as someone who came close to diagnosing infantile scurvy, or as an example of a historical work with

²¹ Pierre Fauchard, *Le Chirurgien Dentiste, ou Traité des Dents*, (“The Surgeon Dentist, or Treatise on the Teeth”) (Paris: Pierre-Jean Mariette, 1728).

²² Densham, “Progress of Dental Science,” 86; Jones, “French Dentists and English Teeth,” 83.

²³ Jones, “French Dentists and English Teeth,” 83, 85.

²⁴ Densham, “Progress of Dental Science,” 86.

²⁵ See, for example, Bloch, “History of Pediatrics”; Kowitz and Loevy, “Paediatric Dentistry: Fauchard and Before.”

²⁶ Ann Dally, “The Lancet and the Gum-Lancet: 400 Years of Teething Babies,” *Lancet* 348 (1996): 1710-1711; Sankalp Sood and Mangla Sood, “Teething: Myths and Facts,” *Journal of Clinical Pediatric Dentistry* 35 (2010): 9-13, especially 10.

“amusing” case histories.²⁷ The reason it has not captured the attention of dental historians is because the text does not address the care of teeth in a way that one might expect. Apart from a discussion about the timing of the arrival of a child’s first set of dentition, Hurlock does not discuss anything related to the anatomy of teeth and bones; nor does he discuss accidents, diseases, or deformities that might be associated with dentition.²⁸ What he does offer, however, is a window into the world of eighteenth-century children and their medical care.

Children as a Special Category of Medicine in *A Practical Treatise Upon Dentition*

Printed medical texts devoted to the care of children emerged as early as 1470, and their production continued throughout the eighteenth century.²⁹ Analyzing these specialized texts about children allows historians access to how children were perceived and represented by medical practitioners.³⁰ Recently, scholars have used these publications to challenge the traditional historical narrative about children’s medical care. This narrative maintained that practitioners prior to the nineteenth century did not acknowledge the child as physically unique and that little progress was made in their care until that time.³¹ In fact, it was thought that prior to the eighteenth-century physicians rarely engaged in the treatment of young children and if they did they typically avoided making adaptations to their medicines.³² In establishing

²⁷ On weaning, see Valerie Fildes, “The Age of Weaning in Britain 1500-1800,” *Journal of Biosocial Science* 14 (1982): 223-240, especially 224; On diagnosing scurvy, see Elizabeth Lomax, “Difficulties in Diagnosing Infantile Scurvy before 1878,” *Medical History* 30 (1986): 70-80; Rendle-Short, “The History of Teething in Infancy,” 137; Still, *The History of Paediatrics*, 362; For reference to case histories, see Densham, “Progress of Dental Science,” 93.

²⁸ Hurlock, *A Practical Treatise*, 1.

²⁹ Adriana S. Benzaquén, “The Doctor and the Child: Medical Preservation and Management of Children in the Eighteenth Century,” in *Fashioning Childhood in the Eighteenth Century: Age and Identity*, ed. Anja Müller, Ashgate Studies in Childhood, 1700 to the Present (Aldershot, England: Ashgate, 2006), 13.

³⁰ Anja Müller, *Framing Childhood in Eighteenth-Century English Periodicals and Prints, 1689-1789*, Ashgate Studies in Childhood, 1700 to the Present, (Farnham, England: Ashgate, 2009), 30.

³¹ Angel Rafael Colón and Patricia Ann Colón, *Nurturing Children: A History of Pediatrics*, (Westport, CT: Greenwood Press, 1999), xiv; Anthony Fletcher, *Growing up in England: The Experience of Childhood, 1600-1914* (New Haven, CT: Yale University Press, 2008), 59.

³² See quotations in Newton, *The Sick Child*, 63.

these claims, authors have ignored the historical context in which these texts were created. As this section shows, it was precisely the perilous nature of children's lives that concerned many physicians and surgeons since the early modern period and one of the reasons they began to establish themselves as experts in children's medicine.

According to Hannah Newton, medical practitioners as early as the late sixteenth century considered the child to be different from adults. Children's age, size, and humoral constitution were all taken into consideration by physicians, many of whom modified their medical treatments accordingly.³³ By the eighteenth century, the identification of children as medically different from adults was well underway and supported by an increasing number of texts that addressed children's specific conditions.³⁴ When examined closely, these texts display unique characteristics of eighteenth-century medicine concerning the protection of children for the future. For example, using a representative sample of English and French medical texts published between 1748 and 1803, Adriana S. Benzaquén notes that the language used to describe the medical care of children, words such as "management" and "preservation," were linked "with political, economic, moral and pedagogical concerns" of this period.³⁵ One of the concerns expressed by practitioners such as Hurlock, was the high infant mortality rate, which was often attributed to the negligence of parents who had the moral duty to ensure their charges survival into adulthood.³⁶

Hurlock was very troubled by England's high infant mortality and it is one of the reasons he wrote *A Practical Treatise*.³⁷ In the introduction of his text, Hurlock provides a detailed breakdown of the Bills of Mortality for the reader, analyzing the number and causes of deaths for the years 1739, 1740, and 1741. According to his assessment from the Bills, too many children were dying before the age of five as a consequence of fevers, smallpox, teeth, convulsions, and measles. Using his own reasoning and calculations, Hurlock isolates three main diseases—convulsions, smallpox, and teeth—that constitute about one third of all deaths.³⁸ Hurlock recognizes that determining an accurate number of children who died from teething, not to mention convulsions, is a difficult task. When a child dies of smallpox it is relatively easy for city officials to identify the disease since

³³ Newton, "Children's Physic"; Newton, *The Sick Child*, Chapters 1 and 2.

³⁴ Benzaquén, "Doctor and the Child," 13.

³⁵ *Ibid.*, 14.

³⁶ *Ibid.*, 23.

³⁷ Hurlock, *A Practical Treatise*, xxii.

³⁸ *Ibid.*, xv-xviii.

the disease scars their bodies. Convulsions and teeth are slightly more difficult for parish clerks to identify, since neither leaves their mark after death. Nevertheless, it stands to reason, according to Hurlock, that since all infants go through a teething stage, they would be a significant contributor to infant death.³⁹

Hurlock's use of the Bills of Mortality to justify why a text such as *A Practical Treatise* is needed was not unusual for the period.⁴⁰ The eighteenth century was a time when natural philosophers, physicians, and other members of the learned society were engaging in quantifying the world around them.⁴¹ Graunt's Bills of Mortality were a popular source of data for those worried about infant deaths and wishing to determine the causes. According to Andrea Rusnock, some individuals reconfigured the data from the tables during the eighteenth century in such a way that showed the weather, seasons, and cities were all possible sources for early death; that boys died at higher rates than girls; and that the loose morals of carers, such as nurses, could be causes of infant mortality.⁴² In addition to

³⁹ *Ibid.*, xviii–xxi.

⁴⁰ Benzaquén, "Doctor and the Child," 16, 22.

⁴¹ See the edited volumes, Tore Frängsmyr, John L. Heilbron, and Robin E. Rider, *The Quantifying Spirit in the 18th Century*, Uppsala Studies in History of Science, (Berkeley: University of California Press, 1990); M. Norton Wise, *The Values of Precision* (Princeton, N.J.: Princeton University Press, 1995). For individual studies on quantification and health, see Anne Borsay, "An Example of Political Arithmetic: The Evaluation of Spa Therapy at the Georgian Bath Infirmary, 1742–1830," *Medical History* 45, no. 2 (2000); Lucia Dacome, "Living with the Chair: Private Excreta, Collective Health and Medical Authority in the Eighteenth Century," *History of Science* 39 (2001); J. Golinski, "Barometers of Change: Meteorological Instruments as Machines of Enlightenment," in *The Sciences in Enlightened Europe*, ed. William Clark, Jan Golinski, and Simon Schaffer (Chicago: University of Chicago Press, 1999); Andrea A. Rusnock, "The Weight of Evidence and the Burden of Authority: Case Histories, Medical Statistics and Smallpox Inoculation," in *Medicine in the Enlightenment* (Leiden, The Netherlands: Brill | Rodopi, 1995); Andrea Alice Rusnock, "Quantifying Infant Mortality in England and France, 1750–1800," in *Body Counts: Medical Quantification in Historical and Sociological Perspective*, ed. Gérard Jorland, George Weisz, and Annick Opinel (Montréal: McGill-Queen's University Press, 2005); Ulrich Tröhler, "Quantifying Experience and Beating Biases: A New Culture in Eighteenth-Century British Clinical Medicine," *ibid.*

⁴² See, Andrea Alice Rusnock, "Quantifying Infant Mortality,"; For a more detailed examination of the use of data during this period, see, Andrea Alice Rusnock, *Vital Accounts: Quantifying Health and Population in Eighteenth-Century England and France*, Cambridge Studies in the History of Medicine, (Cambridge: Cambridge University Press, 2002).

identifying the causes of death, quantifying child and infant mortality was also used to justify modifications in their care. Rusnock argues that quantifying the death of infants and children led to policy changes in England, especially for vulnerable children such as foundlings. The measurement of the very high number of deaths of these orphans subsequently changed how they were treated in institutions in order to help improve their health and survival.⁴³ Similarly, the quantification of infant mortality influenced the practice of inoculation for smallpox. Physicians advocating for the inoculation of children against this disease used infant mortality measures in conjunction with compiled numerical data showing the effectiveness of the practice to support their claims that children should undergo variolation.⁴⁴

When Hurlock used the Bills of Mortality to express to the reader the extent of the problem of infant mortality and the need to address it, he did so in a similar fashion to other practitioners of the period who were concerned about children surviving beyond the age of five. In *A Practical Treatise*, he closely examined the number of deaths reported in the Bills and concluded that teething was an extremely dangerous period of life. This is why Hurlock says that anyone concerned with the survival of children through the teething stage would not object to the need for a text on the subject.⁴⁵ In fact, he indicates that it was at the encouragement of learned gentlemen that he decided to write the book. In the dedication to James Douglas, with whom Hurlock worked as an assistant, Hurlock indicated Douglas felt the work was a necessary contribution to the caring for the young.⁴⁶

This display of concern about the welfare of infants by Hurlock was typical of male medical practitioners and is a key part of how they began to position themselves as experts in the medical care of children through their publications. As they provided readers with information on how to raise children and treat their illnesses, they did so by framing their advice in a way that undermined the role and contribution of women. Literary scholar Andrew O'Malley argues that the practice of creating the expert through the production of these texts was "an organized effort to displace traditional forms of medicine and traditional medical practitioners."⁴⁷ They attempted

⁴³ Rusnock, "Quantifying Infant Mortality," 80-81.

⁴⁴ *Ibid.*, 81-82. See also, Rusnock, *Vital Accounts*, Chapter 2.

⁴⁵ Hurlock, *A Practical Treatise*, xxii.

⁴⁶ *Ibid.*, iii.

⁴⁷ Andrew O'Malley, *The Making of the Modern Child: Children's Literature and Childhood in the Late Eighteenth Century*, *Children's Literature and Culture* (New York: Routledge, 2003), 69.

to remove the raising of children from the uneducated hands of servants and discredited medical practitioners who did not adhere to practices informed by “Enlightenment scientific methodologies”. Many eighteenth century authors identified nurses and midwives as dangerous and unskilled as a way to support their position that the public should rely on the expert knowledge of physicians and surgeons, and Hurlock is no exception.⁴⁸ His feelings about domestic caregivers are made clear when he states that “some have been induced to think these young Patients best when left to the Workings of Nature and the care of a good Nurse, and have very readily contented themselves with the utter Neglect of other Assistance.”⁴⁹ Additionally, nurses are not considered competent enough to adequately deal with “differences of Temperaments and several Accidents, [that] rise to a Height above [their] Skill.”⁵⁰ In these statements, Hurlock identifies two traditional caregivers and characterizes them as lacking appropriate knowledge to properly raise children. First, he targets parents as being negligent for leaving their charges to the forces of nature and the incompetence of nurses. Second, it is these very nurses that Hurlock believes are not adequately trained to deal with the potential health complications infants might face.

Hurlock warns that the combination of inadequately trained nurses and the rejection of medicine’s advice would have a disastrous outcome for the infant. Proof lied in the large number of children that died at home and abroad “thro’ the Unskillfulness of young Mothers, as well as ordinary Nurses...and the Commitment of diseased Infants to the sole care of Nurses, exclusive of the Medical Art, will make but a tragical [*sic*] Scene at best.”⁵¹ He goes on to say that the management of a distempered child is typically under the auspices of the parent or other individuals responsible for their care, and unless these individuals become versed in the nature of dangerous dentition, they remain ill-equipped to deal with an infant’s suffering. It often takes these caregivers too long to call in assistance to relieve their child’s grief because it is difficult “to bring some Guardians to a Compliance with what is necessary, especially in Matters where the Judgment is carried off by a wrong Bias of Mistaken notions[.] Let Experience answer.”⁵²

By specifically mentioning the necessity of experience in the care of children, Hurlock is referring to the kind of knowledge gained by medical practitioners through the practice of observing and recording medical cases. When these case narratives are included in their texts, it is one of the ways

⁴⁸ Benzaquén “Doctor and the Child,” 21.

⁴⁹ Hurlock, *A Practical Treatise*, viii.

⁵⁰ *Ibid.*, ix-x.

⁵¹ *Ibid.*, x.

⁵² *Ibid.*, xxiii.

they asserted their authority.⁵³ Interspersed throughout the pages of *A Practical Treatise*, are several case narratives used by Hurlock as supporting evidence for a treatment that would ensure his patients' survival. Lancing infants' gums alleviates their distress during teething because, as per his statement in the book's full title, this is "*a Right Practice Recommended Upon Observation and Experience*."⁵⁴

Cases, Observation, and the Construction of Medical Authority

"Observation" was an important part of knowledge production during the Enlightenment which has recently gained new ground as an object of historical study by philosophers and historians.⁵⁵ Making the method of "observation" the object of historical inquiry has contributed to our understanding of the development of the canons of scientific knowledge in new ways, especially within medicine. Historian of medicine Gianna Pomata has written extensively on the history of "observation" and notes that, by the early seventeenth century, observations of medical cases had developed into an "epistemic genre." Pomata refers to this genre of writing as "epistemic" rather than literary because authors and readers viewed medical cases as serving a cognitive function.⁵⁶ She also classifies them as a "genre" since they display a standard textual format with recognizable conventions, styles, and content.⁵⁷ In medicine, many practitioners like Hurlock published a collection of medical cases that were "observations"; they were detailed descriptions of individual cases they had experienced first-hand over the course of their careers. Over time, the focus of these collections shifted from the reporting of rare cases to the description and classification of diseases in the sixteenth and seventeenth centuries.⁵⁸ In addition, the collection and publication of medical cases was a way for

⁵³ O'Malley, *Making of the Modern Child*, 74.

⁵⁴ Hurlock, *A Practical Treatise*, t.p.

⁵⁵ See Lorraine Daston, "On Scientific Observation," *Isis* 99 (2008): 97-110; See also the edited volume, Lorraine Daston and Elizabeth Lunbeck, *Histories of Scientific Observation*, (Chicago: The University of Chicago Press, 2011).

⁵⁶ Gianna Pomata, "Observation Rising: Birth of an Epistemic Genre, 1500-1650," in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 48; Gianna Pomata, "The Medical Case Narrative: Distant Reading of an Epistemic Genre," *Literature and Medicine* 32 (2014): 1-23, especially 2-3.

⁵⁷ Pomata, "Observation Rising," 48.

⁵⁸ Gianna Pomata, "Sharing Cases: The *Observationes* in Early Modern Medicine," *Early Science and Medicine* 15 (2010): 193-236, especially 225-226.

physicians and surgeons to promote themselves as experts.⁵⁹

By the mid-eighteenth century, “observation” came to embody larger enterprises, often involving collaborative collections of observations. Individuals working independently would be part of a communication network that organizations, such as the Royal Society in Britain, called upon to submit their observations as part of a larger agenda of international observations.⁶⁰ One of the key features of “observation” in the eighteenth century is its link to experimentation, the introduction of an artificial intervention to observe an outcome.⁶¹ This is precisely what Hurlock does in *A Practical Treatise*. He presents a number of cases in which he details his observations of the symptoms of teething, any associated diseases, and the relief of an infant’s distress by lancing the gums.

Before presenting his series of medical cases, Hurlock first provides the reader with his justification for conducting and then presenting his case observations to the public. His book is not a speculation on the nature and uses of teeth, but about the dangers that arise from the teething process and the efficacy of the remedies, both old and new, that had so far been used. In the main body of the treatise, Hurlock unpacks the work of previous authors by addressing three topics, including the seasons during which dentition erupts in infants, the dangers associated with this period of life, and the ancient and modern remedies commonly used to combat related diseases. With respect to the dangers of the period during which teething occurs, Hurlock quotes the works of well-known medical authorities, such as Hippocrates (460-370 BCE), Ambroise Paré (1510-1590), Daniel Sennertus (1572-1637), Franciscus Sylvius (1614-1672), John Arbuthnot (bap. 1667-1735), and Herman Boerhaave (1668-1738), each of whom ascribe various conditions, such as inflammation, tumours, gangrene, convulsions, loose green stools, excess salivation, and even death, to the natural process of teething.⁶²

Hurlock then turns to a discussion of different authors’ remedies for problematic dentition. Internal treatments include; breast-feeding by nurses in good health; rubbing the gums with cream, butter, honey, egg yolk, or sugar; the brains of a hare, goat, calf, lamb, or baby pig, fat of fowls, fresh blood from a cock’s comb, dog’s milk, liquorice stick, oils of sweet almonds, roses, lilies, chamomile, juice of lettuce, or nightshade; or allowing the child to chew on a wax candle to relieve the itching.⁶³ External

⁵⁹ *Ibid.*, 215; Pomata, “Observation Rising,” 59.

⁶⁰ Daston, “Empire of Observation,” 87-88.

⁶¹ *Ibid.*, 85-86.

⁶² Hurlock, *A Practical Treatise*, 10-19.

⁶³ *Ibid.*, 28-29.

remedies involve fomenting the jaws with marshmallows, chamomile or dill; a cataplasm of barley-meal, milk, oil of roses, and egg yolks; washing the head with a concoction of chamomile, melilot, and dill; and pouring hot wax into the ears to resolve the humours descending on the gums.⁶⁴ Instruments are also suggested to penetrate the gums or for the child to bite down upon. This includes animal bones and necklaces of henbane, peony, wild gourd, or other vegetables.⁶⁵

Despite the use of these remedies by former experts, Hurlock rejects them all in support of the one method he believes is the most effective in relieving suffering resulting from the problems of dentition.⁶⁶ The remedy Hurlock supports is the one first presented by Paré, and involves lancing the gums to make the eruption of teeth more comfortable for the infant. But agreeing with Paré is just the first step; to set himself apart from the many detractors of the method, Hurlock provides readers with proof it works. Thus, he identifies and countered as many as eight objections to the practice of opening the gums. This includes claims that incising the gums was a novel practice and not necessary; it causes the child pain; it causes fits in children; it causes the gums to mortify; it causes children to get worse and die; it causes the teeth to grow improperly, it creates bad teeth that decay; and, finally, that if the gums were cut too early they healed with a hardness that made subsequent teething difficult and painful for the child. After identifying each of these objections, Hurlock then proceeds to defend his position. The process he uses is to carefully deconstruct each objection and then provide case examples that supported his claims.⁶⁷ Two examples highlight some of the ways the use of the case narrative helps boost Hurlock's claim to authority.

The first objection Hurlock addresses is the challenge from parents that opening the gums is a new practice that needs proper justification that infants will benefit from it.⁶⁸ In answer to this objection, Hurlock says there is little evidence from the ancient authorities that their methods worked. "Hence we are at a loss to know, what may be justly imputed to the Remedies made use of," he observes.⁶⁹ Thus, as a counter argument to this objection, Hurlock presents a case that was successfully resolved by lancing

⁶⁴ *Ibid.*, 29.

⁶⁵ *Ibid.*, 30.

⁶⁶ The act of rejecting the authority of the earlier medical practitioners was a common way for authors to situate themselves as experts. See Benzaquén, "Doctor and the Child," 17.

⁶⁷ Hurlock, *A Practical Treatise*, 43-109.

⁶⁸ *Ibid.*, 43.

⁶⁹ *Ibid.*, 43-44.

the gums despite a grandparent voicing their objection. This case in question concerns “an Honourable Family” with whom he had already established his method as a success with some of their older children. However, when he was asked to consult on another of their offspring suffering from teething, “the Grandmother, a Lady of Worth,” was visiting and strongly objected to Hurlock’s intervention. Secretly, however, the parents consented to Hurlock treating their child, who soon recovered. When the grandmother was informed the procedure had taken place, she did concede the child had benefited from an incision in the gums but refused to change her mind on the matter. Interestingly, the daughter informed Hurlock that the grandmother had lost two children of her own from teething, having not allowed the gums to be opened.⁷⁰

This example demonstrates how the medical case was used to position the medical practitioner as an authority in two important ways. First, Hurlock relays to the reader his earlier relationship with the family and the fact that the older children had survived because of his treatment. Thus, the reader is made aware that the parents were already in agreement that the method worked because they had seen it for themselves. For them, it was neither novel nor ineffective. These parents were willing to accept the application of new knowledge that medicine gained through observation and experiment rather than rely on tradition or superstition.⁷¹ Second, Hurlock specifically mentions the mature female member of the family as the source of objection to lancing open children’s gums. The grandmother’s objection is juxtaposed against the younger parents who, unlike the older generation, accepted the procedure and saved their children from death. By positioning the grandmother as the contrarian, he undermines her role as a knowledgeable authority in childrearing. Additionally, he points out her ignorance by revealing to the reader that in the past, she had been unable to deal with the teething illnesses of two of her children who died as a consequence.

As a father, Hurlock is well aware of the difficulties faced by parents who fear for their children’s lives at so delicate a stage of development. When countering another objection, he draws upon his own personal experience in treating his own daughter to convince readers that lancing the gums can alleviate conditions brought on by teething. The third objection he addressed was the belief that opening up the gums “throws Children into Fits.”⁷² Hurlock concedes that a child can experience fits during and after teething, but he believes in his experience that “*no remedy* has given more

⁷⁰ *Ibid.*, 44-45.

⁷¹ Benzaquén, “Doctor and the Child,” 21.

⁷² Hurlock, *A Practical Treatise*, 49. Emphasis in original.

evident proofs of it's [*sic*] Efficacy in relieving Convulsions, occasioned by the Teeth, than *This* has done in it's [*sic*] *right Use*."⁷³ As proof, Hurlock offers the case of his daughter, who was seized by convulsions just before she came down with smallpox. Standing next to the table at the end of dinner, she fell to the floor and began to convulse. Grabbing her and taking his lancet from his pocket, Hurlock "immediately *opened* her Gums, apprehending *this Evil* [the convulsions] from Back-Teeth."⁷⁴ The remedy worked, his daughter fits disappeared almost instantly.

Revealing how he saved his own daughter from death Hurlock creates an important connection with his audience. He transcends his status as surgeon to the equally important role of father, and as a father he was sharing with his readers what he thought was necessary to do in order to ensure his daughter's survival. As Benzaquén has pointed out, parents wanted their children to survive and would turn to physicians for help when the need arose. Physicians obligingly consulted on cases and produced advice manuals filled with their expertise for parents so that parents could shoulder some of the responsibility in keeping children safe.⁷⁵ By citing the case of his own daughter, Hurlock was potentially fulfilling both roles. He could show he was satisfying his moral duty as a parent by restoring his daughter to health, while sharing his medical knowledge with others so they could do the same fulfilled his role as surgeon.⁷⁶ Parents could take comfort in a surgeon willing to submit their own child to treatment, especially when that treatment proved successful. Thus, by positioning himself as both father and surgeon, Hurlock asserted both his parental and practitioner authority.

After concluding his arguments against the eight objections, Hurlock uses the remainder of the treatise to present twenty case observations he personally attended. What is interesting is that these are not chronological but presented to the reader in a particular order so that he could address specific questions. This included the causes of problematic dentition (Cases I-III), whether diseases like smallpox have an impact on teething (Cases IV-VI), the role of corrupt humours (Cases VII-XII), and the impact of the environment (Case XIII).⁷⁷ In most cases, opening up the gums proves

⁷³ *Ibid.*, 50. Emphasis in original.

⁷⁴ *Ibid.*, 51. Emphasis in original.

⁷⁵ Benzaquén, "Doctor and the Child," 23.

⁷⁶ As Gianna has noted, The production of medical case observations in the early modern period and into the eighteenth century was a way for physicians to share knowledge and build a community with other physicians. Pomata, "Observation Rising," 60-61; Pomata, "Sharing Cases," 196-197.

⁷⁷ The publication of Isaac Newton's (1642-1727) *Principia Mathematica* (1687) presented a new scientific model for physicians to explain the workings of the body.

beneficial to the child. In other cases, despite Hurlock's intervention, the children died because of circumstances beyond his control. This was caused by a malformation of chest (Case XVI), a weakened child exposed to the air (Case XVII), or the simple fact that the lack of appropriate knowledge interfered with caregivers' and other practitioners' ability to recognize the symptoms (Cases XIV-XV).

As part of the genre of medical cases, Hurlock's observations are generally presented in a narrative style that is consistent across all twenty examples. He typically begins with certain phrases: "I was called for"; "I was desired to attend"; or "I was sent for." With this opening, he then proceeds to introduce the reader to the patient; their relative age, sex, where they lived, and sometimes their name or the surname of the family to which they belong. Following the personal details of the patient, Hurlock recites the child's illness history, then the signs and symptoms of their disease. Hurlock derives the list of symptoms from two sources, the principal caregiver and his own observations. The former individual is usually the mother or nurse, sometimes the grandmother and, on a rare occasion, the father. For example, in Case IV, Hurlock was called to see a twenty-two-month old boy who is described by the mother as being "very fretful, and out of order, above a week past." In the previous two days, she described him as being "light-headed," "with reachings [*sic*] to vomit," and "would often poke his finger to the left side of his mouth."⁷⁸ Similarly, in the case of his own daughter, Case II, it is the nurse that reports some symptoms to Hurlock, explaining that the child was "restless," "attended with great startings and convulsive rollings of her eyes, in a frightful manner," and was "observed to thrust her little hand into her mouth."⁷⁹ Again, in Case XIII, Hurlock describes how in the month of April, a child of nearly three years was brought to him for help. She was teething and had become restless. According to Hurlock:

This new mechanical model did not immediately replace the humoral model, which had been the accepted framework for explaining the body's health and disease since Antiquity. For a brief introduction to the humoral model, see Mary Lindemann, *Medicine and Society in Early Modern Europe*, 2nd ed. (Cambridge: Cambridge University Press, 2010), 17-19; Newton, *The Sick Child*, 34-45. On the introduction of the mechanical model, see Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: W.W. Norton, 1999), 246-249. On the revival of the Hippocratic tradition that linked climate and health, see Jan Golinski, *British Weather and the Climate of Enlightenment* (Chicago: University of Chicago Press, 2007), Chapter 6.

⁷⁸ Hurlock, *A Practical Treatise*, 125.

⁷⁹ *Ibid.*, 115-116.

The Mother said, she knew the Child had taken Cold some Days ago, and from that Time had been uneasy. The Father was of Opinion that her Complaint was of the Nature of a *common tooth-ach* [sic] from a Decay of some of her Teeth and asked my Thoughts about it. He observed also, that her Trouble was accompanied with Signs of Tenderness in her Mouth at the time of Eating.⁸⁰

Throughout his cases, Hurlock faithfully records the words spoken by parents and nurses about their child's condition. By not translating the descriptions of symptoms displayed by the child into the medical terminology he and the caregiver remain in equal footing.⁸¹ This shared language about illness also suggests that Hurlock and his patients' parents engaged in the care of the child together.⁸² In a few instances, the parents and Hurlock engage in a negotiation about choices in treatment.⁸³ For example, in the case of a two-and-a-half-year-old boy with a cough and a fever, the mother steadfastly refused to allow Hurlock to lance the child's gums and asked for medicine instead. Hurlock complied, but the child remained unwell for several days and he again suggested opening the gums. This time, the mother decided to wait until her husband returned home. Although the child's father agreed the teeth were the problem, he also refused to allow the gums to be opened. In time, the child recovered, but only after the teeth erupted on their own. In his reflections on the case, Hurlock remarks that, despite the fact that the gums were not opened, the result of the case supported his diagnosis that the teeth were the problem. Based on the fact that the child returned to health after the teeth erupted was seen as further proof that, had it been allowed, his "artificial" intervention would have also provided relief.⁸⁴

While these parents negotiated for a different treatment, others tried to argue that cutting open the gums was the cause of their infant's distress. At the end of December 1736, Hurlock opened the gums of a six-month-old boy and gave the mother extra medicine, at her request, to quiet him. As Hurlock followed the boy's case into 1738, he became puzzled about why his fits, coughs, and fevers continued to ail him. The father believed his son's condition stemmed from the initial opening of the gums, which became hard and prevented the teeth from emerging. Checking the mouth,

⁸⁰ *Ibid.*, 216.

⁸¹ Mary E. Fissell, "The Disappearance of the Patient's Narrative and the Invention of Hospital Medicine," in *British Medicine in an Age of Reform*, ed. R. K. French and A. Wear (New York: Routledge, 1991), 92-94.

⁸² *Ibid.*, 94.

⁸³ *Ibid.*

⁸⁴ Hurlock, *A Practical Treatise*, 118-125.

Hurlock found it in good order, which meant other factors must be the cause. He posited that the mother's milk was corrupted by her fatigue, and that the smallpox was another contingent cause of distress.⁸⁵ Finally, in other instances caregivers' objections are used to show how Hurlock could convince them lancing the gums was a safe remedy. The daughter of a gentleman banker was suffering from a terrible skin condition on her head and neck and Hurlock wanted to open the gums to help relieve her symptoms. The father, concerned about the process, had to have his misgivings alleviated before he would allow Hurlock to proceed and when he did it was a success.⁸⁶

Hurlock's case reports show that parents and nurses could provide an accurate account of the signs and symptoms of their charges and their appearance in medical case narratives indicates they participated to some extent in decisions regarding the child's care. However, in concert with other eighteenth century medical practitioners, Hurlock ultimately uses the cases to place himself as the authoritative interpreter of the child's condition.⁸⁷ Other caregivers might read and then report on symptoms, but it is Hurlock who confirms their reading by observing the child for himself. It was not necessary for the infants—the majority of whom are non-verbal—to speak for themselves because the information Hurlock receives through his senses is enough for him to deduce the nature of their condition. Thus, after receiving the illness histories from the family, Hurlock does not disregard their account, but uses it as a starting point for his own examination. Like mothers, nurses, and grandmothers, he reads the child's symptoms and behaviours. Using all his senses—sight, sound, smell, and touch—he notes their “costiveness,” “startings,” “difficult breathing,” “heat,” and “fetid smells.” He then offers his advice, which is, with the exception of just one or two instances, to cut open the child's gums to give them relief from their symptoms. When he determines what caused the problematic dentition or what exacerbated this already difficult stage of development, Hurlock provides an explanation. This explanation is something only the person with the appropriate medical knowledge can convey to others, so they can properly care for the infant.⁸⁸

This is particularly important in cases where parents relied on less qualified individuals for help. When they had done so, Hurlock framed his description of the situation in a way that emphasised the need to know how

⁸⁵ *Ibid.*, 134-139.

⁸⁶ *Ibid.*, 166-170.

⁸⁷ O'Malley, *Making of the Modern Child*, 81-82.

⁸⁸ *Ibid.*, 77.

to recognize and treat teething conditions.⁸⁹ For example, Case XV is about a twenty-one-month-old female who had been ill for fifteen days. An apothecary had been called to see her and he administered a number of treatments without success. When a second more experienced apothecary happened to be visiting the father of the child, he noticed the girl's condition and ordered her gums to be opened. At this point, Hurlock was summoned, and he made the incisions in the gums, but to no avail. The child died forty-eight hours later.⁹⁰ When reflecting on the case, Hurlock claims it was not his intention to lay blame on the apothecary, but to encourage him to learn to identify symptoms of "dentition-grief."⁹¹ Hurlock goes on to place the responsibility of the child's death on "the Persons principally concerned in the Care" of the girl. Had the parents realized that the teeth were one of the causes of their daughter's distress, they would have requested her gums to be opened. This is why someone with the skill to diagnose the real disease is necessary because ineffectual remedies are not useful to the child.⁹²

Conclusion

Recent historical analysis of children's medical books from the eighteenth century reveals the physicians who wrote these works did so with the intent of managing, governing, or preserving children's lives. This emphasis on control is indicative of how the medical profession was changing in order to increasingly bring the sphere of infancy and childhood under the purview of doctors. An intellectual shift was taking place where the physician-as-expert was positioned at the centre of care for children, guiding their health and wellbeing.⁹³

At first glance, Joseph Hurlock's *A Practical Treatise* gives the impression that it is simply an early text devoted to the care of children's teeth. However, a closer inspection of the content reveals Hurlock's text is similar to other eighteenth century medical books addressing children's health. First, Hurlock begins by expressing his concern about the social problem of Britain's high infant mortality rate, which he attributes to the dangerous events of teething. This helps justify the need for a text on the subject. Second, he employs a rhetorical strategy to undermine the skill and traditional role of nurses as caregivers without adequate knowledge to attend to a sick infant. This is a tactic that physicians used during this period

⁸⁹ *Ibid.*, 76.

⁹⁰ Hurlock, *A Practical Treatise*, 232-233.

⁹¹ *Ibid.*, 233.

⁹² *Ibid.*, 233.

⁹³ Benzaquén, "Doctor and the Child," 14.

to position themselves as the ones with the most knowledge about children and infants because they occupy a special category of medicine.⁹⁴ Finally, he uses the discursive practice of case studies to not only establish his authority, but to articulate to the reader how observations and experiences of success in opening the gums of infants verifies the effectiveness of the intervention. As examples of an “epistemic genre,” the publication of these medical cases was a way to share knowledge with others that was gained from observation and acted as a form of self-promotion.⁹⁵

This re-examination of Joseph Hurlock’s *A Practical Treatise Upon Dentition* reveals it to be an exemplar of eighteenth-century medical texts about the preservation and management of children.⁹⁶ One of the reasons it may not have received adequate attention is perhaps due to the historical narrative against which it was being assessed. As Colin Jones observes: “Dental history has tended to be written in the past as a classic Whig history of scientific progress”⁹⁷ and it may be “the last grand narrative still standing unassailed at the turn of the twenty-first century.”⁹⁸ This may explain why *A Practical Treatise* has been ignored. It does not conform to any modern notion of dentistry, but it reveals much about children’s medical care in the eighteenth century.

⁹⁴ See *ibid.*; O’Malley, *Making of the Modern Child*.

⁹⁵ Pomata, “Sharing Cases,” 196-197; Pomata, “Observation Rising,” 60-61.

⁹⁶ Benzaquén, “Doctor and the Child;” O’Malley, *Making of the Modern Child*, Chapter 1.

