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William Osler and Comparative Medicine

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Summary

During the last thirty years of the nineteenth century, comparative medicine deeply influenced veterinary education in Montreal, New York and Philadelphia. Of the many physicians and veterinarians involved in this movement, Sir William Osler has attracted the most biographical and historical attention. However, his contributions to comparative medicine have been characterized inexactly, partly because of his later prominence as a clinician and partly because little has been written about the history of veterinary education in Quebec.

Osler's teaching and research in comparative medicine as well as his efforts to promote a veterinary profession are described and set alongside the work of other physicians and veterinarians who were his contemporaries. As a result, Osler's contributions to comparative medicine are seen to be many and important but by no means unique. Other Quebec veterinarians, including Duncan McEachran, Orphyr Bruneau, Victor T. Daubigny and J.A. Couture, and such physicians as T. Wesley Mills and J. George Adami made as many, and in some cases greater, contributions to veterinary education in Quebec than did Osler. That they have not received the degree of recognition that Osler has received reveals Osler's ability to represent values and ideals and draws attention to some essential features of late nineteenth-century comparative medicine.

Key words: Veterinary medicine, William Osler, History of medicine, 19th century.

Résumé

William Osler et la médecine comparée

Au cours des 30 dernières années du 19ième siècle, la médecine comparée exerça une influence importante sur l'enseignement vétérinaire, à Montréal, New York et Philadelphie. Parmi les nombreux médecins et vétérinaires impliqués dans ce mouvement, Sir William Osler a suscité le plus vif intérêt biographique et historique. On a toutefois inexactement caractérisé son apport à la médecine comparée, d'une part à cause de sa prépondérance ultérieure comme clinicien et, d'autre part, à cause du peu d'écrits sur l'histoire de l'enseignement vétérinaire au Québec.

On a décrit l'enseignement et la recherche d'Osler en médecine comparée, ainsi que les efforts qu'il déploya pour promouvoir une profession vétérinaire, et on les a placés à côté du travail d'autres médecins et vétérinaires qui étaient ses contemporains. Ceci permet de réaliser que ses contributions à la médecine comparée sont nombreuses et importantes, mais en aucune manière uniques. D'autres vétérinaires du Québec, tels que Duncan McEachran, Orphyr Bruneau, Victor T. Daubigny et J.A. Couture, ainsi que des médecins, entre autres T. Wesley Mills et J. George Adami contribuèrent autant, sinon plus que lui, à l'enseignement vétérinaire au Québec. Le fait qu'ils n'aient pas acquis une renommée égale à la sienne, révèle l'habileté que possédait Osler à faire mousser des valeurs et des idéaux; il attire aussi l'attention sur certaines particularités de la médecine comparée de la fin du 19ième siècle.

Mots clés: médecine vétérinaire, William Osler, histoire de la médecine, 19ième siècle.

Introduction

Throughout the histories of human and animal medicine, the theme of comparative medicine has occurred in different disciplines, for instance at one time in anatomy (1), at another in the organization of rural medical and veterinary practice (2), and at still another in pathology (3).

During the last 35 years of the 19th century, comparative medicine has been made to embrace not only the biomedical sciences, but also to shape the organization of veterinary education, and to form the process of professional definition then being undertaken by some veterinarians. In Canada this movement was centered in the Province of Quebec, where four veterinary schools and several professional organizations were formed using a comparative medicine model (4). In the United States the movement centered around the New York College of Veterinary Surgeons and School of Comparative Medicine (founded in 1857), the Columbia Veterinary College and School of Comparative Medicine (founded in New York in 1877), and the School of Veterinary Medicine of the University of Pennsylvania (founded in Philadelphia in 1884) (5,6).

Among the many physicians working with veterinarians in this movement, William Osler (1849-1919) has attracted the most biographical and historical attention. This partly because, later in life, he became the best known physician in the English-

speaking world and also because he was connected with two of these centers, the Montreal Veterinary College (from 1874 until 1884) and the School of Veterinary Medicine in Philadelphia (from 1884 until 1889) (6). An equally important reason for his posthumous identification with comparative medicine has been the relative neglect of historical research carried out on the history of veterinary and comparative medicine in the Province of Quebec. This has led some writers to assign Osler a uniqueness and a degree of influence that he never had (7,8). There is a need, therefore, to place his work in comparative medicine in the context of his entire career and of the history of veterinary education in Quebec. The objectives of this paper are to examine his teaching of comparative medicine, his research in comparative medicine, and his efforts on behalf of the profession of veterinary medicine.

