

OSLER'S AUTOPSIES: THEIR NATURE AND UTILIZATION

by

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SIR WILLIAM OSLER performed 786 autopsies while pathologist to the Montreal General Hospital from 1876 to 1884.¹ This represents approximately one hundred autopsies a year, a respectable number for a working pathologist, but a large number for one who was also physician to the hospital, registrar for McGill Medical School, and actively engaged in teaching the Institutes of Medicine. In addition he performed 162 autopsies while professor of medicine at Philadelphia.

Even more remarkable than the number of autopsies performed by Osler is the extensive use he made of the material. He literally left no avenue unexploited in the utilization of his autopsies. This study is an analysis of the type of autopsy performed by Osler and the manifold ways in which he capitalized on his extensive experience in the morgue, including Pathology Reports of the Montreal General Hospital, presentations before various medical societies, publication of papers, writing of a textbook of medicine, teaching and preparations of museum specimens.

OSLER'S AUTOPSY BOOKS

Of the original five volumes of Osler's autopsy protocols, only three remain.^{2,3,4} Volume I² is dated 'for the year ending May 1, 1877' and contains descriptions of 100 autopsies. Volume II³ extends from 1 May 1877 to 14 March 1879 and includes 190 cases. Volume III⁴ covers the period from 14 March 1879 to 12 September 1880 and contains 138 autopsies. The two missing volumes evidently contained a further 272 autopsy descriptions and covered the period from 13 September 1880 to 14 February 1884, the date of Osler's last recorded autopsy at the Montreal General Hospital.¹

The three existing volumes are accessioned in the Osler Library at McGill University. They consist of hard-bound and lined notebooks measuring 7 by 12 inches. Volume I has 310 pages, Volume II 250 pages and Volume III 299 pages. Only the first two volumes contain indices of diagnoses. Most of the protocols are written in Osler's hand. The descriptions are quite pragmatic and to the point, written in clear, concise English. The language is often cryptic and consists of incomplete sentences. There is little of the flowery rhetoric of his later years. Weights and measurements are abundant and readily understandable to the modern pathologist. All the protocols begin with a short, general external description. A typical example is 'body that of a delicately built but not emaciated girl' (Vol I, case 20). The usual order of presentation is the thoracic and abdominal cavities, heart, lungs, spleen, kidneys, stomach, small and large intestines, gallbladder, pancreas, genitalia, bladder and brain. There is very little or no history recorded with each autopsy—at the most

a sentence or two. Examples from Volume I² are 'aged 65, male. Had had an epithelial growth removed from underlip two weeks before' (Case 27); 'age 40 black night porter and M.G.M. 14 days ill. Symptoms of peritonitis 18 hours' (Case 28); 'age 18 delivered 3 weeks ago' (Case 29). In fact some of the protocols do not list age or sex. A few of the protocols consist only of the major diagnosis with no description. There are no notations of microscopic examinations and no discussion or synopsis. Attached to one protocol on pneumonia (Volume I, no. 86) is a temperature chart.

Volume III of Osler's autopsy protocols differs from the first two in several respects. The volume is in poor condition with many loose pages, unlike the other two which are well bound. Some of the cases have an attached slip of paper titled 'Montreal General Hospital, Memorandum for the Pathologist'. These include a very brief history, chief symptoms and temperature range. Many of the autopsy protocols are written on separate pieces of paper and pasted in the book. Some of these are in pencil. In general it appears that less time was devoted to the recording of autopsies during this period. This may be a reflection of the increased responsibilities incurred by Osler with his appointment as physician to the Montreal General Hospital in 1879.

The initial reaction on surveying these autopsy protocols is one of disappointment. Where are the indications that these were the work of one of the world's most renowned physicians and humanists? Osler's autopsy protocols are those of a thorough, conscientious and hard-working technician. But one must examine all of Osler's activities before it becomes apparent that his orientation to pathology was far more than descriptive. His protocols were merely the initial recording of data.