⁹⁷ Jones, “French Dentists and English Teeth,” 88.

⁹⁸ Colin Jones, “The King’s Two Teeth,” *History Workshop Journal* 65 (2008): 79-95, especially 92.

A HISTORICAL EXPLORATION OF THE PROFESSIONAL DEVELOPMENT AND MIDWIFE/DOULA DIVIDE IN THE MODERN CANADIAN HEALTH CARE SYSTEM

ANCA-VANESSA POPA

SUMMARY: Knowledge of ancient “holistic” approaches to midwifery has prompted scholars to trace the professional development of the midwife in Canada. The first documented descriptions of the midwife date to c.1900-1500 BCE in the papyri of ancient Egypt. The characteristics and duties of a proper midwife were described in the second century AD by the ancient Greek physician Soranus (fl. 98-138 AD) in the *Gynaecology*. The respect given to midwives in the Roman Empire is evident through funerary epitaphs. Religion played a big role in 1277 at the Trier Synod, resulting in the official regulation of midwifery in some regions, while the sixteenth and seventeenth centuries saw new technology influence male involvement in the field of obstetrics. Later, anaesthesia offered a means of painless childbirth, resulting in more hospital births. The rise of obstetrics challenged the profession of midwifery, resulting in its marginalization in many countries. A shift occurred in the 1960s–1970s when women chose to revert back to traditional home-birthing. By the 1990s, midwifery became regulated and recognized in Canada. The legalization allowed the profession to be integrated into the health care system with funding services, hospital privileges, and rights to practice woman-centered care.

KEYWORDS: Canadian Health Care System, Doula, Medical Legislation, Midwife, Obstetrics

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Introduction

Throughout the course of its history, midwifery progressed from being a highly praised and appreciated profession (for slave girls) in ancient Greece and Rome, to persecution in the Middle Ages, followed by a diminishing role of women in medicine by the eighteenth century, lasting until the twentieth century. The rise of feminism in the 1960s and 1970s empowered women to pursue medical careers, which resulted in the legalization and regulation of this profession. Canada follows a similar path of regression and progression of midwifery to that of European countries which is today considered a respectable career path for both men and women.

The term “midwife” was first used in the fourteenth century and is derived from the Middle English (c. 1100–1500) word *midwif*; from *mid* meaning “with” and *wif* meaning “woman”.¹ This term was used to give meaning to the role of a woman that helped another woman before, during and after labour, and its denotation remains consistent today. The term “doula” is believed to be derived from the Greek word *doulē*, meaning “female slave”; however, the first use of this term was noted in anthropologist Dana Raphael’s book, *The Tender Gift: Breastfeeding*.² The word *doula* meant someone (usually a woman) who provided postpartum care but now has extended to one who provides emotional and physical support as well as offering information to women during birth and postpartum.³

The first mention of the female-helping-female role of the midwife was noted in the Westcar and Ebers Papyri dating back to c. 1900–1500 BC.⁴ These ancient Egyptian scripts told of many remedies and magical formulas in regard to gestation, contraception, parturition, and postpartum care. However, the information is somewhat limited and more details on the profession only emerge during the classical era of the Greco-Roman world.

For the purpose of this chapter, I will be focusing mainly on the

¹ *Collins English Dictionary Online*, s.v. “midwife,”

<http://www.collinsdictionary.com/dictionary/english/midwife?showCookiePolicy=true> (accessed April 2, 2015).

² Dana Raphael, *The Tender Gift: Breastfeeding* (New York: Schocken Books, 1976), 196.

³ Martha Kayne, Mary Greulich, and Leah Albers, “Doulas: An Alternative Yet Complementary Addition to Care During Childbirth,” *Clinical Obstetrics and Gynecology* 44 (2001): 692-703.

⁴ J. Hunt Cooke, “The Westcar Papyrus,” *The Biblical World* 4 (1894): 49-53; Carl H. von Klein, “The Medical Features of the Papyrus Ebers,” *Journal of the American Medical Association* 26 (1905): 1928-1935.

history of the midwife, particularly the women who served as such, so that I may demonstrate the appreciation and depreciation of their role throughout history, and how they came to be integrated into the modern-day Canadian health care system.

Greco-Roman World

The people of ancient Greece and Rome were very clear on the roles that men and women played in society. They believed that social hierarchical structures must be made and maintained, and that each individual within their social class has a job. The majority of information we have on midwifery in this ancient time period comes from funerary epitaphs and the few books written by respected physicians. One reputable physician hailing from Ephesus was Soranus (c. 93-138 AD). He practiced in Alexandria and Rome and was a chief representative of the Methodist School of Medicine. In his book *Gynecology*, Soranus speaks of what it means to be a good midwife and how the pregnant woman should be taken care of throughout all stages of pregnancy and after delivery. He mentions that:

A suitable person [to be a midwife] will be literate, with her wits about her, possessed of a good memory, loving work, respectable and generally not unduly handicapped as regards her senses, sound of limb, robust, and, according to long slim fingers and short nails at her fingertips.⁵

What this indicates is that the role of the midwife was not something to be undermined and that women filling these roles had great responsibilities. However, the majority of women that could afford a properly trained and educated midwife were most likely the elite upper class. In Plautus's (c. 254-184 BC) *Miles Gloriosus*, Periplectomenus is observed complaining of how women—including the midwife he hired to attend his wife—are always asking for more money.⁶ Other ancient works of literature also mention midwives and their roles, such as Plato's *Theaetetus* (c. 369 BC).⁷ From the sources that are available to us, we are only capable of inferring what wealthy women had available to them in means of prenatal and postnatal care. It is most probable that poor women turned to their

⁵ Sor. *Gyn.* 1.1.3, tr. Owsei Temkin, *Soranus' Gynecology* (Baltimore: Johns Hopkins University Press, [1956] 1991), 5.

⁶ Plaut. *Mil.* 3.1.

⁷ Pl. *Tht.* section 149b. *Theaetetus* is one of Plato's dialogues with regards to the nature of knowledge.

female relatives to help with this process.

Funerary epitaphs that mention midwives, describe these women as “freed” which indicated that they were most likely originally of servile origin.⁸ This “freed” status can mean one of three things: first, these midwives were daughters born to women that were freed from their slave status. Second, the female practicing midwifery may have been valued enough by her owner to issue her freedom. Third, these women may have made enough money to buy their own freedom. All this is speculative, as there is no concrete evidence to support any one of these claims, nor is there any evidence to suggest how these women were chosen for this position and how they were trained (though most likely by apprenticeships).

We can contrast Soranus’ work with that of the Roman author, Pliny the Elder (c. 23-79 AD) who wrote about midwifery based on ancient folk tales. In his work *Historia Naturalis*, Pliny makes suggestions such as:

Fumigations with the fat from hyena loins produce immediate delivery for women in difficult labor; placing the right foot of a hyena on the woman results in an easy delivery, but the left foot causes death.⁹

Although his methodology may seem quite bogus now, it was most probable that women of the time believed and followed his teachings. He was an educated man, and although the remedies may not have helped directly, their placebo effects and the attention given to the women during this time were what proved to be most efficacious.

In ancient Rome, the act of childbearing was the most important act that a woman managed and was the sole purpose of marriage.¹⁰ There were, however, differences between the East and West Roman Empire. It was largely east of Rome that midwives advanced beyond that profession to become obstetricians (by means of formal training). It is believed that these women were highly regarded and respected as is evidenced through published works that were cited by male physicians (see Figure 8-1.).¹¹

⁸ Mary Lefkowitz and Maureen Fant, *Women’s Life in Greece and Rome: A Source Book in Translation*, 3rd edition (Baltimore: John Hopkins University Press, 2005), 267.

⁹ Pliny. *HN* 28.27.102, tr. John Bostock (London: Taylor and Francis, 1855), available online as part of the Perseus Digital Library at <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.02.0137%3Abook%3D28%3Achapter%3D27>.

¹⁰ John Balsdon, *Roman Women: Their History and Habits* (London: Bodley Head, 1974), 190-196.

¹¹ Sarah B. Pomeroy, “Technikai kai Mousikai: The Education of Women in the



Figure 8-1: Funeral monument of the Roman midwife Scribonia Attica; terracotta, 2nd century CE Ostia. The parturient is seated in a birthing chair, with an attendant supporting her from behind. Scribonia is seated on a stool in front of the parturient. Source: Wellcome Collection (CC BY 4.0).

With this evidence, it can be inferred that midwives of the Greco-Roman world were most likely slave girls that were trained through apprenticeships, worked for wealthy individuals and had the capabilities to gain their freedom. This time period progressed from using folk tales as the main source of medicine, to a civilization that was capable of adapting and accepting new means of diagnosis, treatment, and prevention in terms of childbearing, some of which still hold true today.

Middle Ages

From the fifth to the fifteenth century, the state and church were integrated into one overbearing authority. In Europe, the majority of knowledge and understanding of maternal care was that obtained from the Greco-Roman world. The secrecy surrounding women's bodies allowed female midwives

Fourth Century and in the Hellenistic Period," *American Journal of Ancient History* 2 (1977): 51-68, especially 58-68.

to continue their profession with little male involvement.¹² Their roles remained similar to those seen in ancient Greek and Roman times, however, the profession of the midwives became highly regulated during this time, mainly due to religious concerns and the professionalization of medical careers.

Midwives were (usually) uneducated females, from lower classes, that were trained via apprenticeships by their older female relatives.¹³ Women dominated the birthing room and the majority of practices remained unchanged since the previous era. Many midwives became highly valued and appointed to attend aristocracy, such as Asseline Alexandre (1340-1405) who attended to the births of the Duchess of Burgundy and Jean La Goutière (fourteenth century), midwife of Queen Isabeau.¹⁴

The major problem that midwives of this period were facing was the accusation of witchery and the potential for severe punishment if found guilty.¹⁵ These midwife-witches were kept under close supervision by civil and religious authorities mainly due to their knowledge of folk medicine and use of different herbs which, to these authority figures, indicated black magic.¹⁶ The high levels of abortion and still births resulted in suspicion of the midwife either killing the babies in utero or committing infanticide for their "spells."¹⁷

All this finger-pointing led to the regulation of midwifery as a profession. The Trier Synod of 1277 was intended to place more regulation on midwives, and there was a new law stating that all women in this profession must know when and how to perform an emergency baptism.¹⁸

¹² Myriam Greilsammer, "The Midwife, the Priest, and the Physician: The Subjugation of Midwives in the Low Countries at the End of the Middle Ages," *The Journal of Medieval and Renaissance Studies* 21 (1991): 285-329.

¹³ William L. Minkowski, "Women Healers of the Middle Ages: Selected Aspects of Their History," *American Journal of Public Health* 82 (1992): 288-295.

¹⁴ Sheila Kitzinger, *Rediscovering Birth*, 2nd edition (London: Pinter & Martin Ltd, 2011), 37.

¹⁵ Kathryn Taglia, "Delivering a Christian Identity: Midwives in Northern French Synodal Legislation, c. 1200-1500," in *Religion and Medicine in the Middle Ages*, eds. Peter Biller and Joseph Ziegler (Woodbridge: York Medieval Press, 2001), 77-90.

¹⁶ David Harley, "Historians as Demonologists: The Myth of the Midwife-Witch," *The Society for the Social History of Medicine* 3 (1990): 1-26.

¹⁷ Lène Dresen-Coenders, "Witches as Devils' Concubines: On the Origin of Fear of Witches and Protection Against Witchcraft," in *Saints and She-Devils: Images of Women in the 15th and 16th Centuries*, eds. Lène Dresen-Coenders, Petty Bange, and Commanderie van Sint-Jan (London: Rubicon Press, 1987), 59-63.

¹⁸ Taglia, "Midwives," 83-87.

Laws throughout the Holy Roman Empire of German Nations were written down and recorded which recognized midwives as professionals and mentioned that they must be licensed if they wished to practice.

It seems as if midwifery was beginning to become an appreciated early profession, where women could gain status and respect. Although the church and legal system acted as one authoritative figure, the rules and regulations they set for midwifery caught on and were of benefit in geographical regions that include modern countries such as Germany, France, England, the United States, and Canada. However, this period of celebration and social standings was short-lived, as the turn of the century lead to more problems for the midwives, that eventually amounted to the elimination of this occupation in some of these countries, while it thrived in others.

1700s–1900s

The rise of obstetrics began during the eighteenth century and resulted in a great division between the sexes for matters such as childcare and maternity.¹⁹ Male obstetricians believed the female midwives to be incompetent and unreliable (see Figure 8-2). As the male doctors were more capable of obtaining the tools and education for learning and practicing the trade, midwives, especially in large cities, were pushed aside.²⁰ In smaller towns and villages, obstetricians opted to teach the midwives more skills so that they may be able to practice in these remote areas without a physician. During this time period, the importance of sanitation and the role of anesthetics in painless childbirth resulted in a progression from home births to hospital births, which consequentially isolated midwives and the profession even more.

¹⁹ Adrian Wilson, “The Perils of Early-Modern Procreation: Childbirth With or Without Fear,” *British Journal for Eighteenth-Century Studies* 16 (1993): 1-19.

²⁰ Adrian Wilson, *The Making of Man-midwifery: Childbirth in England, 1660-1770* (Cambridge: Harvard University Press, 1995), 25-107.

This period is important as it demonstrates the regression of midwifery and the progression of medical knowledge. Men-midwives, also known as obstetricians, were becoming more popular, due to their knowledge and expertise on female anatomy.²¹ Much of the obstetrician's knowledge came from tools such as "obstetric phantoms" (models of the female torso, often life-sized), which allowed practitioners to discover the female anatomy (during birth) without invasive methods (see Figure 8-3).²² As hospitals began to see more patients and puerperal fever was common amongst young infants, the ideas of the aseptic technique proposed by Joseph Lister (c. 1827-1912) spread across hospitals in Europe and North America due to the efficacy and long term benefits of limiting disease.²³



Figure 8-3: Eighteenth-century obstetric phantom; Italian.
Source: Wellcome Collection (CC BY 4.0).

²¹ *Ibid.*

²² Harry Owen and Marco A. Pelosi, "A Historical Examination of the Budin-Pinard Phantom: What Can Contemporary Obstetrics Education Learn From Simulators of the Past?," *Academic Medicine: Journal of the Association of American Medical Colleges* 88 (2013): 652-656.

²³ Joseph Lister, "On the Antiseptic Principle in the Practice of Surgery," *The Lancet* 90 (1867): 353-356.

By the nineteenth century, drugs and gases were being used to procure a relatively painless childbirth. Substances such as nitrous-oxide, nitric-oxide, ammonia and hydrogen chloride were first mentioned by Joseph Priestley (c. 1733-1804) in his work entitled *Experiments and Observations on Different Kinds of Air*,²⁴ first published in 1755. Although anesthetics were disapproved by the church, since they believed that women suffer in birth as punishment, their use was evident and appreciated in many parts of Europe. Queen Victoria herself delivered her eighth and ninth children under anesthesia with the supervision of Dr. John Snow (1813-1859).²⁵ After aristocracy used these means of birthing and maternal care, civilians began to follow in their footsteps.

Maternal care from the eighteenth to twentieth centuries showed a great departure from old ways of maternal care, to acceptance and curiosity of newer ones. It is evident that the role of the midwife has become suppressed by male obstetricians. The use of new medical techniques such as the obstetric phantoms, aseptic technique and anesthesia allowed physicians to claim that they offered better care and attention for mothers-to-be than did the uneducated, folk medicine-practicing midwives of the past. Being forced to quit their professions or else work only in remote areas of Europe and North America, midwives began to lose their voice, power and respect during these centuries, which would not be reclaimed until the rise of feminism.

Midwifery in Canada: 1600s–1920s

The history of midwifery in Canada follows much of the pattern seen in Western Europe, but particularly Britain, as well as in the United States of America. These two regions were more disorganized in their regulation of midwifery practice when compared to Europe, and although the pattern of progression and regression followed that of other European countries such as modern-day Germany and France, their paths lagged behind along the way.²⁶ This profession was highly valued and regulated until the beginning of the twentieth century, when the Medical Council of Canada abolished midwifery and caused these women to practice only in remote areas of the country.²⁷

²⁴ These books contain a total of six volumes, published between 1755 and 1786.

²⁵ See opinion piece expressing astonishment and concern on the administration of chloroform to the Queen, *The Lancet* 61 (1853): 453.

²⁶ Hilary Marland, *The Art of Midwifery: Early Modern Midwives in Europe* (London: Routledge, 1993).

²⁷ Robert B. Kerr, *History of the Medical Council of Canada* (Ottawa: Medical

In 1691, the government in what is now Quebec, established three autonomous branches of medicine: physicians, surgeons, and midwives. At the time, midwives were integrated into society and accepted by all; the actions and regulations bestowed upon them closely mimicked those evident in Europe: the abilities to perform emergency baptisms, to report all abortions, to be honest, and help all women in need.²⁸ By the late 1700s, midwives in Quebec required a license to practice, administered by the British government.²⁹ These regulations resulted in two types of midwives arising, similar to those in Europe. There women were either very well qualified and highly respected, working in big cities for high society, or they were working (unlicensed) in rural and more secluded areas of the country.

By the late 1800s, Canadian midwives needed to have compulsory certification in the provinces of Nova Scotia (1872) and Quebec (1879).³⁰ However, it was evident that these documents would prove to be useless as here too, there was a shift in power amongst women and men in maternity care. The rise of obstetrics was also noted in Canada as this new field and novel technology, such as the use of forceps, allowed for greater flexibility in the profession.³¹ This medical uprising pushed midwives out of the field and into smaller rural areas, which was further encouraged by the establishment of the Medical Council of Canada in 1912. During this time, however, Newfoundland was in urgent need of midwives in isolated communities, and in the early 1920s the Midwives' Club was established.³² This club allowed aspiring midwives to gain the skills and knowledge to practice and be certified under the Newfoundland Midwives Act.³³

Throughout the history of Canadian midwifery, there was a very similar parallel to what was occurring in Western European nations. The profession was greatly appreciated early on until the late 1800s-early 1900s, when male physicians began practicing obstetrics. The inclination of

Council of Canada, 1979).

²⁸ Brian Burtch, "Promoting Midwifery, Prosecuting Midwives: the State and the Midwifery Movement in Canada," in *Sociology of Health Care Canada*, eds. B. Singh Bollaria and Harley Dickenson (Toronto: Harcourt Brace Jovanovich, 1988), 313-327.

²⁹ Jutta Mason, "Midwifery in Canada," in *The Midwife Challenge*, ed. Sheila Kitzinger (Quebec: Unwin Hyman Limited, 1988), 99-133.

³⁰ Mary A. Eberts (chairperson) and the Task Force on the Implementation of Midwifery, *Report of the Task Force on the Implementation of Midwifery in Ontario, 1987* (Toronto: Task Force on the Implementation of Midwifery, 1987).

³¹ Eleanor Barrington, *Midwifery is Catching* (Toronto: N.C. Press Ltd., 1985), 26.

³² Joyce Nevitt, *White Caps and Black Bands* (St. Johns: Jespersen Printing Ltd, 1978), 125-127.

³³ *Ibid.*

Canadian citizens to support and follow their doctors, resulted in the regression of midwives into isolated areas. However, a rebirth of midwifery was evident by the 1920s, starting with Newfoundland and eventually extending to other provinces.

The Rise of Feminism

The second wave of feminism in the 1960s-1970s was encouraged by Betty Friedan's, *The Feminine Mystique* which was written to inspire women to question acceptance of stereotypical roles and to encourage them to become more empowered.³⁴ Women began to stray away from their old roles as housewives and mothers, and instead began to branch out and seek education, equal rights, and empowerment.

Throughout Friedan's chapters, it is evident that this new outlook on the roles of women is a positive one, which encompasses all aspects from education, to children's behaviours, and the push towards emotional fulfilment by using one's capacities to the fullest. Many women who read her book began to question the sterile, egocentric routine that hospitals offered for mothers. A new re-emergence of natural birthing and at-home-birthing surfaced all over North America.³⁵

The book entitled *Our Bodies, Ourselves*, written by a group of female activists, encouraged this revolution.³⁶ It inspired women to take ownership over their bodies and to be informed about how to access appropriate healthcare and speak to their doctors about important matters regarding female health without feeling ashamed. The Canadian government took note of this rising feminist movement, yet still attempted to suppress these individuals. Like the United States, Canadian women began their revolution in the 1970s.³⁷ The Royal Commission on the Status of Women examined female status and made recommendations to the federal government for steps required to ensure equality amongst the sexes.³⁸ However, no actions were taken, and in 1972 a small coalition of women, frustrated with the lack of action from the federal government, formed the National Action

³⁴ Betty Friedan, *The Feminine Mystique* (New York: W.W. Norton and Co, 1963).

³⁵ *Historica Canada: Heritage Minutes*, s.v. "midwife," <https://www.historica.canada.ca/content/heritage-minutes/midwife> (accessed April 5, 2015).

³⁶ Boston Women's Health Book Collective, *Our Bodies, Ourselves* (New York: Simon & Schuster, 1976).

³⁷ *Historica Canada: Heritage Minutes*, "midwife."

³⁸ Privy Council Office, *Report of the Royal Commissions on the Status of Women in Canada* (Ottawa: The Commission, 1970).

Committee (NAC) which was a Canadian feminist activist organization.³⁹

Women's jobs were lobbied for—and supported by—these female activists and representatives of the movement. Of these jobs, midwifery began its rebirth and re-integration into Canadian society. No longer did the midwives need to be confounded to isolated areas of the country. Now they were sought after by patients across the provinces and territories. By the 1980s, gender inequalities were subsiding and appreciation of this ancient practice was recognized. However, this decade also led to some debates and conflicts regarding midwifery practice, and the Canadian government was forced to take action.

Legislation and Modern-Day Midwifery in Canada

In 1985, a high-profile death of a baby in Ontario drew the attention of media, health care and government officials.⁴⁰ The Crown allotted the blame to the midwife, whereas the midwife deemed the death unavoidable. Nevertheless, both sides resolved that midwifery needed to be regulated and, in the 1990s, the Midwifery Task Force of Ontario was established to implement training and education programs for midwifery as a separate branch of medicine.⁴¹ By 1991, the Ontario Midwifery Act was passed by legislature, which resulted in the regulation and public funding needed for this beneficial profession.⁴²

It is evident here that Canada opted for progression. The mistakes of previous centuries, where midwifery was all but completely abolished, were taken into consideration as Canada decided to join the ranks of other countries worldwide that had integrated midwifery into their health care systems. Midwifery began to gain precedence province by province, beginning with Ontario in 1994 and the most recent addition of Nunavut in 2011.⁴³ Only the Yukon, Prince Edward Island, and Newfoundland remain

³⁹ Lorraine Greaves, "Reorganizing the National Action Committee on the Status of Women 1986–1988," in *Women and Social Change: Feminist Activism in Canada*, eds. Jeri Dawn Wine and Janice L. Ristock (Toronto: James Lorimer and Company, 1991), 101–116.

⁴⁰ Ivy Lynn Bourgeault and Mary Fynes, "Integrating Lay and Nurse Midwifery into the US and Canadian Health Care Systems," *Social Sciences and Medicine* 44 (1997): 1051–1063.

⁴¹ Canadian Midwifery Regulators Consortium, Submissions to the Commission on the Future of Health Care in Canada, *Regulated Midwifery and The Future of Health Care in Canada*, October 26, 2001.

⁴² *Midwifery Act*, 1991, S. O. 1991, c. 31: O. Reg. 168/11.

⁴³ Canadian Association of Midwives, *Midwifery Across Canada*,

without midwifery integrated into their health care system. Of all locations that have chosen to accept midwifery, only five provinces offer training programs: British Columbia (University of British Columbia), Alberta (Mount Royal University), Manitoba (University Collage of the North), Ontario (McMaster University, Ryerson University and Laurentian University) and Quebec (Université du Québec à Trois-Rivières); see Table 8 for the full list.

The legal recognition of midwifery in Canada has allowed for the integration of these women (and men) into the modern-day health care system (see Table 8). A midwife is now capable of prescribing common maternal medication, and ordering blood work and ultrasounds. They also have hospital privileges and work together with physicians to ensure the best care for both mother and baby. They are present throughout gestation and offer support and services to new mothers. In 2003, the “Society of Obstetricians and Gynecologists of Canada” (SOGC) issued a policy statement in support of midwives, indicating that:

The SOGC is confident that the integration of midwifery into the obstetrical health-care team is fostering excellence in maternity care for Canadian women and their families, which is the goal of our organization...The SOGC promotes the building of interprofessional relationships between midwives and other obstetrical care providers, in the interests of providing excellent health care for women and their babies.⁴⁴

In 1992, DONA, “Doulas of North America,” was founded, which is an organization that legally recognizes doulas as members of the medical community; five locations are available for training in Ontario, two in Manitoba, and one in Alberta. Although they act mainly as birth coaches and support systems, the role of the doula cannot be undermined as it remains an open option for pregnant women who want less invasive care during gestation.⁴⁵

<https://canadianmidwives.org/midwifery-across-canada/#1464901048224-2e0367ef-3303> (accessed April 15, 2015).

⁴⁴ Society of Obstetrician and Gynecologists of Canada, *Midwifery-Policy Statement*, March 2003.

⁴⁵ Amy L. Gilliland, “After Praise and Encouragement: Emotional Support Strategies Used by Birth Doulas in the USA and Canada,” *Midwifery* 27 (2011): 525-531.

Province	Integration into Health Care System	Education & Training Programs	Location of Training Programs
British Columbia	1998	Yes (1)	University of British Columbia
Alberta	1998	Yes (1)	Mount Royal University
Saskatchewan	2008	No	
Manitoba	2000	Yes (1)	University College of the North
Ontario	1994	Yes (3)	McMaster University Ryerson University Laurentian University
Quebec	1999	Yes (1)	Université du Québec à Trois-Rivières
New Brunswick (Fredericton)	Since 2018	No	
Nova Scotia	2011	No	
Prince Edward Island	No	No	
Newfoundland and Labrador	No	No	
Yukon	No	No	
Northwest Territories	2005	No	
Nunavut	2011	No	

Table 8: List of Canadian provinces and territories that have midwifery integrated into their health care systems, and provinces that offer educational training programs.

Conclusion

The profession of midwifery has been in a constant struggle for acceptance and respect throughout history. The earliest known writings about prenatal and postnatal care come from the Westcar and Ebers Papyri in ancient Egypt. Funerary epitaphs in the Greco-Roman world give evidence that the women of ancient Greece and Rome were probably slaves, owned by the elite. The enslaved girls most likely apprenticed through their female family members and may have even gained or bought their freedom. The majority of what is known about childcare and maternal care in this time period comes from educated men such as Soranus who wrote *Gynecology* and Pliny's work *Historia Naturalis* both of which offer different opinions on modern and folk medicine, respectively.

The occupation of midwives remained static until the medieval period when state and church combined into one powerful entity. Midwives faced accusation of witchcraft and use of black magic, which resulted in the regulation of their careers, starting with the Trier Synod in 1277. Modern-day Germany often lead the way in modernizing and integrating different medical fields, with France and England following suite. North America was much more disorganized in their implementation and creation of new regulations.

By the eighteenth century, midwives were being challenged by a new branch of specialized medicine: obstetrics. Only men were capable of receiving an education and practicing this career; they considered female midwives to be incompetent and illiterate and therefore, not capable of caring for women during this critical point in life. The use of anesthetics and increased stringency on the aseptic technique and sanitation caused a shift in public opinion, and a higher demand for hospitalized births. This shift pushed midwives farther away, into remote areas and it was only here that the midwives could practice their skills and knowledge.

In 1691, the Canadian government established the three branches of medicine (physicians, surgeons, and midwives) as a means of categorizing the field of medicine. As many duties of the midwife remained similar to those in Europe, Canada began to join the ranks of those countries which had midwifery integrated into their health care systems. Obstetrics had a great impact on Canadian midwives as well, with similar repercussions as those seen in other parts of the world. After the Medical Council of Canada was established in 1912, midwifery was completely disregarded as a medical profession and those that practiced had to flee to isolated rural areas if they wished to continue their trade.

The repression of the midwives lasted until the second wave of feminism, occurring in the 1960s-1970s, sparked by Betty Friedan's book *The Feminine Mystique*. As women started to reject the stereotyped roles placed upon them by society, the importance of female individual choice and opinion was becoming more and more clear. Feminist activist organizations such as the National Action Committee in Canada encouraged women to speak up about their opinions and offered a voice for those that could not. Women were now reverting back to natural birthing methods and preferring at home births, performed by midwives, as opposed to hospitalized ones.

In the 1990s, the Canadian government finally realized the importance of midwifery and began to regulate it. In 1991, the Ontario Midwifery Act was passed, and Canada re-welcomed one of its oldest branches of medicine. Since this time on, men and women choosing to become midwives (or doulas) have the means to do so, through schooling systems and regulated legislation. Although it took a very long time, midwifery has eventually become an integrated part of our health care and is now allotted the respect and attention it should have always been given.

PUBLIC HEALTH HISTORY

RADIUM DIAL WORKERS: RADIUM AS A USEFUL TOOL AND A DEADLY METAL DURING THE EARLY 1920S¹

EMILY HURST

SUMMARY: I have used the 1920s “Radium Dial Worker Tragedy” which took place in Orange, New Jersey, as a historical case study to explore the nature of science. In doing so, I have developed a teaching tool for use at the high school and university level, that will explain the ways in which the discovery of radium and its industrial applications have far-reaching implications in regard to medicine, workers’ rights and industrial hygiene.

As dial painters working for the US Radium Corporation, the women meticulously applied radium-laced luminous paint to the dials of watches and clocks so that they could be seen in the dark. In order to be as detailed as possible, the women created a fine brush point by placing the brush between their lips and twirling it to a point. In doing so, the women consumed some of the paint and constituent radium.

Because the symptoms of radium poisoning observed in the dial painters had not been seen before this time, health professionals and sufferers alike were perplexed as to the cause. We know now that radium ingestion and external exposure can have severe deleterious effects on the human body, but at the time these connections had not been made.

The process of knowledge accumulation in the midst of the “Radium Dial Worker Tragedy” acts as the scaffolding for the case study and is intended to provoke students to question their own knowledge base regarding scientific discovery and the process by which they acquire it.

KEYWORDS: Radioactivity, Radium, Marie Curie, Pierre Curie, William Aikins, Radium Girls, Radium Corporation, Workers’ Rights

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INSTITUTION: University of Calgary

¹ A portion of this paper appears as Emily Hurst, “Death by Numbers,” with the Tamaratt Teaching Professorship in Geoscience, University of Calgary, 2015, <https://geoscience.ucalgary.ca/tamaratt-chair/historical-case-studies/death-numbers>.

Introduction and the Discovery of Ionizing Radiation

The history of the discovery of radium, and its subsequent application within the medical field in Europe and eventually Canada, is predicated on the discovery of ionizing radiation by German physicist Wilhelm Conrad Roentgen (1845-1923). Roentgen discovered X-rays (or Roentgen rays) and published the results of his finding in an article entitled “On a New Kind of Rays” in 1896.² Initially there was no concern regarding the long-term health effects of radiation exposure and it would take several decades before a concern over radium exposure for the general public was taken seriously within the scientific community. Even so, within the 1890s there were numerous reported occurrences of skin burns and hair loss attributed to radiation. These negative health consequences, though detrimental to the inflicted individuals, helped guide physicians to the potential therapeutic value of radiation in terms of cancer treatment.³

Building upon the discovery of X-rays and their uses, the discovery of radium can be seen as a catalyst for an entirely new approach to the treatment of cancer. This chapter will discuss how radium came to be understood as an agent of physical change, whose powers could be harnessed for the treatment of cancer. I will also outline how radium-based cancer treatments made their way to Canada from Europe and discuss some of the key players who popularized radium use in the Canadian medical system.

Prior to the introduction of radium-based medicine in Canada, the primary treatment option for cancer was invasive and often disfiguring surgeries. Radium offered a seemingly less drastic but potentially effective option to patients who could afford this new cutting-edge technology. Doctors and their patients alike were impressed by the miraculous element which seemed to possess the ability to transform diseased tissue into healthy tissue and heal those who were previously untreatable. Even in cases where radium could not effectively reduce or cure an individual of their cancer, it was still seen as palliative treatment which could allay physical discomfort and provide a psychological benefit.⁴

² Wilhelm Conrad Roentgen, “On a New Kind of Rays,” *Science* 3 (1896): 227.

³ Barrie Lambert, “Radiation: Early Warnings; Late Effects,” in *Late Lessons from Early Warnings: the Precautionary Principle: 1896-2000*, eds. Poul Harremoës, David Gee, Malcolm MacGarvin, Andy Stirling, Jane Keys, Brian Wynne, and Sofia Guedes (Copenhagen: European Environment Agency, 2001), 31.

⁴ Charles Hayter, *Element of Hope: Radium and the Response to Cancer in Canada, 1900-1940* (Montreal: McGill-Queen’s University Press, 2005), 6-8.

The Discovery of Radium

The discovery of radium in 1898 by Marie Sklodowska Curie (1867-1934) and Pierre Curie (1859-1906) in Paris, France, is a fundamental building block in the understanding of radioactivity and the properties of radioactive materials (see Figure 9-1). Early in their radium research, Marie and Pierre Curie, along with their supervisor Henri Becquerel (1852-1908) were made aware of the powerful effects of radium exposure.⁵ The Curie's discovery of radium (the giver of rays) occurred during their study of pitchblende ore, which was understood to be radioactive. However, the pitchblende was much more radioactive than expected based on its uranium content. The higher than expected radioactivity suggested to Marie Curie that the ore contained an element even more radioactive than uranium. Through a meticulous extraction process, the Curie's found a new element which they named polonium. Radium was discovered after polonium, and only trace quantities were found. In order to confirm its existence, the Curies had to extract enough radium to study its properties.

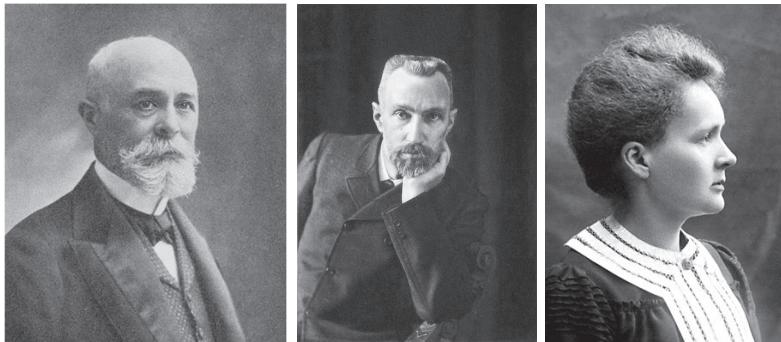


Figure 9-1: Henri Becquerel (1852-1908), Pierre Curie (1859-1906), and Marie Curie (1867-1934).

Source: Wikimedia Commons.