Osler as Formal and Informal Teacher of Comparative Medicine

In 1874, just after turning twenty-five, William Osler accepted an invitation to come to Montreal to take up a lectureship in the Medical Faculty of McGill University. His return to his alma mater — he had graduated with a medical degree in 1872 — came shortly after completing two *Wanderjahre* in Europe, listening to lectures and studying in laboratories and clinics of London, Berlin and Vienna. To the medical students at McGill, he was to lecture on the Institutes of Medicine, a synthesis of what soon would be subdivided into physiology, histology and pathology (9).

As it turned out, he lectured not only to the medical students but also to students from the Montreal Veterinary College (MVC). This came about because, since its founding in 1866, the MVC students had attended McGill Medical Faculty lectures and had used its laboratories, library and museum. Consequently, Osler was the third physician to lecture on the Institutes of Medicine to MVC students, succeeding William Fraser and Joseph Morley Drake (10). Although the lectures on the Institutes of Medicine were Osler's chief classroom teaching duty, he also gave special lectures for students of the MVC, on the entozoa of domestic animals and on microscopy (11,12). His formal teaching duties included year-end oral and written examinations of the veterinary students.

At that time Osler provided not only classroom lectures, but an equal if not greater amount of informal teaching. There is a tradition that between 7 and 8 a.m. each morning he was at the MVC building demonstrating anatomy and pathology to the veterinary students (13). In addition, he gave papers frequently, participated in discussions, presented specimens at the bimonthly meetings of the Montreal Veterinary Medical Association, and occasionally to other associations such as the Montreal Medical-Chirurgical Society. In his presentations to the Montreal Veterinary Medical Association in 1877, for example: on January 11 he exhibited a variety of specimens (canine lungs with pneumonia, human lungs with pneumonia, *Filaria* from the bronchial tubes of a dog, and a blood clot from a dog) (14); two months later, Duncan McEachran, presented his and Osler's results of experiments with equine variola (15); on October 11, Osler exhibited the cause (*Spiroptora megistoma*) of a large verminous tumor from the stomach of a horse (16); two weeks later, he conducted a postmortem on a horse; and on November 8, he presented a paper on hog cholera (17). These events have been recorded haphazardly in print, undoubtedly they represent only a sample of this sort of activity.

Throughout his career in Montreal, and during his years in Philadelphia and Baltimore, Osler earned a reputation as an effective and inspiring teacher. Unfortunately, teaching is like performing in a play or in a musical ensemble, so that for eras without film, tape, and other recording technology, it is now impossible to reconstruct the nature and effectiveness of actors, musicians, and teachers, except through eyewitness testimony. Consequently, the most that we can learn about the quality of Osler's teaching is by quoting his students and contemporaries. The first testimony is from Walter L. Williams, a graduate of the MVC in 1879. In 1945 Williams recalled hearing and seeing Osler lecture:

> "He was the greatest, most inspiring teacher I had known, and since that time I have not consciously met his equal. Then a young man, seven years my senior, he came upon the rostrum at a brisk walk at the minute due, began his lecture without delay and rapidly and clearly discussed the subject under consideration. As I now recall, he never emphasized what he *knew* and never intimated that he knew very much. He placed great emphasis upon the interesting and important things which a student might learn. But it remained for the student to do the learning" (18).

The second testimony about Osler's teaching comes from Duncan McEachran, Principal as well as founder of the Montreal Veterinary College, and a lifelong friend of Osler. In 1920 he wrote: ". . . the personal interest he took in our boys was of great value to them and of immense assistance to me; his genial manner, kindly disposition and thoroughness of instruction endeared him to the hearts of pupils and fellow-teachers and did much to establish the reputation of the School for throughness and sincerity of purpose" (10).

Osler's Research in Comparative Medicine

Besides teaching comparative medicine, Osler carried out research in it, but published little of it. When considering his research, it is important to keep in mind the distinction between research and publication. Much of everyone's research activity remains unpublished because it has not been fruitful or it did not have direct bearing on the problem at hand. Generally, the convention is to publish the results of the research rather than descriptions of the research process itself. Although this is obvious to anyone undertaking research, some commentators on William Osler's research in comparative medicine have not kept in mind this distinction and, as a result, have assigned to him more publications than he actually had (6, 8, 19). The majority of Osler's publications in comparative medicine, listed by Maude Abbott (20) and a recent supplement (21), are not research publications at all but are better described as records of research activity, informal teaching (as seen above) or efforts to

further the study and status of veterinary medicine.

