

## HISTORY OF OCCUPATIONAL MEDICINE

# The heritage of Bernardino Ramazzini

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Although the seminal work in what was to become the speciality of occupational medicine appeared in 1700 as written by the Italian physician, Bernardino Ramazzini and titled *De Morbis Artificum Diatriba*, it was through the English translation by Wilmer Cave Wright in 1940 and the subsequent scholarship of Dr Pericle Di Pietro of Modena, Italy, that this monograph became widely known. Ramazzini has been cited by innumerable medical authors and his volume has undergone many translations from the mid-18th century to the present day. References to his early observations of persons and work and their subsequent disease patterns repeatedly infuse today's description of work-related illness. That his pioneering efforts continue to receive adulation is seen in the organizations bearing his name, many eponymous awards, the striking Ramazzini Hall in Japan, and the continuing appearance of new reprintings of *Diseases of Workers* world-wide. The name Ramazzini marks the beginning of society's concern with the well-being and physical and emotional health of its workers from the shops of the crafts to the offices of the executives.

**Key words:** *Diseases of Workers*; Bernardino Ramazzini; Wilmer Cave Wright.

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*Shun those studies in which the work  
that results dies with the worker.*

—Leonardo da Vinci

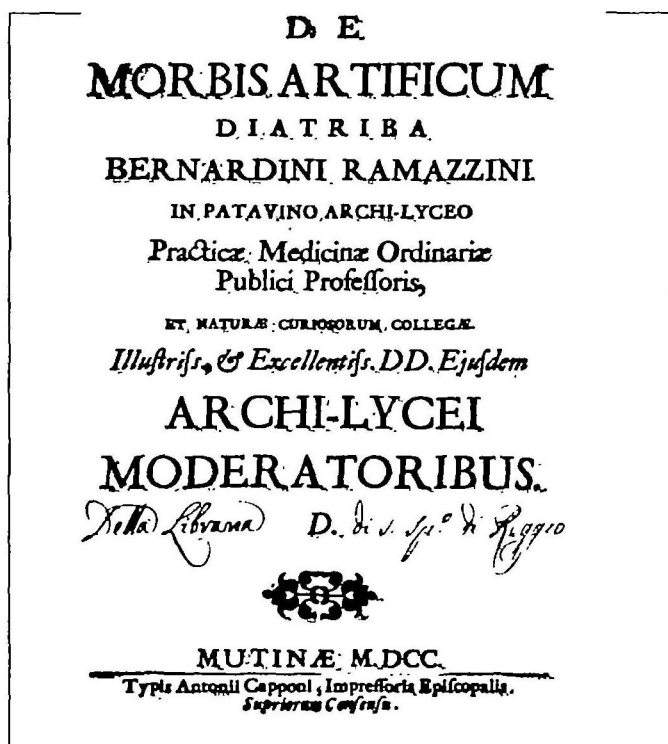
In every human endeavour, attribution is ascribed to one individual who initiated the thought or activity that became the heritage of the generations to follow. While descriptions of the hazardous effects of certain work came early,<sup>1–3</sup> the first comprehensive treatise on the diseases of workers, *De Morbis Artificum Diatriba*, appeared in 1700, written by a native of Carpi, Italy, Bernardino Ramazzini<sup>4</sup> (Figures 1 and 2). While subsequent editions and translations appeared throughout the 18th century, his writings concerning occupational diseases did not reach a sizeable readership until an accurate English translation was undertaken by Wilmer Cave Wright (Figures 3 and 4), an Emeritus Professor of Greek at Bryn Mawr College, and was published by the University of Chicago Press in 1940.<sup>5</sup>

**Figure 1.** Bernardino Ramazzini, author of *De Morbis Artificum Diatriba* (*Diseases of Workers*), 1633–1714.



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**Figure 2.** Title page of the first edition of *De Morbis Artificum*, 1700. Signature of original owner is seen.



**Figure 3.** Professor Wilmer Cave Wright, whose 1940 translation of *DI Morbis Artificum Diatriba* brought the writings of Bernardino Ramazzini to a broad readership.



*Wilmer Cave Wright*

**Figure 4.** Original advertisement announcing publication of *Diseases of Workers*, 1940.

*Just published*

De Morbis Artificum  
BERNARDINI RAMAZZINI

**DISEASES  
OF  
WORKERS**

*The Latin Text of 1713 Revised with  
Translation and Notes*

By WILMER CAVE WRIGHT

Bernardino Ramazzini (1633-1714), of Modena and Padua, was the author of the first fundamental and, for its time, comprehensive treatise on occupational diseases, the *De morbis artificum*, first published in 1700. In 1713 a revised edition with 42 new chapters was published—here translated into English for the first time.

In an extensive introduction, Mrs. Wright tells of the life of Ramazzini and gives a stimulating picture of the practice of medicine two and one-half centuries ago, varied by occasional crises and controversies over medical treatments.

Ramazzini's treatise is indispensable to the student of the history of occupational diseases, and of importance to the medical profession in general. A complete bibliography of Ramazzini's works is included.

Historians whose field is the late seventeenth century should also read it, for in it they will find a vivid and often humorous picture of the social and business life of a famous Italian city.