The extraction was a huge undertaking and the Curies had very few resources at their disposal. Their funding was meagre, and the facilities lacked the appropriate equipment to undertake the laborious extraction process. However, the Curies were highly motivated to continue their research and appropriated some equipment from Pierre's employer, the

⁵ Ross Mullner, *Deadly Glow: The Radium Dial Worker Tragedy* (Washington: American Public Health Association, 1999), 9-10, 7.

Paris School of Industrial Physics and Chemistry (see Figure 9-2). They worked out of an old wooden shed that had previously been used as a dissecting room by the university's medical school. The shed had an open skylight which left them partially exposed to the elements and its thin walls did little to keep out the cold in the winter. Humidity greatly interfered with the equipment and dust impeded the crystallization process used to isolate the constituent radium into its elemental form.⁶



Figure 9-2: The laboratories of Marie and Pierre Curie, Paris: room where experiments on uranium ore took place. Photograph, ca. 1900.
Source: Wellcome Collection (CC BY 4.0).

The Curies faced other obstacles as well. Large quantities of pitchblende would be required to harvest only a small amount of radium. Therefore, the Curies sought the help of one of their colleagues at the Academy of Science in Vienna who, through the Austrian government, helped them to receive appropriate raw materials from uranium mines in St. Joachimsthal, Bohemia (now: Jachymov, Czech Republic). At the time, the pitchblende donated to the Curies was rather considered a waste product by the mines and the only cost incurred was the shipment from the mines to

⁶ *Ibid.*, 8-9.

their laboratory.⁷

The pitchblende used by the Curies contained as many as thirty different elements, and isolating the radium required multiple chemical separations. The pitchblende contained two main fractions: barium, which contained radium; and, bismuth, which contained polonium. These two newly identified elements were quite different in their composition but were both highly radioactive.⁸ In order to push forward with their work, the Curies collaborated with the Central Chemical Products Company which was already working to market scientific instruments designed by Pierre. A colleague of the Curies, Andre Debierne (1874-1949), adapted their small-scale lab techniques into fully-fledged industrial style processes which produced a measurable amount of radium and polonium, which were then extensively studied to determine their properties.

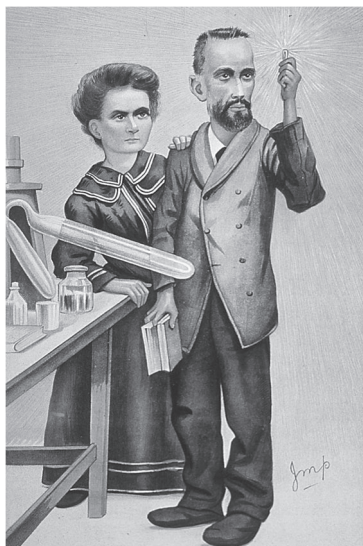


Figure 9-3: Caricature of Marie and Pierre Curie, with Pierre holding aloft a glowing specimen of radium, as illustrated in the magazine *Vanity Fair* (1904). Source: Wellcome Collection (CC BY 4.0).

⁷ *Ibid.*, 9.

⁸ Richard F. Mould, “Marie and Pierre Curie and Radium: History, Mystery and Discovery,” *The International Journal of Medical Physics Research and Practice* 26 (1999): 1767-1772.

Marie Curie had mastered the extraction process and was also adept at using the piezo-electrometer which had been designed by Pierre and his brother to assess the chemical constitution of a sample. Pierre concentrated his efforts on measuring the radioactivity of the various fractions.⁹

The Curies' arrangement with the Central Chemical Products Company involved the company supplying the chemicals used in the extraction process and wages for the laboratory staff (see Figure 9-3). In exchange, the Curies gave a share of their radium salts to the company. This exchange would prove highly lucrative for the company as the radium salts were later marketed for medical and various other uses. Yet even with the assistance provided by the Central Chemical Products Company, it took the Curies more than three years of nonstop work to isolate just one tenth of a gram of nearly pure radium.¹⁰

Radium in Medicine: The Early Days, 1900–1910

Radioactive decay involves unstable atomic nuclei releasing subatomic particles. Radium and other radioactive substances go through a decay chain in which isotopes undergo a series of decays until a stable isotope is reached. Radium is part of the Uranium series which begins with naturally occurring uranium-238 and ends with lead-206. Radium has thirty-three isotopes, with radium-226 being the most stable. It has a half-life of 1600 years.¹¹ Radium's ability to extensively affect human tissues made it incredibly interesting to scientists and physicians alike. Within two years of the discovery of radium in 1898, a German researcher noted that external radium exposure led to inflammation of the skin. This report spurred Pierre Curie to undertake experimentation whereby he exposed his own arm to a tube of radium for various amounts of time to determine the physiological dose response effects. Also, Henri Becquerel suffered from unintentional radium burns by keeping a tube of radium in his waistcoat pocket for several hours.¹² Becquerel and the Curies were impressed by the rapid and violent response that their newly discovered element had on the skin and, within the year, published a report of their findings pertaining to the physiological effects of radium. Their results ("On a new, strongly radioactive substance contained in pitchblende") were published in the *Comptes Rendus* of the

⁹ *Ibid.*, 1767-1768.

¹⁰ Mullner, *Deadly Glow*, 9.

¹¹ Half-life is a measure of exponential decay that refers to the amount of time for a quantity of radioactive material to half its value from its initial measure.

¹² *Ibid.*, 9-10.

French Academy of Sciences in 1898.¹³ Because of its physiological effects, Becquerel and the Curies were interested in radium's potential practical applications, such as its use to destroy diseased skin for medical purposes.

A small, but precious sample of radium was loaned to Dr. Henri-Alexandre Danlos (1844-1912), who worked as a dermatologist at the Saint-Louis Hospital in Paris (see Figure 9-4). Danlos encapsulated the radium in rubber and celluloid containers and applied them to the skin lesions of patients suffering from lupus erythematosus,¹⁴ an autoimmune disease that causes the sufferer's body to attack its own healthy tissues. The results of these initial medical applications yielded promising results.



Figure 9-4: Dr. Danlos treating a lupus patient with radium at the St. Louis Hospital, Paris. Lithograph, 1904.

Source: National Library of Medicine, France.

¹³ Pierre Curie, Marie Curie, and Gustave Bémont, "Sur une nouvelle substance fortement radio-active, contenue dans la pechblende," *Comptes Rendus de l'Académie des Sciences* 127 (1898): 1215.

¹⁴ Hayter, *Element of Hope*, 12.

Through Danlos' experimentation, word spread through the medical community and roused further interest in the use of radium in a medical setting. However, radium was still in scarce supply due to the tedious nature of the extraction process and only limited amounts could be procured by medical institutions. The Curies, in particular Marie, were motivated to supply research laboratories with the radium they needed to explore its medical applications. As a result, within a few years both French and German researchers were supplied with small amounts of radium which they tested on patients suffering from various physical ailments. This research emerged from the epicenter of radium research, France, and eventually spread to North America.¹⁵

In 1903, Dr. Francis H. Williams (1852-1936) and Dr. Robert Abbe (1851-1928) of New York, were the first doctors outside of Europe to obtain a sample of radium from the Curies, and it was used to experimentally treat uterine cancer by internal application. From this and other early medical experimentations, two perceived properties of radium were of particular interest. First was its apparent ability to remove diseased tissue without surgical cutting and, second, was the multitude of ways it could be applied to the treatment area.¹⁶ Radium could be used externally by the application of radium salts in flat applicators called "plaques," through bandages infused with radium pellets, or with radiferous mud, a by-product of uranium mining. Internal use involved placing radium in capsules or needles which could be inserted directly into tumors or body cavities. Radium salts could be mixed into various solutions and ingested or directly injected into cancerous tissues. Finally, radium's decay chain product, radon could be inhaled.

As previously discussed, radium was in short supply due to the nature of the extraction process, meager initial funding, and scarcity of the element. The relatively low supply of radium could not meet the demand for the precious element during the early years of medical research. In order to fill the niche for refined radium salts, in 1904 French industrialist Armet de Lisle (1853-1928) set up a commercial radium refinery in Paris. The radium was then sent to the Laboratoire Biologique du Radium, which opened in 1906 under the supervision of Dr. Louis Wickham (1861-1913). It was here that the therapeutic effects of radium exposure were extensively studied. Compared to earlier studies, Wickham had an abundant supply of radium to use in various ways, testing a multitude of properties. The Curies' decision to not patent their elaborate radium extraction process undoubtedly

¹⁵ *Ibid.*, 12.

¹⁶ *Ibid.*, 13.

promoted the medical application of radium. It also proved economically fruitful for de Lisle. In payment for the radium supplied to the Laboratoire, de Lisle received a portion of the charge for each patient treated. This commercial benefit to those in the fledgling radium industry would expand greatly over the next twenty years. Wickham's work at the Laboratoire Biologique du Radium prompted him to publish a textbook in 1910 entitled *Radiumtherapy*, which was incredibly influential within the scientific community. Institutes akin to the Laboratoire began to spring up across Europe (see Figure 9-5). The Swedish "Radiumhemmet" ("Radium Home") opened in 1910, and in 1911 the Radium Institute in London was founded.¹⁷

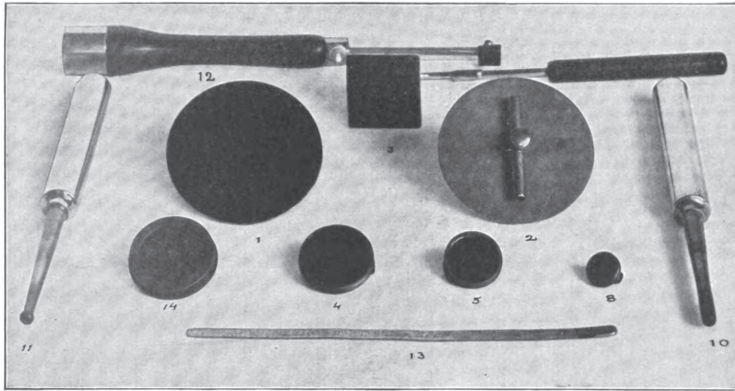


Figure 9-5: Apparatus for administering radiation used by Wickham and others: applicators with radium salts contained within a surface varnish.

Source: Louis Wickham and Paul Degrais, *Radiumtherapy*, trans. Ernest Dore (New York: Funk and Wagnalls, 1910), 42. Hathi Trust Digital Library.

Much of our current understanding of radium stems from New Zealand-born British physicist Ernest Rutherford's (1871-1937) theory of atomic disintegration, which was built upon research he performed while working at McGill University in Montreal, and for which he would eventually win a Nobel Prize in Chemistry.¹⁸ Also, during the first decade of the twentieth century, the list of conditions which could apparently benefit from radium therapy grew substantially and was further accompanied by an excess of over eighty articles on radium therapy by 1906 in North America alone. Given all that was achieved, it can be argued that the first decade of

¹⁷ *Ibid.*

¹⁸ *Ibid.*

the twentieth century marked a major shift in medical radium research.¹⁹



Figure 9-6: “The Mysterious Cure: a Patient Undergoing the Radium Treatment at the London Hospital.” A nurse is shown administering radium to the face of a seated child who holds a book and looks off into the distance. The caption, quoting the prominent British surgeon Sir Frederick Treves (1853-1923), notes that applicators barely the size of a postage stamp and containing little over a grain of radium were costing £360. In 1910, this was approximately twice the average annual income. Front cover illustration by the artist Samuel Begg for the *Illustrated London News* (February 6, 1909). Photomechanical Print. Source: US National Library of Medicine.

¹⁹ *Ibid.*, 14.

Early Use of Radium in Medicine in Canada

Initially, the medical community in Canada did not show as much interest in radium as a medical treatment as did the medical community in Europe. Charles Hayter, in his book *Element of Hope: Radium and the Response to Cancer in Canada, 1900–1940*, suggests that this may be partially due to emphasis being placed on the work of Rutherford, which was conducted within Canada and published in the *Montreal Medical Journal* in February of 1904, with subsequent therapeutic radium research being deemphasized as a result.²⁰ Regardless of the reason for the delayed uptake, the first major article addressing the medical use of radium in Canada by Wickham of the French Laboratoire Biologique du Radium was published in the *Canadian Practitioner and Review* in December of 1908.²¹ In it, he wrote optimistically about the efficacy of radium use in cancer treatment:

In many cases radium is, first and foremost, an agent of special election, which acts as a specific remedy and deserves this cognomen...certain tumors can be made to disappear, certain pathological tissues can be changed, can be turned from their pathological action, and be forced to give place to new tissues.²²

The editor of the journal, William Aikins (1859-1924) had visited Wickham at the Laboratoire the previous year and had been impressed with what he saw. Aikins had hoped that the 1908 article would rouse the interest of the Canadian medical community, but instead ended up disappointed at how unmoved the medical profession seemed to be by the wonders of radium treatment. Despite not receiving the response hoped for by Aikins, the article incited some interest in radium therapy, and even prompted a few Canadian doctors to travel to Paris to visit the Laboratoire in person. One of these doctors was Dr. G. Sterling Ryerson (1855-1925), who worked as a professor of ophthalmology at the University of Toronto.

In Canada, the first reported medical use of radium was chronicled in the *Canadian Practitioner and Review* in December of 1909 and was authored by Dr. Edmund E. King (d. 1930). King was born in Brantford, Ontario and received his medical training from the Toronto School of

²⁰ *Ibid.*, 15.

²¹ Louis Wickham, "The Specific Action of Radium on Certain Tumors and on Certain Rebellious Skin-Diseases," *The Canadian Practitioner and Review* 33 (1908): 745-751.

²² *Ibid.*, 745-746.

Medicine in 1885.²³ Even before publishing his report on the medical usage of radium, King was interested in radiology. Only a year after Wilhelm Conrad Roentgen's discovery of X-rays, which occurred in 1895 (results published in 1896),²⁴ King published his first-hand observations of a male patient, coined "Mr. R," who had suffered physical damage from the X-rays he had been exposed to while delivering public exhibitions of the newfound technology.²⁵ Mr. R had been exposed to X-rays for multiple months, with his daily average exposure time hovering around six hours. Mr. R's symptoms included stiff, swollen and blistered hands, swelling and tenderness of the face, and hair loss, including the eyebrows and hairline. Later symptomatology included the shedding of fingernails and extreme tenderness of X-ray-exposed skin. Upon giving up work due to his symptoms, King wrote, Mr. R's condition improved greatly in that all his blistering and most of his pain subsided. However, he continued to suffer hair loss, indicating the extreme depilatory effect of X-rays.²⁶ Later, building upon his understanding of radiation, King's 1909 article, "Cancer of Tongue—Radium Treatment," discussed the case of a 67-year-old patient, "J. W.," who was suffering from an ulcer on the left side of his tongue.²⁷ In his report, King writes hopefully about the potential of radium-based therapy, highlighting the scientific understanding of radium at the time:

In speaking of the treatment by radium it is well to appreciate the tremendous power that radium exerts. It is the only substance that is known to-day that is continuously parting with its component parts and yet not in any material or discoverable way lessening its power or bulk. It is seen under Spinthariscopes to throw out from a centre luminous bodies like meteoric showers, with an estimated velocity of 150,000 miles per second. It is difficult for anyone to grasp any such figures as these, but, like the Roentgen ray, we are to understand that it is particles passing through the tissue lodging within it that produces the action that results in change from diseased tissue back to normal.²⁸

After excising a portion of J. W.'s cancerous tumour, a portion still

²³ Hayter, *Element of Hope*, 15.

²⁴ Roentgen, "On a New Kind of Rays," 227.

²⁵ Edmund E. King, "Skin, Hair, and Nail Lesions, Produced by the Action of "X" Rays," *The Canadian Practitioner* 21 (1896): 769-791.

²⁶ *Ibid.*, 793.

²⁷ Edmund E. King, "Cancer of Tongue—Radium Treatment," *The Canadian Practitioner and Review* 34 (1909): 747-748.

²⁸ *Ibid.*, 747.

remained that was deemed unsuitable for surgical removal. King began treating J. W. with radium by placing a tube on the tumour for five minutes every second day, totaling three days of treatment. This was then followed by five-minute treatments, every day for ten days. At this point, King noted that the cancerous growth was changing in size and texture. Treatment was suspended for a week and then continued as twice daily, five-minute treatments for ten days straight. J.W., of his own volition, did not return to King for a month as he considered himself cured after the tumour had almost completely disappeared. However, J.W. did return to treat a particularly difficult-to-reach portion of the tumour on his palate, which responded well to treatment. Unfortunately, J.W. broke the tube of radium, effectively preventing any further treatment.²⁹ There is no mention as to how this occurred, or if any ill-effects resulted, and King published no other reports pertaining to his use of radium therapy in his practice.

In 1911, another physician reported his findings in regard to the use of radium in his medical practice. Sterling Ryerson had been one of the few individuals who had made the trip to Paris in 1909 to visit the Laboratoire, as urged by William Aikins. While visiting the Laboratoire, Ryerson had purchased a small quantity of radium which he planned to use in his eye, ear, nose and throat practice. In 1911, he outlined his findings in his article "On the Use of Radium in Ophthalmology," which was published in *The Canadian Medical Association Journal*. In his article, Ryerson references the work of Wickham from the Laboratoire and that of Abbe in New York³⁰ and ends his account of radium use on a note of tempered optimism; he writes:

I can say, without exaggeration, that radium has proved its work. As is the case with all new methods of treatment, too much has been expected of it, and the impossible has been attempted. True, carcinoma is still outside the possibilities of cure, while sarcoma, if superficially situated and of recent growth, will rapidly melt away.³¹

William Aikins as a Cohesive Force in Canadian Radium Research

Dr. William Aikins, was one of the most influential promoters of radium-based medical therapy during the early years of its use in Canada.³² Born in

²⁹ *Ibid.*, 747-748.

³⁰ G. Sterling Ryerson, "On the Use of Radium in Ophthalmology," *Canadian Medical Association Journal* 12 (1911): 1187-1188.

³¹ *Ibid.*, 1190.

³² Hayter, *Element of Hope*, 17.

Peel County, Ontario, Aikins was a member of a well-known political family. His father, James Cox Aikins, was a member of Prime Minister Sir John A. Macdonald's first cabinet, who eventually took up post as the Lieutenant-Governor of Manitoba. Aikins graduated from the Toronto School of Medicine in 1881 and then traveled to Europe in order to pursue his postgraduate studies. Upon his return, he set up his general practice in Toronto and quickly became a well-respected physician. Aikins' recurrent visits to the Laboratoire in Paris in 1908 and 1909 cemented his progressive interest in the use of radium in medicine. Like his fellow physician Ryerson, Aikins purchased a small quantity of radium during his 1909 visit to the Laboratoire, which he planned to use in private practice. Once back in Toronto, Aikins opened his own clinic (the first in Canada to offer radiotherapy), which he named the Radium Institute of Toronto. Aikins' clinic was located near the University of Toronto in a middle-class neighborhood, whose inhabitants could afford specialized medical care.³³

Beyond his role as a physician, Aikins also did editorial work for *The Canadian Medical Association Journal* where he published many of his case reports pertaining to the radium treatments he performed on his patients. Between 1910 and 1923, Aikins treated over 3,200 patients using radium.³⁴ His medical instrumentation was modelled after those utilized by Louis Wickham, the supervisor of the Laboratoire Biologique du Radium in Paris, and Robert Abbe of New York. Aikins possessed a radium "plaque" composed of a flat applicator coated with a radium varnish for external applications to the skin, and a tube of radium which was either placed into body cavities or surgically inserted into cancerous tumors. Aikins also firmly believed that radium treatments conferred a positive effect beyond their curative ability. His work pays great detail to the role of radium in relieving pain, reducing bleeding and discharge and, above all, restoring hope to those who are suffering.³⁵

Aikins' pioneering radium work and promotion of its use in medicine within Canada helped pave the way for future generations of physicians to capitalize on the benefits of radium in cancer treatment. Still, there was the issue of supply. Even with refined commercial extraction techniques, the newfound popularity of radium in medicine and beyond (for industrial applications), meant that it was expensive and hard to procure. Then in 1913, the Standard Chemical Company set up a radium refinery in Pittsburgh in the United States (see Figure 9-7).

³³ *Ibid.*, 18.

³⁴ *Ibid.*, 19.

³⁵ *Ibid.*, 32.

"STANDARD"

RADIUM
PREPARATIONS



**"Standard" Radium
Solution for Drinking**

—
Each bottle contains
two micrograms radium
element in 60 cc. aqua
dist.

—
Maximum-equilibrium
constant of radium
emanation, 5400 mache
units.

PERMANENT



**"Standard" Radium
Solution for Intravenous
Use.**

—
In Ampules of 2 cc.
N. P. S. S. containing
5, 10, 25, 50, or 100
micrograms radium ele-
ment.

PERMANENT

**"Standard"
Radium Compress**

A means of applying
radium locally for the
relief of pain.

A flexible pad of
standardized, guaran-
teed radium element
content.



PERMANENT RADIO-ACTIVITY

INDICATIONS
Subacute and Chronic Joint and Muscular Conditions.
High Blood Pressure. Nephritis.
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"The value of radium is unquestionably established in chronic and sub-
acute arthritis of all kinds (rheumatic and tuberculous excepted), acute, subacute
and chronic joint and muscular rheumatism (so called), in gout, sciatica, neu-
ralgia, polyneuritis, lumbago and the lancinating pain of tabes."—Rowntree
and Baetjer, Journal A. M. A. Oct. 18, 1913.

For Descriptive and Clinical Literature Address		Chicago
New York	RADIUM CHEMICAL	C. W. Hanford, M. D., 749 1st Nat'l Bank Bldg.
C. Everett Field, M. D., 50 E. 41st St.	COMPANY	San Francisco
Boston	PITTSBURGH	Fred L. Lackenbach Biologic Depot 909 Butler Bldg.
Samuel Delano, M. D., 19 Newbury St.		

Figure 9-7: Advertisement by the Radium Chemical Company of Pittsburgh, 1916, promoting radium for drinking, topical application, and intravenous use against a variety of chronic and acute ailments.

Source: Wellcome Collection (CC BY 4.0).

Although the First World War prevented any extensive distribution of radium to Canada, by the early 1920s, radium found its way into medical practices there. From Vancouver to Saint John's, radium was embraced as a useful tool for the treatment of various skin conditions and cancers (see Figure 9-8).³⁶

The Power of Radium at Your Disposal

Twenty-three years ago radium was unknown. Today, thanks to constant laboratory work, the power of this most unusual of elements is at your disposal. Through the medium of Undark, radium serves you safely and surely.

Does Undark really contain radium? Most assuredly. It is radium, combined in exactly the proper manner with zinc sulphide, which gives Undark its ability to shine continuously in the dark.

Manufacturers have been quick to recognize the value of Undark. They apply it to the dials of watches and clocks, to electric push buttons, to the buckles of bed room slippers, to house numbers, flashlights, compasses, gasoline gauges, autometers and many other articles which you frequently wish to see in the dark.

The next time you fumble for a lighting switch, bark your shins on furniture, wonder vainly what time it is because of the dark—remember Undark. *It shines in the dark.* Dealers can supply you with Undarked articles.

For interesting little folder telling of the production of radium and the uses of Undark address

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 Practices, Chicago, N.Y. Mimeo, Cincinnati and Wash.

UNDARK
Radium Luminous Material
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The number of manufactured articles to which Undark will add increased usefulness is manifold. From a sales standpoint, it has many obvious advantages. We gladly answer inquiries from manufacturers and, when it seems advisable, will carry on experimental work for them. Undark may be applied either at your plant, or at our own. The application of Undark is simple. It is furnished as a powder, which is mixed with an adhesive. The paste thus formed is painted on with a brush. It adheres firmly to any surface.

Figure 9-8: “It shines in the dark”: 1921 magazine advertisement for *Undark*, a product of the Radium Luminous Material Corporation, used in painting watch and clock dials, compasses, and automotive and aviation gauges.

Source: Wikimedia Commons

³⁶ *Ibid.*, 20.

The Case of the Radium Dial Workers as an Early Twentieth Century Public Health Incident in the United States

Amelia Maggia (1896-1922), or Mollie for short, was one of seven daughters born to Italian immigrant parents. Upon arrival in America, her father, Valerio, and mother Antonetti took root in Orange, New Jersey.³⁷ At the age of twenty, Mollie started a new job as a dial painter at the US Radium Company.

By what she thought of as a stroke of good luck, two of Mollie's sisters also worked as dial painters at the same company. Her older sister Albina (1895-1946) had begun months earlier, while her younger sister Quinta (1900-1929) started up a few months after Mollie. The sisters worked along with many other young women, mostly between the ages of sixteen and twenty, though ages from eleven to forty-five could be observed. The more they painted, the more they earned (about eight cents a dial). There was also the added benefit of working with a new and exciting product. The paint used on the dials glowed and could be seen in the dark. The women understood that their time at the factory would be short-lived, as they would eventually get married and start families. The year or two they spent earning money and experiencing the work world was seen as a fleeting moment punctuated with dedication and camaraderie.

Mollie, like the other dial painters, was trained in how to carefully and speedily paint the luminescent dials. They were also required to mix together the ingredients of the glowing paint in small batches to keep it from drying out. A yellow powder was mixed together with an adhesive so that it would easily adhere to the numbers and dial hands of wrist watches. The women were told that pointing the brush in their mouths to form a tidy tip with which to paint their delicate strokes was against the rules for sanitary reasons. However, they were also made aware that the only way to work more quickly and efficiently was to do so. Those in charge knew that pointing was widespread but did not prevent it from occurring as it would assuredly slow down production. Increasing the turnout of luminous dial watches and military instruments was of great importance in 1917–1918 due to the Great War. While men were at battle, women worked domestically, fulfilling their patriotic duty by painting as many dials as they could, often working seven days a week.

In 1921, after working as a dial painter for almost four years, Mollie began to suffer from various terrifying physical maladies. Mollie's teeth

³⁷ Ross Mullner, *Deadly Glow: The Radium Dial Worker Tragedy* (Washington, DC: American Public Health Association, 1999), 47-50, 81-88.

ached constantly, and the pain was so debilitating that she had one of her teeth removed. She went to see dentist Dr. Joseph P. Knef (1879-1946) for a follow up as her symptoms were persisting. He noticed that the socket had not healed and that more treatment would be necessary. Unfortunately, the treatments did not seem to help much at all (see Figure 9-9.).



Figure 9-9: At a bedside hearing, Catherine Wolfe Donohue shows how girls often licked the brushes used to paint radium on the dials; this practice would make the brush tips more pointed and therefore their aim would be more accurate. Donohue, who contracted radium poisoning while an employee of the Radium Dial Company in Ottawa, Illinois, was part of the class action suit against the company. Damages were awarded to the women in 1938 by the Illinois Industrial Commission.

Source: *Chicago Herald and Examiner* (February 27, 1938).

In January 1922, Mollie visited another doctor in hopes of finding a treatment or cure for her crippling joint and jaw pain. She was diagnosed with rheumatism and prescribed aspirin for pain relief. Follow up visits with Dr. Knep yielded no further insights into Mollie's downward health spiral. Dr. Knep had observed that Mollie's jaw had been disintegrating and, in a horrifying state of affairs, he lifted parts of her disintegrated jaw out with his fingers. It seemed that nothing could be done for Mollie. To add insult to injury, a lab which processed her tests for various illnesses diagnosed her with syphilis, for which she was treated but her symptoms did not improve. She became severely anemic on top of all her other physical ailments and the necrosis of her jaw spread further to the roof of her mouth and the bones of her ears. Mollie frequently bled from her mouth as she crumbled from within.

On September 12th, 1922 at the age of twenty-five, Mollie died of what was said to be ulcerative stomatitis due to syphilis. A supposed death by venereal disease was the final post-mortem blow to her image and grieving family. Mollie was the first factory girl to die, but sadly others followed; in his book, *Deadly Glow*, Ross Mullner lists over one hundred dial painters believed to have died as the result of ingesting the radium-containing paint as they shaped their brushes with their lips. The cause of their deaths was undoubtedly exposure to high levels of radiation over an extended period of time (see Figure 9-10).³⁸

Conclusions

The discovery of ionizing radiation and, subsequently, of radium, paved the way for an entirely new approach for the treatment of cancer and various other conditions. As Marie Curie had hoped, radium was taken up as a useful tool in medicine that dramatically altered how cancer was treated in Canada and across the globe. Though a bit slower than some other countries to adopt its use, the Canadian medical community ultimately embraced radium as a curative and palliative treatment for their patients.

³⁸ Mullner, *Deadly Glow*, 146-151. The dial painters were employed primarily at three locations; the US Radium Corp. of Orange, NJ, the Waterbury Clock Comp. of Waterbury, CT, and the Radium Dial Comp. of Ottawa, IL. A further six individuals employed by the Radium Dial Comp. and believed to have suffered radium-related deaths include three chemists, two managers, and a clerk.



Figure 9-10: “Poisoned! as they chatted merrily at their work”; newspaper cartoon depicts the factory girls painting the luminous numbers on watches.

Source: *American Weekly* (February 28, 1926).

From its beginnings at the St. Louis Hospital in Paris under the stewardship of Dr. Henri Danlos, to New York, where new instruments and techniques were developed by Doctors Williams and Abbe and, finally, in Canada, where Dr. Aikins championed the new useful element and its efficacy exhibited by the likes of Dr. King and Dr. Ryerson, radium altered the landscape of medicine and captured the imaginations of doctors and patients alike. Due to its scarce supply and prohibitive cost, radium was initially used tentatively in private clinics where large-scale experimentation could not take place. As such, eager Canadian doctors hopefully tested

radium treatments on their critically ill patients without knowing what to expect. It is in this way that the early adopters of radium-based medicine were both doctors and researchers, learning and cataloguing as they practiced their craft.

**SPECIAL COMMUNICATIONS
IN THE HISTORY OF MEDICINE
AND HEALTH CARE**

ELECTROCONVULSIVE THERAPY – A HISTORY OF A SHOCKING TOPIC

ANNA SARAH EREM

SUMMARY: Across the range of psychiatric disorders, schizophrenia can be considered an extraordinary illness, because of a variety of powerful physiological symptoms and the social stigma attached to it. This mental disorder is poorly portrayed and misunderstood.

Thomas Szasz (1920-2012), a famous psychiatrist at the University of Cincinnati called schizophrenia “the sacred symbol of psychiatry” in the twenty-first century (Szasz, 1961: 34). It is a complex condition that is characterized by heterogeneity in symptomatology. The differences in symptoms, family and personal background, make it extremely difficult to trace the historical origins of the mysterious disorder. It is often suggested that “schizophrenia-like” illnesses had existed in similar ways in the past since “madness” had been documented in medicine. Treatment options for schizophrenia were fairly limited throughout the earlier history of psychiatry. This only changed with the introduction of ergotherapy, physiotherapy, some psychoactive drugs, and the availability of psychoanalysis at the end of the nineteenth century, albeit with limited success. In the early twentieth century, the development of shock therapies as a “last resort” (Pressman, 1998) entered the domain of schizophrenia treatment. From a perspective on the availability of medical applications, this chapter looks at the early introduction of seizures through electrical currents in the brain, now defined as ‘electroconvulsive therapy.’

KEYWORDS: Electroshock Therapy, History of Psychiatry, Physical Therapy Approaches, Psychiatric Techniques, Ugo Cerletti (1877-1963)

PRECEPTOR: Dr. Frank W. Stahnisch
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Historical Origins – What are They?

Writing about the history of biological treatments in psychiatry is a complex and daunting approach,¹ specifically when trying to identify the scientific origins and aiming at tying major events together into the “end knots.” For example, when we take the longer-term history of schizophrenia into account, it becomes apparent that a singular reference to German psychiatrist Emil Kraepelin (1856-1926)—who introduced the diagnosis into medical terminology—is insufficient, as scholars have repeatedly suggested.² Apart from the issue of oversimplification of historical inventions and discoveries, detailed analyses regarding the nature and origin of the social and medical developments that led Kraepelin to propose the idea of “*dementia praecox*” (now “schizophrenia”) have shown the vast complexity of psychiatric discourse and progress.³

The history of the convulsive therapies poses a similar challenge. While historical facts—such as individual actors, dates of discoveries and scientific or clinical events—need to be disentangled from specific intellectual “influences”, clinical “priorities,” and priority disputes about “first discoveries.”⁴ All such debates are deeply connected to social, political and moral contexts, without the analysis of which it would be impossible to understand the history of medical progress. Similarly, the very definition of electroconvulsive therapy (ECT) in psychiatry is fairly controversial, and it would be over-simplistic to define ECT just as the use of electricity in the treatment of mental disorders. Besides the intentional induction of convulsions, ECT also necessitates the development of a controlled environment, and its application is supported by the availability and change in scientific hypotheses, requiring many moral and ethical considerations as well.⁵ For instance, the Food and Drug Administration

¹ See for instance in Edward Shorter and David Healey, *Shock Therapy—A History of Electroconvulsive Treatment in Mental Illness* (New Brunswick: Rutgers University Press, 2007), 1-8.

² Eric L. Engstrom, *Clinical Psychiatry in Imperial Germany—A History of Psychiatric Practice* (Ithaca, NY: Cornell University Press, 2003), 16-49.

³ Andreas Ebert and Karl-Juergen Baer, “Emil Kraepelin: A Pioneer of Scientific Understanding of Psychiatry and Psychopharmacology,” *Indian Journal of Psychiatry* 52 (2010): 191-192.

⁴ Sally Frampton, “Patents, Priority Disputes and the Value of Credit: Towards a History (and Pre-History) of Intellectual Property in Medicine,” *Medical History* 55 (2011): 319-324.

⁵ Frank W. Stahnisch, “Non-Restraint, Shock Therapies, and Brain Stimulation Approaches: Patient Autonomy and the Emergence of Modern Neuropsychiatry,” in *Handbook of Neuroethics*, eds. Jens Clausen and Neil Levy (New York: Springer,

(FDA) in the United States approved an electroconvulsive therapy device classification only in 2011,⁶ and the Royal College of Psychiatrists in the United Kingdom offered an official working definition only in 1989.⁷ The Italian pioneers of electroconvulsive therapies Ugo Cerletti (1877-1963) and Lucio Bini (1908-1964) had rather practiced on their psychiatric patients without providing specific diagnostic criteria, assessments of their therapeutic protocols or classifications of the differences of ECT methodology, which were later implemented in medicine. For early twentieth century pioneers, it thus appeared therapeutically sufficient that seizures could be induced through injection or inhalation (such as through the chemical pentylenetetrazol or fluorothyl) or by passing a non-standardized electrical current through the brains of their human patients. This chapter deals specifically with the history of electroconvulsive therapy among the many shock therapies introduced at the beginning of the 1900s.⁸

Idea of Clinical Antagonism between Schizophrenia and Epilepsy

During the 1920s, very few therapies, such as malaria-induced fever therapy of general paresis and psychodynamic therapies, were available for treating mental disorders.⁹ The effectiveness of these contemporary treatment forms was, however, limited with respect to schizophrenia.¹⁰ In 1927, Austrian-American psychiatrist Manfred J. Sakel (1900-1957) introduced the insulin-shock therapy. Even though induced insulin coma also caused convulsions and appeared clinically similar to ECT, the physiological mechanism for

2014), 519-533.

