OSLER'S BRAIN AGAIN*

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A few weeks before he died, Sir William Osler pencilled sixteen numbered memoranda in a shaky but legible script, inked over with corrections and inserts. The last one reads (Fig. 1):

"Autopsy, most careful? by Gibson & Edwin. The brain goes to the Wistar Institute Philadelphia for description. Arthur Thomson knows about [it] the Society. I was one of the founders."

Service at Ch Ch. Cremation at Golders Green. Ashes in box in my Library*

Cushing explains that “during his last week, Osler kept on his bedside table under his pad, which he would let no one touch, many scraps of writing which he somehow managed to compose usually by stealth when Lady Osler or the nurse were driven out to get some exercise.”

Alexander G. Gibson, Osler’s physician in Oxford, kept detailed clinical notes of Osler’s last illness which ended fatally on the afternoon of December 29, 1919; the next afternoon, Gibson performed the autopsy at Norham Gardens presumably with the help of Edwin (Wheal), Osler’s "boy" from the pathology laboratory. The final diagnosis was broncho-pneumonia with empyema and multiple lung abscesses, probably initiated by Hemophilus Influenzae.10

In Gibson’s complete pathological report, one paragraph reads:

"Brain
The pia arachnoid is lightly adherent to the dura over the vertex and the dura again to the calvarium. The falx cerebi and tentorium cerebelli thickened. Frontal lobes large, squarish in transverse outline. Atheroma of the basilar arteries and circle of Willis. No external abnormality. Preserved for further examination."

As Osler had directed, the brain, packed in cotton soaked in formaldehyde, was brought in 1920 from Oxford to the Wistar Institute, Philadelphia, by Thomas McCrae. Osler had taken a keen but realistic clinical interest in the course of his own illness. When offered some consoling medical explanation by his friend Archibald Malloch, he commented, “Archie, you old lunatic! I’ve been watching this case for two months and I’m sorry I shall not see the post-mortem”. And in one of his dreams, in October, 1917, Osler viewed with Gibson his own body being autopsied by Sir Clifford Allbut, the Regius Professor of Medicine at Cambridge and discussed with both the appearances of the heart, aorta, and lungs. The details of Osler’s illness and the autopsy findings have been thoroughly reviewed by Barondess.10

Fig.1: Page from Osler’s Memoranda of December 1919 (Osler Papers, Accession 230).

The Anthropometric Society
In regard to Osler’s pledge about the disposition of his brain, Cushing11 notes “...and when some years later the Wistar Institute came to be established in Philadelphia, he with a number of others (F.X. Dercum, Harrison Allen, Joseph Leidy, William Pepper, and E.A. Spitzka) formed what was called the Anthropological Society [sic] and agreed to bequeath their brains for study.”

From notes in the Cushing files of the Osler Library, it is evident that this Society was established in 1889; although Osler was not listed among those at the first meeting, he described himself as a founding member and certainly attended the early sessions. In response to a query by Cushing in June 1920, F.X. Dercum, President of the Society, confirmed that Osler was a member, continued, “the brains, which I am glad to say did not accumulate very rapidly, were deposited in the Wistar Institute of Anatomy and in 1907 six were studied by Dr. E.A. Spitzka.” The title of Spitzka’s report identifies the group correctly as the American Anthropometric Society.13

At a meeting in 1890, when Osler was present, the subject of discussion was how the brains should be treated and whether they should be farmed out to those interested in units or in part. Henry Donaldson wrote of this meeting, “I remember offering to take up the problem of the architecture of the cerebral cortex, but was told by one of my learned colleagues that in view of the fact that so little was known of the cerebral cortex, it would not be wise to study it in these brains.” Later in answer to Cushing’s enquiry, Donaldson wrote14 in June 1920 regarding Osler’s brain, “the brain is here and in good order but I have not studied it. Have you any suggestions as to such a study especially in relation to the use which you would like to make of the results?” There is no record of any advice forthcoming from Cushing.