Osler's published research in comparative medicine consisted of four case reports (22, 23, 24, 25) and four research papers. As the existence of the former have only recently been noted, there is yet no learned commentary. Consequently, it is not possible to generalize about these formal and factual reports except to say that three of them were written with A.W. Clement, a graduate of the Montreal Veterinary College in 1883. Since Osler's four research papers (26, 27, 28, 29) have generated considerable commentary (7, 8, 19, 30, 31, 32), several generalizations can be made about them. First, they deal with topics receiving great attention during the 1870s and 1880s: parasites, hog cholera and the Pictou cattle disease. Secondly, although pathological descriptions, they are widely disparate in species: dogs, hogs and cattle. In other words, Osler did not take a narrowly defined problem and then systematically pursue it, into all its ramifications, through a series of papers. Quite to the contrary, three of the four papers were occasional ones, written at the initiative of Duncan McEachran. In January 1877, he asked Osler to assist him in investigating a disease which had broken out in the kennels of the Montreal Hunt Club; in the summer or early fall of 1877 McEachran suggested that Osler investigate a contagious disease in a drove of hogs near Quebec; and in the summer of 1882 he convinced Osler to travel to Pictou County, Nova Scotia to study a puzzling epidemic among the cattle there. Although Osler's report (29) was sent to the Minister of Agriculture, John Henry Pope, it is hard to imagine that anyone but McEachran, who was the Chief Inspector of Stock for the Dominion as well as the Principal of the Montreal Veterinary College, could have gotten Osler to undertake the time-consuming investigation.

The last generalization to be made about Osler's published research is that it led nowhere. That is to say, Osler not only did not pursue these projects and turn them into lines of research, but from all evidences, other scholars did not incorporate his work into their own. The minor exception to this is the parasite that he discovered that is now called *Filaroides osleri*. Although it has generated a small amount of scientific literature since 1877, it is a rare nematode never near the center of any major research front.

Osler and the Profession of Veterinary Medicine

Before examining Osler's efforts at advancing veterinary medicine as a profession, it should be remembered that these efforts were not separable from his teaching and research in comparative medicine. His visible participation and enthusiastic commitment to comparative medicine were the foundation for his subsequent effort in publicizing the importance of veterinary medicine to medical doctors and to the public at large. This he did by encouraging the translation of European veterinary knowledge into English, through membership and participation in the Montreal Veterinary Medical Association, and through the writing of editorials and book reviews.

An occupational specialty is defined in part by the specialized knowledge that it generates and uses. As a consequence, communication of knowledge becomes an early and key function of the group and its individual members. To contribute towards this end, Osler wrote for the American Veterinary Review six abstracts of European research (33-38) and one translation of an article dealing with the examination of Russian veterinarians (39). The abstracts and the translation communicated only a small bit of European research. But it was the example that Osler set that is important. By publishing them in the inaugural year of this veterinary journal, the only one published in North America at the time, he set forth the importance of maintaining communication between Europe and North America.

In 1875 the Veterinary Medical Association was founded by Duncan McEachran in order to complement the education offered by the Montreal Veterinary College, and in 1876 its membership consisted of "qualified veterinary surgeons, members of the medical profession, and students of veterinary and medical colleges" (40). During 1875 Osler attended one of the meetings as a guest, and then in November 1876, when membership was broadened to include medical doctors and medical students, he was elected a member (41). Next year, at the first meeting of the Association, he was elected first vice-president. He soon became with Duncan McEachran, then president and later ex-officio Honorary President, one of the two most active and visible members of the Association. Osler served as vice-president for three years and then assumed the presidency for the 1879-1880 session (42-44). After his term as president, he held no more offices in the Association but attended its meetings regularly as an active participant. Not the least of his contributions were books he gave to the Association's Library (45, 46). Finally, in 1881 he represented the Association at the British National Veterinary Congress (47). All of this, of course, is in addition to the many contributions he made to the Association that have been mentioned above in the section dealing with his informal teaching.

When Osler left Montreal for Philadelphia in 1884, he became a regular contributor and editorialist for the Medical News published there. While carrying out these tasks he wrote several editorials on comparative medicine, setting forth information and opinions on hemoglobinuria, pleuropneumonia, the Journal of Comparative Medicine and Surgery, Hendon cow disease and scarlet fever, and typhoid fever in animals (20). While these editorials served several functions, not the least important was to disseminate to a wide medical audience knowledge about comparative medicine and, in the phraseology of the time, to elevate the veterinary profession. For example, he concludes one editorial by saying:

> "During the past twelve years the veterinary profession of this country has developed rapidly and the public is beginning to recognize its power and usefulness. Such an organ as the *Journal of Comparative Medicine* will represent its best interests and deserves the support of all who would see this branch of the profession take its rightful position in the community" (48).