PATHOLOGICAL REPORTS OF THE MONTREAL GENERAL HOSPITAL

Osler published selections of his autopsy reports as the *Pathological Report, Montreal General Hospital for the year ending May 1, 1877*.⁵ It was the first such publication in Canada. Although the book contains only 69 of the 100 original autopsies for the year, they provide a clue to Osler's true orientation to pathology. Many contain clinical histories, some microscopic descriptions and a few have detailed discussions of the cases, none of which was part of the original protocols.

The title-page of this first Pathological Report⁵ contains a quotation from Wilks—'Pathology is the Basis of All True Instruction in Practical Medicine'—surely an apt description for Osler's orientation to pathology. Following the title-page is a dedication 'to my teacher James Bovell, M.D., Emeritus Professor of Pathology in the Trinity Medical School, Toronto, this first pathological report from a Canadian Hospital is gratefully and affectionately inscribed'. This is a well-deserved recognition for one who was instrumental in developing Osler's interest in pathology while a freshman medical student.⁶ The 69 autopsies are arranged under headings of osseous, circulatory, respiratory, gastrointestinal, genitourinary and cerebrospinal systems, and general diseases. There is evidence of careful re-editing with changes in wording and tense. In addition, only some parts of the original autopsy report were selected and in others there is considerably more detail than in the original description, as for example case 71.⁵ The amount of clinical history varies from case to case but there is certainly much more than in the original reports.

Osler's second pathological report from the Montreal General Hospital⁷ was part

Osler's Autopsies: their Nature and Utilization

of the *Montreal General Reports Clinical and Pathological by the Medical Staff, edited by William Osler*. The 90 pages of the pathological section include 42 autopsy case descriptions from the 190 represented by Osler's second volume of autopsy protocols.³ As in the first report the cases are arranged under systems, with the addition of the lymphatic system and liver.

In both pathological reports^{5,7} some of the cases are followed by discussions with reference to the literature, as for example case 44.⁵ Case 44 was a 39-year-old male with hypertrophy and dilatation of the heart from no obvious cause. Osler followed the autopsy description with a brief review of the literature, largely German, which suggested the possibility of prolonged muscular exertion or overstrain as the cause of hypertrophy.

Evidently Osler kept records of his histologic studies separate from his autopsy protocols, as none of them can be found today. In discussing a case in the second pathologic report⁷ he stated on page 338 that 'the histologic notes of this case have unfortunately been mislaid'. Some indication of Osler's histologic techniques can be obtained from his notes for students.⁸ Fixing agents mentioned include freezing, bichromate of potash, Müller's fluid, chromic acid, alcohol, picric acid and osmic acid. Stains recommended were carmine, log wood, aniline blue, silver nitrate, gold fluoride, and osmic acid.

The variety of cases for which Osler supplied histologic descriptions indicates extensive use of the microscope and considerable interest in histologic appearances. In the first pathologic report⁵ there are detailed microscopic descriptions of cirrhosis of the liver (Case 1), gumma of the liver (Case 5) and of many organs from a case of pernicious anaemia (Case 61). The second pathological report⁷ is even richer in microscopic descriptions. In a case of endarteritis and aneurysmal dilatation of the basilar arteries with rupture Osler commented that 'on microscopic examination there were no special features in the diseased arteries which would warrant the conclusion that the process was syphilitic'. He described a 'sarcoma' of the kidney as 'on microscopical examination, the softer portions of the tumor are found to be made up of large, irregular cells, with distinct nuclei. Many of these are exceptionally large, somewhat flattened, and with one or two central nuclei. In sections, the softer parts appear made up entirely of closely packed cells with very little stroma; but in the peripheral firmer parts of the fibrile-nucleated stroma occurs, in which the cells are imbedded, but there is no constant alveolar arrangement'. This description is certainly indicative of an adeptness with microscopic study and evaluation.