A Study of Osler’s Brain

Donaldson, with the assistance of Myrtelle M. Canavan, later produced a report15 in 1928, entitled “A study of the brains of three scholars”, one of which was that of Osler. Canavan carried out extensive measurements using a scheme developed by E.E. Southard. After recording the weight of a brain and its various parts, groups of sulci were selected for study, measuring them in length and depth by a metal sound bearing a sliding bead. The brains of three members of the Southard family were examined in this same manner. Excellent photographs of the cortical surfaces of the two separate hemispheres of Osler’s brain were reproduced in the article, along with tables of data on all the brains. Brief notes on Osler’s faculties included some complimentary but perhaps gratuitous evaluations. Under “senses” it was noted - “sight: very keen; hearing: acute; taste: (blank); smell: unusually keen; touch: very sensitive;” and under esthetic interests: “music: slight; painting, etc: not marked.”

*Read in part at the Twentieth annual Meeting of the American Osler Society, Johns Hopkins Medical Institutions, Baltimore, Maryland, May 1960.

**Dr. Feindel, former Director of the Montreal Neurological Institute, is a member of the Board of Curators of the Osler Library and Curator of the Wilder Penfield Archive, located in the Osler Library

The initial letter on this page is reproduced from Alexander Nesbitt (ed.) Decorative alphabets and initials, plate 72, Dover Publications, 1959.
Donaldson and Canavan reported that after removal of the pia the encephalon weighed 1396 grams; the cerebellum in the strict sense, i.e. without the pons, 134 grams, thus being 9.6% of the encephalon without pia. This arcane figure and the extensive numerical data in the three tables relating to Osler’s brain await advances in the neurosciences to understand their significance. Perhaps the cautionary admonition to Donaldson by his learned colleagues of the Anthropometric Society may have been justified. After relating further details of the gross examination of the brain, for instance, that the superior surface of the left hemisphere was appreciably larger than the right, no special revelations were forthcoming. “The brain of W.O. was well grown and, therefore, under favorable conditions for further activity,” they wrote, “the brain, after death”, they concluded, “is therefore but the crude machine lacking power and controls, and although the convolutions may differ somewhat, yet, in view of the controlling numerical and quantitative conditions, variations in the convolutions can hardly be used to explain mental traits and abilities as between persons of ordinary and of superior intelligence.” They recognized that this conclusion was not new. They observed, however, that the extent of cortex in the scholars’ brains was greater in the frontal area, though they hesitated to make any particular inference from this.

After seeing the Donaldson-Canavan report, A.G. Gibson wrote16 from Oxford to W.W. Francis, “It gives the cold light of science or nescience with vengeance.”

Osler’s Brain Comes to McGill—Temporarily

Nothing further was done about Osler’s brain until 1959, when Wilder Penfield (as he explained later, in a letter to Edward Bensley17 who was asking for information on behalf of Alistair Robb-Smith) was at the Institute for Advanced Study, Princeton, to work on “The Torch”, his historical novel about Hippocrates. Invited by the Director of the Wistar Institute to talk at a symposium, he at first refused. Then the Director said, “Well, we have at the Institute the brain of Sir William Osler, does it interest you?” “Yes, certainly it does,” Penfield replied, “if you will let me carry off the brain of Sir William I will come and make the address just as you want me to.”

“So that agreement ended.” Penfield continued, “in my carrying off the brain to the Neurological Institute where we examined it with reverence!”

“However, it looked like the brain of any other normal individual, except that there was very little evidence of any atrophy. It was examined routinely and a report made by the neuropathologist—Gordon Mathieson.”

“Do tell Dr. Robb-Smith, and if he would like any of the details he can write directly to Gordon Mathieson.”

“After we had made the study, the Wistar Institute asked for the brain back as they had come to the conclusion that they were not at liberty to part with it, although they did not begrudge the parts we had taken for our examination. We sent them all back, so that it may be said that the brain is still in the Wistar Institute, although it spent a month or two in the hands of his admirers in Montreal.”

Mathieson’s report may be quoted in part.18 He remarked that the tip of the left occipital lobe had previously been removed, the brain received with the blood vessels and leptomeninges already stripped, the cerebral hemispheres already divided from each other and from the brainstem and cer-
eellum detached from the pons. The brain tissue appeared pale throughout and was "firm but friable."

When the cerebrum was cut coronally and the brainstem and cerebellum horizontally, no focal lesion or other significant abnormalities were disclosed (Fig.2).