At the same time that he was editorializing for the Medical News, he was also busy writing on similar subjects for the Journal of Comparative Medi-

cine and Surgery, the very same journal he was praising so highly in the Medical News. Besides writing editorials for the former, he also contributed an account of the veterinary department at the University of Pennsylvania, an institution oriented towards comparative medicine (21).

Even as a book reviewer, Osler took opportunities to communicate information about comparative medicine, and to argue its value to medical doctors and veterinarians. In reviewing Joannes Chatin's La trichine et la trichinose, he summarizes at great length statistics about European incidence of this parasite, and then concludes with this statement:

> "It is surprising, considering the vast stock interests of the country, how far behind we are in the study of comparative pathology, and in all matters of veterinary police and quarantine. Let us hope that the steps in this direction which the government has taken in the past few years, indicate that at length public opinion has reached a point which make the necessary legislation not only practicable but imperative" (49).

These views are hardly original, a number of veterinarians and professional associations were making these pragmatic arguments throughout the last decades of the 19th century. But what was unusual about them is that they came from a leading physician writing in a prominent medical journal.

Many years later, in 1918, he offered a more original, and even radical, opinion as he reviewed General Mennessier de la Lance's Essai de bibliographie hippique. Near the end of that review, after going on at great length about the history of veterinary science, he wrote:

> "In the bibliographical notes the complete story of the French veterinary profession may be read. The impression is left that this branch of our science is on a very high plane on the other side of the Channel. Doubtless the active government support has contributed not a little to raise its intellectual and social status. The position in science reached by such masters as Bouley and Chauveau cannot be matched outside of France. No veterinary surgeon has as yet been President of the Royal Society and no veterinary professor a President of the Royal College of Surgeons or the Royal College of Physicians" (50).

This chiding of the Royal Society, the Royal College of Physicians, and the Royal College of Surgeons for not having elected a veterinarian as President was a bold and unprecedented stance. It gained its strength not only from its unexpectedness, but also from the fact that it came from a Regius Professor of Medicine who was, at the same time, the leading medical statesman of the English-speaking world. In spite of all this, however, the statement had no effect, perhaps because it was published in a journal not read by the members of these three professional organizations. This book review now is chiefly and frequently cited to demonstrate Osler's predilection for biobibliography and the catalogue raisonné.

One essay (51) so far defies classification. It has been considered to be one of Osler's scientific papers, but a close reading shows it to have the form of one of his scientific papers but with the function of convincing Montreal officials to improve meat inspections, presumably by hiring veterinarians. If this interpretation can be sustained, the essay is another example of Osler's publicizing the importance of veterinary medicine and the veterinary profession to civic authorities as well as the public at large.

Conclusion: The Matthew Effect

This description of Osler's work in comparative medicine must now be placed briefly within the context of: his entire career, and of the history of medicine and veterinary science of late 19th century Quebec. Indeed, failure to do so has in the past led to misunderstandings about Osler's work. However, it should be remembered that this has come about in part, at least, because little has been written about veterinary medicine and veterinary education in Quebec.

Placing Osler's work in the context of his biography can be done briefly by examining all the items recorded by Maude Abbott in her bibliography of Osler and its supplements (21, 52, 53), in order to see the proportion of his work dealing with comparative medicine. Out of the 1569 items so far recorded, 3% relate to comparative medicine. Equally important, 75% of the comparative medicine items were published while in Montreal, during the years 1874-1884. Both of these facts indicate that his work in comparative medicine absorbed a small part of his energies during a short period of his career.

Turning now to the more important matter of the history of veterinary education and research in 19th-century Quebec, we can see that Osler was not unusual for his interest and activity in comparative medicine. As already noted, two of his predecessors as professor of the Institutes of Medicine, William Fraser and Joseph Morley Drake, also taught and examined students of the Montreal Veterinary College. So, too, did his successors, J. George Adami and T. Wesley Mills. Indeed, few of the many McGill Medical Faculty members between 1866, when the Montreal Veterinary College was founded, and 1903, when the MVC (having been transformed into McGill's Faculty of Comparative Medicine and Veterinary Science in 1889) closed its doors, have not taught veterinary students.

Examining research in comparative medicine, and limiting it to physicians teaching only at McGill in the 19th century, there appear several scientists who produced more extensive and better research than did Osler. Chief among these was J. George Adami, who wrote on human and bovine tuberculosis as well as on the Pictou cattle disease (54). T. Wesley Mills was another successor of Osler who wrote articles and several books on human and animal physiology. Besides that work, he was also a leading figure in comparative psychology (55, 56). Incidentally, like Osler, both Adami and Mills were presidents of the Montreal Veterinary Medical Association.