Osler did not publish any further pathological reports from the Montreal General Hospital. A third pathological report from the hospital⁹ was compiled by Wyatt Johnston, Osler's successor as pathologist. It includes a listing of 90 autopsy cases performed by Osler from 10 January 1883 to 14 February 1884. Only the major diagnosis is given. However, the first two reports published by Osler are sufficient to appreciate the full scope of his pathologic studies.

PRESENTATION OF AUTOPSY SPECIMENS AT SOCIETY MEETINGS

Osler's performance of autopsies was only a means to many ends. One of these was the presentation of autopsy specimens at medical society meetings, both in

Montreal and Philadelphia. Abbott's analysis¹⁰ of Osler's Classified Bibliography revealed a total of 1,551 items of which 211 reports of pathological specimens presented at societies. Even assuming that this figure represents all of Osler's presentations, the large number is indicative of a singular dedication to the importance of pathology as exemplified by gross specimens.

In Montreal the Medico-Chirurgical Society was Osler's main forum. Reports of the meetings of this society in the *Canada Medical Record* and the *Canada Medical and Surgical Journal* are replete with listings and some discussions of Osler's presentation of specimens. Examples include a great variety of pathological conditions, such as blood-cast of ureter;¹¹ congenital stenosis of pulmonary artery, hypertrophy of heart and intestinal typhoid;¹² cancer of the stomach;¹³ aneurysm of aortic arch;¹⁴ congenital deficiency of the rectum;¹⁵ and myo-sarcoma of kidney, cirrhosis of liver with portal vein thrombosis, ovarian tumour and chronic endocarditis.¹⁶ These are indeed a fascinating array of diseases and illustrative of the extent of Osler's pathologic orientation.

During Osler's tenure as professor of medicine in Philadelphia, he continued his frequent demonstrations of autopsy specimens, this time at the Philadelphia Pathological Society. Landis¹⁷ has written that 'A study of the minutes of the meetings of the Philadelphia Pathological Society indicates that from the time of his arrival in Philadelphia, and even before his election, he was an almost constant attendant of the meetings of the Society. He was elected a member of the Committee on Morbid Growths, 9 September 1886, and remained such until he left for Baltimore. In the little more than four years that he was an active member of the Society, he appeared before it no less than fifty-two times. It was unusual if he did not have some interesting specimen to show or some new method of clinical microscopy to demonstrate'. Such dedication to the value of autopsy specimens would be as unique today as it was then. But presentations of specimens at society meetings represent only one manner in which Osler capitalized on his autopsy experience.

OSLER'S AUTOPSY PAPERS

Osler's use of his autopsy experience was greatest in the area of publication. In addition to the 211 reports of pathological specimens presented to societies, Maude Abbott¹⁰ classified 160 of his articles as 'autopsies published separately or in articles of other contributors'. The first of these was printed in the *Canada Medical Journal* in 1872¹⁸ by Osler as a senior medical student at McGill. This was a case of pneumonia with delirium tremens. The last reported by Osler was in the *Lancet* in 1919¹⁹ as Regius Professor of Medicine at Oxford. It was a description of influenzal pneumonia and spinal meningitis. These two publications on pneumonia, one at the beginning of his professional career and the other at the end, marked the boundaries of forty-seven years of intense concern with pathologic changes underlying the external manifestations of disease.

Although most of the 'autopsy papers' are short descriptions of individual specimens, Osler did publish several major review articles based on his necropsy material. These represent significant contributions to the medical literature of his day. The earliest of these was 'On the pathology of miner's lung', published in the *Canada*

Osler's Autopsies: their Nature and Utilization

Medical and Surgical Journal of 1875.²⁰ It includes extremely detailed gross and microscopic descriptions of four lungs with anthracosis. These are followed by fairly modern discussion of factors influencing the passage of particles into and throughout the respiratory and related lymphatic system. Because of the extensive fibrosis described, it is likely that silicosis as well as anthracosis was present, although the former had not been delineated by 1875.