⁶ Food and Drug Administration, "Meeting to Discuss the Classification of ECT Devices," <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/MedicalDevicesAdvisoryCommittee/neurologicalDevicesPanel/UCM240933.pdf> (accessed April 13, 2014).

⁷ Royal College of Psychiatrists, *Report on the Administration of ECT* (London, UK: Gaskell, 1989).

⁸ Jack D. Pressman, *Last Resort: Psychosurgery and the Limits of Medicine* (Cambridge, UK: Cambridge University Press, 1998), 18-46.

⁹ Tsay C. J., "Julius Wagner-Jauregg and the Legacy of Malarial Therapy for the Treatment of General Paresis of the Insane," *Yale Journal of Biological Medicine* 86 (2013), 245-254.

¹⁰ German E. Berrios, "Mood Disorders – Clinical Section," in *The History of Clinical Psychiatry*, eds. German E. Berrios and Roy Porter (London, UK: Athlone Press, 1995), 384-408.

insulin-shock therapy was based on a very different rationale.¹¹

After “dementia praecox” had been identified by Emil Kraepelin in Germany, its symptomatological relationship with epilepsy was at length discussed in contemporary psychiatric and neurological scholarship. For example, up to the 1910s, a psychosomatic correlation between epilepsy and schizophrenia was widely accepted in prevalent clinical theories.¹² In 1929, a new hypothesis focusing on a putative biological antagonism between dementia praecox and epilepsy was published by the Hungarian psychiatrists Jozsef Nyiroe (1889-1953) and Ernest Jablonsky (b. 1913?).¹³ This theory received crucial support from another work of German psychiatrist Alfred Glaus (1891-1970), who in his article “*Ueber Kombinationen von Schizophrenie and Epilepsie*” reported the prevalence of comorbidity with epilepsy was as low as 0.13% in 6,000 patients with schizophrenia in 1931.¹⁴ Additionally, Glaus observed in eight case studies that there appeared to be an “alternation of the condition.” When in 1937 von Meduna himself read the preceding work by Nyiroe and Jablonsky on the biological antagonism hypothesis, he stated that neither the clinical antagonism nor the epidemiological assessment had been negated by the Hungarian clinicians, yet that they had merely provided necessary prevalence data and amended the existing literature.¹⁵

These findings were however inconclusive, as for example, Dutch neurologist Pieter Hendrik Esser (1905-1971) analyzed that the correlation of epilepsy in patients with schizophrenia was almost 1.5% in 1938.¹⁶ Despite the available new epidemiological data and corrections that were made since the beginning of the 1930s, Ladislav Joseph von Meduna argued in 1937 at the 89th Meeting of the Swiss Psychiatric Association that while

¹¹ *Ibid.*

¹² Protagonists were, for instance, Émile Garimond, “Contribution à l’histoire de l’épilepsie dans ses rapports avec l’aliénation mentale,” *Annales médico-psychologiques* 19 (1878): 5-37 and 181-217, or Friedrich Siemens, “Klinische Beitrage zur Lehre von den combinirten Psychosen,” *Archiv fuer Psychiatrie und Nervenkrankheiten* 60 (1879): 128-139.

¹³ Jozsef Nyiroe and Ernest Jablonsky, “Einige Daten zur Prognose der Epilepsie, mit besonderer Ruecksicht auf die Konstitution,” *Psychiatrische Neurologische Wochenschrift* 31 (1929): 547-549.

¹⁴ Alfred Glaus, “Ueber Kombinationen von Schizophrenie and Epilepsie,” *Zeitschrift fuer die gesamte Neurologie und Psychiatrie* 135 (1931): 450-500.

¹⁵ Shorter and Healey, *Shock Therapy*, 26-30.

¹⁶ Pieter Hendrik Esser, “Die epileptiformen Anfaelle der Schizophrenen und die differentialdiagnostischen Schwierigkeiten im Grenzgebiet von Epilepsie und Schizophrenie,” *Zeitschrift fuer die gesamte Neurologie und Psychiatrie* 67 (1938): 1-24.

there was no evidence that insulin “reversed the predominance of old over new fibers in the brain of schizophrenics,” there would be plenty of evidence “in favour of a biological antagonism in epileptics and schizophrenics patients.”¹⁷ He also wrote in 1938:

Between schizophrenia and epilepsy there exists a sort of biological antagonism which must be expressed in the pathological course of the two diseases...I feel justified in asserting a priority that these courses are either mutually exclusive or they do, at least to a great degree, weaken each other in their mutual effects.¹⁸

Meduna later confirmed from his clinical observations that schizophrenic patients would improve in their symptomatology, if they also developed epilepsy, and also claimed to have seen that some epileptic patients had less seizures if they developed schizophrenia as well.¹⁹

Based on series of experiments on animals using injections of camphor in guinea pigs, von Meduna treated his first patient on January 23, 1934, and by the end of the year, another 26 patients. In his autobiography, he writes about one of his patients who was a severe 33-year-old catatonic patient who felt much better after three camphor treatments.²⁰ Following two additional treatment forms, his catatonia and psychotic symptoms diminished, and he eventually went into remission.²¹ Building on his clinical camphor experiments in animals and patients, von Meduna also started experiments with electricity in animals. The resulting observations were first theoretically conceptualized by the medical biologist Stéphane Leduc (1853-1939) of the Medical Faculty of Nantes, who described “a state of cerebral inhibition.”²² Leduc had induced sleep through the placement of one electrode placed on the head of an animal, while a second electrode was placed at the base of the animal’s spine. Application of low voltage was

¹⁷ Ladislav Joseph von Meduna, *Die Konvulsionstherapie der Schizophrenie* (Halle, Germany: Carl Marhold, 1937); 131; translation Anna Sarah Erem.

¹⁸ Ladislav Joseph von Meduna, “General Discussion of the Cardiazol Therapy,” *American Journal of Psychiatry* 94 (1938): 40-50.

¹⁹ Ladislav Joseph von Meduna, “Dysharmonism in Psychosis and its Correction by Shock,” *Journal of Nervous and Mental Disease* 98 (1943): 5-11.

²⁰ Ladislav Joseph von Meduna, “Ueber experimentelle Camphorepilepsie,” *Archiv fuer Psychiatrie und Nervenkrankheiten* 102 (1934): 333-339.

²¹ Max Fink, “Historical Article: Autobiography of L. J. Meduna,” *Convulsive Therapy* 1 (1985): 43-57 and 121-135.

²² Stéphane Leduc, “Production du sommeil et de l’anesthésie generale par les courantes électriques,” *Comptes Rendus de l’Académie des Sciences* 108 (1902): 878-879.

alternated with different currents. Sadly, all of the test animals that underwent these treatments died during experimentation. In 1903, radiology professor Adolphe Zimmern (1871-1935) at the Medical Faculty of Paris and Dr. Philippe Dimier at the Salpêtrière replicated Leduc's experiment and concluded that "cerebral inhibition" had taken place similar to states of epilepsy. During the same year, Swiss physician Frederic Battelli (1838-1927) experimented on animals using standard city electric currents (120 or 240V, 45Hz) of Geneva. He placed one electrode in an animal mouth and another in the back of the animal's neck. The result was an induced epileptic attack.²³

Furthermore, California-based psychiatry researcher Edward Stainbrook (1912-1997) and chairman of psychiatry at New York University's medical school Ernest Harms (1896-1974)²⁴ both reported that the Italian physicist Giovanni Aldini (1762-1834) had already discovered an association between electricity-induced convulsions and melancholia, following the therapeutic usage of electricity in England to treat patients with "melancholy" (depression) in 1814. However, some of the techniques that were applied on the hands, neck, spinal column, kidneys, and rears, were not intended to produce controlled clinical seizures. Furthermore, the definition of melancholy in the 1800s was very different from current interpretations of depression as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V).²⁵ Consequently, the complexity of the historical introduction of therapeutic applications of electricity in patients with mental illness is fairly obvious, and it emerges that the history of the use of electricity in medicine and psychiatry before von Meduna was surprisingly irrelevant to his own development and use of ECT at the beginning of the twentieth century. As mentioned above, contemporary convulsive therapies were largely based on the new theory that there was a neurobiological antagonism between epilepsy and schizophrenia.²⁶

²³ Norman S. Endler, "The Origins of Electroconvulsive Therapy (ECT)," *Convulsive Therapy* 4 (1988): 5-23.

²⁴ Edward Stainbrook, "The Use of Electricity in Psychiatric Treatment during the 19th Century," *Bulletin for the History of Medicine* 22 (1948): 156-167; Ernest Harms, "The Origins and Early History of Electrotherapy and Electroshock," *American Journal of Psychiatry* 111 (1955): 933-934.

²⁵ German E. Berrios, "Melancholia and Depression during the 19th Century: A Conceptual History," *British Journal of Psychiatry* 153 (1988): 298-304; American Psychiatric Publishing, "Highlights of Changes from DSM-IV-TR to DSM-V, 2013," <http://www.dsm5.org/Documents/changes%20from%20dsm-iv-tr%20to%20dsm-5.pdf> (accessed 5 April, 2014).

²⁶ Eduard Krapf, "Epilepsie und Schizophrenie," *Archiv fuer Psychiatrie und Nervenkrankheiten* 83 (1928): 547-586.

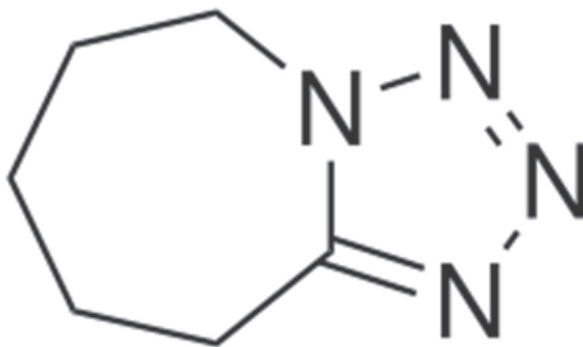


Figure 10-1: Pentylenetetrazol's chemical structure.
Source: Public Domain

Following long-term experimental series with different chemicals to induce clinical seizures in animals, such as with the alkaloids strychnine, thebaine, coramin, caffeine, and brucin, Meduna eventually proceeded with camphor that was galenically prepared in oil. He and his collaborators then realized that the physiological effects of naturally occurring substances could be enhanced when using synthetic chemical alkaloids and replaced camphor with pentylenetetrazol (cardiazol) (see Figure 10-1), which he applied in a series of more exact dose-finding experiments. Von Meduna believed that cardiazol primarily acted on the medulla oblongata, where it elicited seizures in humans and animals, while the optimum range appeared to be 0.4-0.5 grams to be administered intravenously in a 10% diluted solution. In his published article on these experiments from 1935 he noted that “the convulsions usually occur within two seconds of the injection and lasted anywhere between 30 to 80 seconds.”²⁷

After the political situation in Europe was aggravated in the later 1930s, von Meduna was forced to migrate to North America, where he could receive a professorship in neurology at Loyola University in Chicago.²⁸ By the time he had arrived in the United States, however, the biological

²⁷ Ladislav Joseph von Meduna, “Versuche ueber die biologische Beeinflussung des Ablaufes der Schizophrenie,” *Zeitschrift fuer die gesamte Neurologie und Psychiatrie* 152 (1935): 235-262; especially 241; translation Anna Sarah Erem.

²⁸ Frank W. Stahnsch and Guel Russel, eds., *Forced Migration in the History of 20th Century Neuroscience and Psychiatry – New Perspectives* (London, UK: Routledge, 2017), 6.

antagonism hypothesis regarding schizophrenia and epilepsy had become increasingly criticized by the psychiatric and neurological peer research community. Yet von Meduna did not let himself be deterred by this development, when publishing his main work "*Die Konvulsionstherapie der Schizophrenie*" in 1937, in which he presented the findings from 110 cases of his patients: 50% of the patients had been discharged from the hospital, their clinical symptoms were diminished, and he even stated that several patients had seen a "dramatic cure" after convulsive treatment.²⁹ The decreasing support for the biological antagonism theory in the clinical community nevertheless required that von Meduna would propose a new physiological mechanism to explain the neurological basis of the positive results that the convulsion treatments were overall showing. Later, in 1943 he then stated that "the shock worked at an endocrinological level to re-establish mental harmony in the psychosis."³⁰

It needs to be kept in mind, however, that for the first 20 years ECT did not fully replace metrazol therapy, since both treatments were continuously offered in Western Europe and North America and frequently even as a combination treatment. There were nevertheless major problems with metrazol itself; since it was a very potent drug and very difficult to control clinically. One of the major side effects, for instance, were severe spine fractures that affected 42% of the treated patients.

The Italian Beginnings

Italian psychiatry Ugo Cerletti first became interested in electroshock therapies while he was doing postgraduate studies at the University in Genoa. There, he worked on the methods created by Swiss physiologist Frédéric Battelli (1867-1941) to experimentally induce epileptic attacks in dogs. Originally, von Meduna's theory of the biological antagonism between schizophrenia and epilepsy appeared rather as an abstract concept to Cerletti after he had assumed a professorship of neuropathology and psychiatry at the University of Rome. However, his own animal experiments on pigs at the Rome slaughterhouse convinced him that the induction of electric shocks could also be useful for therapeutic application in humans. In 1936, Cerletti sent one of his assistants to Meduna's department to learn the clinical convulsion technique.³¹ Lucio Bini, Cerletti's assistant, did not have

²⁹ Von Meduna, *Die Konvulsionstherapie der Schizophrenie*, 173.

³⁰ Von Meduna, "Dysharmonism in Psychosis and its Correction by Shock," 7.

³¹ Ferdinando Accornero, "An Eyewitness Account of the Discovery of Electroshock," *Convulsive Therapy* 4 (1988): 40-49; esp. 41.

any formal training in psychiatry nor was he an electrical technician, but he provided technical assistance and sat down to build the very first ECT device.

At *La Sapienza* in Rome, Cerletti divided his ECT research into three collaborative projects: neurologist Lamberto Longhi (1909-1997) was asked to study cardiazol therapy; psychiatrist Ferdinando Accornero (1910-1985) was to investigate insulin coma therapy; and assistant Bini was assigned to a special technological research program. Cerletti defined the basic goals for their research collaboration as: “We have seen that, by discharging an electric current of 90 to 120 V for fractions of a second on dogs, we can provoke a kind of epileptic fit: we must improve the circuit and make it as safe as possible, so that we can eventually try this on humans. If we succeed, it is possible that this treatment will be more efficacious than Cardiazol shock therapy.”³² Unfortunately, half of the dogs had died of cardiac arrest because of placement issues with the electrodes. It was Bini, who tested various electrical circuits, and “observed that when the two electrodes were placed on the dog’s cranium, one on each temple, epileptic fits were consistently induced, and the animal survived.”³³

The research project headed by Cerletti in Rome expanded over a period of more than two years. Every week a dog catcher’s truck stopped in front of the clinic and unloaded dogs for experimentation purposes. Every morning started with Bini applying electroshocks to the animals, Accornero using insulin and psychiatrist Mario Felicia cardiazol injections. Autopsies were performed rapidly after death occurred in some of the test animals. Through this process, the Italian research group tried to separate the direct effects of the convulsion treatments from post-mortem alterations, which could have negatively influenced the clinical outcomes. Every day, the collaborative research group studied brain specimens, discussed observations and proposed new scientific hypotheses. Cerletti frequently visited the participating researchers in their laboratories and offices to collect materials also for his own research endeavours. According to Ferdinando Accornero, Cerletti had a significant influence on his assistants and was intellectually “penetrating” their minds.³⁴

In 1937, Bini presented their experimental results on the matter of using electricity for therapeutic induction of seizures during the first international meeting on “New therapies for schizophrenia” organized in Muensingen, Switzerland by the Swiss Psychiatric Association. Additionally, Accornero and Bini reviewed the experiences with insulin coma treatments in Rome. The aforementioned reports are also the first documentation of an

³² Accornero, “An Eyewitness Account of the Discovery of Electroshock,” 42.

³³ *Ibid.*

³⁴ *Ibid.*, 43.

increasing debate of what was eventually to become electroconvulsive shock therapy (ECT) in psychiatry.³⁵

The historical accounts of the individual roles and contributions of the contributing researchers to Cerletti's experimental program are varied and heterogeneous among the writings of Cerletti and his collaborative team members. Some authors and original Italian publications of Cerletti, for example, proposed his personal invention of ECT.³⁶ However, when Cerletti's research coordination is considered, then also the major contributions by his collaborators need to be acknowledged. Bini's accomplishment, for example, was his realization that when electrodes were placed axially from head to rectum the electrical currents passed through their heart, which could cause cardiac arrest. Bini was only 30 years of age when electroshock was developed. Nonetheless, it was he who presented the collaborative research findings during the widely received 1938 conference.³⁷ He was also a senior author of leading Italian publications on psychiatry and had several of his own research publications including those on ECT, yet Lucio Bini has never achieved the recognition that Cerletti did. This is likely a result of Cerletti's moral support for his collaborators and scientific administration skills when he briefed his team regarding the individual steps of their experimental system. This is also reflected in the painstaking careful research and animal trials undertaken by Cerletti himself, prior to initiating clinical trials in humans.

In 1941, endocrinologist Robert Hemphill (1900-1945) in Chester and cyberneticist William Grey Walter (1910-1977) in Bristol published a very influential article in the United Kingdom, which could be considered one of the first attempts to include norms for choosing the right method for clinical ECT administration. The article also had a mathematical table for calculating the correlation between strength and duration of specific electrical stimuli. The ideal condition was suggested by these authors as around 45 seconds for seizure duration, with a range of 25-65 seconds for each application. With respect to the relationship between effectiveness of treatment and diagnosis, Hemphill and Walter wrote: "manic depressive and

³⁵ Walter Ritter von Baeyer, *Die moderne psychiatrische Schockbehandlung* (Stuttgart: Georg Thieme, 1951), 51.

³⁶ Ugo Cerletti, "L'elettroshock," *Rivista Spenmentale di Freniatria* 64 (1940): 209-310; Ugo Cerletti, "Old and New Information about Electroshock," *American Journal of Psychiatry* 107 (1950): 87-94; Ugo Cerletti, *Electroshock therapy. The Great Physiodynamic Therapies in Psychiatry* (New York: Hoeber-Harper Book, 1956): 91-120.

³⁷ Ugo Cerletti and Lucio Bini, "Un nuevo metodo di shockterapie-'L'elettroshock'," *Bollettino della Accademia Medica di Roma* 64 (1938): 136-138.

involutional melancholiacs respond best to treatment.”³⁸ This confirmed the previous publication by Garibaldi Borgarello from Pavia in Italy.³⁹ In 1943, Benjamin Malzberg (1893-1975) from New York presented his own findings, which included 491 cases of diagnosed dementia praecox patients who did better on insulin treatment than ECT, noting also that 33% of 142 “main-depressives”, and 23% of 85 “involutional” (schizophrenic) patients did better on ECT.⁴⁰ The findings of Lauren H. Smith (b. 1886?) from a community mental health centre in New York City, in 1942, confirmed these results.⁴¹

The early 1940s saw further technological and clinical refinements of the shock therapeutic treatment approaches, while extensive research was devoted to medical side effects and the range of diagnostic indications.⁴² The first generation of ECT machines utilized sine wave frequency and were of increasingly simpler technical design, resulting in a “black box” apparatus that many contemporary psychiatrists no longer understood, connected to the main circuits with an electrical transformer and two wires inside that led to two electrodes (see Figure 10-2).⁴³ The energy flow was altered by adjusting either the voltage or current switch, while early treatments were always given bilaterally (to the temples of the head) and unmodified through the application of anaesthetic drugs. It soon became apparent, however, that in addition to the beneficial effects, ECT also resulted in temporary cognitive confusion and often the presence of “retrograde amnesia.”⁴⁴ Swiss psychiatrist Oscar Louis Forel (1891-1982) reported frequent therapeutic success in treating “full seizures” in about 65% of his patients with catatonia, melancholia and mania, and he also believed in the successful co-treatment next to psychotherapy. Moreover, the aforementioned was also applicable to “impressionable”, “hypochondriacal”

³⁸ Robert E. Hemphill and William Grey Walter, “The Treatment of Mental Disorders by Electrically Induced Convulsions,” *Journal of Mental Science* 87 (1941): 256-275.

³⁹ Garibaldi Borgarello, “Clinical Results of one Hundred Cases of Mental Illness Treated with Electroshock,” *Schizophrenie* 9 (1939): 131-136.

⁴⁰ Benjamin Malzberg, “The Outcome of Electric Shock Therapy in the New York Civil State Hospitals,” *Psychiatric Quarterly* 17 (1943): 154-163.

⁴¹ Lauren H. Smith, “Electroshock Treatment in the Psychoses,” *American Journal of Psychiatry* 98 (1942): 558-561.

⁴² Norman P. Moore, “The Maintenance Treatment of Chronic Psychotics by Electrically Induced Convulsions,” *Journal of Mental Science* 89 (1943): 257-269.

⁴³ Carol Robertson and Grace Fergusson, “APT Advances in Psychiatric Treatment,” *Electroconvulsive Therapy Machines* 2 (1996): 24-31.

⁴⁴ Oscar Louis Forel, “L’Electroshoc en psychiatrie,” *Annales médico-psychologiques* 99 (1941): 32-40.

and “vindicators.”⁴⁵ Overall ECT was considered by contemporary psychiatrists to be “cheap and [that it] could be repeated without causing harm,” thereby associated with a “little anxiety” when combined with metrazol- or insulin-induced coma-therapy for the most effective results in severe types of psychoses.⁴⁶

By the mid-1940s there were several reports that seizures could be produced more efficiently using interrupted electrical stimuli. Some of the side effects, for example, disorientation, were less severe and showed a shorter recovery time. However, research and clinical priority was given to the introduction of general anaesthesia for ECT that came to be introduced in the early 1950s.⁴⁷



Figure 10-2: ECT Machine, 1940s.

Source: Wellcome Collection (CC BY 4.0).

⁴⁵ *Ibid.*

⁴⁶ André Lamarche, Jaubert de Beaujeu and Guy Estienne, “Le Traitement par l’electroshoc,” *Annales medico-psychologiques* 94 (1941): 251-261.

⁴⁷ Robertson and Fergusson, “APT Advances in Psychiatric Treatment,” 24-31.

Despite the political situation in Europe, which had culminated in the Second World War, several commercial organizations emerged that were interested in starting a mass-production of ECT devices. French paediatrician and psychiatrist Georges Heuyer (1884-1977) reported to the *Société Médico-Psychologique* in 1941 that “he had been informed that the Siemens company from Germany had become interested in manufacturing a similar machine” for German medical market.⁴⁸

Post-War Period and Convulsive Therapy

In 1947, Munich-based Anton von Braunmuehl (1901-1957) published his amazing book with a detailed account of research data on electric convulsive therapies that he had collected since prewar times. The work included information on current variables, side effects and clinical results of both bilateral and unilateral placement of the therapeutic electrodes (see Figure 10-3). He recommended Italian psychiatrist Giuseppe Corberi’s (1851-1951) scheme for electricity titration, for instance the titration of voltage change according to skull resistance, while keeping the same duration of the electrical stimuli. Von Braunmuehl supported the classification criteria of seizures that Forel had previously suggested in 1941: abortive, incomplete and complete seizures.⁴⁹ It is difficult to infer priority prerogatives among the contemporary psychiatrists regarding their classifications of seizure differentiation. During the National Socialist period between 1933 and 1945, many research activities regarding electricity had been classified and many of the compromising records were eventually destroyed. Later during the atmosphere of the immediate post-war period, scientific data had also been misdated and likely withheld from the public.⁵⁰ Von Braunmuehl’s schemata for the administration of his “*Blockmethode*” for electricity treatment two years after the war nevertheless stood out. The treatment blocks of his method consisted of two, three, or four convulsions on several

⁴⁸ Quoted in Endler, “The Origins of Electroconvulsive Therapy (ECT),” 5-23. The official company website of Siemens AG website does not provide more detailed information on the first Konvulsator (~ECT machine). Apparently, “it chopped sine-wave – unacceptable side effects failed safety standard (BS5724).” Robertson and Fergusson, “APT Advances in Psychiatric Treatment,” 28.

⁴⁹ Anton von Braunmuehl, *Insulinshock und Herzkrampf in der Psychiatrie* (Stuttgart: Wissenschaftliche Verlagsgesellschaft M.B.H., 1947), 117.

⁵⁰ Francisco Lopez-Muñoz, Pilar Gracia-Gracia and Cecilio Alamo, “The Pharmaceutical Industry and the German National Socialist Regime: I. G. Farben and Pharmacological Research,” *Journal of Clinical Pharmacy and Therapeutics* 34 (2009), 67-77.

concessive days.

Another interesting idea came from psychiatrist Walter Ritter von Baeyer (1904-1987) at the University of Heidelberg in 1951. In his book *Die moderne psychiatrische Schockbehandlung* von Baeyer stated that ECT would cause “organic disorders”, and he worked temporarily by “abolishing pathological experiences” and intended to postpone the onset of the psychiatric disorders. Consequently, he agreed with the so-called *Blockmethode* offered by von Braunmuehl in 1947 and described it as “accelerated organic disorganization”.⁵¹ Eventually, longitudinal studies confirmed and corrected some of the historical data regarding the total number of patients in remission versus the reappearance of their clinical symptoms.



Figure 10-3: ECT machine. Manufacturer: Offner Electronics Inc., 1945.
Source: Courtesy of the Museum of Health Care at Kingston.

⁵¹ Baeyer, *Die moderne psychiatrische Schockbehandlung*, 53-55.

ECT in North America

At the time when ECT became first administrated in Italy in 1938, state hospitals in the United States were still overcrowded and grossly understaffed.⁵² An excellent example is described by psychoanalyst Joseph Wortis (1907-1995) of New York, who invited professor Adolf Meyer (1866-1950) for a guest lecture in 1937. Meyer was then psychiatrist in chief at Johns Hopkins University's medical school and one of the most prominent leaders of American psychiatry,⁵³ and Wortis tried to convince him to participate in a major scientific meeting on insulin shock therapy. In his invitation acceptance letter, Dr. Meyer also gave some insights into his own stances toward ECT treatments in contemporary psychiatry:

Dear Dr. Wortis:

There are two extremes in the attempts to play the savior role in psychiatry: work at the root—which is evidently not Insulin work—and importations which have next to nothing specific to do with psychiatry but exploit the patient and resources through and for imported interests; and this is the case of Insulin. I am always sorry to see the latter to get on top. Whenever it does my interest wanes. I have allowed the paresis problem to pass into the domain of the Lues department because Paresis is a “dirty” experiment of nature without localizing or any other control being possible.... And with Insulin we deal with even more of an information apt to divert the attention completely from the illness by absorbing the attention in the direction of something pharmaceutical.⁵⁴

The only psychoactive drugs that were widely available during the 1930s for psychiatry were sedatives, chiefly in the form of barbiturates, bromides, paraldehyde, and chloral hydrate. Hydrotherapy with cold packs, continuous tub bath, and Scotch douches were mainstay of most state hospital treatments.⁵⁵ Among contemporary psychiatrists there was considerable distrust against the somatic therapies, while the most accepted

⁵² Zigmond M. Lebensohn, “The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry: Personal Memoir,” *Comprehensive Psychiatry* 40 (1999): N3.

⁵³ Susan Lamb, *Pathologist of the Mind: Adolf Meyer and the Origins of American Psychiatry* (Baltimore: Johns Hopkins University, 2014).

⁵⁴ Letter of Adolf Meyer to Joseph Wortis at the New York Academy of Medicine in 1938 as quoted in Lebensohn, “The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry,” 174.

⁵⁵ Edward Shorter, *A History of Psychiatry: From the Era of the Asylum to the Age of Prozac* (New York: John Wiley & Sons, 1997), 200-202.

approaches to treatment were psychological and custodially oriented.⁵⁶

An additional factor contributing to the bias against somatic therapies and specifically the clinical introduction of ECT, has been the dominance of psychoanalytic theories in most medical schools and psychiatric training centres.⁵⁷ The psychiatrists who clinically administered ECT in the 1930s and 1940s were often viewed “with the same gaze that gynecologists used to reserve for their colleagues who performed abortions in the days before legalization” of the respective procedures.⁵⁸ Some scholars have thereby claimed that they had personally known psychoanalysts who “condemn[ed] ECT in public but who have privately recommended it for individual patients, and even for members of their own family.”⁵⁹ The political angle of resistance to ECT and widespread ignorance *vis-à-vis* the positive clinical results were rather astonishing from a modern perspective. With regard to the medical treatment of manic-depressive disorders, it is also interesting to note that the delayed introduction of ECT in the United States stood in contrast to the acceptance of invasive psychosurgery in the same scientific community. It was largely based on theoretical rationales, while comparatively few animal trials and epidemiological information existed. Psychosurgery, in fact, was widely recommended by American physicians to treat mental disorders, with a peak of transorbital lobotomies occurring between 1949 (5,074 procedures were undertaken) and 1951 (18,608 treatments).⁶⁰

Italian-American psychiatrist David J. Impastato (1903-1986), who had practised at the New York University medical school wrote about the history of the reception of ECT in North America:

According to Dr. [John] Hughes [b. 1908?] (personal communication) in the fall of 1939 and assistant of Dr. Lucio Bini was passing through Philadelphia. Dr. Earl Bond [d. 1957], Chief of Psychiatric Department of the Institute of the Pennsylvania Hospital, who had read an abstract on Electroshock Therapy, invited him to visit the institute...Subsequent to this discussion, Hughes designed an ECT machine which was constructed by Mr. Fritz Schindler [1906-

⁵⁶ Lebensohn, “The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry,” 173.

⁵⁷ David J. Impastato, “The Story of the Electroshock Treatment,” *American Journal of Psychiatry* 116 (1960): 1113-1114.

⁵⁸ Lebensohn, “The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry,” 174.

⁵⁹ *Ibid.*

⁶⁰ Shorter, *A History of Psychiatry*, 228.

1967].⁶¹

This apparatus, although therapeutically fairly effective, was quite unsophisticated by present-day standards. The first patient ever to receive an ECT treatment administered in the USA by Dr. Impastato was a 29-year-old woman of Italian descent, who was suffering from schizophrenia.

As mentioned above, ECT was originally practised without the benefit of anaesthetic muscle relaxants (see Figure 10-5). The patient had to be treated in the early morning period on an empty stomach and would lie on a bed in the reverse position, fully awake.⁶² A heavily padded double tongue depressor was inserted on one side of the mouth between the upper and lower molars shortly before the electrical treatment was given.⁶³

In the early days of ECT in North America, patients were treated “*en masse* in some hospitals” and “the ECT apparatus was wheeled from patient to patient, accompanied by the doctor and his assistants. This permitted a large number of treatments to be administered in a very short period.”⁶⁴ Obviously, the administrations of these large hospitals lacked in sufficient training in empathy towards their patients, and it is possible that such practices were responsible for the widespread concerns among clinical patients during this time. There are several reports during the 1940s and 1950s, that ECT had sometimes even been administered in the psychiatrists’ offices without any emergency equipment or anaesthetics in stand-by position. Some doctors would also make “house calls” accompanied by a nurse and bring their own ECT machine (see Figure 10-4). In the case of outpatient treatments, the responsible relatives were asked to stay with the patient until their recovery was complete.⁶⁵

⁶¹ Impastato, “The Story of the Electroshock Treatment,” 1113.

⁶² David J. Impastato, *Report to W. E. Barton, 27 January, 1968* (Washington DC: American Psychiatric Association Archives, 1968), n.p.

⁶³ Zigmond M. Lebensohn, “Letter to the Editor,” *Washington Post*, March 4th, 1973, n.p.

⁶⁴ Lebensohn, “The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry,” 174.

⁶⁵ *Ibid.*, 175.



Figure 10-4: ECT machine; overview with cables (top), close-up of the operating board (bottom). Manufacturer: Lektra Laboratories Inc., 1960.
Source: Courtesy of the Museum of Health Care at Kingston.

Elizabeth Wertz underwent repeated ECT treatments during the 1950s in the United States. The terrible patient experiences that accompanied ECT treatments in the 1950s were reflected in her article in the *Washington Post*, which was published in 1972.

We are turned around in the bed so that our heads are at the wrong end, the foot. Then the shock machine and a table with needles and tubes are wheeled up. First there is a shot of insulin. Then the shock to your head. You are terrified. You are clammy and cold with fear. When it is too much, your feelings shut off although your mind goes on recording events around you. The last thing you remember is the sharp noise, a peculiar sound of the electric shock machine. Your head, your brain, complete the circuit. You have a convulsion, you moan in an unnatural animal way and after the seizure you go into a coma. You know this because it happens to the others...⁶⁶

The medical community responded to the public complaints one year later:

It is true that ECT has sometimes been used injudiciously as has any new and powerful instruments in medicine...but I do not know of any reputable psychiatric institutions now in operation which resembles horror chamber described by Ms. Wertz...there have been many advances in the intervening years. What Ms. Wertz describes is totally incompatible with the present-day practice of ECT...Each treatment is similar to a minor surgical procedure in which the patient is put to sleep by intravenous anesthesia, given muscle relaxants... recovery is monitored carefully and the patient is usually eating breakfast within 30-40 minutes of this treatment...⁶⁷

Contemporary Position of ECT and the War against Social Stigma

To this day, electroconvulsive therapy remains one of the most controversial treatments in modern psychiatry. Not many other treatments have generated such fierce and polarized scientific as well as social criticisms. This is also reflected in the public reception of the 1975 movie “One Flew Over the Cuckoo’s Nest” directed by Ken Kesey, which was originally a theatre play (1962), and later made into a movie seen by millions globally. In the movie, ECT was presented as a form of punishment for deviant behaviour largely

⁶⁶ Elizabeth Wertz, “The Fury of Schock Treatment – A Patient’s View,” *Washington Post*, December 10th, 1972, n.p.

⁶⁷ Lebensohn, “Letter to the Editor”.

for administrative reasons to “calm down” the patients and to teach the male main character “a lesson,” and rather not as a treatment for a serious psychiatric disorder clinically applied by psychiatrists.⁶⁸ As time passed by, movie and television coverage of ECT also began to change. In the televised series “Homeland” (2011-), after endless years of taking medications to treat manic-depression with different pharmacological drug alternatives, the main character eventually agrees to undergo ECT treatment. The female actress portrays all angles of the disease; including an enormous amount of medications ingested daily, moments when she attempts to “get off drugs,” and the struggles with her family over her own sickness.⁶⁹



Figure 10-5: A new Faradic battery, ca. 1960, Calgary, AB.

Source: Courtesy of Susan Powelson, Head, Health Sciences Libraries and Cultural.