Looking at the institution builders, we see the same pattern. Chief among them was Duncan McEachran, who founded the Montreal Veterinary College in 1866, and the Montreal Veterinary Medical Association in 1875. Also important were three of his students, Orphyr Bruneau, Victor T. Daubigny, and J.A. Couture, all of whom founded veterinary colleges (4). Nor should the Council of Agriculture

of Quebec be omitted, either. Beginning in 1866 they provided financial support to veterinary education institutions and veterinary students. Its members and officers, chief among them Georges Leclerc, also played large roles in the establishment of veterinary education in Quebec (57). Osler participated, at times brilliantly, in the work and life of several of these institutions, but they each have had a life and history of their own both with and without him.

What Osler did, that no one else could do, was to act as a publicist for comparative medicine. His charisma, facility in writing, sense of timing, and visibility made him the most effective North American spokesman for comparative medicine. Nonetheless, we are left with the conclusion that Osler's reputation for work in comparative medicine is greater than were his contributions. Not only that, but his recognition is out of proportion to that now given to other teachers, researchers, and institution builders in Quebec whose contributions were as great or greater. For every person who has heard of Adami, Mills, McEachran, Daubigny, Bruneau and Couture, a hundred or even a thousand have heard of Osler.

This phenomenon of disproportionate recognition is frequently encountered in the history of science and medicine. Limiting it only to the history of medicine in Canada, several examples quickly come to mind. Compare, for example, the relative recognition afforded Wilder Penfield and C.F. Martin, Norman Bethune and Edward Archibald, as well as James Barry and the female physicians and midwives recorded in 19th century censuses. This phenomenon has occurred so frequently in history that it has been given a name, the Matthew effect (58), suggested by this New Testament verse: "For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath" (Matthew 3:12).

The purpose of studying the Matthew effect is not to lower the mighty and raise the humble, or even to set the record straight. Rather it raises an important historical question: how did it happen that William Osler — and not Theobald Smith nor Duncan McEachran, for example — became the spokesman and symbol for 19th and 20th century comparative medicine?

Firstly, we should remember that Osler can be made to support a wide variety of unrelated and sometimes contradictory positions. For example, he can be cited to support either more or less basic science in medical and premedical education. He can be summoned as an example of personal selflessness and humility, or as an example of the peerless manager of a medical career, including a posthumous one. He can be invoked also as a model of the physician as scientist, or the physician as clinician. In other words, Osler belongs to the category of oracular medical figures that includes Hippocrates and Sydenham but excludes figures whose biographies are not so malleable, such as Galen and Benjamin Rush.

A second reason for this disproportionate recognition of Osler's work in comparative medicine is his deep-seated preference for synthesizing knowledge and experience rather than analyzing it into smaller and less related categories and details (58). This preference was important for comparative medicine because it was an attempt to synthesize animal and human medicine. Incidentally, this also explains comparative medicine's failure at the turn of the century, for it could not withstand the predominant intellectual and professional reductionism.

Thirdly, Osler had a charismatic personality, communicated through his facility in speaking and writing, which acted as a motor to effect his oracular status during and after his lifetime. During his lifetime, it made him the elder statesman of medicine in the English-speaking world; posthumously it has generated a secondary literature larger than that devoted to any other 19th or 20th century physician.

How did the Matthew effect function in comparative medicine? Comparative medicine is an evanescent concept that recurs from time to time in the history of human and animal medicine. It is virtually indefinable, both by those who have been part of the movement, and by historians. Indeed, the term comparative medicine can make the most hardheaded realist reconsider the merits of nominalism. One method of making scientific and medical concepts concrete is through biography, saying in effect, if you want to know what comparative medicine was, look at Osler's work. Indeed, this is one of the chief ways in which Oslerian historiography, which is heavily dependent upon biography, operates (60). It is a pleasant irony that Osler himself should be used historically in precisely the same way that he used his predecessors.

Equally important, comparative medicine, identified with a highly successful physician who was deeply interested in it, obtained visibility and legitimacy. This is all the more important because both of its parents, human medicine and animal medicine, only sporadically and erratically acknowledged their parenthood.

This has been a study of only one aspect of Osler's biography. Other episodes will also demonstrate his ability to become a focal point of interest and to represent wider meanings and values than are strictly deducible from biographical and historical details. Indeed, explicating how this has happened is one of the chief tasks of the Osler industry as well as a fruitful method for examining the values and aspirations of 20th century biomedical science.

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