This paper²⁰ is also noteworthy as it includes an account of one of the few recorded animal experiments performed by Osler. His objective was 'to show the remarkable aptitude of cells to take up granules of various sorts, and, also, to demonstrate the rapidity with which the lymphatic glands are affected'. In one experiment he injected India ink into the axilla of a kitten and 20 hours later demonstrated this material within local white blood corpuscles and lymphatic vessels. In another he injected India ink into the thorax of a kitten and 36 hours later observed the material within cells in alveoli and lymph glands. These experiments are significant in that they were published in 1875, 8 years before Metchnikoff's first paper on phagocytosis, delivered at the Odessa Congress in 1883.²¹

Osler's best-known review is on malignant ulcerative endocarditis, delivered as the Gulstonian Lectures to the Royal College of Physicians of London in 1885 and published in the *British Medical Journal* in the same year.²² It was based on an extensive survey of the literature and on his autopsy experience in Montreal, totalling 209 cases. Noteworthy is the description of pre-existent sclerotic valve damage in three-quarters of his cases. Although Osler has been given credit for the first suggestion that there is an increased incidence of infection in scarred valves,²³ he noted in the paper that Sir James Paget had previously made such an observation. His description of bacteria in the valves was one of the first.²⁴

One of Osler's most extensive review papers was based on a clinical lecture delivered at the Johns Hopkins Hospital and published in *International Clinics* of 1903.²⁵ It contained a detailed clinical and autopsy review of fourteen cases of 'Aneurism of the descending thoracic aorta' seen at the hospital from 1890 to 1903. Although he evidently did not perform these autopsies himself, he refers to two additional cases which he did in 1882 at Montreal. There is also an extensive review of the literature. Noteworthy are the inclusion of clinical and autopsy photographs, and references to the use of X-rays in diagnosis.

These publications represent the work of an individual who was in the forefront of medical knowledge and practice of his day, and who moved with ease and proficiency in both the clinical and pathological manifestations of disease.

OSLER'S TEXTBOOK

A major factor contributing to Osler's renown has been his textbook, *The Principles and Practice of Medicine*, first published in 1892.²⁶ It represents a detailed exposition of disease including not only clinical aspects but also gross and microscopic detail. Abbott²⁷ has commented that 'His Practice of Medicine is literally built up on his rich memories of these and similar cases and the foregoing clinical histories, accumulated both here and in his later Philadelphia experience'. He also availed himself of material at hand, as evidenced by occasional references to Dr.

Welch's autopsy cases at Johns Hopkins. There is ample evidence that Osler drew considerably on his Montreal autopsy experience in writing his textbook. He is known to have borrowed the five volumes of his autopsy protocols from Montreal while he was writing his book in Baltimore.¹ *The Principles of Medicine*²⁶ contains reference to and analysis of at least four series of autopsies performed by Osler at Montreal—64 cases of typhoid (p. 5), 30 of diphtheria (p. 102), 100 of pneumonia (p. 554), and 23 of endocarditis (p. 595). In addition, there are several descriptions of individual cases—meningitis (p. 93) and anthracosis (p. 554).

However Osler's textbook was not unique when published. Available in 1892, and used in twenty-eight American medical schools, was the second American translation of the sixth German edition of Strümpell's *Textbook of Medicine*.²⁸ There is considerable resemblance between the two textbooks. The tables of contents are similar although in somewhat different order. Both begin with typhoid fever and end with diseases caused by animal parasites. It is possible that Osler used Strümpell's textbook as a model. In fact, his book reproduced three fever charts from Strümpell's work. However, all textbooks on the same subject written within a decade of each other are generally alike because the authors have the same sources of information and prevailing theories to draw upon. Both books have a similar degree of emphasis on the pathology of disease. In general, the same amount of gross and microscopic detail is given for the various diseases by both. Strümpell provides some figures of gross changes, such as vocal cord fibromata and tabes of the knee, and of microscopic drawings such as the spleen in typhoid, parasites, acute nephritis and blood smears. Osler's textbook has twenty-four illustrations of which only one relates to pathologic changes, a diagram of pyramidal tract degeneration. The major difference between the two books, in respect to pathology, is that Osler has direct references to his own personal autopsy studies.