⁶⁸ Jennifer Lambe, “Memory Politics: Psychiatric Critique, Cultural Protest, and One Flew Over the Cuckoo’s Nest,” *Literature and Medicine* 37 (2019): 298-324.

⁶⁹ Susana Collado-Vázquez, Ariadna Martínez-Martínez and Roberto Cano-de-la-Cuerda, “Deficiency, Disability, Neurology and Television Series,” *Révue Neurologique* 60 (2015): 517-526.

Gradually public opinion began to shift regarding the controversial ECT treatment in light of recent refinements and increasing clinical safety in the provision of the biological treatment (see Figure 10-6). The goal of trained psychiatrists in the current mental health field should be to inform the public, patients and their families both of the augmented public health standards as well as the respective diagnoses of mental disorders in which ECT has proven to be clinically beneficial.⁷⁰

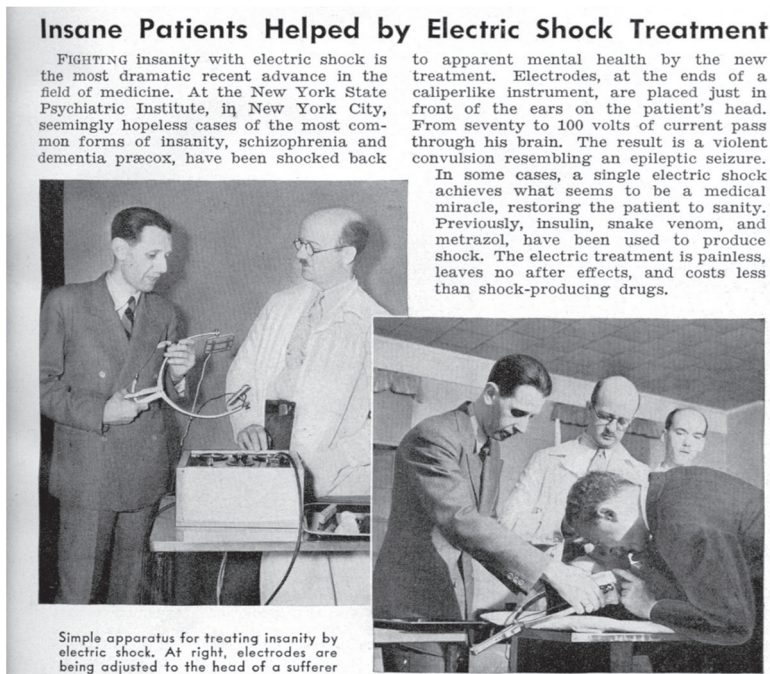


Figure 10-6: Editorial, "Insane Patients Helped by Electric Shock Treatment," *Medscape*, Nov. 1940, n.p.

Source: Courtesy of Medscape, Nov. 1940.

⁷⁰ Lebensohn, "The History of Electroconvulsive Therapy in the United States and Its Place in American Psychiatry."

Conclusion

Despite the continued criticisms from both the public and medical community, ECT has remained a widely used treatment which is recognized as leading to good clinical results in patients such as those with severe mood disorders.⁷¹ Numerous randomized clinical trials (RCTs) have since confirmed the effectiveness of ECT in specific psychiatric diagnoses with severe symptoms, such as treatment-resistant depression, severe depression, severe mania, catatonia or agitation in people with dementia.⁷² The clinical technique of ECT has become increasingly refined and rendered much safer than with earlier treatments that have led to social stigma—being administered now with adjuvant drugs to treat the side effects, seeing the application of anaesthesia and muscle relaxants, as well as attention to protect patients from injuries and fractures.⁷³ According to recent deliberations of the Canadian Psychiatric Association Committee on ECT, modern improvements in the clinical technique further included the constant use of monitored anaesthesia with muscular relaxation and pre-oxygenation, the application of brief-pulse electrical stimulation, unilateral and bifrontal electrode placement alternation, and continuous electroencephalogram (EEG) monitoring of seizures. Contemporary estimates of the mortality rate associated with ECT have thereby been given as approximately two deaths per 100,000 clinical treatments.⁷⁴

Frequent meta-analyses have also indicated that the mortality following hospitalization is lower for patients who were treated with ECT than, for example, depressed patients who had not undergone the procedure. Patients' adverse effects thereby include headache, nausea, muscle aches and sometimes vomiting. Both the American and Canadian Psychiatric Association Committees further describe temporary retrograde and antegrade amnesia as a possible side effect after ECT treatment.⁷⁵ Some

⁷¹ Murray W. Enns, Jeffrey P. Reiss and Peter Chan, "Electroconvulsive Therapy. Position Paper by Canadian Psychiatric Association, 2009,"

www1.cpa-apc.org/Publications/Position_Papers/Therapy.asp (accessed April 5, 2014).

⁷² Richard Jaffe, "American Psychiatric Association Committee on Electroconvulsive Therapy. The Practice of Electroconvulsive Therapy: Recommendations for Treatment, Training and Privileging," *American Journal of Psychiatry* 159 (2002): 331-331.

⁷³ Klaus J. Wagner, Oliver Moellenberg, Michael Rentrop, Christian Werner and Eberhard F. Kochs, "Guide to Anaesthetic Selection for Electroconvulsive Therapy," *CNS Drugs* 19 (2005): 745-758.

⁷⁴ Barry A Kramer, "The Use of ECT in California, Revisited: 1984-1994," *The Journal of ECT* 15 (1999): 245-251.

⁷⁵ Enns, Reiss and Chan, "Electroconvulsive Therapy."

patients might also experience a longer-lasting memory loss. Several organizations founded by former patients however claim that permanent memory loss as a common side effect and that psychiatry would be “a brainwashing technique which damages the brain and destroys memory.”⁷⁶ Moreover, the Committee for Truth in Psychiatry suggests that ECT, although providing temporary relief and “any beneficial effect, there is always a permanently deleterious effect on memory. This consists of erasure of a good deal of pre-shock memory and dimming of more and it frequently includes also a permanent reduction in retentiveness for post-shock experience and learning...”⁷⁷ The Committee for Truth in Psychiatry further adds on their website that ECT would “works by damaging the brain.”⁷⁸ Such anecdotal and rhetorical claims lack validity, however, since comprehensive and scientific reviews of the available data do not find credible evidence that ECT would cause structural brain damages.⁷⁹

Despite the ongoing controversy regarding the extent to which memory loss is associated with the clinical administration of ECT, the available evidence shows that the adverse cognitive effects of ECT could be significantly reduced by using advanced techniques.⁸⁰ Thus the history of ECT can be traced from its early and rudimentary beginnings to a highly sophisticated clinical procedure in modern psychiatry. Yet despite these technological and clinical advances, ECT’s mechanism of action still remains insufficiently understood. Many articles, reports and books have been devoted to important landmark events in the historical evolution of this clinical technique. Nowadays, in the psychiatric research community there is very little controversy regarding the scope, usefulness and clinical benefits of ECT. Only time may tell whether the 70-year-long development of ECT therapy will remain a confined case study of past events with their contingent importance similar to the cases of insulin shock and metrazol shock therapy, or whether it will transcend its place in history and remain an accepted element of the therapeutic repertoire of modern psychiatry.

⁷⁶ Crusaders Against Psychiatry, “Wendy Funk-Robitaille Personal Patients Experience, 2013;” www.ect.org/news/wendyfunk.html (accessed April 5, 2014).

⁷⁷ The Committee for Truth in Psychiatry, 2014, www.ect.org/ctip_about.shtml (accessed April 5, 2014).

⁷⁸ *Ibid.*

⁷⁹ Devangere P. Devanand, Andrew J. Dwork and Edward R. Hutchinson, “Does ECT Alter the Brain Structure?,” *American Journal of Psychiatry* 151 (1994): 957-590.

⁸⁰ Murray, Enns, Reiss and Chan, “Electroconvulsive Therapy.”

EDUCATION, EXPERTISE, EXPERIENCE AND THE MAKING OF HOSPITAL WORKERS IN CANADA, 1920–1960¹

PETER L. TWOHIG²

SUMMARY: Beginning in the 1920s, many Canadian hospitals underwent an extensive period of modernization. A wide variety of workers, generally termed “allied health professionals,” began to work alongside physicians and nurses. This chapter examines the history of two such groups, x-ray and laboratory technicians, paying particular attention to the ways in which technical education was transformed and, through this transformation, new occupational identities forged. Initially, those who staffed the laboratory and x-ray departments were given quick, practical instruction. In many cases, these workers continued to work in various settings across the hospital. The informal instruction of the 1920s and 1930s was displaced by formal, accredited training programs, replete with national examinations linked to a practice registry in the 1940s. Hospital administrators, the Canadian Medical Association, and technicians themselves were all engaged in this transformation. At the same time, national organizations such as the Canadian Society of Laboratory Technologists or the Canadian Society of Radiological Technicians, founded in the late 1930s and early 1940s respectively, attempted to create a common professional identity with a clear scope of practice. Despite this, the professional identity of technical workers remained malleable and highly dependent upon context long after the creation of supposedly national accreditation standards.

KEYWORDS: Canadian History, History of Medicine, Laboratory History, Medical Expertise, Women Hospital Workers

¹ This chapter was previously published as the following article: Peter Twohig, “Education, Expertise, Experience and the Making of Hospital Workers in Canada, 1920-1960,” *Scientia Canadensis* 2 (2006): 131-153. We are grateful to the author, to *Scientia Canadensis*, as well as to the managing editor William Knight for their reprint permission as an additional chapter in this volume.

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Introduction

Many occupational groups comprise the contemporary health care system. The most identifiable occupations are those widely recognized as “professionals” (physicians and nurses) and analyses of these groups also dominate the historiography of health care. “Support staff” (such as cleaners, porters, kitchen workers) rarely figure in analyses of health and medicine in twentieth century Canada,³ while those workers who are considered “allied health professionals” (such as occupational therapy, physiotherapy, speech pathology) have only recently begun to attract the interest of historians of health and medicine.⁴ While such studies have enriched our understanding of health services in Canada, the occupational group has, predictably, remained the focus of the analysis. This is entirely understandable, as many groups have membership records or publish journals that make them “natural” topics of inquiry. Nevertheless, an unintended and ironic effect of this professional gaze is to reinforce the notion that occupational groups were comprised of individuals doing discrete tasks in one area of clinical care. A further consequence of the professional gaze is that these same occupational groups have acquired what Gerald Larkin has described as an “aura of inevitable permanence.”⁵ In

³ Important exceptions would be Jerry P. White, *Hospital Strike: Women, Unions, and Public Sector Conflict* (Toronto: Thompson Educational Publishing, 1990) or, for the United States, Karen Brodtkin Sacks, *Caring by the Hour: Women, Work and Organizing at Duke Medical Center* (Urbana: University of Illinois Press, 1988).

⁴ Ruby Heap, “Physiotherapy’s Quest for Professional Status in Ontario, 1950-80,” *Canadian Bulletin of Medical History* 12 (1995): 69-99 and Heap, “Training Women for a New ‘Women’s Profession’: Physiotherapy Education at the University of Toronto, 1917-40,” *History of Education Quarterly* 35 (1995): 135-158. In Québec, there have been studies of a number of allied health care workers. See, for example, Lucie Piché and Nadia Fahmy-Eid, “À la Recherche d’un Staut Professionnel dans le Champ Paramédical: le Cas de la Fiététique, de la Physiothérapie et de la Technologie Médicale,” *Revue d’histoire de l’Amérique française* 45 (1992): 375-401; Nadia Fahmy-Eid and Lucie Piché, “Le Savoir Négocié: les Stratégies des Associations de Technologie Médicale, de Physiothérapie et de Diététique pour l’Accès à une Meilleure Formation Professionnelle (1930-1970),” *Revue d’histoire de l’Amérique française* 43 (1990): 509-534; Aline Charles and Nadia Fahmy-Eid, “La Diététique et la Physiothérapie face au Problème des Frontières Interprofessionnelles (1950-1980),” *Revue d’Histoire de l’Amérique Française* 47 (1994): 377-408. For a broader discussion of health care workers in Québec, see Nadia-Fahmy-Eid, *Femmes, Santé et Professions: Histoire des Diététistes et des Physiothérapeutes au Québec et en Ontario, 1930-1980* (Saint-Laurent: Fides, 1997).

⁵ Gerald Larkin, *Occupational Monopoly and Modern Medicine* (London: Tavistock Publications, 1983), vi.

other words, the division of labour in health care seems to some to “make sense” and to be rational.

An analysis of technical work in hospitals presents an opportunity to disrupt notions of tightly contained occupational groups and explore the shared, but contested, geography of the division of labour in health care. I have argued previously that health care historians need to transcend silos and build broader analyses of the organization and delivery of health care in Canada,⁶ an argument that has been best advanced by nursing historians.⁷ This chapter presents an analysis of two groups of hospital workers, namely, the technical staff found in laboratories and x-ray departments, in an effort to challenge the idea of clear, permanent and immutable occupational boundaries in health care work. It focuses particularly on the question of regulating these emerging occupational groups, through an analysis of the effort to create accredited education programs and national registries. In this way, the history of technical workers in Canada offers important insights into the nature of hospital work.

While it is certainly possible to group workers together in analytically naïve ways, laboratory and x-ray workers can both be considered “technical workers” in the context of health care. This is because both groups generate symbolic representations of physical phenomena through the use of tools such as imaging technologies or laboratory assays (leading to “results”). Furthermore, these representations are interpreted by other health care professionals. Both groups, therefore, occupy the borderlands between patients and professionals, and both are responsible for manual technical tasks, while being simultaneously alienated from the intellectual work of interpreting results. For the purposes of this analysis, technical workers are significant because their shared histories suggest that the theme of specialization, surely one of the dominant themes in both medical history and analyses of work during the twentieth century, is in need of reinterpretation. Specifically, we need to rethink some of our assumptions about specialization in health care and how workers were prepared for practice. There is, likewise, a profound need to situate interpretations of professional and occupational groups within the historical and structural parameters of particular settings, because of the importance of local needs in shaping the hospital labour force. Most intriguing are the ways in which health care workers continued to work across services long after the presumed specialization of Canadian hospitals. Technical work in the

⁶ Peter L. Twohig, “Recent Writing on Health Care History in Canada,” *Scientia Canadensis* 26 (2002): 26-7.

⁷ Cynthia Toman and Meryn Stuart, “Emerging Scholarship in Nursing History,” *Canadian Bulletin of Medical History* 21 (2004): 223-227.

hospital reveals more bridges than boundaries between occupational groups.

Laboratory Workers

In Canada, the infrastructure of health care took shape in the late nineteenth and early twentieth centuries and this included the development of laboratories small and large. Laboratories are, therefore, typically viewed as an important part of health care's "modernization."⁸ Their development across Canada was much more prosaic, rooted in the efforts of the federal government to control the "venereal disease problem." Venereal disease control became an integral part of the federal health department when it was established in 1919 and this included a commitment of two hundred thousand dollars to help control the "secret plague."⁹ The federal government would supply the funds in proportion to provincial population, while the provinces, most of which passed legislation that addressed VD in the years before 1920, would use the enhanced funding to expand laboratory services. At the practical level, this provided laboratories with federal dollars to support the development of diagnostic services for a number of venereal diseases, including syphilis and gonorrhoea. The impact was dramatic. From 1920 to the mid-1930s, for example, the number of syphilis tests conducted in Nova Scotia's laboratory increased sixteen-fold.¹⁰

Accompanying the rise of venereal disease testing was a general expansion of laboratory work of all kinds through the 1920s. The total number of tests at the Pathological Laboratory in Halifax, including both public health and clinical laboratory tests for the Victoria General Hospital, increased from just 759 in 1914-15 to more than 8,753 a decade later and exceeded twelve thousand tests by the end of the 1920s.¹¹ As insulin

⁸ A much fuller discussion of laboratory workers may be found in Peter L. Twohig, *Labour in the Laboratory: Medical Laboratory Workers in the Maritimes, 1900-1950* (Montreal and Kingston: McGill-Queen's University Press, 2005).

⁹ Jay Cassels, *The Secret Plague: Venereal Disease in Canada, 1838-1939* (Toronto: University of Toronto Press, 1987), 163-169.

¹⁰ Nova Scotia Department of Public Health *Annual Reports*, 1919-20 to 1929-40. The laboratory reported doing some 159 Kahn tests in 1925-26, and this number grew to over 2700 the next year, outpacing the 2369 Wassermann's completed. Thereafter, only Kahn's were conducted, topping 4000 in 1928-29, almost 7000 in 1930-31, 9000 in 1933-34 and reaching 10,000 in 1934-35.

¹¹ These numbers are based upon data published in the Nova Scotia Department of Public Health *Annual Reports* and reflect the number of tests, not the number of samples. The totals are my own. Despite the imperfections of these data, they do serve to illustrate the significant growth in the work of the laboratory.

treatment grew more common at the Saint John General Hospital in the early 1920s, the number of urinalyses dramatically increased. During 1922-23, for example, an additional eleven hundred urinalyses were completed.¹² Such a dramatic expansion of laboratory work required more staff. In the Maritimes, as I have argued elsewhere, larger laboratories in Saint John and Halifax began to offer training in the 1920s but laboratory courses were informal until the later 1930s. These informal courses were practically oriented and short, ranging from two to eight weeks in the 1920s, and nurses were among the earliest students.¹³ After completing the course, nurses were familiar with basic laboratory techniques and could conduct a limited range of analyses. In addition to providing service in hospital laboratories, many nurses continued to provide nursing care, or work in other departments throughout the hospital.¹⁴ The addition of new diagnostic services or other departments created a demand for competent and capable staff but limited financial resources meant that many hospitals needed inexpensive options.¹⁵ Requiring nurses to assume responsibilities in these new departments was a pragmatic response to both rising expectations (of

¹² New Brunswick Department of Health, "Annual Report of the Bureau of Laboratories," in *Annual Report of the Medical Officer of Health*, for the year ending 31 October, 1923, 3.

¹³ W. W. Kenney to Dr. W. Eagar, November 4, 1924 in Victoria General Hospital Letterbook. In another instance Kenney wrote in early 1924 that the hospital "felt for a long while that it was perhaps one of our public duties to assist in any way we possibly could the smaller hospitals of the province." Kenney to Miss J. S. Calder, Superintendent, City of Sydney Hospital, January 21, 1924 in Victoria General Hospital Letterbook. This letterbook is part of the Victoria General Hospital collection, formerly housed at Nova Scotia Archives and Records Management. This rich collection was deaccessioned by the archives and returned to the Queen Elizabeth II Health Sciences Center, where it is housed in a basement storage vault.

¹⁴ This is developed more fully in Peter L. Twohig, "'Local Girls' and 'Lab Boys': Gender, Skill and Medical Laboratories in Nova Scotia in the 1920s and 1930s," *Acadiensis* 31 (2001): 55-75.

¹⁵ W. G. Godfrey has recently provided a stellar analysis of the complexities of funding municipal hospitals. Indeed, he notes that "hospital funding is a major concern of this study, since too many hospital histories revel in grand opening ceremonies and ribbon cutting celebrations...yet ignore the evolving funding patterns that made such space and service extensions possible." See W. G. Godfrey, *The Struggle to Serve: A History of the Moncton Hospital, 1895-1953* (Montreal and Kingston: McGill-Queen's University Press, 2004), 8. It is worth noting that the process of shifting work from one group to another, to save money, unfolded in office work and other areas. See, for example, Graham Lowe, *The Administrative Revolution: The Feminization of Clerical Work* (Toronto: University of Toronto Press, 1987).

clinicians and of patients) and the limited financial resources of many hospitals.¹⁶ In this way, nurses became a critical, and flexible, labour pool for the modernizing hospital.

Susan Reverby has argued that beginning in the 1910s, as hospitals underwent a transformation in the range of services offered, nurses could be found working as laboratory or x-ray technicians, social workers or physiotherapists.¹⁷ While Margarete Sandelowski has described the nurses in these settings as “assistants,”¹⁸ they often worked alone and were in charge of the day to day duties in these departments. For example, when Prince Edward Island appointed its first laboratory technician in the early 1930s, there was widespread agreement that she would work alone and would be largely unsupervised. After considering a number of candidates, it was agreed that a nurse should be sent to the Pathological Institute in Halifax to acquire skills in basic laboratory techniques. Relief and assistance in the new laboratory would be provided by the public health nurses.¹⁹ The demands placed on nurses to staff different areas in the emerging health care matrix is a concrete illustration of their contribution to the “scientific and technological transformation of health care and medicine”²⁰ that occurred in the early twentieth century.

Nurses’ laboratory labour also raises questions about exactly who was considered qualified to work in the new diagnostic services and the nature of that claim to expertise, questions at the heart of occupational identities within health care. The Canadian Medical Association (CMA) showed little interest in the question of laboratory workers and the Canadian Society of Laboratory Technologists (CSLT) was not founded until late 1936.

Following its creation, membership in the CSLT was open to any person who worked in a laboratory, regardless of their education or training.²¹ Such an open membership policy permitted the society to grow

¹⁶ David Gagan and Rosemary Gagan, *For Patients of Moderate Means: A Social History of the Voluntary Public General Hospital in Canada, 1890–1950* (Montreal and Kingston: McGill-Queen’s University Press, 2002), 46, 89; William G. Godfrey, “Private and Government Funding: The Case of the Moncton Hospital, 1898–1953,” *Acadiensis* 31 (2001): 22–23.

¹⁷ Susan M. Reverby, *Ordered to Care: The Dilemma of American Nursing, 1850–1945* (Cambridge: Cambridge University Press, 1987), 114.

¹⁸ Margarete Sandelowski, *Devices and Desires: Gender, Technology, and American Nursing* (Chapel Hill: University of North Carolina Press, 2000), 83.

¹⁹ For complete details see Twohig, *Labour in the Laboratory*, 116–119.

²⁰ Sandelowski, *Devices and Desires*, 1.

²¹ It is not my intention to relate the history of the CSLT here. Readers interested in the details of the professional society will find a fuller account in Twohig, *Labour*

and reflected the diversity that prevailed within the laboratory labour force. Nevertheless, the nascent CSLT was interested in the question of qualifications and of professional status. Among the society's six stated objectives were improving the "qualifications and standing" of laboratory workers and, once this was achieved, to "promote a recognised professional status" for the workers. The founding members believed that establishing approved training facilities and national practical and theoretical examinations would provide a vehicle for professional uplift.²² The imposition of exams, registration, and training schools are, of course, among the key hallmarks of "professionalism" in health care and beyond.

In early 1937, Mountain Sanatorium in Hamilton asked the American Medical Association (AMA) to approve its training program for laboratory workers.²³ The CMA did not have its own evaluation process, so it raised no concerns when contacted by the AMA. The request did, however, prompt the CMA to consider the issue of educating and registering laboratory workers in Canada and they subsequently established a committee to investigate laboratory training. Dr. William James Deadman (1885-1965), who became a prime mover in creating the Canadian Society of Laboratory Technologists, was appointed chair, Dr. G. Harvey Agnew (1895-1961) was appointed secretary and the rest of the members were drawn from across Canada.²⁴ The CMA wanted to ensure that students began laboratory courses

in the Laboratory, especially chapters 5 and 6.

²² Minutes of the CSLT Executive, November 8, 1936. The other objectives, contained in the by-laws, were the promotion of research, to promote co-operation between laboratory workers and the medical profession, and to "more efficiently" aid in the diagnosis and treatment of disease. The minutes and other documents pertaining to the CSLT, are housed in the national office of the Canadian Society for Medical Laboratory Science, in Hamilton, Ontario. The executive of that society generously granted me access to this archival collection, and I am particularly grateful to Kurt Davis.

²³ The movement of health care workers across the Canada-United States border merits some further attention. It is clear from many accounts that Canadian health care workers frequently acquired their education in the United States. Susan Reverby has noted that when the Somerville Hospital in Boston could not attract local women to its nursing school during the 1920s, it strategically advertised in newspapers in Halifax, Nova Scotia. See Reverby, *Ordered to Care*, 80. In another example, pioneer occupational therapist Mary Black, who could not earn a living in Nova Scotia, went to Boston where her Canadian credentials posed no impediment to employment. See Peter L. Twohig, "'Once a Therapist, Always a Therapist': The Early Career of Mary Black, Occupational Therapist," *Atlantis* 28 (2003): 106-17.

²⁴ Library and Archives of Canada, MG28-1343, Canadian Medical Association Minutes of the Executive Committee (hereafter CMA Executive Committee), 18-19

with some knowledge of high school science and that training programs were accredited. For its part, the CSLT expressed its hope that the CMA would not let “every hospital train technicians.”²⁵ When it reported it 1939, the CMA committee on laboratory technicians established thirteen requirements for approving laboratory programs, including laboratory size, the volume and nature of the tests performed, and the qualifications of the instructors. Schools were to be in “adequately organized” pathology departments in hospitals with at least four hundred beds or in provincial laboratories or “other laboratories providing comparable experience.” The committee rejected outright any suggestion that private or commercial laboratories should train laboratory workers.²⁶

Initially, course content remained the responsibility of the hospital and the laboratory director. The CMA prescribed a twelve-month training program and recommended that any specialty training should be preceded by twelve months of general training. The focus on general training ensured that all graduates would acquire core competencies in the areas of hematology, bacteriology, medical zoology, histology and pathological chemistry. Specialized training could include serology, bacteriology or biochemistry.²⁷ This proposal was further refined and was approved by the CSLT in February 1941. The official published syllabus²⁸ prescribed general training in the principal laboratory sections (bacteriology, biochemistry, hematology, serology, parasitology and histology) and outlined areas of specialization. As an illustration, general training in serology included topics such as the principles and methods of complement fixation tests, agglutination tests, blood grouping, pneumococcus typing and preparation of glassware. A person wishing to specialize in serology would learn how to prepare antigens and reagents, conduct paternity tests and other advanced

June 1937; *Canadian Journal of Medical Technology*, 1 (October 1938), 5; Archie R. Shearer, ed., “Canadian Society of Laboratory Technologists,” (Unpublished manuscript, [1983]), 2-3. The other members were Dr. Ralph P. Smith, Halifax, Dr. E. H. Mason, Montreal, Dr. James Miller, Kingston, Dr. George Shanks, Toronto, Dr. J. C. Patterson, Regina and Dr. J. J. Ower, Edmonton.

²⁵ Annual General Meeting of the CSLT (hereafter AGM), 11 December 1937.

²⁶ Library and Archives of Canada, MG28-1343, “Report of the Committee on Laboratory Technicians,” Canadian Medical Association Minutes of General Council (hereafter CMA General Council), 19-20 June 1939; CSLT Executive, 8 February 1941.

²⁷ “Report of the Committee on Laboratory Technicians,” CMA General Council, 19-20 June 1939; CSLT Executive, 8 February 1941.

²⁸ CSLT Executive, 8 February 1941. This was published in the *Canadian Journal of Medical Technology* 3 (1941): 158-159.

techniques.²⁹

With a curriculum agreed upon, the process of approving schools could begin. When the CMA executive met in Winnipeg in June 1941, four laboratories had been approved for training workers.³⁰ By March 1942, when the *Canadian Journal of Medical Technology* published its first list of approved schools, there were nine, most of which were located in eastern Canada.³¹ Ultimately, a network of approved schools was created across the country.³² From nine schools in 1941, the number of approved schools expanded to 30 by 1946, 58 by 1951, 82 by 1956, and 110 by 1960. Although the result of using local hospitals to meet the labour force needs of an expanding health care system was decentralization, the process of approval was an attempt to impose some uniformity on what had been a complex and idiosyncratic training system for laboratory workers. The third component of this enhanced regulation was the creation of a national registry for laboratory workers. Recalling developments in 1941, Dr. Harvey Agnew, noted that physicians believed that there was an “urgent need” for a “registry of qualified technicians,” to be established under the auspices of the CSLT if the laboratory organization “could...stiffen its admitting regulations.”³³ While some physicians were happy with graduates from approved programs, others were less than enthusiastic. In 1948, the Registrar of the Ontario College of Physicians and Surgeons described how some physicians “won’t have anything to do with those [workers] whom they have not trained themselves.”³⁴ According to one laboratory student, a doctor declared: “I don’t believe in general technicians. I want a technician who can do one job well, and I still think only university graduates in science should be employed as technicians.”³⁵ The attitudes of such physicians reflected the realpolitik of laboratory work—membership in the

²⁹ “Official Registry of Technicians: A Syllabus of Studies,” *Canadian Journal of Medical Technology* 3 (1941): 159.

³⁰ CMA Executive Committee, 20-21 June 1941. See also CMA Executive Committee, 14-15 March 1941.

³¹ *Canadian Journal of Medical Technology*, March 1942. By the next CMA General Council meeting, there were ten approved schools and the applications of several other laboratories were pending. CMA General Council, 15-16 June 1942.

³² The approved schools were in Halifax, Saint John, Montreal, Ottawa, Kingston, two in Toronto (St Michael’s Hospital and Toronto Western Hospital) and two in Hamilton (Hamilton General Hospital and Mountain Sanatorium).

³³ Harvey Agnew, “The Place of the Technologist in Modern Diagnosis,” *Canadian Journal of Medical Technology* 3 (1941): 154.

³⁴ CSLT correspondence, Robert T. Noble to W.J. Deadman, March 29, 1948.

³⁵ Mary W. O’Donnell, “O Pity the Poor Student—Or Should We?” *Canadian Journal of Medical Technology* 4 (1942): 41.

national society was not a condition of employment in many settings, so professional closure remained a distant goal for the CSLT. Nevertheless, the CSLT, with the active participation of the CMA, did much to organize Canadian laboratory workers and re-shape their training through the 1940s. By the 1940s there were approved education programs, a national curriculum, and a system of national examinations, all of which were linked to a registry of laboratory workers (see Table 9).

X-Ray Workers

The introduction of x-ray workers to hospitals followed a pattern similar to that of laboratory workers. Within months of their discovery in November 1895,³⁶ x-rays were recognized as a powerful tool for imaging and clinical treatment.³⁷ Roy Porter described x-rays as an “impressive diagnostic tool and a symbol of medical power,”³⁸ while in his recent history of the Toronto

³⁶ The date is provided by both Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: Norton, 1997), 604 and William F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994), 173.

³⁷ The centenary of Röntgen’s discovery prompted a spate of writing in journals such as *Journal of the American Medical Association*, *British Medical Journal*, *Canadian Medical Association Journal* and others. There are also several studies that focus on Canada. The fullest treatment is John E. Aldrich and Brian C. Lentle, eds., *A New Kind of Ray: The Radiological Sciences in Canada 1895-1995* (Vancouver: The Canadian Association of Radiologists, 1995). Other work includes Ruth Brecher and Edward Brecher, *The Rays: A History of Radiology in the United States in Canada* (Baltimore: Williams and Wilkins, 1969) and Edward A. Shorter, *A Century of Radiology in Toronto* (Toronto: Wald and Emerson, 1996). Charles Hayter has been the most prolific scholar, providing many detailed studies of aspects of x-ray work. His recent book, *An Element of Hope: Radium and the Response to Cancer in Canada, 1900-1940* (Montreal and Kingston: McGill-Queen’s University Press, 2005) provides essential context because of the overlapping histories of radium and x-ray departments. See also Charles R. R. Hayter, “The Clinic as Laboratory: the Case of Radiation Therapy, 1896-1920,” *Bulletin of the History of Medicine* 72 (1998): 663-688; Hayter, “Making Sense of Shadows: Dr. James Thirld and the Introduction of X-Rays, 1896 to 1902,” *Canadian Medical Association Journal* 153 (1995): 1249-1256. Hayter has also examined Nova Scotia in “‘To the Relief of Malignant Diseases of the Poor’: The Acquisition of Radium for Halifax, 1916-1926,” *Journal of the Royal Nova Scotia Historical Society* 1 (1998): 130-143.

³⁸ Porter, *Greatest Benefit*, 606. It is of course worth noting that the interest in and authority of x-rays quickly spawned a host of dubious x-ray “cures” and the widespread use of x-rays for such diverse purposes as the treatment of minor benign menstrual bleeding or appropriate sizing of feet. See Porter, 608, for the first

General Hospital, James T. H. Connor argues that the acquisition of x-ray technology (used first in November 1896) “serves as the best example of medicine reflecting modernity.”³⁹ Despite the emphases of Porter and Connor on the meaning of x-rays for medicine, many different people operated x-ray equipment. In his formidable study of American hospitals, Charles Rosenberg has described how “photographers, clinicians, and technicians” ran x-ray departments in various settings.⁴⁰ Other settings show a similar diversity. In England, a dentist operated the x-ray apparatus at the Nottingham General Hospital.⁴¹ In Canada, the prominent Nova Scotian radiologist Herbert Corbett noted that early x-ray work “was relegated to the physicist and photographers.”⁴² When the St. John Infirmary opened in Saint John, New Brunswick in 1914, it was a local general practitioner who supervised the x-ray work.⁴³ Debates about who was qualified to operate x-ray equipment endured for decades.

As with laboratory work, nurses were often called upon to also serve as x-ray technicians. When Dr. William H. Eagar was appointed roentgenologist in Halifax’s Victoria General Hospital in November 1919, he was promised that the hospital would supply “an assistant, not necessarily a so called technician, who shall be an employee of the nursing department.”⁴⁴ The nurse, when working in the x-ray plant, was under

example and Jacalyn Duffin and Charles Hayter, “Baring the Sole: The Rise and Fall of the Shoe-Fitting Fluoroscope,” *Isis* 91 (2000): 260-82 for the use of x-rays in shoe stores. Importantly, the use of x-rays was done with little regard to patients. One consequence of the therapeutic use of x-rays to treat benign menstrual bleeding, for example, was cervical cancer. Technical staff were put in harm’s way, often with devastating consequences. Reiser also describes the widespread use of x-rays for “sentimental” photographs, showing lovers’ clasped hands or fashionable women’s bejeweled fingers. Stanley Joel Reiser, *Medicine and the Reign of Technology* (Cambridge: Cambridge University Press, 1978), 60-63.

³⁹ James T. H. Connor, *Doing Good: The Life of Toronto’s General Hospital* (Toronto: University of Toronto Press, 2000), 130. References to the early use of x-ray equipment are included in a chapter tellingly entitled “A Model Hospital.”

⁴⁰ Charles Rosenberg, *The Care of Strangers: The Rise of America’s Hospital System* (Baltimore: Johns Hopkins University Press, 1995), 182-83. It is also worth noting that there were competitors outside of the hospital.

⁴¹ Rosemary Stevens, *Medical Practice in Modern England: The Impact of Specialization and State Medicine* (New Haven: Yale University Press, 1966).

⁴² Herbert R. Corbett, “Inter-Relationships,” *Focal Spot* 3 (1946): 132-33.

⁴³ *75 Years of Caring: St. Joseph’s Hospital* [Saint John, New Brunswick], n.p.

⁴⁴ Minutes of the Victoria General Hospital Board of Commissioners (hereafter BOC), 16 May 1914 and Minutes of the Medical Board (hereafter MMB), 24 November 1919. Eagar stayed in this position until 1926, see BOC, 13 August 1926.