Blocks for microscopic examination were taken from the right frontal lobe, the left insular cortex and basal ganglia, the right hippocampus, the pons, the medulla and cerebellum.

Except for moderate lipochrome accumulation in the cortical neurons, the sections appeared normal. There was no neuronal loss in the lamina pyramidalis of the hippocampus and the adjacent structures were also normal. Mathieson concluded that the blocks of this brain taken after fixation in formalin for 40 years with the right hemisphere failed completely, provided satisfactory sections with simple methods. A survey of different regions failed to show any significant histopathological changes. "In particular there were no micro-abscesses that are a common cerebral finding with terminal pulmonary suppuration."

A photographic enlargement of the original of the coronal section shows more clearly the absence of atrophy of the hippocampus (Fig.3).

There the matter again rested until 1970, when Richard D. Walter published a historical note on Osler's brain. After citing the Philadelphia brain donors and summarizing the Donaldson-Canavan report, he concluded, "Sir William Osler's brain remained at the Wistar Institute until 1963. In that year, the Osler Society of McGill Medical School requested the return of the brain to McGill for preservation with other Osler specimens."

In the meantime, Alistair H.T. Robb-Smith, Nuffield Reader of Pathology at the University of Oxford, and an erudite Oslerian, was preparing a paper entitled "Did Sir William Osler have carcinoma of the lung?" (The answer in brief was "No."). Robb-Smith included an appendix on "The examination of Sir William Osler's brain": some confusion was entailed by the editor omitting this appendix from the journal text in 1974-75, but adding it to reprints of the article. To clarify this situation, the editors of this Newsletter reprinted Robb-Smith's note on the brain, with an explanatory note, in issue No.60 of February 1989. This incorporated the material already alluded to by Walter and summarized the MNI report which he had obtained in the meantime from Penfield and Mathieson, including a set of the histological sections provided, according to Robb-Smith, through Professor Sir Hugh Cairns. He then wrote "There is no evidence that the Osler Society of McGill Medical School, which is an undergraduate medical society, ever had any dealings with Osler's brain."

But from Edward Bensley's file on Osler's brain, it appears that John Randall, a McGill graduate of 1965, reading the Newsletter, wrote Robb-Smith to say that in 1963 he had been asked by Charles Swisher, then President of the McGill Osler Society, to enquire from the Wistar Institute about Osler's brain. Randall visited two staff members at the Institute who told him the brain was no longer intact (Mathieson had cut it coronally). He reported back to the McGill Undergraduate Society (different from the Osler Society of McGill University) and it was decided not to request removal of the brain to the Osler Library.

In 1988, a paper on "Osler's Brain and Other Related Mental Matters" was presented by Rodin and Key at the New Orleans meeting of the American Osler Society. They had been unaware (according to Robb-Smith) that the brain had been sent to Penfield and examined by Mathieson, but added this information to their published paper in the Southern Medical Journal for February 1990. They quote again the sections from the brain from the autopsy report by A.G. Gibson of a brain which had been produced in facsimile by Barondess in 1974 and the study from the Wistar Institute by Donaldson and Canavan. They also cite a communication from Robb-Smith (June, 1988) about the MNI pathology report and refer to the microscopic slides being examined by Mathieson.

The Brain of Osler

There the matter rests for the moment. But the vast work created by the active brain of Osler goes on -- the Osler Industry, some have called it. Osler's contribution to neurology alone make him one of the first neuropathologists in America and certainly Canada's first neurologist. His positive influence on his protege, Harvey Cushing, and his inspiring friendship with the Oxford Rhodes Scholar, Wilder Penfield, profoundly affected also the dimensions of the young field of neurosurgery.

At the opening of the Wistar Institute in 1894, five years after the formation of the Anthropometric Society, Osler spoke on "The Leaven of Science": he said that Cajal "based development of the intelligence upon the complexity of the cell mechanism and its associations". (quoted by Burchell, 1975) The well preserved hippocampal region in Osler's brain indicates that this anatomical substrate, crucial for memory, was intact -- the variety of the many items detailed in his last memoranda further substantiate that conclusion. Much remains to be done to connect intelligence and the brain, that ancient question still engages an ever increasing number of brain scientists.