Even though both books were similar in length, detail, areas of emphasis and currency of concepts, Osler's *Principles of Medicine* rapidly became the leading textbook of medicine.²⁷ Its overwhelming success may have been due to the better style of writing as compared to a translation, the popularity of Osler, and the fact that it represented the most modern work written originally in the English language.

OSLER'S USE OF AUTOPSY MATERIAL IN TEACHING

Another productive use of post-mortem material by Osler was in the teaching of medical students. As professor of the institutes of medicine, Osler was responsible for the teaching of physiology, histology and pathology. The Annual Announcement of the Faculty of Medicine at McGill University for 1877²⁹ provides some orientation to Osler's course. 'This course comprises Histology, Physiology, and General Pathology. The lectures are illustrated by apparatus, diagrams, plates, and microscopic preparations of the various tissues, and by Pathological specimens from the museum. Extra demonstrations are held every Saturday afternoon. Voluntary courses of three months each on Practical Physiology and Microscopy are organized throughout the entire year'. The textbooks listed for pathology are Green, Rindfleisch, Jones & Sieveking, Wilkes & Moxon and Virchow on post-mortems.

Osler's teaching on pathology was based primarily on the demonstration of gross



Figure 1

Osler's Pathological Seminars at the Philadelphia General Hospital in the Old Blockley Laboratory, 1887. (From E. B. Krumbhaar, 'The history of pathology at the Philadelphia General Hospital', *Medical Life*, 1933, 40, 162.