Eagar's direction, who assumed responsibility "to train and develop" the nurse for the work.⁴⁵ When an early candidate declined the position,⁴⁶ Eagar seconded a senior male nurse from the staff to train as a "technician" in late January 1920.⁴⁷ Recruiting staff to x-ray departments, either as assistants or to take charge of the service, was an important question as the departments were transformed during the 1920s from small services to important departments within hospitals, with huge volumes of work. Where once the x-ray department was the exclusive domain of individual physicians or even lay-people, the expanding role of x-rays in clinical care demanded additional staff.

As in the laboratory, nurses were considered to be an important source for labour in the nascent x-ray departments. Many recalled this aspect of their work in oral histories collected during the 1980s by nursing historian Barbara Keddy.⁴⁸ Greta MacPherson, who began her career at Glace Bay General Hospital in the summer of 1922, worked in both the x-ray department and the laboratory following her graduation, replacing another nurse. Both of the nurses took a "short course" in x-ray and lab work in Halifax. Young Greta, who gave up school teaching to become a nurse, was not enthusiastic about working in the diagnostic service departments, and worried that her duties there would interfere with her desire to nurse. She was, however, adept in x-ray and laboratory technique and the hospital superintendent assured her that she would continue to nurse patients. MacPherson recalled that the superintendent "was anxious for me to do this. Nobody would touch it. So I took instruction." Over the next ten years, her duties at Glace Bay General combined nursing with x-ray work, basic laboratory tests such as blood counts and urine samples, and administering anaesthetics. She came to particularly enjoy her work in the x-ray department.

⁴⁵ W. W. Kenney to W. H. Eagar, 10 November 1919 in Victoria General Hospital Letterbook. In correspondence with the Hon. E.H. Armstrong, the Minister of Public Works and Mines, Kenney wrote that the VG "will supply a *technician* [my emphasis] to this department," Kenney to Armstrong, 26 November 1919 in Victoria General Hospital Letterbook.

⁴⁶ W. W. Kenney to Mary Noonan, 20 January 1920, Victoria General Hospital Letterbook.

⁴⁷ W. W. Kenney to Dr. A. F. Miller, Superintendent, Nova Scotia Sanatorium, 27 January 1920 in Victoria General Hospital Letterbook. While unnamed, it is likely that the man was Michael MacInnis, who would serve as x-ray technician well into the 1940s. See BOC, 2 June 1943.

⁴⁸ This material is drawn from Nova Scotia Archives and Records Management, Barbara Keddy Fonds, Series 018, Social History of Nursing in Nova Scotia in the 1930s: I am grateful to Dr. Keddy for her permission to cite from this important collection.

Probably echoing the opinion of small hospital administrators everywhere, MacPherson stated “to be a nurse-technician, you’re a jump ahead of when you’ve just taken a technician’s course because you already know how to handle patients.”⁴⁹ Her ability to work across several departments and fill multiple roles permitted the hospital to undergo a degree of modernization, without the burden of adding dedicated staff members to now-required departments such as laboratory or x-ray services. Many other nurses recounted similar stories.⁵⁰

The volume of images grew to such an extent that full-time x-ray workers were needed in many departments. In late 1937, Halifax’s Victoria General Hospital’s radiologist, S. R. Johnston, requested that the hospital provide \$720 to employ a “full time X-ray technician, who could be trained to do various types of work...and thus liberate a pupil nurse, who, on account of her short time of service, is only partially satisfactory.”⁵¹ Here it is worth noting that it was the nurse’s “short time of service” that was an issue for Johnston, who nevertheless did not request a more experienced nurse. Instead, he wished to acquire a fulltime staff person to conduct all the necessary tests, which would also put a student nurse back into the nursing labour pool. In January 1938 Jennie Weir joined the x-ray department as a technician but her declining health forced the hospital to make a number of temporary appointments, including Mrs. Violet Toomey and Mr. W. P. Reynolds in the spring and autumn of 1938, respectively.⁵² Finally, in early 1939, Winnie Flynn joined the x-ray department, eventually assuming a position on the permanent staff.⁵³ The path was now clear. In the largest hospital x-ray departments, such as Halifax’s Victoria General Hospital, a full-time x-ray staff was necessary.

Alongside the growth in the number of x-ray departments and increasing numbers of technical staff during the 1920s and 1930s were nascent efforts to organize Canadian x-ray workers. Both the American

⁴⁹ Keddy Fonds, MF160-11, Interview with Greta MacPherson. When Keddy asked MacPherson about radiation exposure from doing the x-ray work, MacPherson replied that “I always blamed that for my infertility,” suggesting the hazards associated with this work.

⁵⁰ While nurses were obviously important to the operation of many x-ray departments, others continued to operate the equipment. In the early 1920s, Wendall Bain served as the maintenance man at the Yarmouth Hospital, before going to Halifax to take an x-ray course. He returned to the hospital and served as the head of the x-ray department for two and a half years. Evangeline R. Pothier, *Mary Ann Watson and the Yarmouth Hospital* (Yarmouth: s.n., [1986]).

⁵¹ MMB, 17 December 1937.

⁵² MMB, 9 May 1938 and 27 October 1938.

⁵³ MMB, 2 December 1938, 23 January 1939 and 3 August 1939.

Association of X-Ray Technicians (AAXRT) and the Society of Radiographers in the United Kingdom were founded in 1920. The first Canadian organization established was the Western Society of Radiographers, created in Manitoba in 1930. Claude J. Bodle, a Winnipeg x-ray worker was the Canadian representative at the AAXRT founding meeting, and he was a key leader in the Manitoba organization. It is therefore unsurprising to learn that the Western Society of Radiographers affiliated with the AAXRT. Individually, many Canadian x-ray workers also sought membership in the American society. In 1947, for example, 184 Canadians appeared on the American registry. Ontario's provincial organization was created in 1935 and by 1938, the Ontario society, together with the Canadian Medical Association and the Canadian Association of Radiologists turned their attention to the question of a national society. Provincial societies were established in Nova Scotia, New Brunswick, Quebec and Saskatchewan in 1940, and other provinces followed. The provincial societies subsequently co-operated to create a national organization, the Canadian Society of Radiological Technicians (CSRT). The first meeting, held in September 1942, extended membership to anyone who was a member of a provincial society before 1 July 1942. As with other professional societies, the CSRT's main issues concerned creating a national registry and raising the educational requirements. Provincial societies varied slightly in their membership rules, so at the CSRT's first annual meeting a decision was made to adopt the standards of the Ontario Society of Radiographers. The minimum period of training would become two years, though the question of approved schools did not emerge until 1946.⁵⁴

Of the CSRT members registered before 1960, 14.4% (n=432) had some education beyond high school. Many, like Irene P., completed business, commercial or secretarial courses. Others listed laboratory training programs, teacher's colleges, nurses' training or university courses. Only 1.2% (n=35) of CSRT registrants were university graduates. Mary S.'s path to x-ray work was particularly circuitous, but captures the broad range of options available to some women. The Summerside, Prince Edward Island,

⁵⁴ Sister Maij DeLellis Crowley, "Some Historical Considerations of the Canadian Society of Radiological Technicians," 1960. This article was originally submitted as part of Sister DeLellis' work for her B.Sc. in Radiologic Technology, which she completed at Saint Louis University in 1948. The article also appeared in the CSRT's journal, the *Focal Spot*, that same year. It was recently republished and updated in Ron Wood and Brian Lentle, "The Canadian Association of Medical Radiation Technologists: Historical Aspects," in *A New Kind of Rays* (see note 37), 304. On the creation of the Nova Scotia Radiographers Society, see *Nova Scotia Medical Bulletin* 19 (1940): 554 and *Nova Scotia Medical Bulletin* 20 (1941): 188.

native completed her grade 12 in 1939 and then went to St. Francis Xavier University in Antigonish, Nova Scotia for two years (September 1939 to May 1941), though she did not complete her B.Sc. In 1942, she took a commercial course at the Central Business College in Summerside. In January 1946, she renewed her education, this time undertaking x-ray training at St. Joseph's Hospital in Saint John, New Brunswick. She completed her course in June 1946 and in August that year, assumed her position at the Prince County Hospital, in Summerside.⁵⁵ In another example, Sister Frances G. completed two years of laboratory training at the Halifax Infirmary in 1946, and immediately followed this with two years of x-ray training at the same hospital.⁵⁶ As the examples suggest, there remained many different paths to x-ray work, although all workers after 1942 had to complete a two-year training course and pass an exam.

Given the absence of approved schools and the many routes to working in an x-ray department, it is not surprising that the issue of education appeared in the first issue of the CSRT's journal, *The Focal Spot*. In his article, "The Future of the X-ray Technician," published in January 1944, Claude Bodle (1886-1980) wrote:

It has also been questioned if any elaborate scheme of education and training is necessary for technicians; that radiographic technique is a very simple matter, and that any extensive course of study and training is largely a waste of time and effort, and that the rapid development of equipment and automatic devices and gadgets have so simplified procedures that no very great degree of skill or knowledge is required to do technical work, and that the whole thing has become more or less automatic, like a "penny in the slot" machine, you press the button and the machine does the rest, and so on, and that there is no future for the technician.⁵⁷

Nevertheless, Bodle believed that "too much emphasis has been placed on purely theoretical considerations, and not enough on the practical phases of the work."⁵⁸ There is ambivalence in Bodle's argumentation. On the one hand, he indicates that technicians were more than "button-pushers" and that they, in fact, possessed skills. But the skills were technical ones, rooted in practical education rather than, say, developing the "trained mind"

⁵⁵ Canadian Association of Medical Radiation Technologists (hereafter CAMRT) membership file, #298.

⁵⁶ CAMRT membership file, #340.

⁵⁷ Claude J. Bodle, "The Future of the X-Ray Technician," *Focal Spot* 1 (January 1944): 10-13.

⁵⁸ *Ibid.*

that is usually associated with professional work.⁵⁹

Education was also a prominent topic at the annual meetings of the CSRT throughout the 1940s and 1950s. There were a number of linked developments through the 1940s. In 1944, a motion was passed that established a national standard examination as a precondition for membership in the CSRT.⁶⁰ The next year, the Alberta Society of Radiological Technicians developed a resolution that would have the CMA and Canadian Association of Radiographers (CAR) endorse a policy that only registered technicians be employed.⁶¹ In 1946, the CSRT broached the idea of approved training centres with both the CMA and CAR.⁶² A first step to achieving this goal was the creation of a Syllabus of Training for Technicians, which was published in July 1946.⁶³ But an approved curriculum and the delivery of that curriculum were two different matters. An examination of St. Joseph's Hospital in Saint John, New Brunswick, reveals how the approved curriculum was implemented in one local hospital. In 1950, the first-year curriculum in x-ray technique was divided into two semesters, each lasting sixteen weeks. The first year had a heavy focus on anatomy and physiology (110 hours), physics (32 hours), x-ray technique (32 hours), processing room technique (16 hours), nursing essentials (16 hours), and first aid (12 hours). Other topics received less than ten hours of instruction. The second year focused largely on refining technique and skill development in supervising and departmental administration (see Table 9). In addition to the classroom work, each student was also required to work in the x-ray department at least thirty hours per week. While the curriculum was becoming standardized across Canada, the emphasis continued to be on practical experience.

The heavy emphasis on practical instruction created the conditions for exploitation, wherein students received only minimal instruction or supervision and were, in fact, treated as labour.⁶⁴ There was sufficient

⁵⁹ This was also true of laboratory work. See Twohig, *Labour in the Laboratory*, 136-47. For a discussion of the contrast between technical skills and professional skills, and the implications of such definitions for women, see Nancy F. Cott, *The Grounding of Modern Feminism* (New Haven: Yale University Press, 1987) and Cynthia Cockburn, *Brothers: Male Dominance and Technological Change* (London: Pluto Press, 1983).

⁶⁰ "Skirmish on the Home Front," *Focal Spot* 1 (October 1944).

⁶¹ Resolutions Committee of the Canadian Society of Radiological Technicians *Focal Spot* 2 (1945): 90-91, 98-99.

⁶² Minutes of Fourth Annual Meeting, *Focal Spot* 3 (October 1946): 198-207.

⁶³ Syllabus of Training for Technicians *Focal Spot* 3 (July 1946): 158.

⁶⁴ *Focal Spot* 7 (Fall 1950): 185-86, 191-92, 206-07.

variation in the nature and quality of education in hospitals across the country that the CSRT felt that “until we have an approved teaching syllabus we cannot hope to make progress towards the establishing of approved training centres which will be our next major undertaking.”⁶⁵ There were other problems with the training system. As with laboratory workers, marriage and mobility, particularly to the United States, exacted a heavy toll on the labour force.⁶⁶ Greta MacPherson, a nurse who also worked in the x-ray and laboratory departments at Glace Bay General Hospital, is an illustration. When she retired from her position as chief technician in 1951, a note in the *Focal Spot* commented that she had been “a loyal and tireless worker for our Society for many years . . . however, we know husbands have to be looked after too.”⁶⁷ Another issue was training capacity. Some large x-ray departments did not train students and the entire system produced only about 125 technicians each year, which was insufficient to meet the expanding needs of Canadian hospitals.⁶⁸ Within the CSRT, there was the general opinion that this training system was providing “adequate instruction”⁶⁹ for x-ray workers; while the training prepared x-ray workers for practice in hospitals across Canada, it fell short of the CSRT’s goal of being a vehicle for professional uplift.

Shared Histories in the Contested Geography of Health Care Work

The limited training capacity and the demand for workers, particularly in small hospitals and rural areas, required innovative solutions. The most dramatic example emerged in Saskatchewan, where Dr. William A. Riddell (1881-1963) of Regina inaugurated a combined x-ray and laboratory course for hospital workers in 1946.⁷⁰ Riddell co-operated with the CSLT and the CSRT to create a corps of workers particularly for smaller hospitals to continue the rich tradition of multi-tasking, well-established by the mid-1940s.⁷¹ The first class began on 6 October 1946 and consisted of fifteen

⁶⁵ *Ibid.*

⁶⁶ *Focal Spot* 8 (Spring 1951): 76-77, 86-87. For a discussion on laboratory workers, see Twohig, *Labour in the Laboratory*, chapter 6.

⁶⁷ *Focal Spot* 8 (Winter 1951), 41.

⁶⁸ *Focal Spot* 8 (Summer 1951), 131-4.

⁶⁹ *Focal Spot* 7 (Fall 1950): 185-86, 191-92, 206-07.

⁷⁰ AGM, 1 June 1946.

⁷¹ The CSLT recognized that “the need in small hospitals is very great for technicians who can do blood groupings, blood counts and urinalysis and x-rays of chests and fractures.” The frequent combination of these skills led the CSLT to

returned service people. A second class of twenty was slated for the new year and there were reportedly one hundred and fifty applications for these positions.⁷² Students spent three months each on laboratory work and preparation for work in x-ray departments. The focus was on very basic tasks. The laboratory training, for example, concentrated on urinalysis and basic haematology (red and white blood cell counts, haemoglobin estimation, sedimentation rate and simple staining techniques). Following the six-month training period, students would be placed in a hospital laboratory and either a qualified technician or a laboratory director would continue to make supervisory visits for an unspecified period.⁷³ These workers, given the unwieldy name of “provisional laboratory and radiological technologists,” would not become full members of the CSLT until completing further training.⁷⁴

As the announcement in *Canadian Hospital* acknowledged, the program was not designed to train “fully qualified technicians” but rather to meet the “the immediate need” for workers, who could then take further preparation to qualify for registration either with the CSRT or the CSLT. Such combined programs became common in provinces with rural hospitals, where recruiting and retaining staff was particularly problematic. In addition to Saskatchewan, Alberta also offered a combined course lasting six months, while Nova Scotia and Newfoundland had eight-month programs. In all of these instances, the graduates were designed to fill positions in smaller, rural hospitals and carry out limited duties. None of these programs were offered yearly, but were a direct response to the labour demands of rural hospitals in an era of expanding hospital services.⁷⁵

There were other programs designed to meet the demand for a multitasking labour force. Dr. James C. McMillan (1873-1941), director of the Winnipeg General Hospital’s radiology department, advertised a sixteen-month course approved by the American Registry of X-ray Technicians that was only open to nurses.⁷⁶ The reality was that many

discuss affiliation with the radiology society in the mid-1940s. See AGM, 1946.

⁷² *Canadian Hospital* 23 (November 1946), 84.

⁷³ *Ibid.*

⁷⁴ Minutes of the CSLT Executive, 2 June 1946 and 5 October 1946.

⁷⁵ Department of Labour. *Medical Laboratory Technologist*, Minutes of the CSLT Executive, 19-20 March 1955. It is worth noting that the Saskatchewan government reinstituted the combined x-ray and laboratory course in October 1953. See Shearer, “Laboratory Technologists,” 16.

⁷⁶ This advertisement appeared in *Canadian Nurse* 36 (1940). Further evidence can be found in advertisements from either hospitals or individual workers, which often referred to multiple skill sets, including some combination of nurses’ training and x-

hospitals foisted multiple duties upon existing staff, as illustrated in this 1942 article in *Canadian Hospital*:

Since in X-ray work so much depends upon the proper handling of sick people, it is reasonable to suppose that nurses would make good technicians, and it often works out that way. It is obvious that they have already had much of the professional attitude and responsibilities taught to them...It has become a common practice—which is working very well in many small hospitals—to have one person do both laboratory and X-ray work.⁷⁷

Hospital superintendents were acutely aware of their need for staff in the diagnostic service departments and focused on staffing issues at a 1952 roundtable. One nurse superintendent of a 30-bed hospital wanted to know whether a nurse could be sent for some basic x-ray training. Another participant thought that student nurses could be taught some x-ray technique and provide service. Still other solutions were discussed, including hiring an auxiliary person who could relieve the regular technician or having a manufacturer's representative provide basic instruction to an existing staff person so "that person could turn out diagnostic films." The CSRT held firm, rejecting the idea of short courses and adhering to the prescribed two-year training course. The minutes record that "some who had experience in the technical field, said that x-ray and lab work do not combine well as to the time factor, as both services are usually busy at the same time." Moreover, some of the superintendents who were seeking alternatives to the two-year training period "reconsidered the matter after returning home, and wrote in requesting me to find them registered personnel."⁷⁸

Clearly, the CSRT wanted to reinforce the idea that the modern hospital required workers with discrete areas of expertise. But read against the grain, it is equally clear that many hospitals wanted workers with combined skill sets. Evidence of the multiple roles of hospital workers may be gleaned from Canadian health care periodicals. Pearl Morrison wrote in *Canadian Nurse* in 1941 that graduate nurses often worked in the laboratory

ray experience or training in x-ray and laboratory work. See advertisements in *Canadian Nurse* 37 (1941): 358 and *Canadian Nurse* 37 (1941): 493. Kathryn McPherson has ably noted how nurses were encouraged to undertake training in many facets of hospital work, including x-ray technique. See Kathryn McPherson, *Bedside Matters: The Transformation of Canadian Nursing, 1900-1990* (Toronto: Oxford University Press, 1996), 221.

⁷⁷ P. E. Hunt, "Better X-Ray Diagnosis in Small Hospitals," *Canadian Hospital* 19 (1942): 48-49.

⁷⁸ *Focal Spot* 9 (1952): 56, 59, 67, 69-71.

or x-ray departments.⁷⁹ Anne, writing a year later, made the same point but also noted that “X-ray equipment has become so greatly simplified and reduced in cost that there are few of the smaller hospitals now without it, but its operation remains a problem. If the hospital can afford a technician and a part-time radiologist, or a part-time technician who may divide his or her time with other departments, the difficulty is overcome.”⁸⁰

Advertisements for jobs, or from individuals seeking work, provide further evidence. An unnamed eastern Canadian hospital advertised for a “Laboratory X-ray technician, able to do blood chemistry” in 1930.⁸¹ The next year, a woman advertised that she spent eight years working as a “nurse-laboratorian” in a doctor’s office, eighteen months as a combined x-ray and laboratory technician in a 75-bed hospital and another year working exclusively in the x-ray department of a 350-bed hospital.⁸² Early issues of the *Focal Spot*, the official journal of the Canadian Society of Radiological Technicians that began publishing in 1944, offer abundant evidence. A Manitoba woman seeking a position in a large urban hospital emphasized that she was a registered nurse and a member of both the Canadian and American x-ray societies. A nurse from Alberta, who worked first for five years performing lab tests, was now currently working as a combined x-ray and laboratory technician.⁸³ The St. Catharines General Hospital, in southern Ontario, sought an x-ray technician, though preference would be given to one with nurses’ training. The Woodstock General Hospital, also in Ontario, preferred an individual who could work both in the laboratory and in the x-ray room.⁸⁴ One hospital wanted a nurse to work in the x-ray and laboratory departments, noting that the candidate would spend their “spare time” as a general duty nurse, while another advertised for a nurse technician who would maintain medical records in her spare time.⁸⁵ Focusing exclusively on a single aspect of an individual’s labour, as many studies of health care professionals are wont to do, obscures the complex nature of hospital work, wherein many worked across disciplines and many employers demanded broad and flexible skills. Moreover, this was an enduring feature of hospital work. In Halifax, for example, the Tuberculosis

⁷⁹ Pearl L. Morrison, “The Nurses in Hospital Administration,” *Canadian Nurse* 36 (1940).

⁸⁰ Anne Wright, “Administration in Small Hospitals,” *Canadian Nurse* 37 (1941): 230.

⁸¹ *Canadian Hospital* 7 (1930): 36.

⁸² *Canadian Hospital* 8 (1931): 42.

⁸³ *Focal Spot* 2 (1945): 98-99.

⁸⁴ *Focal Spot* 2 (1945): 104.

⁸⁵ *Focal Spot* 3 (1946): 52.

Hospital employed a combined x-ray and laboratory technician as late as 1949.⁸⁶ Labouring across services was standard fare for x-ray workers and others in the interwar period and beyond, in rural and urban settings, in large and small facilities.⁸⁷

Multitasking women played an integral role in the scientific and technological transformation of the hospital and, through it, of the health care system. That many of the earliest laboratory and x-ray workers were women is hardly surprising. Nurses' uses of new technologies in the diagnosis, management and, in the case of x-rays, treatment of patients were placed in the service of physicians and hospital administrators eager to bring the latest developments to their patient population. As Margarete Sandelowski recently wrote, doctors viewed nurses "much like stethoscopes and surgical instruments, as physical or bodily extensions of physicians."⁸⁸ Barbara Melosh's catchy phrase, "the physician's hand" captures this sense of extension, which was a familiar component of the development of health services across North America. When a North Carolina hospital faced a shortage of interns before World War I, a local physician suggested that tasks such as urinalyses, blood counts and medical histories be delegated instead to nurses.⁸⁹ "In order to harness the benefits of this new technology," Sandelowski argued, "physicians had to share its use with nurses (and eventually also with a host of new technicians whose jobs were created in response to it)."⁹⁰ In the new scientific hospital of the twentieth century, patients routinely experienced blood tests or urine samples and physicians now depended upon others to collect the samples, take the images, or prepare reports.

What they could not do was interpret the results or make diagnoses. Diagnosis, the mental component of clinical care, was separated from the manual aspects that underpinned that diagnosis and was vested in the professional domain of physicians. Though many hospital workers were expected to assume responsibility for running the new services, often with little or no supervision, they did not derive much in the way of cultural or professional authority from the technology. Moreover, as Rosemary Stevens has argued, the multifaceted nature of nursing work further defined nursing as "all-purpose female service workers without a defined monopoly of scientific skills."⁹¹ Her argument fits the experience of other multitasking

⁸⁶ "News Notes," *Canadian Nurse* 45 (1949): 943.

⁸⁷ Twohig, "'Local Girls and Lab Boys'."

⁸⁸ Sandelowski, *Devices and Desires*, 3.

⁸⁹ *Ibid.*, 85.

⁹⁰ *Ibid.*, 63-4, 72.

⁹¹ Rosemary Stevens, *In Sickness and in Wealth: American Hospitals in the*

women in health care. Physicians used stethoscopes to diagnose disease; nurses used them to collect information which was then passed to the physician for interpretation. Women's engagement with technology in the diagnostic services, rather than providing a fresh impetus to professional claims, served instead to blur their role, while concurrently confirming their subordinate position to physicians.

It is not entirely clear how nurses themselves felt about their use of technology and their new duties within the hospital. Lavinia Lloyd Dock (1858-1956), a leading American nurse, recognized that opportunities in the service departments could alleviate some of the overcrowding that was characteristic in American nursing as early as the 1890s. Dock suggested that departments such as dietetics or pharmacy were promising employment alternatives for nurses. Moreover, Dock believed such services would be better served through staffing them with nurses.⁹² Rank and file nurses expressed ambivalence toward these new roles. Some nurses, such as Greta MacPherson, feared new duties would interfere with their nursing work. Greta, after all, suggested that nobody else wanted to do the work, evidence that such positions were not desired.

Conclusion

The history of x-ray and laboratory work reveals a portrait of the multiple duties of hospital workers. Such patterns of work are revealed through detailed analysis of individual workers in particular settings. The technical workers who staffed hospitals across Canada suggest that we need to rethink our assumptions about specialization in health care and the "modernization" of hospitals, and look instead for linkages among workers. Such linkages have analytical potential because they force us to consider the many factors that shaped (and shape) the division of labour within health care. The Canadian health care system is comprised of a large number of often interdependent occupational groups, each of which makes an important contribution to health services and each with its own history, though there are shared elements, as the current analysis suggests. Yet, we know very little about such topics in part because we lack foundational studies on the division of labour within health care in particular contexts. Susan Reverby has recently argued that "policymakers at every level...need a past as a

Twentieth Century (New York: Basic Books, 1989), 12.

⁹² Susan Reverby, "Neither for the Drawing Room nor the Kitchen," in *Sickness and Health America: Readings in the History of Medicine and Public Health*, eds. Judith Walzer Leavitt and Ronald L. Numbers (Madison: University of Wisconsin Press, 1997), 260; Sandelowski, *Devices and Desires*, 83-6.

touchstone,” while Daniel Fox has highlighted how beliefs about the history of health care continue to shape public policy.⁹³ But the foundations of those beliefs may not be well laid, as Michael Bliss has suggested.⁹⁴ A re-examination of the social organization of health care, with due attention to the contested geography of health care work, offers the potential to complicate our ideas of occupational identity, notions of “expertise” and a range of other issues. At a time when the relationships among health care providers and between providers and patients are being actively reshaped in an effort to meet labour shortages, to economize, or to extend new services to new populations, such historical perspectives are particularly apt.

⁹³ Susan Reverby, “Thinking through the Body and the Body Politic: Feminism, History, and Health-Care Policy in the United States,” in *Women, Health and Nation*, eds. Georgina Feldberg, Molly Ladd-Taylor, Alison Li and Kathryn McPherson (Montreal and Kingston: McGill-Queen’s University Press, 2003), 404-20; Daniel Fox, “History and Health Policy: An Autobiographical Note on the Decline of Historicism,” *Journal of Social History* 18 (Spring 1986): 349-64.

⁹⁴ Michael Bliss, “Health Care Without Hindrance: Medicare and the Canadian Identity,” in *Better Medicine: Reforming Canadian Health Care*, ed. David Gratzer (Toronto: ECW Press, 2002), 31-43.

First Year – First Semester	
Anatomy and Physiology	50 hours
Nursing Essentials.....	16
History and Roentgenology.....	6
Professional Ethics	8
Medical Terminology.....	8
Departmental Records and Office Administration	8
Processing Room Technique.....	16
Physics of Electricity and Radiation	16
Essential factors on Roentgenology	8
Accessory X-Ray Equipment.....	8
Course A in Roentgenographic Technique.....	16
First Year – Second Semester	
Anatomy and Physiology	60 hours
Radiologic Physics	16
X-Ray Apparatus.....	8
Care and Preparation of Patient.....	4
X-Ray Protection and Fluoroscopy	8
Dental Roentgenography.....	8
Course B in Roentgenographic Technique.....	16
First Aid	12
Second Year – First Semester	
Course C in Roentgenographic Technique.....	16 hours
Roentgen therapy Technique.....	16
Course D in Roentgenographic Technique.....	16
Roentgenographic Critique	16
Introduction to radium Therapy	8
Introduction to Medical Science.....	16
Second Year – Second Semester	
Departmental Supervision	4 hours
Practical Supervision.....	2 months
Character Formation.....	16 hours
Journal Club	16
General Review	16
Elementary Clinical Photography	Optional

Table 9: X-ray course at St. Joseph's Hospital, Saint John, New Brunswick 1950.
Source: *Focal Spot* 7 (Summer 1950): 141.

APPENDIX

ABSTRACTS OF PRESENTATIONS AT THE CONFERENCE

The following appendix contains the abstracts (in alphabetical order) of all other 31 oral and 18 poster presentations that were given at the 2015 History of Medicine Days conference. The respective authors of these abstracts had either not submitted a formal manuscript for publication in the 2015 Proceedings Volume, or their submitted manuscripts were rejected by the reviewers and editors.

EMIL VON BEHRING: FATHER OF SERUM THERAPY, PIONEER OF MODERN-DAY IMMUNIZATION

BABAK ABERUMAND

In 2014, there were an estimated 20,000 cases of Ebola and about 8,000 of them had a fatal ending. Great strides have recently been made in Canada, however, with an experimental vaccine that relies on the fundamental concept of passive serotherapy uncovered by German physiologist Dr. Emil von Behring (1854-1917) while working with diphtheria and tetanus generations ago. Diphtheria was a fatal disease of epidemic proportions throughout Europe and America. Highly contagious, the main culprit for the symptoms of diphtheria was revealed to be the release of “exotoxins” by the causative bacteria. This discovery laid the groundwork for von Behring’s diphtheria antitoxin experiments for which he was awarded the first Nobel Prize in Physiology or Medicine in 1901.

The antitoxin discovery by Dr. von Behring established the concept of serum therapy. His work with antitoxins would go on to pave the way for the development of long-term immunity in the form of vaccinations against these infectious diseases. Today, the diphtheria antitoxin, in conjunction with antibiotics, continues to serve as first-line treatment for diphtheria infection.

Dr. von Behring’s findings were later overshadowed by the antibiotic revolution of the mid-twentieth century, yet his work continues to be relevant to this day. Using previously published works of Dr. Emil von Behring and current medical literature, this poster presentation identifies a key turning point in medicine’s ability to contain the diphtheria and tetanus epidemic of the past and how those very same effective principles are being applied today in combating the threatening Ebola epidemic.

PRECEPTOR: Dr. Shelley McKellar
INSTITUTION: Western University

THE SECOND ROUND: A RENEWED EFFORT TO ERADICATE MALARIA AND THE ROLE OF THE GATES FOUNDATION AND THE WORLD HEALTH ORGANIZATION

YAW AMOAKO-TUFFOUR

The aftermath of the Second World War brought a renewed sense of shared humanity and a galvanized will to tackle global challenges. The United Nations replaced the defunct League of Nations and from this arose the World Health Organization (WHO) with a mandate to help all attain the highest level of health by providing leadership on global health matters. In this spirit, the WHO committed itself to the eradication of malaria (1955) and smallpox (1959). The trajectories of these endeavors varied greatly, and the dramatic failure of the malaria eradication campaign had consequences not only on the credibility of the organization, but also on subsequent campaigns.

This presentation explores the factors that made it possible to eradicate smallpox and explores the challenges unique to malaria that resulted in the failure of its initial eradication campaign. The existence of a smallpox vaccine, the long duration of its efficacy, and the lack of animal reservoir made the disease a good candidate for eradication. Conversely, chloroquine and dichlorodiphenyltrichloroethane (DDT) resistance in the plasmodium parasite thwarted efforts to eradicate malaria. Ongoing research seeks effective strategies to combat the disease. These conditions have allowed the Bill and Melinda Gates Foundation to challenge incumbents, such as the WHO, for leadership in the fight against malaria. We posit that the ongoing search for effective eradication tools has changed the relationship between intergovernmental organizations such as the WHO and independent philanthropic organizations with yet unknown consequences on public health policy and future efforts to eradicate disease.

PRECEPTOR: Jake Blacklaws

INSTITUTION: Dalhousie University

DR. PETER HENDERSON BRYCE: A BEACON OF TRUTH TOWARD RECONCILIATION

MADELINE ARKLE

Aboriginal health has been a responsibility of the federal government since the signing of the treaties. The myriad of issues rooted in the government's treatment of Aboriginals in Residential schools, which were supposed to oversee the education and health of Aboriginal children, is now being recognized through the Truth and Reconciliation Commission.

Dr. Peter Henderson Bryce (1853-1932), an official of the Ontario Health Department, dedicated himself to working in public health. At the height of his distinguished career he was appointed Chief Medical Officer of the Department of the Interior. Dr. Bryce collected data on the conditions in prairie Residential Schools, where he uncovered disturbing information about the inadequate maintenance of healthcare. Dr. Bryce's position made it impossible for him to disclose his empirical evidence of the high rate of tuberculosis and mortality in these institutions. After he was unceremoniously relieved of his employment, he publicly released *A Story of a National Crime* (1922), outlining the data he recorded over 17 years. This exposed the government's lack of action in these matters and questioned the prevailing sentiments of the day concerning the "Indian problem". His concerns were dismissed.

Through analysis of Dr. Bryce's writings throughout his public health career, and consideration of the prevalent attitudes of the era, this presentation will explore how his documentation of Aboriginal health conditions provided a bulk of proof that now function as the "truth" Canada is aiming to reconcile. Only now are the importance of Aboriginal health and the horrors that went on in the Residential system coming to light. Bryce exposed inside facts about the true conditions faced by Aboriginals and advocated for change at the time it was occurring. As a public servant in a position of authority, Dr. Bryce's story provides a unique perspective that sheds light on the progression to the present realization that reconciliation is necessary.

INSTITUTION: Western University

HARMFUL LANGUAGE: AN HISTORICAL ANALYSIS OF THE RHETORIC OF HARM REDUCTION IN VANCOUVER

ELENA-BIANCA BARBIR

Canada's harm reduction approach to addiction began in Vancouver in 1988 with the first legally sanctioned, community needle exchange program. The idea gained tremendous support at the grassroots level and, consequently, acquired political relevance at the federal level. However, the progress of harm reduction programming in Vancouver was only a faint echo of that in other cities, such as Zurich, Amsterdam and Frankfurt am Main, which shared similarly prominent, widespread substance abuse and addiction. I argue that the discrepancy in program development between the different cities is better understood by charting the evolution of harm reduction in Vancouver.

Several Canadian historians have traced the story of addictions, moreover, Larry Campbell, Neil Boyd and Lori Culbert have chronicled the history of harm reduction in Vancouver. I hope to contribute to this literature by analyzing the rhetoric through which the changing concept of harm reduction appears in popular media over the last 40 years. My sources include policy reports, newspaper articles, books, and program websites.