So, in the end, Osler's brain was transferred to the Wistar Institute to the Mutter Museum of the College of Physicians of Philadelphia. Representative microscopic sections are kept at the Montreal Neurological Institute and another set somewhere in Oxford. But, we can agree in a figurative as well as a literal sense with the marginal notation of W.W. Francis, on the letter from A.G. Gibson in 1929 -- "His heart is here in the Osler Library with his ashes".

Acknowledgements

Dr. Faith Walls kindly provided the holograph of Osler's Memoranda, a copy of Gibson's autopsy report on Osler and other helpful material. Dr. Edward Bensley generously allowed me to review his file on Osler's brain from which several letters here have been quoted.

Notes and References

1. Osler Papers, Accesion 326, Osler Library.
2. 1904 letter to Professor Sir Hugh Cairns.
3. Words italicized here were added in ink.
4. Christ Church, Osler's Oxford College, has the skull of Professor E.T. Scopel.29 Representative microscopic sections are kept at the Montreal Neurological Institute.
The latest exhibit at the Osler Library was inaugurated on Friday, May 4, as part of an unusual scholarly conference. “Du manuscrit à la table” – “From the Manuscript to the Table” – was the theme of the 15th annual colloquium of the Institut d’études médiévales at Université de Montréal; its subject was medieval cuisine and eating practices. Scholars from France, Denmark, the Netherlands, Switzerland, and Australia as well as Canada and the U.S.A. gathered for four days of learned papers and discussions, culminating in a spectacular medieval banquet. The History of Medicine Librarian was a member of the organizing committee for this conference, her particular contribution being a major exhibition on “Food and Physic in the Middle Ages.”

The latest admonitions on healthy eating – whether they summon us to boycott palm oil or embrace the gospel of oat bran – are but the most recent exchanges in one of the oldest medical discourses in existence. Ever since Hippocrates, doctors and their clients alike have been obsessed with the relationship between diet and health. Traditionally, this relationship has been viewed from two angles: prevention and cure. Certain foods, selected according to the season and the constitution of the diner, were deemed conducive to health and a bulwark against disease; and in the event of an illness, recovery could be speeded by particular dietary measures. These ancient traditions formed the cornerstone of medieval thinking on hygiene, preventive medicine, and pharmacology. The admonitions and advisements of learned physicians, culled from the principles of Galenic medicine and refined by Arabic lore, also penetrated the eating habits of ordinary medieval men and women, and turned up between the lines of recipe books and popular treatises on the art of living well. Cuisine and medicine are two intertwining themes whose dialogue reveals the complex interface of science and society in the medieval world.

The exhibition on “Food and Physic in the Middle Ages” is divided into three thematic sections. The first is entitled “Regimen Sanitatis”, and deals with texts on diet and medicine. These include specialized medical treatises like the Florida corona medicinae of Antonio Gazio (Bibl. Osl. 7437), various editions and commentaries on the standard medieval compendium of hygiene, the Regimen sanitatis salernitanum (Bibl. Osl. 7483 and 7484), and the first work exclusively devoted to paediatrics, Paolo Bagellardo’s De infantiunt aegritudinis ac remedis, printed in Padua in 1472 (Bibl. Osl. 7417). This section of the exhibition also featured some of the Library’s medieval manuscripts. One of these, Bibl. Osl. 7591, was made in England at the beginning of the 16th century. This missal is largely devoted to medical recipes and charms against every conceivable ailment from cancer to sleepwalking, but it also includes a recipe “To make gynberbrede”. A large folio manuscript written at Pavia between 1428 and 1429 (Bibl. Osl. 170) contains the Latin commentary of the scholastic physician Professor Ugo Benzi on the Aphorisms of Hippocrates; the pages on display contain Benzi’s explanation of Aphorisms 2.38: “With regard to food and drink, it is better to take something slightly less suitable but pleasing than something more suitable but less pleasing.” Finally, there is the concitium, or consultation report, of Giambattista Ferrari da Grado, professor of medicine at Pavia from 1432 to 1472, on the case of Giovanni Symonneta da Calabria, who suffered from chronic indigestion (Bibl. Osl. 7555). Ferrari advises his patient against sleeping, exercising or studying “with vehement application of the mind, especially about subtle or speculative things” directly after meals. Foods that are difficult to digest are forbidden: beef, venison, unleavened bread, salt meat and fish, beans, pastries (riputi, i.e. “ravioli”) and pies (turte). Cheese and dairy products “which are harmful and very obnoxious because of their coldness are off the menu as well. So are leeks, radishes, nuts, and even broth, because it “drives vapours into the head.” Ferrari does not say what poor Giovanni can eat, though he appends a daunting list of prescriptions for pills!