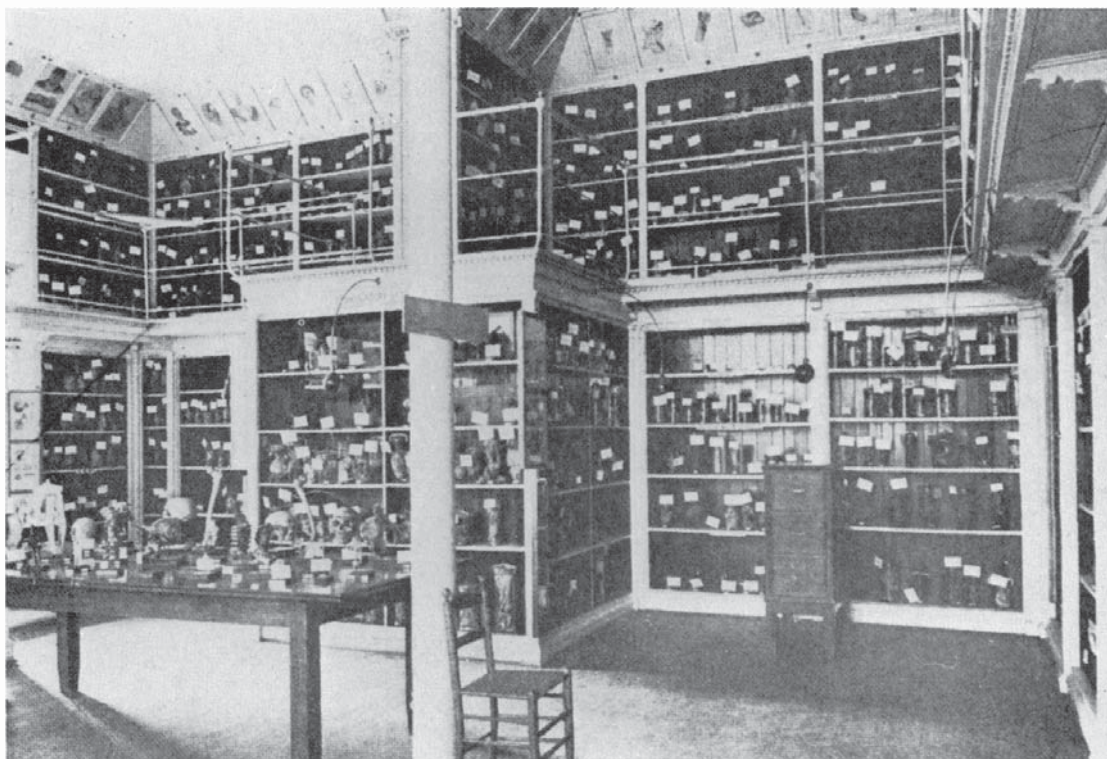


Figure 2

The Old Pathological Museum of McGill University, 1905. Many of the specimens were placed there by William Osler between 1874 and 1884 (Ref. 27).

Osler's Autopsies: their Nature and Utilization

autopsy specimens. His orientation is given in his handwritten notes for an introductory lecture on 'The Practical Teaching of Morbid Anatomy', probably delivered in 1878.³⁰ 'We are now in a position to pass judgment upon an experiment tried for the first time in any of the Schools in this Continent, viz. the establishment of a demonstrative Course in Pathology, after the model of the celebrated one held in the Pathological Institute of Berlin. The results of the past two sessions have more than fulfilled our anticipation; the attendance was better than had been expected and the interest shown most gratifying. Ample material was forthcoming as we may judge from this fact that over 150 recent specimens, illustrating almost all the common forms of diseases, were laid before the class.' In Volume II of Osler's autopsy protocols³ there is an unbound page, signed by a student, R. J. B. Howard, listing 122 specimens representing 80 diseases which were shown to one class.

Some indication of the orientation of Osler's Saturday demonstrations is provided by publication of notes taken from one of them by the same student.³¹ Three cases were presented—typhoid, aneurysm of the aorta and peritonitis. In each the clinical history is first detailed, then autopsy findings presented and gross organs passed around. Finally there are some comments as to clinico-pathological correlations and general importance of the case.

Considerable insight into Osler's pathology demonstrations has been provided by Cushing³² in recording the recollections of another student. 'His method was to select three or four of his class to perform the autopsies during the week in the Montreal General Hospital; from these autopsies a certain number of specimens were selected for the Saturday clinic. Before the class met, the specimens were all arranged on separate trays and carefully labelled. Each specimen in turn was carefully discussed and all the important points clearly indicated. At the close of each case, questions were asked for and answered, the whole being most informal and conversational. The facts elicited in the autopsies were carefully correlated with the clinical histories and notes of the cases taken in the wards. In order that his teaching should be of the greatest value to those in attendance he furnished each one with a written description of each specimen, and with an epitome of the remarks which he had prepared.'

Long after Osler left McGill, he continued to use autopsy specimens for teaching (Fig. 1). Dr. John Pratt has published notes taken during Osler's clinics at the Johns Hopkins Medical School in 1896.³³ Included are demonstrations of diseased organs removed at autopsy, with expositions of their relationship to the patient's general condition.

Osler placed considerable emphasis on histology in his course on the institutes of medicine. When he assumed his professorship at McGill, only one microscope was available. Osler used his salary as physician to the smallpox ward to buy twelve microscopes for use by students.³⁴ These were compound monocular microscopes, manufactured by E. Hartnack & Co., in Paris, France.³⁵ According to Osler³⁶ their cost was \$45.00 each and their magnifying power ranged from 65 to 500 diameters. Osler also provided the students with his own manual on histology.⁸ It begins with a description of the microscope and then a section on the preparation of tissues. There is a page on artefacts such as air bubbles, oil drops, granules, fibres, dust and starch. Subsequent chapters deal with cells, fungi, blood, epithelium, connective tissues and

a brief histologic description of each organ system. It is evident that Osler had a practical orientation to microscopic studies, and one that was quite extensive for his day.