The rhetorical tools used in public debates offer pragmatic insight into the reasons for delay in implementing programs. By clarifying the social values and their transformation over the years, the obstacles to progress can be better understood. The discursive and rhetorical features of the evolution of harm reduction in Vancouver become a case study of a multivariate history, which can be placed in a global context. Consequently, it will highlight differences that exist between programing in Europe and Canada.

PRECEPTOR: Dr. Jacalyn Duffin
INSTITUTION: Queen's University

POT CALLED THE KETTLE BLACK: HARRY STACK SULLIVAN AND HIS PSYCHIATRY FROM THE CLOSET

JAKE BLACKLAWS

Wartime often provides the springboard for medical advancements, and World War II was no exception. This global conflict furthered medical knowledge in several fields, but a less familiar accomplishment was the legitimization of the field of psychiatry. Following the disastrous psychological effects of World War I, epitomized by the Shell Shock that ravaged military personnel, psychiatry was called upon two decades later in the hopes of providing a critical advantage to the American forces. The goal of the US military was to conduct psychological screening of military personnel in an attempt to “select out” individuals who showed susceptibility to psychiatric collapse.

Harry Stack Sullivan (1892-1949) was the primary architect of this screening process. As a psychiatrist in Baltimore, he specialized in treating schizophrenia in male patients and boasted an unusually high success rate in curing the disease. This notoriety landed him in charge of both developing and overseeing the psychological screening process for the US military. The screening protocol encompassed many aspects of an individual’s psyche, as well as life experiences, however, towards the top of the list of “red flags” was homosexuality. Sullivan believed, as did many psychiatrists at the time, that repressed homosexuality would lead to schizophrenia. Since repression of sexual desire would most likely occur in military service, creating mental instability in a soldier, Sullivan had no choice but to screen out these individuals. The interesting aspect, however, was that Sullivan himself was homosexual (although not openly so) and an advocate of equal rights. This project outlines the “rock and a hard place” situation that Sullivan found himself in; the psychiatrist was torn between his moral beliefs, sexual orientation, and the medical profession he was committed to.

PRECEPTOR: Dr. Todd McCallum
INSTITUTION: Dalhousie University

HOW MOHS' MICROGRAPHIC SURGERY TRANSFORMED FROM SURGICAL QUACKERY INTO A FIRST LINE TREATMENT OF CUTANEOUS CANCERS

ROB BOBOTSIS

Mohs' surgery, developed by American surgeon Dr. Frederic E. Mohs (1910-2002), is currently considered the ideal treatment for many skin cancers. Patients who undergo this procedure can expect excellent survival rates and very small cancer recurrence rates, in addition to pleasant cosmetic results. Dr. Mohs first treated skin tumours with a cytotoxic paste of zinc chloride, killing cancerous cells even before surgery. Zinc chloride had the additional benefit of preserving histological architecture, thus allowing small pieces of tissue to be reliably checked under the microscope for the presence of cancerous cells. This process was repeated until samples were free of cancer, saving patients from unnecessary removal of healthy tissue. In 1941, after five years of performing his technique successfully, Dr. Mohs published his work in the *Archives of Surgery* (now *JAMA Surgery*). His colleagues were far from impressed, however, and instead he was ridiculed.

Mohs' surgery contradicted the standards of practice established for cancer treatment at this time. Cutting into a tumour was thought to induce spread, according to surgeons who were also skeptical about the use of chemical agents, since horror stories with poor patient outcomes were common. Drawing on medical literature related to the treatment of skin cancers, as well as biographical material on Dr. Mohs, and secondary sources on experimental cancer treatments in this period, this presentation explored how and why Mohs' surgery shifted from being considered quackery during the mid-twentieth century to securing widespread acceptance by the late twentieth century.

PRECEPTOR: Dr. Shelley McKellar
INSTITUTION: Western University

PERSISTENT POST-CONCUSSION SYNDROME: WHERE HAS 150 YEARS OF DEBATE LEFT US?

DAVID BRADBURY-SQUIRES

Concussions are pathophysiological brain injuries followed by post-concussion syndrome characterized by physical and cognitive symptoms. In 10-15% of patients, these symptoms persist greater than three months, at which time they are considered to have persistent-post-concussion syndrome (P-PCS). The non-specific nature of the symptoms, and the lack of neurological findings have made it difficult to determine the etiology of P-PCS, as the majority of the literature in the last 150 years has attempted to determine a physiological or psychological etiology.

British surgeon Dr. John Eric Erichsen (1818-1896), in 1882, suggested injuries to the central nervous system were the cause of the persistent symptoms. However, others suggested the symptoms were psychological in origin, the result of patients exaggerating their symptoms for medical-legal purposes. Although disputed by some, most of the literature from the early-to-mid 1900s supported a psychological etiology for P-PCS. The literature on P-PCS has increased exponentially since the early 1990s, likely due to the development of more sophisticated diagnostic technologies. Much of the later literature has supported a physiologic etiology of P-PCS. Yet, it is now thought that psychological factors play a role by interacting with the physiological injury.

Improving patient outcomes has historically taken a backseat to the physiological versus psychological etiology debate. Until recently, patients with P-PCS have lived with decreased quality of life and the stigma of being malingering compensation-seekers with few effective treatments available. Now, the focus must shift towards treating what is treatable via a symptom-based approach. By no means is this a suggestion that future research on the etiology of P-PCS is inconsequential—consider this an emphasis on how to best help those suffering from an “invisible injury”.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

EATING DISORDERS: EVOLUTION IN THE DIAGNOSTIC CRITERIA AS REFLECTED IN THE *DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS*

JESSICA BRYCE

In the early twentieth century, the role of psychiatry expanded to include the treatment of mental illnesses that did not warrant institutionalization. This ultimately led to the formation of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* by the American Psychiatric Association in 1952, which offered standard criteria to describe the increasing number of recognized mental disorders. Over the next six decades, the *DSM* was updated, with the latest volume, *DSM-5*, being published in May 2013. The changing categorization of psychiatric conditions do offer a lens into the evolving perspectives of the medical community. Historical epidemiological studies of eating disorders are very difficult to conduct given that diagnostic criteria and media awareness have changed substantially. Anorexia was not classified as a mental disorder until *DSM-II*, when it was categorized broadly under “special symptoms, feeding disorders.” Bulimia referred to a group of diseases that culminated in over-eating and was not classified as an independent disorder until 1980. Similarly, binge eating disorder was grouped generally as “eating disorders not otherwise specified” until *DSM-5*.

This presentation aimed to demonstrate how the prevailing perception of eating disorders by the medical community is reflected in the evolving *DSM*. Research gathered from each *DSM* edition, journal articles, and interviews with senior psychiatric professionals suggests that the evolving *DSM* can be used to elucidate not only medical opinions of the time, but also the deeply ingrained societal and cultural norms by which these opinions were, and are, heavily influenced.

PRECEPTOR: Dr. Shelley McKellar
INSTITUTION: Western University

PLASTIC PIONEERS: REPAIRING THE RAVAGED FACES OF THE FIRST WORLD WAR

ALISON BUMSTEAD

The lethality of the industrialized weapons deployed during the First World War resulted in participants sustaining horrific injuries on a scale never before experienced in combat. Weapons such as grenades, poisonous gas, flamethrowers, and tanks had the capacity to maim and burn the body beyond recognition; high-explosive blasts, shell fragments, and shrapnel shattered bodies and sheared away noses and faces. At the same time, medical advances meant that more of the wounded were surviving their injuries, including those sustaining the disfiguring facial injuries the war created in abundance. Such injuries were particularly traumatizing as they devastated self-esteem and rendered re-integration into civilian society difficult, if not impossible, when the injuries created revulsion in the patient and others.

The impact of mutilated faces was not lost on army physicians, and in response to the need for complex and sophisticated reconstruction, specialization and innovation in the field of plastic surgery occurred. In Britain, a specialist clinic was established under the leadership of Dr. Harold Delf Gillies (1882-1960) by 1916. In July of the same year, two thousand men were admitted for reconstructive facial surgery. This paper examines developments in plastic surgery necessitated by the head and facial injuries sustained by combatants of the First World War. In efforts to repair the damage, Gillies and other “plastic pioneers” developed and refined innovative techniques that included the tubed pedicle, skin grafting, bone transplantation, inventive splinting, and inter-tracheal anaesthesia. By examining recently released before-and-after photographs from the Gillies archives, it is evident that, while the goal of an aesthetically pleasing surgical outcome was often unattainable, significant progress and learning was made in the attempt.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

HISTORY OF OCCUPATIONAL THERAPY PORTRAYAL IN CANADIAN NEWSPAPERS

EMILY CHAI

Occupational therapy (OT) was formed in the context of historical events that created its purpose and aim at the beginning of the twentieth century. The effectiveness of OT on shell shock patients, as one of OT's first clients, was first documented in 1918. However, OT has changed its purpose and scope over time, adding to the initial medical scope, becoming part of policymaking, addressing social issues and socially disadvantaged groups. It is a profession that is crucial to societal development and addressing societal issues of the present and future. OT research has started to investigate issues such as the ecological sustainability of occupations and other areas.

Newspapers exist to inform the general public, and how OT is portrayed influences readers' perceptions of OT, a readership which might include potential OT professionals. The *Calgary Herald* (1980-2014) and *The Globe and Mail* (1918-2014) were analyzed for their history of OT portrayal. A deductive, inductive, and iterative approach was used in conducting a qualitative and quantitative content analysis using Atlas.ti® research software.

OT was seen throughout the years as a medical endeavor and the newspapers missed the transformation of OT over time, including contemporary shifts triggered by the engagement with occupational justice, disability studies theories and sustainability and the broadening of the client base beyond the patient and clinical thus, providing an inaccurate picture of OT to its readers, readers which could include potential OT professionals.

PRECEPTOR: Dr. Gregor Wolbring
INSTITUTION: University of Calgary

THE MANY SECREATS OF THE PLACENTA

JENNIFER CHEN

The human placenta is an essential organ in the maintenance of fetal growth and development. It facilitates maternal-fetal gas exchange, nutrient transportation, fetal waste elimination, and hormone secretions. Human placentophagy is the practice of consuming one's own placenta shortly after childbirth for the claimed benefits of restoring energy, promoting breast milk production, preventing post-partum depression, and treating uterine atony. Common consumptive formulations include capsules, smoothies, and tinctures.

In Traditional Chinese Medicine (TCM), dried placenta, or "*Tzu-ho-che*", is used to treat infertility, emaciation, anemia, black spots on the face, delirium, convulsions, asthma, and TB. *Tzu-ho-che* is also used to increase energy, promote lactation, stimulate thyroid, testes, and uterine development, improve kidney and liver functions, and decrease ascites. In Western Medicine, human placenta is most commonly used in Japan, South Korea, and Switzerland. In Japan, human placental extract can be found in 4 pharmaceutical drugs. Laennec® is used for the improvement of hepatic function in chronic hepatic disease; it is available in injectable and tablet formulations. Melsmon Cell Revitalization Extract® is used to promote lactation and as an anti-aging cosmetic product. Plamon® is used to treat climacteric disorders without hormone replacement. Curasen® is used for cosmetic purposes. In Switzerland, human placental extracts are used in a variety of cosmetic products and immune boosters.

Today, the use of human placenta in TCM has steadily declined due to ethical and patient safety concerns (e.g. source contamination, adverse drug events). However, placentophagy is gaining popularity in Western societies due to naturopathic movements and celebrity endorsements. Human placental extracts are also utilized in the development of pharmacotherapeutic and cosmetic agents. More research is needed to help us explore the many secrEATs of the placenta.

PRECEPTOR: Dr. Frank W. Stahnisch

INSTITUTION: University of Calgary

WHO WANTS TO SUCCEED A PHRENOLOGIST? BRAIN SCIENCE AND LOCALIZATION AROUND 1900

TABEA CORNEL

“New phrenology,” “Neophrenologie,” “*le nouveau phrénologie*,” or similar designations have been in use for more than a century. Authors inside and outside of the mind and brain sciences have employed these terms to refer to: the localization of neural pathways and functions; the modularization of the brain; neuroanatomy, neurophysiology, and neurohistology; psychoanalysis, neuropsychology, and neuropsychiatry; physical anthropology; intelligence testing; and neuroimaging. Unlike contemporary usage of the term “new phrenology” reviling neuroimaging in the late twentieth and early twenty-first centuries, the designation “new phrenology” often carried positive meanings around 1900. It described, for instance, a methodologically novel but conceptually traditional science, and a holistic as well as humanistic approach to brain and mind. Diverse turn of the century scholars in Europe, among them Marie Jean Pierre Flourens (1794-1867), Paul Broca (1824-1880), Gustav Fritsch (1838-1927), Eduard Hitzig (1838-1907), David Ferrier (1843-1928), Paul Flechsig (1847-1929), and Charles Scott Sherrington (1857-1952), were seen as, or regarded themselves as, proponents of a “new phrenology.”

Drawing on turn of the century publications using the term “new phrenology,” this paper sheds light on its meanings in the late nineteenth and early twentieth centuries. It questions the extent to which the designation has been employed to promote, contextualize, challenge, or disapprove of scientists, their work, their knowledge. The paper focuses on the contexts in which the term has been used and by whom; that is, it will investigate the disciplinary backgrounds of authors using the term for themselves or other scholars, their audience, and the concept of “(new) phrenology” to which they adhered.

PRECEPTOR: Dr. John Tresch

INSTITUTION: University of Pennsylvania, USA

AUTO-EARS: COCHLEAR IMPLANTS AND THE CHANGING LANDSCAPE OF SENSORINEURAL HEARING IMPAIRMENT IN CANADA

VANESSA DEMELO

Hearing impairment is arguably an area of some of the most remarkable application and development of medical technology over the past century. One of these applications is cochlear implants, surgically implanted electronic devices used in patients with severe to profound bilateral hearing impairments. The first cochlear implantation surgery in Canada occurred in 1982, and the first paediatric implantation in 1988. The use of implants in children was approved by Health Canada in 1990, public funding beginning in 1993. Cochlear implantation in Canada has experienced enormous growth over the past three decades. At the London Health Sciences Centre, implantation surgery in adults increased from 53 surgeries in 1995 to 336 surgeries in 2007.

Cochlear implantation surgery gave medical professionals a “solution” for sensorineural hearing loss. However, this view was not shared by everyone, especially those in the deaf community who did not necessarily view hearing impairment as a disability. The genetic inheritance of many of these sensorineural hearing impairments led to controversy surrounding a deaf parent’s decision of whether or not to implant their child. This presentation will focus on the introduction, funding, and uptake of cochlear implantation in Canada. It will also discuss the views of medical professionals who regarded this technology as an ability-providing device in contrast to those in the deaf community who viewed it as the medicalization of a non-disabling impairment, and how these opinions have developed over time.

PRECEPTOR: Dr. Shelley McKellar
INSTITUTION: Western University

HISTORICAL AND EVOLVING SOCIETAL PERCEPTIONS ON SUBSTANCE ABUSE BY PHYSICIANS

ALEXANDER DICKIE

Society often places physicians on a pedestal whereby they can do no wrong, but as human beings they are equally as fallible. In their high stress environment, many have turned to the abuse of substances, be it legal or illicit, as a means of coping with their inherent responsibility. Notable physicians such as the great Dr. William Stewart Halsted (1852-1922) at Johns Hopkins University in Baltimore, one of the pioneers of modern surgery and medical education, struggled with cocaine and morphine addictions. However, in that time, a man such as he was held in such high regard that society simply looked the other way. Fast-forward one hundred years and compare Dr. Halsted to the case of Dr. Robert Ogden (1824-1906?), a well-liked physician in small town USA. Like Halsted, Ogden had a vice; the only difference was that it was alcohol. Although well-known, his problem still went unacknowledged until something went wrong.

In the past century, how and why has society changed its views towards substance abuse by physicians? The differences in the reaction of peers and the public towards Halsted's and Ogden's addictions serve as an analogy to the evolving understanding on the nature of addiction and the humanization of the modern physician. This presentation contrasts historical and modern societal perspectives of drug and alcohol abuse by physicians through real and fictional examples. Media depictions of the issue are examined for reasons why some doctors turn to substances, and when it goes too far. The project also delves into the scenario surrounding physician substance abuse; are colleagues willing to wave the red flag when the problem is identified, and if not, why? Is blowing the whistle worth the risk of losing a good doctor? The overall goal is to give context to an important medical issue which is largely swept under the rug.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

WOMEN IN MEDICINE: HOW FAR HAVE WE COME AND WHAT'S NEXT?

PAMELA DORAN

In 1875, Dr. Jennie Kidd Trout (1841-1921) became the first licensed female physician in Canadian history. She and her mentor Dr. Emily Stowe (1831-1903) had been the first women to be reluctantly permitted to attend lectures at The Toronto School of Medicine in 1870, on the condition that they not cause “a fuss”. Having endured relentless sexual harassment from her male classmates and professors, Trout left to complete her studies at the Women’s Medical College of Pennsylvania. She remained the only licensed female physician in Canada until 1880, when Stowe obtained the official qualifications. Just three years later, Stowe’s daughter Augusta Stowe-Gullen (1857-1943) became the first woman to eventually graduate from a Canadian medical school.

Though barriers to medical education for Canadian women continued into the twentieth century, they comprised 17.8% of students enrolled in Canadian faculties of medicine by 1970. These proportions continued to rise over the next four decades, and have now more than tripled, with women making up 55.9% of Canadian medical students in 2014. However, women remain underrepresented in leadership positions and in academic medicine. For instance, Canada’s first female dean of medicine, Dr. Noni MacDonald of Dalhousie University, was appointed 170 years after the first medical school opened. Of seventeen Canadian faculties of medicine, there are only two female deans.

While more women are entering medical school than ever before, they continue to be outnumbered in the notoriously competitive and lucrative medical professions. Of particular note, 75.4% of Canadian surgical specialists and 92.7% of cardiac surgeons are male. Using scientific journal articles and statistical reports from the Association of Faculties of Medicine of Canada, this presentation focussed on the changing demographics of Canadian women in medicine from the 1970s to present day and offers insights into the future of the female physician.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

THE HISTORY OF THE IMAGE OF NURSING IN CANADA

LAURA DOUGLAS, ASHLEIGH TAN AND
DEBORAH WASYLENKO

Over the course of history, various figures and world events have shaped the public's perception of the nursing profession. Examples of notable events that have influenced the image of nursing include; World War I and II, the Spanish Flu Epidemic, urbanization and the shift of women into the labor force, the Great Depression, and the demand for financial recognition and improvement of working conditions in postwar Canada. Economic climate, political relations and popular culture continue to inform and shape the image of nursing in Canada today. It is essential to recognize Florence Nightingale's (1820-1910) contribution to the development of the Canadian profession of nursing. Moreover, Mary Agnes Snively (1847-1933) was a notable figure considered to be the "Mother of Nursing in Canada", her influence on the image of nursing will be discussed. In addition to their contributions to the establishment of the profession, these early leaders had a profound influence on the public's perception of nursing.

The present-day image of nursing is greatly influenced by the presence of social media. Through the analysis of mass media outlets such as television shows, newspaper articles, Twitter®, Instagram® and Facebook®, common images have been identified. Current stereotypes of nursing include the hypersexualized nurse, the careerist, the nurse as subservient to the physician, and the nurse lacking autonomy. Common themes identified were the sensationalized and inaccurate portrayal of nursing work in the media, in addition to the dramatization of nursing errors. The objective of this presentation is to demonstrate how the image of nursing in Canada is reflective of current societal values and the events that occur within Canadian society.

PRECEPTOR: Dr. Diana Mansell
INSTITUTION: University of Calgary

WILLIAM S. HALSTED AND MEDICAL COCAINE: AN AFFAIR TO REMEMBER

SARAH EREM

In 1850, New York City was home to 700,000 inhabitants, increasing to 2 million by 1860. At the time, little more than alcohol and opiates were available to ease the pain during invasive surgical procedures. In 1846, the era of painless surgery had begun, yet surgeons proceeded in the old-fashioned manner, as a good surgeon meant a quick surgeon. The high mortality rate remained, largely due to doctors continuing to sew dead tissue inside the patients, the lack of sterility and local anesthetics.

William S. Halsted (1852-1922) was one of the major contributors towards modern surgery. He revolutionized surgical methodology, sterility and operating room conditions. In 1884 cocaine was first introduced as a local anesthetic to the scientific community. Consequently, Dr. Halsted and many others immediately started extensive research into cocaine properties on themselves, colleagues, medical students and their patients. For Halsted, this resulted in a lifelong substance addiction, an early loss of his close friends and nearly his professional life. In 1919, Dr. Halsted (then Chief of Surgery at Johns Hopkins University) retracted the value of scientific papers published from 1884 to 1885 on his cocaine research.

The goal of this presentation is to illustrate the role of Halsted's research on medical cocaine as a local anesthetic in surgical settings, while analyzing his upbringing and the changes in his personal and professional life as he dealt with his addiction by himself, a battle he could never win entirely.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

GENERATING NEW METAPHORS: GENDER POLITICS AND OBSTETRIC MEDICINE IN SIXTEENTH AND SEVENTEENTH CENTURY ENGLAND

ASHLEIGH FRAYNE

In the early sixteenth century, the medical community began to distinguish between university-educated physicians and practitioners like midwives and surgeons. In the late sixteenth and early seventeenth centuries, surgeons commenced to study medical theory in an attempt to gain status in the hierarchy and began to compete with midwives for their patients. The caesarean section, in particular, became a controversial topic in the debate over which procedures surgeons and midwives should be allowed to perform. As midwives were not instructed in surgical techniques or anatomy, it was decided that only male practitioners should perform caesarean sections. Tensions over control of childbirth are also apparent in sixteenth and seventeenth century literary representations, with a longstanding tradition of male authors comparing the writing process to childbirth. During the sixteenth and seventeenth centuries, this metaphor changed to reflect the struggle for power over childbirth and male authors began to compare the writing process to surgical birth. These comparisons not only reaffirmed the political importance of caesarean section, but also revealed its dramatic effect on the social understanding of women's roles in childbirth. This presentation will examine a transitional period in medical history through a literary lens, illuminating gender dynamics underlying the emergence of the caesarean section as an obstetrical procedure. Through an analysis of primary sources, including literary and scientific texts, this presentation investigates how the caesarean section redefined the social meaning of childbirth, fundamentally altering our perception of women's roles in childbirth, both as midwives and mothers.

INSTITUTION: University of Victoria

A CASE STUDY IN THE HISTORY OF PHARMACOLOGY: THE HISTORY OF MODERN ANTIDEPRESSANTS AND THE MONOAMINE HYPOTHESIS IN THE TREATMENT OF DEPRESSION

MADISON FULTON

When the euphoric effects of the anti-tuberculosis drug isoniazid were observed in 1953, the modern era of pharmacological treatment of depression began. The discovery of monoamine oxidase inhibitors and tricyclic antidepressants founded the basis for American psychiatrist Joseph J. Schildkraut's (1934-2006) monoamine hypothesis of affective disorders, where low levels of neurotransmitters caused a chemical imbalance leading to depression. Numerous pharmacological therapies revolving around Dr. Schildkraut's original monoamine hypothesis have been developed, despite controversy from both the public and the scientific community.

This presentation uses primary scientific publications, secondary literature and newspaper articles to focus on the contrast between the beginning of this era, and the rush of antidepressant development by the pharmaceutical industry in the mid-1990s. It describes the early development of these drugs in the 1950s by independent research scientists, explains the rationale behind the monoamine hypothesis, and presents the opinions that arose later which strongly opposed this hypothesis as a treatment for depression. It also provides context to the controversy surrounding these drugs from the 1950s to the mid-1990s, when the pharmaceutical industry revealed "blockbuster" antidepressant drugs we still see in use today. The rise of the pharmaceutical industry and its subsequent influence on the diagnosis of depression by physicians are also examined.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

IRISH PHYSICIAN IMMIGRATION
AND INFLUENCE ON MEDICINE
IN NEWFOUNDLAND:
THE CASE OF DR. HUGH TWOMEY

BRIAN HARNETT

The influence of Irish heritage and culture is quite apparent in Newfoundland. It began with Irish men coming to Newfoundland in the employ of English merchants, then, with the economic distress in Ireland in the late 1700s, more and more Irish people made the permanent move to Newfoundland. These immigrants were mainly comprised of fisherman and vendors, but through the years some physicians made their way from Ireland to Newfoundland. Just as the strong Irish nature influenced heritage and culture in Newfoundland, Ireland has had a strong impact on the medical traditions and practice of Newfoundland doctors.

International medical graduates (IMGs) are those that train outside of Canada and come back to Canada to practice. There have been many IMGs who come to Newfoundland to practice medicine, and Ireland is one of the more represented nations. One significant example is Dr. Hugh Twomey (1920-1989), who practiced as a family doctor in rural Botwood in north-central Newfoundland from 1946-1984. His original visit to Newfoundland was only to fulfill his desire to be adventurous. However, upon meeting Mel Stuewe (1927-2018), his future wife, this stay became permanent and he found his home. Dr. Twomey has a fascinating story that captures the amazing combination of Newfoundland and Irish culture that has resulted in a unique Newfoundland medical tradition. Using journal articles, book chapters and case studies this paper explores the history of Irish medical graduates that immigrated to Newfoundland and their influence on the practice of medicine across the island through the case of Dr. Hugh Twomey.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

WHY NOT TEST THE WATERS: ENVIRONMENTAL JUSTICE, HEALTH, AND THE LIMITS OF SCIENCE AMONG CONFLICT- AFFECTED COMMUNITIES

RITA HENDERSON

This poster presents a case study in community engagement in conflict-affected contexts, centering on local efforts to mobilize against the industrial contamination of a river in rural southern Chile. At the time of research, between 2007 and 2010, the number of Indigenous Mapuche and settler residents in the commune of Mariquina affected by the contamination of the Cruces River who did not mobilize against industrial impacts in the environment was substantially larger than those who did. While the lack of mobilization against the activities of a nearby pulp mill among these people was generally interpreted by company and state officials as implied consent to corporate activities, ethnographic analysis indicates that a history of state repression in the region restricted who would express concern for local wellbeing and how. The title phrase “why not test the waters” is not a question about casually evaluating community sentiment over the degradation of the natural environment upon which local livelihoods depend. Rather, it offers commentary on how water quality testing and scientific measures for the evaluation of environmental health are far from neutral, potentially undermining the environmental justice that water testing poses to defend.

INSTITUTION: University of Calgary

THE EVOLUTION OF BURN THERAPY DURING THE SECOND WORLD WAR: HOW THE MASS CASUALTIES OF THE EVACUATION OF DUNKIRK (1940) EXPOSED THE INADEQUACY OF TANNIC ACID AND BURN MANAGEMENT

MARK HEWITT

Shortly after the First World War, tannic acid coagulum was pioneered as an effective treatment of burns, and it remained the gold standard for more than a decade. Prior to the Second World War, however, whispers of doubt began creeping across the medical profession: whispers of the inability to prevent septicemia, of inelastic eschar formation, even of liver damage. These whispers, however, remained only that, largely ignored as isolated incidents or refuted by prominent surgeons. In 1940, over 300,000 British, French and Belgian soldiers fled from the French beaches of Dunkirk and with them emerged the largest mass casualty crisis of the early war. The evacuation brought delirious, sleep-deprived soldiers, with haphazardly cleansed serious burns, to emergency medical hospitals. Importantly, it was noted that many of the men had been immersed in sand and saltwater on the beaches, and that some burns responded better than anticipated, prompting ideas for one of the new treatments that would emerge from this tragedy. Specific protocols on burn treatment and inter-professional responsibilities were established, an initiative which, in this era, was not often the case. Patient outcomes fueled the debate of what was the best treatment method for burn patients. With the aid of archived scientific literature, historical texts and soldier accounts, the Evacuation of Dunkirk will be reconstructed from a burn casualty perspective. The treatment of these patients, and how treatment evolved, are explored, demonstrating why the oft-overlooked medical treatment of these specific casualties significantly evolved the treatment of burn victims.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

THE HISTORY OF PLACEBO THERAPY AND THE VALIDITY OF BELIEF

ALEX HOPE

Until the turn of the twentieth century, few medical treatments were available with recognized and consistent benefits. This would suggest cultures across most of human history were treating illness with inadequate medicine, making the history of medicine largely the history of *placebo*. A placebo simply refers to a therapy used for its non-specific psychophysiological effect or ‘presumed’ effect, despite having no actual influence on a patient’s condition. Throughout history, the placebo has been a trusted ally of essentially every medical practitioner, and it was first documented by the ancient Babylonian and Assyrian civilizations in 2100 BCE. The shaman, sorcerer, priest, surgeon, and physician either unknowingly or intentionally created the environmental conditions for ‘pleasing’ the patient, which was at the heart of any successful placebo treatment. The religious context, patient’s belief in the substance, and the relationship between the patient and practitioner were crucial mediators for instilling positive beliefs until the scientific age. It was not until the eighteenth century that the first placebo-controlled study was conducted. With the advent in the 1940s of reliable medical treatments, the distinction between placebo and putative, active drug effects became vital in medical research. This ushered in double blind, randomized and placebo-controlled trials, as well as a debate within the medical community about the morality of the “benevolent deception” of patients. With the tools of modern science and the side effects of modern drugs borne in mind, questions surrounding the biological mechanisms of placebo action and the place for belief in contemporary medicine remain.

This presentation focusses on the use of the placebo across human history, its odd predicament in modern medicine, as well as the future of belief-based therapy, drawing from anthropological texts, case studies and scientific journals.

INSTITUTION: University of Alberta

WINDS OF QUANDARY, GALES OF IGNORANCE: THE POLITICAL AND SOCIAL REACTION TO FEDERALLY SANCTIONED NUTRITIONAL EXPERIMENTS IN RESIDENTIAL SCHOOLS

ZACH KUEHNER

In May 2013, historian Ian Mosby published an article in the journal *Social History* that would ultimately make national headlines. Mosby detailed the way in which Aboriginal communities and residential schools were used as *de facto* laboratories by the federal government between 1942 and 1952 for the then-nascent field of nutritional science. Although Mosby paints a grim picture of starvation, neglect, and paternalism, by his own account, his article attracted little attention until its publication online in July 2013. Within minutes of a colleague's recommendation via social media, Mosby was invited by the Canadian Press for an interview, and by nearly every media outlet in the country soon thereafter. Many factors contributed to the rapid dissemination of Mosby's findings, including the rise of the *Idle No More* movement and the use of social media by indigenous activists. His work provoked strong reactions in the media and political circles, illustrating the tension between the federal government and Aboriginal organizations. Moreover, the role of scientists and physicians in such experiments in the wake of the Nuremberg Code raises questions about the evolution of research ethics. In my presentation, I analyze the reception of Mosby's paper, examining its import for an understanding of health and Aboriginal peoples. I also discuss the significance of the history of medicine for understanding social justice and ethical issues in a health care context. I do so by using a variety of publications from media outlets, Mosby's original work and subsequent commentary, and a relevant literature review.

PRECEPTOR: Dr. Geoffrey Hudson

INSTITUTION: Northern Ontario School of Medicine

DR. ALVIN T. MATHERS AND PSYCHIATRY IN MANITOBA, 1919-1942

ERNA KURBEGOVIĆ

During the early twentieth century, psychiatry was undergoing a change from asylum practice to scientific and therapeutic practice. The impact of the First World War and the added pressure from the mental hygiene movement led many psychiatrists to think differently about mental illness. One of these was Dr. Alvin T. Mathers (1888-1960), an influential Manitoba psychiatrist who helped develop the profession in the province during the interwar period. He received his medical training in Manitoba and post-graduate training in psychiatry in the United States. He was an ardent mental hygienist and his understanding of diagnosis and treatment of mental disorders was shaped by the First World War. He promoted the idea of a “new psychiatry,” one that sought to prevent mental illness, and identify mental disorders in early stages in order to effectively treat them. This new psychiatry also meant that psychiatric institutions would no longer be modeled after asylums. Instead these facilities would be more like hospitals with psychiatrists involved in community clinics and university research hospitals. At the same time, Dr. Mathers was a passionate eugenicist who believed that Manitoba’s institutions were overrun with “feeble-minded” individuals and called for eugenic measures to control them.

This presentation examines the influence of Mathers on mental health care in Manitoba. I show that through his appointment as the Provincial Psychiatrist and the superintendent at the Winnipeg Psychopathic Hospital, Mathers was able to influence mental health legislation, education, and public opinion regarding mental illness in the province. In this way, he helped transform mental health care and psychiatry in Manitoba.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

A CHANGE IN PERSPECTIVE? – A CRITICAL DISCOURSE ANALYSIS OF THE EVOLUTION OF THE *DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS*

GEOFFREY LEBLOND

The *Diagnostic and Statistical Manual of Mental Disorders (DSM)* is the Psychiatric “Bible” of Western Medicine. First published by the American Psychological Association in 1952, it has had many revisions since, with the latest *DSM-5* being released in 2013. It is the principle psychiatric tool used in North America to diagnose mental illness, and often the only officially recognized diagnostic tool able to provide access to health care recourses. Many diagnoses and diagnostic criteria within the *DSM* have received criticism over the years, in particular those relating to what are now referred to as ‘Sexual Dysfunctions,’ ‘Paraphilic Disorders’ and ‘Gender Dysphoria’.

This presentation provides a critical analysis of diagnoses within these controversial categories through a historical review of the *DSM* editions, as well as a review of secondary sources critiquing the most recent editions. I provide an overview of the earlier editions of the *DSM* in order to explore how the *DSM* has historically viewed sexuality and gender identity. Following this, I examine the ways in which two diagnoses, Transvestic Disorder and Gender Dysphoria, evolved in *DSM-III*, *DSM-IV* and *DSM-5*. In analyzing the latest *DSM-5*, two ongoing issues are discussed: access to healthcare coverage for persons wishing to undergo sex change, and the extent to which categorizations of gender and sexuality used within the *DSM* are inherently discriminatory. Due to the profound influence the *DSM* has in practice and in legislation, an historical examination of the ongoing changes in the *DSM* is necessary in order to ensure appropriate and equitable care.

PRECEPTOR: Dr. Geoffrey Hudson

INSTITUTION: Northern Ontario School of Medicine

“ALL THE BEST QUALITIES OF HER NATURE”: THE STRUGGLE TO ESTABLISH A TRAINING SCHOOL FOR NURSES AT THE MONTREAL GENERAL HOSPITAL, 1870-1890

TAMARA LEES

Beginning in the 1870s, head nurses at the Montreal General Hospital (MGH) initiated reform to raise the standards of nursing. Their efforts, however, were met with resistance by the patriarchy of the hospital, comprised of the Medical Board and physicians, who wanted to maintain authority over healthcare. After a twenty-year effort by head nurses to effect change, a training school was finally established. As the 1890 opening address to the first graduating class of nurses will show, nursing remained linked to the domestic sphere as women had “all the best qualities” to care for the sick.