The second part of the exhibit, “Tacitum sanitatis”, focusses on popular works on the art of healthy living. The title is taken from one of the most attractive vehicles for conveying information about the medical properties of foods, the family of illustrated texts called Tacitum sanitatis. Tacitum is a Latinization of the Arabic word tawhimi, or “tables”. The original Tacitum was a set of tables compiled by the 11th century Arab physician Ibn Butlan to illustrate the relationships between the six “non-naturals” of Galenic medicine: climate, food and drink, motion and rest, sleep and wakefulness, elimination and retention, and emotional states. The typical western European version of the Tacitum, however, abandoned the tabular form in favour of separate illustrations of each item of food and drink. These illustrated “housebooks” are often exquisite works of art; one art historian has called them “the most beautiful books of the medieval world”.

The third part of the exhibit is on view in the Osler Room, and is devoted to the herbal tradition. An herbal is a catalogue of plants deemed useful from a medical point of view. Being practical guides to identification rather than formal botanical treatises, medieval herbals were very frequently illustrated. The transmission of these illustrations is surprisingly stable, considering that each copy was made by hand from a preceding exemplar. The exhibition highlights the dominant influence of the ancient illustrated codices of the herbal of Dioscorides, such as the famous Vienna or Anicia Juliana volume, made in Constantinople at the beginning of the sixth century. The facsimile of this manuscript, recently acquired for the Library, shows an illustration of a buttercup (rannunculus asiaticus) which is extraordinarily similar to the buttercup in Osler’s thirteenth-century Arabic manuscript of the herbal of al-Ghaffiki, a medieval physician from Islamic Spain (Bibl. Osl. 7502).

The four “pillars” in the display area of the Osler Library feature four very special medieval manuscripts whose contents bear upon the theme of food and physic. An exquisite early thirteenth century manuscript from Italy (Bibl. Osl. 7627) contains a Latin translation of the Dietae particulares of Isaac Judaeus (died ca. 932). This treatise is essentially an encyclopedia of the medical properties of foods, and was widely read and commented on in the Middle Ages. Bibl. Osl. 7628 is an early fourteenth-century manuscript of the Antidotarium of Nicholas of Salerno, to which is appended a vocabulary of materia medica. This glossary is essentially pharmacological in character, but the frontier between foods and drugs was a very hazy one, and there is much that the student of medieval cuisine can garner from such lists. Here we learn, for example, that pita epyntina are the familiar Italian lupini, and that oleum spumaticum is oil pressed from unripe olives. However, sometimes the vocabulary serves only to tease the curious scholar: what might sal sacrumaltis (“priest’s salt”), which our manuscript cryptically defines as quaedam confectio (“a sort of confection”), really be? Bibl. Osl. 7586 contains a very unusual text, really a miniature encyclopedia of the head and its ailments, internal and external, from baldness to insanity. Amongst the topics it treats is the perennial problem of the bon vivant, how to drink without getting drunk. The text suggests a number of preventive measures, such as eating the herb betony, dining on sheep’s liver, and consuming the testicles of a rooster. Finally, both good health and good manners dictated that the medieval gastronome follow a regular programme of oral hygiene. Inevitably, this included brushing one’s teeth, and a fifteenth-century manuscript (Bibl. Osl. 7579) contains a number of recipes for home-made dentifrice.

“Food and Physic in the Middle Ages” will be on display at the Osler Library throughout the summer months. We hope that Montrealers and visitors to Montreal will be able to drop in and see an unusual side of the Osler Library’s collections. 