Osler's application of microscopic studies in diseased conditions is given in some introductory remarks for his course.³⁶ 'In no class of diseases is it of greater service than in the various Renal disorders. Here we may not only date the commencement of the affection, and follow it in its progress, but, also, very often obtain tolerable certain evidence of the nature of the changes going on in the kidneys.' He also refers to the diagnostic value of the microscopic in examining vomit, alvine discharges, and sputum. He mentions its use in diagnosis of tumours but cautions as to the degree of precision possible. Also included are ways in which the microscope can be used in medico-legal inquiries—identify blood and human stains and distinguish between human and animal hair. Osler completes his account by mentioning the use of the microscope in distinguishing diseased from healthy meat for human consumption. Osler was indeed in the forefront of the practice and teaching of pathology.

OSLER'S AUTOPSY SPECIMENS

A monument to Osler's interest in pathology and to his industry is the collection of museum specimens at McGill Medical School. Our information about the McGill Medical Museum comes largely from Maude Abbott who wrote extensively on its history. Since the founding of the school in 1823, faculty members had prepared and saved specimens from autopsies.³⁷ At that time specimens were preserved in alcohol or arsenical solution, by drying and covering the sealing-wax, or by maceration and mounting. By the time Osler joined the faculty as Professor of the Institutes of Medicine, three to four hundred specimens had been accumulated.

Osler's first contribution to the museum consisted of the thirty-three microscopic and gross specimens which accompanied his graduation thesis in 1872.³⁸ As a McGill faculty member he prepared many more specimens, largely 'preserved in alcohol or Sappey's fluid and suspended in well-stoppered jars'.²³ The exact number of specimens prepared by Osler is not certain. According to Maude Abbott, 'In his time he must have added at least five hundred such specimens to that historic collection, many of which were of permanent value'.³⁹

Osler's interest in museum specimens continued after he left Montreal. Thomas McCrae, one of Osler's successors as pathologist at the Montreal General Hospital, has related that 'He had a considerable number of specimens in Baltimore, some of which came from Montreal and Philadelphia. There were 250 or 300 of them. He rarely used them in teaching but on some occasions he went over them and even if there were not many details on the label he remembered the particulars'.⁴ That Osler transported museum jar specimens from both Montreal and Philadelphia to Baltimore is an indication of both his interest in morbid anatomy and his compulsion as a collector.

Osler continued his interest in the McGill Medical Museum while in Baltimore. In 1904, twenty years after leaving McGill, he returned to the museum (Fig. 2) and assisted Maude Abbott in cataloguing his specimens.⁴¹ In Abbott's own words 'I shall never forget him as I saw him walking down the old museum towards me, with

Osler's Autopsies: their Nature and Utilization

his great, dark, burning eyes fixed full upon me. His delight that his own beloved specimens were being conserved and catalogued, and their histories attached was very great'.⁴¹ His contribution at this time was to provide accurate identification and histories for eighty-three specimens that were not clearly labelled. That he could do so, from memory, is remarkable.

The history of the McGill Medical Museum, after Osler left, is somewhat indefinite. In 1899, when Abbott became Curator of the Museum, there were approximately 180 Osler specimens remaining, and this number was further reduced by a fire in the Medical Building in 1907.²³ By 1927 there were 'some 150'.²⁷ In 1935, 130 specimens remained and they were 'remounted on glass frames in square jars by special provision of Dean C. F. Martin, forming a really spectacular display'.²³

A further account of the Osler specimens has been obtained from J. M. Legault, acting Museum Curator.⁴² In 1945, a selection of Osler's specimen jars were removed from the Strathcona Building Medical Museum and placed in storage in the new McGill Pathology Institute. In 1963, the jars were removed from storage and redone. The original glass jars were retained but the preservative fluid was replaced with Keiserling III, the jars resealed, and the accompanying cards retyped because they were disintegrating. In 1969, under the direction of Dr. Robert More, the revamped specimen jars were moved to lighted glass cases in the foyer of the McGill Pathology Institute. There fifty-five of Osler's original specimens remain on permanent display.