Focusing on the Montreal General Hospital between 1870 and 1890, this presentation will use academic publications, letters and journals written by nurses at the MGH, and the hospital’s Annual Reports, to examine complications nurses faced in gaining professional recognition. In doing so, this presentation shows how the gendered understanding of nurses as primary caregivers had a significant role in delaying nursing reform. I argue that the changing nature of the hospital from a charitable to modern scientific institution delayed reform, as money was continually prioritized toward hospital improvements instead of a nurse training school. This presentation ultimately demonstrates that, while professionalization was not immediately achieved upon the establishment of a training school, efforts by head nurses to effect change between 1870 and 1890 laid the foundation for professionalization during the twentieth century.

PRECEPTOR: Dr. David Wright
INSTITUTION: McGill University

THE OSLER SOCIETY AT WESTERN UNIVERSITY, CANADA: A CENTURY OF ENHANCING MEDICAL EDUCATION

DANIEL LIU

The fame of Canadian physician Sir William Osler (1849-1919) coincided with a rise of medical societies supporting education, before and after graduation. Many of these societies, throughout the world, adopted the title of “Osler Clubs” in his honour. This paper aims to record the history of the Osler Society at Western, one of the first to co-opt his name, in order to determine its effect on medical education. Archives held by the society and by the university library were searched for documents relating to the founding and operation of the Osler Society. Interviews with past participants were conducted. Historical records including meetings and events, papers presented, administrative records, bulletins, photographs and slides were located.

The inception of the society likely stemmed from informal meetings devoted to medical history, held intermittently from the early 1900s as a part of what was then known as the Medical Historical Society. As student interest accumulated in the following years, more frequent meetings were held and, by 1921, records began to be kept. In 1927, eight years after Sir William Osler’s death, Drs. W. D. M. Lloyd (d. 1940?), J. W. Crane (1877-1959), and medical student Edward Bartram formally received permission from Lady Osler (1854-1928) to establish the Osler Society with a constitutional objective of fostering the study Sir William Osler’s life, medical history, and other cultural subjects. Today, the society continues to fulfill this role through strong student initiative and faculty mentorship, exploring the intricate connections between medicine, culture, and society. By taking the name of William Osler, societies at Western and around the world broadened the horizon of medicine and education for all its participants, be they student or staff.

PRECEPTOR: Dr. Vivian McAlister
INSTITUTION: Western University

CHANGING VIEWS OF SOCIAL INEQUITY IN POPULATION AND PUBLIC HEALTH

KELSEY LUCYK

While contemporary in name, the concept of social inequity has existed throughout the modern history of public health. Today, social inequity refers to the “systematic, socially produced (and therefore modifiable) and unfair” differences and variations that exist between different socioeconomic groups

My purpose in this paper is to evaluate different conceptualizations of social inequity throughout the following historical stages in the modern history of public health: (1) Industrialization and Sanitary Reform; (2) the Bacteriological Era and the Child Health; (3) Social Activism, Empowerment, and Health Promotion; and our current stage of, (4) Population and Public Health. For each stage, I consider the social processes that created social inequities, to what extent the public deemed them unfair, and the public health response. I focus on the historical stages and developments most influential to contemporary public health in Canada; therefore, I draw from the histories of public health in the United States and England from the 1830s to the present day. I defend the argument that the concept of social inequity and the actions taken reduce social inequities in health have evolved to become more inclusive and more explicitly focused on justice.

PRECEPTOR: Dr. Frank W. Stahnisch

INSTITUTION: University of Calgary

PROGRESSING PARADIGMS? MEDICAL VIEWS
OF THE BODY IN *DE HUMANI CORPORIS
FABRICA*, *GRAY'S ANATOMY*, AND THE *VISIBLE
HUMAN PROJECT*

HANNAH MACKENZIE

It can be tempting to view the history of medicine as an inexorable march of progress towards our modern system. Alongside the transition from bedside to hospital to laboratory medicine, changes in the conceptualization of the patient body are similarly described as a paradigm shift, but is this actually the case? Insight into historical views of the body can be gleaned by comparing various anatomical atlases used in medical education. Andreas Vesalius' (1514-1564) *De humani corporis fabrica*, published in 1543, is considered one of the masterpieces of this genre, as is Henry Gray's (1827-1861) eponymous *Gray's Anatomy*. The Visible Human Project® is a more recent example of a compilation of body images for teaching use, and while it may not be a traditional atlas, it follows in the tradition and provides a modern comparison. This presentation examines the representations of the body in these three atlases, focusing on the use of normative versus individual models, as well as holistic versus segmental depictions of the body and its systems. These differences can be attributed to changing theories about the medical body. Each atlas can summarily be interpreted as adhering to a different permutation of these two variables, but on closer inspection they share more attributes than are initially apparent. Contrary to often described paradigmatic shifts in medical thinking about the body, through inspection of medical atlases we can see that different means of representing the body have been used concurrently to achieve specific aims. If we reject the notion that historical ways of thinking about the body were inherently opposed to our own, then we can better incorporate the knowledge of the past into the medicine of the future.

PRECEPTOR: Dr. Shelley McKellar

INSTITUTION: University of Western Ontario

LIEUTENANT-COLONEL DAVID TAMBLYN: VETERINARIAN, CIVIL SERVANT, AND SOLDIER

ANDREW McEWEN

Over the course of the Great War, 142 veterinary officers served in the Canadian Army Veterinary Corps (CAVC). These officers, all graduates of recognized veterinary colleges, presided over the health and fitness of roughly 25,000 horses and mules under Canadian command. These veterinarians drew heavily on educational, professional, and military experience to treat animal casualties during the conflict. One of the most capable and innovative of these officers was Lieutenant-Colonel David Tamblyn (1880-1943). As a young man, Tamblyn enrolled in the McGill Faculty of Comparative Medicine and Veterinary Science and excelled in his studies. Before the Great War, he was employed by the federal Department of Agriculture, Health of Animals Branch as an infectious disease inspector. He also pursued a part-time career in the Canadian Militia and oversaw the health and safety of animals in peacetime military exercises. In the Great War, he enrolled in the CAVC and eventually rose to become Deputy Assistant Director Veterinary Services for the 3rd Canadian Division, with roughly 5,000 animals under his charge. Among Tamblyn's many contributions to the war effort were innovative methods of combatting infectious disease and new means of constructing shelters to protect animals from enemy fire. He ended the war as the highest-decorated officer in the CAVC, with several awards for meritorious conduct.

This paper examines the life and career of Lieutenant-Colonel Tamblyn as a case study of Canadian veterinary officers in the Great War. His sterling education at McGill University, his career in the civil service, and his experience as a pre-war Militia officer were crucial preparation for the heavy responsibility of high command in the CAVC. Ultimately, Tamblyn's career serves as a key example of the duties, background, and wartime experience of senior veterinary command in the Great War.

PRECEPTOR: Dr. Patrick Brennan

INSTITUTION: University of Calgary

A YOUNG SPECIALTY FOR OLDER PATIENTS: GERIATRICS OVER THE PAST CENTURY

KATRIENA MCKAY

Interest in the effects of aging, and especially how to overcome or prevent the aging process, has been around since antiquity. However, geriatric medicine as a formal medical specialty is a fairly recent development, and it remains a highly underserved area. Statistics from the Canadian Resident Matching Service (CaRMS) suggests that, over the past five years, only 2-3% of internal medicine residents chose geriatrics as their specialty. This presentation will examine the historical development of the specialty, how this may have contributed to the current deficit in geriatrics physicians, and contemporary attitudes of ageism that still impact medical culture today.

In 1909, the word “geriatrics” first appeared in the writings of Dr. Ignatz Leo Nascher (1863-1944), a Viennese pharmacist. Nascher wrote many articles on geriatrics and published the book *Geriatrics: The Diseases of Old Age and Their Treatment*. Much of the development of the specialty, however, can be credited to Marjory Warren (1897-1960), a British physician who, in 1935, took on the care of “chronic sick” patients at West Middlesex Hospital. Dr. Warren classified these elderly patients into different categories, so that their care would be matched to their needs. The American and British Geriatrics Societies were formed in 1942 and 1947 respectively. Formal academic training in the specialty began in 1966, when Dr. Leslie S. Libow (b. 1933) started the first geriatrics fellowship at City Hospital Center in New York. This presentation also contrasts the development of the field of geriatrics with the field of pediatrics, another major specialty defined by a particular stage of human development. Medical programs generally include specific training in pediatrics; in contrast, medical students do not receive equivalent specific teaching on care of the elderly as part of the formal curriculum. The presentation ends with a discussion on the common need for the emphasis of the social determinants of health in both geriatric and pediatric health care.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

THE RISE AND FALL OF PSYCHOANALYSIS: AN INVESTIGATION OF SUBJECTIVE SCIENCE AND THE FREUDIAN INFLUENCE

STEPHANIE MOKRYCKE

The nineteenth century saw the introduction of several important discoveries that made possible a scientific view of the mind. As neuroanatomists were able to locate lesions related to specific diseases, the understanding of neurological illnesses became increasingly anatomical; likewise, germ theory and the use of microscopy enabled infectious disorders of the mind to be understood and even treated definitively. In a time with such tremendous enthusiasm for laboratory science and technology in medicine, it seems strange, then, that Sigmund Freud's (1856-1939) psychoanalysis—an explanation of the functions of the mind based solely on individual subjective evidence—achieved such widespread influence. Early in his career Freud had been a neuroanatomist himself, yet in the late nineteenth century he began to turn away from traditional scientific methods and take on a more subjective approach in his studies of the mind. In 1900, *The Interpretation of Dreams* established Freud's most prolific exploration of the unconscious and dream life, which began a Freudian influence that came to permeate the fields of psychiatry, psychology, and general culture to the present day.

My presentation seeks to explain this seeming paradox, and to examine the cultural environment that served as fertile ground for Freudian theories becoming so widely influential. Based on a study of Freud's writing and Ernest Jones' three-volume biography, I explore how Freud could have exerted his influence with emotionally attractive ideas that seemed to respond to the cultural needs of the time in order to gain such a reputation and widespread influence. I conclude with an evaluation of Freud's contribution to culture in general and provide an account of the rise and fall of the psychoanalytic movement in psychiatry.

PRECEPTOR: Dr. Paul Potter

INSTITUTION: Western University

DISABLED PHYSICIANS IN CANADA: HISTORY AND FUTURE

KIRSTEN NESSET

Population rates of disability are well documented through national surveys, but only a few studies have attempted to determine the prevalence of physical disability among medical students and physicians. They consistently report lower rates than in the general population. Does this silence reflect a true under-representation of disabled persons in the medical profession or is it false under-reporting due to stigmatization? Existing literature on the topic is scant and primarily consists of narrative with few large-scale studies, possibly owing to limited participant recruitment. Consequently, we face a significant gap in knowledge regarding the numbers and the experiences of medical students and physicians with physical disabilities.

Drawing on scientific journal articles, reviews, individual narratives, and interviews, this presentation will investigate barriers experienced by medical students and practicing physicians with physical disabilities, and the accommodations that have helped them participate. The Canadian Association of Physicians with Disabilities (CAPD), founded on August 13th, 2000, by Dr. Ashok Muzumdar, became an affiliated society of the Canadian Medical Association in 2002. The reception, function, and impact of recommendations published by the CAPD on medical education and practice will also be examined.

While the main focus of this paper is to address the history of disability within health care practitioners, answers to these questions improve current understanding of disabled persons in medicine. This research also highlights existing and future measures to ensure that people with physical disabilities will have equal opportunity and appropriate support to study and practice medicine.

PRECEPTOR: Dr. Jacalyn Duffin
INSTITUTION: Queen's University

HISTORICAL CHANGES IN CANADIAN END OF LIFE CARE: THE TECHNOLOGICAL PUSH

TAMMY NIGHSWANDER

Early in the twentieth century, Canadians commonly died at home; now most die in hospitals. When and how did the location of end of life care change? How has this shift changed patient-doctor relationships? The shift appears to be due to a number of social and medical factors, especially since World War II. Canadian National Health Grants in the 1940s and 1950s allowed for increased hospital funding, and the Hospital Insurance and Diagnostic Services Act (1957) increased public hospital coverage. The Medical Care Act (1966) offered public funding for physician care. The shift to reliance on hospitals can be mainly attributed to scientific advancements in four areas: firstly, an increased understanding of public health, with improved sanitation and food standards; secondly, new equipment such as ventilators, defibrillators, and dialysis; thirdly, new drugs and vaccines; and finally, specialized areas of care were recognized, such as Intensive Care Units and Hospice/Palliative Care. With reliance on evidence-based practice, disease could be overcome and life prolonged, often at the cost of producing chronic illness. Technology has both increased society's faith in medicine and created fear. Society tended toward questioning science and protecting liberties, hence the need for bioethics was recognized. The review around how advancements in medical technology have shaped how Canadians perceive death, dying and end of life care is as much a philosophical, sociological, theological and ethical endeavor, as it is a historical review. This presentation offers an overview of research from scientific and ethical journals, palliative care textbooks, Statistics Canada sources, philosophical publications, as well as period newspapers and popular media, with specific attention to how technological advancements have affected the doctor-patient relationship in Canadian end of life care.

PRECEPTOR: Dr. Ian Mitchell
INSTITUTION: University of Calgary

THE HISTORY OF VITREORETINAL SURGERY

MATHEW PALAKKAMANIL

Before the development of vitreoretinal surgery, many posterior segment eye conditions were virtually untouchable. Patients afflicted by retinal detachments, vitreous haemorrhages, diabetic retinopathy and numerous other conditions were usually subjected to blindness with little hope of regaining sight. Advancements in surgical techniques and instrumentation in the past 90 years have allowed ophthalmologists to successfully manage ocular conditions that were once widely untreatable.

It was in the 1920s that Dr. Jules Gonin (1870-1935), a Swiss ophthalmologist, suggested that retinal detachments were caused by retinal breaks, and that one could seal the breaks with surgery. Gonin's surgical approach involved locating the break and applying thermocautery through the sclera—this would produce inflammation to seal the retinal tear. Although this procedure had limited success, retinal detachment, a condition that was once a sentence of blindness, was suddenly now treatable. Often touted the “father of modern retinal detachment surgery,” Dr. Charles Louis Schepens (1912-2006) introduced binocular indirect ophthalmoscopy, allowing visualization of the peripheral retina, as well as silicone rubber as the buckling material for treatment for retinal detachments. Schepens' contributions dramatically improved surgery success rates to more than 70 percent.

Gonin and Schepens are but two of many ophthalmologists that made lasting contributions to the field of vitreoretinal surgery. With the rapid accumulation of knowledge in the past 90 years, posterior segment eye conditions, once untreatable, are now successfully managed. Using scientific journal articles, medical reviews and case studies, this presentation will document the brisk advancement of vitreoretinal surgery that has improved the quality of life of patients across the world.

PRECEPTOR: Dr. Feisal Adatia

INSTITUTION: University of Calgary

FROM 'INFANTILE SEXUALITY' TO DEVELOPMENTAL CAPITAL: WHAT IS PSYCHIATRY'S ROLE IN THE HISTORY OF INFANCY?

SOPHIE PALMER

Fostering healthy early childhood development is currently a key concern to policymakers, clinicians and researchers in a variety of health and social sciences. This presentation examines early childhood development theories through the lens of psychiatry, from the beginning of the twentieth century to the present, drawing on original interviews, published literature, newspaper articles from Alberta and Ontario, and publication trends from *MEDLINE*®.

Beginning with Freud's 1905 theory of psychosexual development, adult psychopathology has been connected to injured, or failed, childhood development. Furthermore, the isolation of children in institutions (orphanages, hospitals, facilities for the disabled) created natural laboratories for the psychiatric study of deprivation. These conditions led to a relationally informed (and often gender-biased) approach to development and psychopathology in children. Scottish psychiatrist John Bowlby's (1907-1990) relationship-dictated attachment theory (1951), grounded in the study of institutionalized and fostered children, remains dominant today, reinforced by advances in neurosciences and neuroimaging. With increased understanding that early childhood is a period of vulnerability and growth, and in recognition of the psychiatric harms of chronic institutionalization, social attitudes have shifted to value integration over institutionalization. Social policies affecting children have changed accordingly, justified by their downstream effects. Additionally, they have been capitalized upon in two ways: purporting to save healthcare dollars, and fostering a new market for toys and television shows that claim to promote development.

PRECEPTOR: Dr. Jacalyn Duffin
INSTITUTION: Queen's University

THE EDINBURGH BLOODLETTING CONTROVERSY: THE INFLUENCE OF SCIENTIFIC ENQUIRY, PERSONAL EXPERIENCE, AND DEMOGRAPHIC CHANGES ON PHYSICIANS' PRACTICES

ELIZA PHILLIPS

For centuries, bloodletting was considered one of medicine's most valuable therapies. However, in a remarkably short period of time, the end of the eighteenth and beginning of the nineteenth centuries, it fell almost completely out of use. How such an integral medical practice declined so quickly has been debated fiercely, particularly so during the Edinburgh bloodletting controversy of the mid-nineteenth century. One reason suggested then was the change of type hypothesis, advocated by Dr. William Pulteney (1790-1859), that claimed doctors no longer performed bloodletting because the types of diseases and the patients' constitutions were no longer of the type that benefitted from bloodletting. A second reason, advocated by Dr. John Hughes Bennett (1812-1875), was that advances in pathology and statistical evidence showed the harm of bloodletting, causing physicians to abandon the practice.

In the years following the Edinburgh bloodletting controversy, the change of type hypothesis has been given little credence, and the decline in bloodletting has largely been attributed to scientific progress. However, re-examination of the debate supports the possibility that changes in social demographics also had a role in transforming the practice. This presentation uses the history of bloodletting and its decline to provide a lens to examine changes in medical theory and practice. It also examines the debates about its decline to reveal beliefs about the roles of laboratory science, statistics, personal experience, demographic changes, and tradition in influencing how doctors change their practices.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

PROBLEMATIZING THE SOLDIER SUICIDE: MENTAL HEALTH AND THE CANADIAN ARMY IN THE SECOND WORLD WAR

WILLIAM JOHN PRATT

Soldier suicides were in the news in Canada in 2014, with veterans' advocacy groups calling out the Canadian Forces for lack of support of the mental health of soldiers after the Afghanistan War. The Canadian Forces responded with a study on soldier suicide, which showed that rates of suicide were no larger than that of similar demographics amongst the civilian population. During the Second World War, the Canadian Army also used the modern technology of statistics to analyze the rate of soldier suicides as an index to the mental health of the army.

This paper seeks to examine the problems of statistical analysis to examine soldier suicide and its comparison with civilian rates. It attempts to answer the question, are suicide rates a valid indicator of soldiers' mental health? Various points of departure will include: psychiatric screening; attempted suicides; incidence of mental illness from other forms of statistics; and anecdotal evidence.

PRECEPTOR: Dr. David J. Bercuson

INSTITUTION: University of Calgary

TREATMENT OF RHEUMATOID ARTHRITIS IN CANADA: CONQUESTS FOR SOLUTIONS

NADINE QURESHI

Rheumatoid arthritis (RA) is a chronic autoimmune disease, the causes of which are not fully understood. It affects 0.5-1% of adults in the developed world, with between 5 and 50 people per 100,000 acquiring the condition each year. The first recorded cases of arthritis date back to 4500 BC and early healers describe symptoms much like RA. Paintings from the sixteenth and seventeenth centuries especially may show depictions of the bony deformities characteristic of RA. In 1800, the disease was investigated by the French physician Dr. Augustin Jacob Landre-Beauvais (1772-1840). The name 'rheumatoid arthritis' was coined by Dr. Alfred Baring Garrod (1819-1907) in the 1850s. Early treatments included those used today: rest, ice, compression, and elevation. Unlike current practice, however, was the inclusion of specific natural remedies, such as nutmeg, honey, and insect venom, alongside electroconvulsive therapy, dental extractions and the use of magnets. Medication that treated leukemia in the 1940s, Aminopterin, was shown to ameliorate the symptoms of RA and other autoimmune conditions such as psoriasis. Low dose pulse methotrexate was first seen to be useful in RA in 1972, however it was not until the 1980s that literature reports of the drug confirmed promising results with seemingly untreatable RA.

Much focus on the European systems and a closer look into how the Canadian healthcare system adopted these guidelines is warranted. The widespread adoption of disease-modifying anti-rheumatic drugs has restored the quality of life dramatically in many patients. Using scientific medical reviews, texts, and journal articles, this poster focusses on how the current treatment of RA came to be applied in Canada, the innovative collaborations that have led to not only contradicting debates, but also appealing consensuses and promising directions.

PRECEPTOR: Frank W. Stahnisch
INSTITUTION: University of Calgary

A LEVEL PLAYING FIELD FOR ONTARIO AND SASKATCHEWAN: CANCER THERAPY RESEARCH WITH HUMAN SUBJECTS AND ITS ETHICS IN THE 1960s

FEDIR RAZUMENKO

Canadian ethical and legal standards for government sponsored medical research on human subjects have a patchy history. In this paper, I trace the origins of the now traditional account of human research ethics in Canada, and explain the pertinent findings from Ontario and Saskatchewan, where researchers pioneered novel cancer therapies in the late 1950s and drew up essential ethical regulations to implement these therapies. My findings show that international ethical standards, enshrined in the Nuremberg Code, the Declaration of Helsinki, and further elaborated on in American codes of research ethics, were not fully incorporated in the Canadian Medical Research Council regulatory framework in late 1960s, despite statements to the contrary.

I argue that medical professionals applied innovative cancer treatment in the 1960s as part of the standard therapeutic process, including both routine and experimental protocols. Using cancer research protocols and reports of regulatory committees, I explore the supposedly appropriate parameters of clinical studies with a special emphasis on informed consent and human dignity. Unlike the Declaration of Helsinki and other human rights-based documents, the provincial institutional policies guiding doctors in clinical research were intended to be construed broadly, admittedly, to promote respect for the medical profession and its ethics rather than for the dignity of the patient. I conclude that a close look at internal documents of research centers and units in Canadian provinces enriches the traditional view of the research ethics history by showing that the statements and the practices differed in a range of contexts.

PRECEPTOR: Dr. Erika Dyck and Dr. Larry Stewart
INSTITUTION: University of Saskatchewan

SANITATION, SINS, AND SCAPEGOATS: HOW RELIGION BOTH PROTECTED AND HARMED JEWISH EUROPEANS DURING THE BLACK DEATH

JIN SOO ANDY SONG

During the mid-fourteenth century, the Black Death spread rapidly throughout Europe, causing massive death tolls, irreversible socioeconomic changes, and engraving itself as one of the most notorious pandemics in human history. While the story of the pathogen's permanent disruption of the feudal system has been thoroughly explored, there is limited insight into how differing religious backgrounds influenced individual experiences during the crisis. Even prior to the peak of the Black Death, Christian Europeans sought a scapegoat to blame for the severe punishment they were enduring from their God. Jewish populations became this scapegoat, with hatred toward them fuelled by their lower mortality rates than Christians. While it has been shown that the Jewish community did suffer fewer deaths, it was due to their higher degree of cleanliness, limiting the spread of illness. However, animosity towards Jewish people grew widely, quickly accepted with conviction because there was already distrust towards the peregrine religion. Using published studies, historical articles, and encyclopaedia sources, this presentation discusses how Jewish Europeans were vilified, exiled, massacred and, from certain perspectives, saved by their religion during the Black Death. Emphasis is placed on how more stringent sanitation practices provided some protection against the illness. An understanding of this historic event offers insights into the development of anti-Semitism (and sanitation) in the following centuries, and the global redistribution of Jewish communities.

PRECEPTOR: Jake Blacklaws
INSTITUTION: Dalhousie University

DIFFICULTIES WITH DOGMA

MARC SONNTAG

Axioms, common in medicine, are “statements or propositions regarded as being established, accepted, or self-evidently true”, however, their origins are often without foundation. The axiom “do not use epinephrine in the fingers, nose, toes, and penis” is commonly taught at Canadian medical schools. This rule of treatment appears to be related to 21 case reports of gangrene and necrosis following the peripheral use of epinephrine and other anesthetic agents in the 1930s and 1940s. Recent reviews of these cases, however, have concluded that those complications were more likely related to the use of toxic expired anaesthetic, hot boric acid baths and finger tourniquets. Despite the nature of the evidence, these case reports were translated into clinical practice prohibiting epinephrine use in the periphery. According to Dr. Sterling’s (1882-1957) *Surgery of the Hand* (1956), the authoritative reference for hand surgeons for 30 years, “epinephrine should never be injected into a digit because from this gangrene has often resulted.”

While generally avoided, some individual practitioners continued the peripheral use of epinephrine. In the late 1990s, retrospective, prospective and randomized controlled-trial research data in the areas of surgery, dermatology, and emergency medicine demonstrated the efficacy and safety of the digital use of epinephrine. Today’s medical reference texts vary in their support of the historic epinephrine axiom versus the modern, evidence-based approach. This variation is similarly reflected in clinical practice. While the move towards evidence-based medicine is conceptually embraced by both educators and clinical practitioners, changing deeply entrenched practices appears to be a slow process.

This presentation explores the history of the peripheral epinephrine axiom and the evidence to the contrary, in terms of the rise of evidence-based medicine and the translation of knowledge from research into practice.

PRECEPTOR: Dr. Frank W. Stahnisch

INSTITUTION: University of Calgary

MULTI-TALENTED HERMANN VON HELMHOLTZ: A CASE STUDY ON THE OPHTHALMOSCOPE IN DETERMINING KEYS FOR INNOVATIVE SCIENCE AND MEDICINE

DANIEL STOJANOVIC

The narrative of scientific research is one of incremental advances adding to collective knowledge, a slow, relentlessly upward, pursuit of authority. Popular history, however, prefers the characterization of geniuses such as physicists Albert Einstein (1879-1955), Nikola Tesla (1865-1943), and Alan Turing (1912-1954). These diverging views create a discourse in which the achievements of science are torn between the ultimate success of methodology versus the individual resourcefulness of a researcher. History research on science, however, can search for behaviors of success among the great innovators. Conceptually, these behaviours can be emulated to bring out repeated success.

German physiologist Hermann von Helmholtz (1821-1894) was a leader in research in the second half of the nineteenth century. He trained as an army physician in Berlin, but later focussed on research. While dubbed an organic physicist, he had a remarkable influence on modern physiology, psychology, and aesthetics, and was instrumental in tearing down scientific dogma in place since Aristotle in the 4th century B.C. His contemporaries described his works as “a rare example of versatile knowledge,” and many historians characterize Helmholtz’s interdisciplinary knowledge as key to his success. However, different disciplines are often cited when exploring Helmholtz’s success in academia. Through an analysis of Helmholtz’s correspondence to his wife, transcripts of his public lectures, and several biographies, this presentation provides an account of the disciplines which Helmholtz utilized to create and propagate his invention, the ophthalmoscope. Furthermore, this case study elaborates on the use of interdisciplinary education to promote behaviours which promote innovative researchers.

PRECEPTOR: Dr. Paul Potter and Dr. Shelley McKellar
INSTITUTION: Western University

“HE CAME TOO LATE INTO A DARK AND
INSANE PLACE”: A COMPARISON OF
DIFFERENT INDIVIDUAL CONDUCT DISPLAYED
BY TWO SS-PHYSICIANS STATIONED IN THE
INFIRMARY OF THE CONCENTRATION CAMP
FLOSSENBUERG, GERMANY, DURING THE
SECOND WORLD WAR

JESSICA TANNENBAUM

Dr. Richard Trommer (b. 1910), a young and ambitious physician who killed an uncounted number of inmates with poisonous injections in 1941 and 1942 will be contrasted to Dr. Otto Adam (1918-1945?), another physician who took action for the benefit of inmates during the last months of the war in 1945. Similar in age, they were both members of the notorious *Waffen-SS*, a para-military unit which became known for its merciless cruelty in warfare and for its murderous administration of concentration and extermination camps.

Summarizing source material, I demonstrate how Trommer acted fully in the national socialist ideology of the *superior being* versus the *inferior being*, or “*Uebermenschen*” versus “*Untermenschen*,” the former being entitled and bound to kill the latter one if deemed necessary. Likewise, I shall demonstrate the sharp contrast of Otto Adam’s conduct in the same infirmary, where he helped inmates in various ways. He alleviated the prisoners’ struggle for survival in a time period in which the camp was overcrowded by a factor of three, resulting in ever-growing starvation, epidemics, and totally insufficient sanitary facilities. I shall draft a hypothesis for his motivation to do so. This analysis fills a knowledge gap about the medical personnel in the concentration camp Flossenbuerg and relates it to the practice of medicine under the racial hygiene theories of the “Third Reich.”

PRECEPTOR: Dr. Karl-Heinz Leven

INSTITUTION: University of Erlangen and Nuremberg, Germany

BREAKING OF THE GENDER SPECIFIC ROLES THROUGH COLLABORATION BETWEEN COUPLES IN THE HISTORY OF NEUROSCIENCE

ANOSHA KIRAN ULFAT

Can two scientists work and live together? A very prominent example of a highly efficient and successful professional couple is the British physiologist Sir Charles Sherrington (1857-1952) and his wife, Ethel Mary Wright (1887-1966). Sherrington worked on neuron functionality, synapses and reflexes, and was also involved in the determination and emergence of the terms “neuron” and “synapse.” He was awarded the Nobel Prize in Physiology or Medicine in 1932 for his contribution to the neuron doctrine. While it is rare for anyone to mention Wright’s impact on Sherrington’s contributions to the field of neuroscience, his discoveries can be related to the intellectual influences he received from her.

The Department of Cell Biology at the University of Oxford, together with the Wellcome Unit for the History of Medicine have established a comprehensive collection of scientific materials, autographs and personal items showcasing Sherrington’s neuroscientific research, including an extensive diary written by his wife. These sources provide a very comprehensive account, not only of Charles Sherrington’s social life, but also a reflection on the course of his physiological discoveries as seen through the eyes of his wife. This perspective from an outsider offers us a unique interpretation beyond Sherrington’s own contribution to the neuron doctrine, while also helping us to evaluate the general role of couples’ collaboration in science. The historical analysis of this diary will provide insights into the very nature of this fruitful and long-term relationship. Secondly, it helps us understand how Sherrington’s research was shaped from a more personal perspective. And lastly, this collaboration raises debate about the gender context of scientific work and discoveries.

PRECEPTOR: Dr. Frank W. Stahnisch

INSTITUTION: University of Calgary

EVOLUTION OF TECHNOLOGY IN SURGICAL EDUCATION DURING THE SECOND HALF OF THE TWENTIETH CENTURY

MANDY WONG

With rapid advancements in computing technology, there has been a growth in the fields of “virtual reality,” “biomedical visualization,” and “simulation,” as exemplified by the “*Visual Human Project*” or the Calgary-based project “*Lindsay*.” These developments have stimulated interest in virtual reality and simulation technologies as learning tools in surgical education and training. While traditional approaches employ the preceptor or apprenticeship method, there is now pressure to restructure the surgical training system, both for safety and economic reasons. Along with surgical education funding that is under threat, the per capita workload is increasing. There are now recommendations, for example by the *Association of Surgical Education*, that the next step in surgical education could be the adoption of computer-based simulators as training tools. It is estimated that the annual cost of training chief residents in the operating room totals \$53 million per year for general surgery alone. Training environments that utilize virtual teaching aids may alleviate this cost over time.

This paper explores some important steps in the evolution of high-end technology as a means to support surgical education, such as in endoscopy and mechanically assisted orthopedic surgery and neurosurgery, both before and after the introduction of computer-assisted devices in the 1970s. While some such technologies have become obsolete, others have helped to improve surgical simulation and practical skills through virtual reality.

PRECEPTOR: Dr. Frank W. Stahnisch
INSTITUTION: University of Calgary

CANADIAN MEDICAL MANUALS AND EDUCATION IN THE EARLY TWENTIETH CENTURY

CLAIRE WOODWORTH

In Medical Books: For Information or Learning? Reflections on the Books of Three Newfoundland Physicians, c. 1860 to c. 1970, J. K. Crellin observes a lack of information on physicians' personal libraries, especially those from the pre-World War I era. A study of the collection of Dr. George Bond Cross (1889-1964), eponymous physician of the hospital in Clarenville Newfoundland, helps to bridge the gap. Dr. Cross graduated from McGill University with the degrees of M.D. and C.M. in 1918. In 2013, thirty-six of his medical books were located. By using Crellin's work as a model, this poster presentation catalogues Dr. Cross' medical books for posterity and attempts to discern the extent of American and British influences on McGill-trained physicians during this time.

At the turn of the twentieth century, the quality of medical education varied across North America. The Flexner Report, published in 1910, assessed the eight pioneer Canadian medical schools, finding variability in the quality of basic scientific and clinical training. McGill University was found to be a first-class school; yet, it had slipped in standards by the First World War. Dr. Cross' student medical manuals help to elucidate a period of significant change in Canadian medical education as McGill transitioned from the traditional British style of didactic lectures on the basic sciences to the modern American focus on research and clinical training. On Crellin's model, this presentation will also outline the career of this early twentieth century physician, who was appointed lieutenant in the Canadian Army Medical Corps prior to becoming one of the first Newfoundland doctors to earn the L.M.C.C. diploma. Dr. Cross returned to Newfoundland to work as a rural physician, attending to a range of health care concerns while operating a full practice and drugstore from his home.

PRECEPTOR: Dr. Jim Connor

INSTITUTION: Memorial University of Newfoundland

MIDWIVES AND MEDICAL MEN: THE EVOLUTION OF ANATOMICAL MODELS IN OBSTETRICS EDUCATION

CINDY NINGFU ZHU

For most of history, the practice of obstetrics rested in the authority of midwives as a traditionally feminine sphere. In the eighteenth century, however, it became increasingly professionalized with the advent of instrumental delivery and techniques such as the Mauriceau-Levret manipulation and began to pass into the domain of male surgeons. This transition was facilitated by the use of anatomical models and simulators with facsimile uteruses, fetuses, and placentas enabling the teaching of the practice in medical institutions. Anatomical drawings by Andreas Vesalius and others had been used since the sixteenth century as alternatives to cadaver dissections. The rise of three-dimensional models provided an enormous advantage over two-dimensional images, allowing students to recognize how organs fit together as a complex spatial puzzle within the confines of the body. Such spatial knowledge was particularly essential in obstetrics, with an understanding of the positioning of the fetus crucial for successful delivery. Ranging from miniature ivory manikins, to the cloth *la machine* of Madame Angélique du Coudray (1712-1794), and Anna Morandi Manzolini's (1714-1774) fine wax sculptures, these models provide a lens into the state of obstetrical education and its development. Using journals, museum exhibition catalogues, and obstetric teaching manuals of the period, this presentation will outline the use of anatomical models in obstetrics education, focusing on specific examples to discuss how their unique characteristics reflected the particular practice and context of obstetrics at the time. These models reveal much about the changing perception of obstetrics as a field of medicine, and of the status of midwives and the first "man-midwife" surgeons. Such discussions continue to resonate as the medical management of childbirth has increasingly come under attack, and midwifery experiences a renaissance.

PRECEPTOR: Dr. Shelley McKellar
INSTITUTION: Western University

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