Faith Wallis
OSLER LIBRARY FELLOWS FOR 1990

At its annual meeting in February, the Selection Committee for the Osler Library Fellowships awarded a Student's Fellowship to Miss Wendy Wobeser, and a Scholar's Fellowship to Miss Ellen Brickwedde. Wendy Wobeser, a student in the Faculty of Medicine at the University of Saskatchewan, pursued her professional interest in epidemiology and biostatistics back into the nineteenth century, as she researched "The Contribution of Pierre-Charles Alexandre Louis to the Use of Statistical Methodology in Clinical Medicine". During a month at the Osler Library in February, she worked under the supervision of Prof. George Weisz of the Department of Humanities and Social Studies in Medicine tracing the impact of Louis' methods on the nineteenth-century French medical literature.

Ellen Brickwedde, a doctoral candidate in History at Indiana University, will use her Scholar's Fellowship to forward her research on "The Impact of Yellow Fever Epidemics on the Development of Medical Thought, Theory and Preventive Policies in Colonial Senegal, c.1830-1940." The Library's French theses, historic materials on French social medicine, and important runs of nineteenth century French medical periodicals provide a rich resource for her project. We look forward to Miss Brickwedde's arrival at the beginning of July.

Each year, the Osler Library offers a Student's Fellowship to medical students, and a Scholar's Fellowship to historians and physicians working on research projects appropriate to our collections. A stipend of $1200 is provided through the endowment fund of the Class of Medicine of 1936, and through the Faculty of Medicine, in order to permit researchers not resident in Montreal to work at the Library. Details of the application procedure are available from Dr Faith Wallis at the Osler Library, and the deadline for applications is December 31 of each calendar year.

GOLDEN AND ROLAND ANNOUNCE
CORRIGENDA AND ADDENDA

"Of the making of books there is no end", and this is true a fortiori of bibliographies, though perhaps in this case the adage should be modified to "Of the finding of books there is no end...". Richard L. Golden and Charles G. Roland have discovered that even their monumental bibliography of Sir William Osler, Sir William Osler: An Annotated Bibliography with Illustrations (San Francisco: Norman Publishing, 1988), was not a fine enough net to catch everything of Osler's that was ever printed; Dr. Golden has therefore compiled a 5 page Corrigenda and Addenda. This supplement is in the same format and typeface as the original, and can conveniently be tipped into the back of the volume. The Corrigenda and Addenda include further printed appearances of Osler's works, expansions to the annotations, and some rather spectacular surprises, such as not one, but two separate Russian translations of Principles and Practice of Medicine. The discovery of these hitherto unknown Russian versions was announced by Dr. Golden in his Presidential Address to the American Osler Society at its meeting in May; the full story will be told in his article "A Note on the Russian Translation of Sir William Osler's Textbook", forthcoming in the July 1990 issue of Journal of the History of Medicine and Allied Sciences. The Corrigenda and Addenda may be purchased directly from Dr. Richard Golden, 554 Larkfield Road, East Northport, N.Y. 11731, at a cost of $5.00.

OSLER DAY – 1990

Osler Day this year falls on Wednesday, November 7th. The Osler Lecturer will be Dr. Robert C. Gallo of the National Cancer Institute, Bethesda, Maryland.

As is customary, the Osler Banquet will be held on the evening of Osler Day. Dr. Gallo will be the honoured guest at the banquet and will respond to questions about his Osler Lecture delivered that afternoon.
The appeal to the Friends for the 1989-90 academic year concluded at the end of May. The Library gratefully acknowledges the support it has received from Friends, both old and new, who have responded to the appeal for funds this year. Over the year, 337 Friends have given a total of approximately $19,750. Most of the contributions have come from Friends in Canada and the United States of America. However, very welcome contributions have come also from Argentina, Australia, Belgium, Brazil, Chile, Denmark, Kuwait, Norway, United Kingdom, Switzerland and West Germany. The names of Friends whose contributions were received after January 31, 1990 are listed below.

Due to a printing error, the list of Friends in the February issue of the Osler Library Newsletter ends abruptly. The present list acknowledges not only donations received since February 1990, but those inadvertently omitted in the February issue.

The appeal for the 1990-91 academic year will be made in the October Newsletter.

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