The diseases represented in Osler's specimen collection are a reflection of his interests. In 1935, over one-half of the remaining specimens were of cardiovascular lesions²³ with the largest numbers being related to his major review articles—endocarditis²² and aortic aneurysms.²⁵ There were fifteen examples of the former and twenty-eight of the latter.¹⁰ Of the fifty-five specimens existing today, eleven are of endocarditis and eleven of aortic aneurysms.⁴³ There are thirteen other heart specimens. The remainder include a variety of conditions (Table 1).

In general, the specimens on display at the McGill Pathology Institute are well prepared, with highlighting of lesions by trimming off of excess tissue. The accompanying cards often include details of both clinical history and pathological changes, with an occasional reference to a publication on the specimen. Abbott's bibliography of Osler's publications, published in 1939,⁴⁴ identified ninety specimens which were the basis for papers and which were still in the museum.

Osler's interest in museums was not limited to McGill. He was an enthusiastic supporter of the International Association of Medical Museums and became its first honorary member on its formation in 1907.⁴⁵ In 1911 he called a meeting at the Royal College of Surgeons in London for the purpose of organizing a British branch of the Association. According to Keith,⁴⁶ 'He was the moving force which led to the formation of an Imperial Collection of Medical Specimens during the late War.'

Osler's epitaph in relation to pathology museums has been given by Warthin.⁴⁵ 'To him the pathological specimen, properly prepared and catalogued, was a record of disease more instructive than any textbook description could possibly be. He valued rare specimens as he valued rare editions. Each had a wonderful beauty of its own—valuable in that it demonstrated some essential bit of knowledge of disease for which it should be preserved as an individual record. He had the feeling of the

Alvin E. Rodin

old-time naturalist for these specimens. He loved to look at them, comparing and contrasting, seizing upon their individual points, and correlating these with the clinical symptoms produced by them. He knew, moreover, how to describe them in such a telling way as to excite interest in the most apathetic of medical student.'

TABLE 1
EXISTING OSLER MUSEUM SPECIMENS*

<i>Heart</i>	<i>Blood Vessels</i>
Endocarditis (11)	Aortic aneurysms (11)
Valvular Stenosis (4)	Aneurysm pulmonary artery
Pericarditis (3)	Bayonet wound of aorta
Myocardial Fibrosis (2)	Thrombosis of portal vein
Hypertrophy	Thrombosis of tibial artery
Fatty with Rupture	<i>Larynx</i>
Metastatic Tumour	Stenosis and edema
<i>Stomach</i>	<i>Animal</i>
Hairball	Actinomycosis
Ulcers	Verminous bronchitis
Carcinoma (7)	Acute Pleurisy
<i>Intestine</i>	<i>Kidney</i>
Typhoid	Atrophy
Leukaemia	Nephritis

*On display at the McGill Pathology Institute, Montreal, Canada.

CONCLUSIONS

Osler's autopsy experiences were characterized not only by excellence of technique but also by his extensive use of the related material. To have performed 786 autopsies, published 211 accounts of specimens and prepared approximately 500 museum specimens in the eight-year period as pathologist to the Montreal General Hospital is indeed remarkable.

Osler was the most outstanding example of the benefits of his master-word, *Work*.⁴⁷ Although his major activities in pathology were during his Canadian period, their influence permeated his subsequent career as a diagnostician and author. Osler's publications based on his autopsy experience did much to popularize the use of post-mortem case material in teaching of medical students. As Abbott has stated,³⁹ 'With him to see was indeed to record, but, having done this, to publish for the interest and benefit of others'. And Osler's autopsy activities certainly did benefit himself, the practice of medicine and medical education.

Osler's Autopsies: their Nature and Utilization

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Alvin E. Rodin

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