*Both Latin and English texts given  
on opposite pages*

500 pages, 3 illustrations, **\$5**

The University of Chicago Press

With the appearance of this edition, issued as part of the History of Medicine Series under the auspices of the Library of the New York Academy of Medicine, scholars and students throughout the English-speaking world became familiar with this seminal writing in a speciality to become known in the mid-twentieth century as 'Occupational Medicine', and later as 'Occupational and Environmental Medicine'. Familiarization with the new English version led to multiple references to the wisdom of Ramazzini, probably the most frequently cited aphorism being an addition to the counsel of Hippocrates to physicians regarding the initial visit to a patient: 'When you come to a patient's house, you should ask him what sort of pain he has, what caused them, how many days he has been ill, whether the bowels are working and what sort of food he eats'. Following this citation, Ramazzini writes, 'I may venture to add one more question: What occupation does he follow?'<sup>5-7</sup>

While much of the recollection of this eminent observer was subsequent to the 1940 volume, obeisance to Ramazzini has taken many forms in the current century. It is the purpose of this writing to bring attention to the numerous ways in which his name is being remembered.

### Scholarship of Pericle de Pietro

Ramazzini wrote in many areas apart from work-related disorders, was an avid letter writer and produced much poetry. A medical practitioner in Modena, Dr Pericle Di Pietro, was also a classical scholar and translated into Italian much of Ramazzini's writings from the original Latin. On the occasion of the 250th anniversary of Ramazzini's death *Epistolario* was published, a collection of 316 letters, including some addressed to such familiar names as Avicenna, van Leeuwenhoek and Malpighi. Thirteen years later, in 1977, Dr Di Pietro published *Bibliografia di Bernardino Ramazzini* in which all of Ramazzini's writings are listed, including their location in Italian and foreign libraries, his works by place of publication and a bibliography by author, giving the title and full references of all articles concerning Ramazzini that appeared up to 1977. While the listings are complete, the efforts of Dr Di Pietro have not been translated into English, and no subsequent updating of such articles has been undertaken.

### Citations

Most innovators' words and contributions are cited in innumerable monographs and periodic publications. It was not long before Ramazzini was referred to in the 18th century by Adam Smith, the Scottish economist, who wrote in his classic, *An Inquiry into the Nature and Causes of the Wealth of Nations*,<sup>9</sup> the following: 'Almost every class of artificers is subject to some peculiar infirmity occasioned by excessive application to their peculiar species of work. Ramazzini [sic], an eminent Italian physician, has written a particular book concerning such diseases'.

In a later, and equally historic work, Karl Marx, the German political philosopher and socialist, in his *Capital's* discussion of labour and manufacture referred to Ramazzini's concerns as 'industrial pathology', after citing the 1781 translation into French. Marx's comment, a century and a half after the original *De Morbis Artificum* appeared, read: 'The period of modern mechanical industry has, of course, very much enlarged his catalogue of occupational diseases'.<sup>10</sup> Nearly all of the recognized texts of the late 19th and the 20th centuries have either alluded to Ramazzini or quoted directly from his innovational work.<sup>11-18</sup> In early America, Cotton Mather (1663-1728) cited Ramazzini's writings. After noting that 'I will in the first Place, readily acknowledge, that one of the worst Maladies, which a Man in any Trade, or Way of Living,

ever can fall into, is, for a Man to be sick on his Trade', he wrote, 'Some learned and wholesome Things have been written in *De Morbis Artificum*. What Ramazzini has done upon this Head, is well worthy to be more known among Artificers'.<sup>19</sup>

In a sense comparable to the labelling of Dr Alice Hamilton on the 1995 commemorative US Postal Service stamp as a 'Social Reformer', is the inclusion of Ramazzini in the discussion of 'Political Sociology' and social class theories by the early 20th century Italian-political scientist, Roberto Michels.<sup>20</sup> Through Ramazzini's writings, he believed that 'a special discipline appeared, intermediate between medicine and social science, a typical *Grenzwissenschaft* or boundary-line science.

### Editions and translations

In the course of the 18th century, Ramazzini's work was translated into English, French, German, Italian and Dutch, and a few additional translations into Italian, French and German followed in the 19th century, all documented well by Wright in her bibliography.<sup>21</sup> In 1713, Ramazzini added a supplement, the second edition serving as the document to undergo the translation in 1940 by Wright. In his dedication to the new edition, Ramazzini wrote, 'I believed that it would benefit the commonwealth of mankind if I should examine carefully the special diseases of workers and prescribe suitable remedies, a task that no one had undertaken hitherto'.<sup>22</sup> Copies of various translations are in university libraries in the USA and other countries and a few copies of the first edition are extant. Of interest is the size of the 1700 publication, which measured only 18 cm in height, the small work being planned as a pocketbook for physician readers.

The volume was not readily available in the United States until Wright was induced to translate it from the original Latin. Why should a classicist, unfamiliar with occupational disease undertake a work of this type? During Wright's tenure at Bryn Mawr, she had translated a writing of Fracastorius from the 16th century,<sup>23</sup> a result of influence by Dr Haven Emerson, a respected name in public health. It was Emerson who encouraged Wright to add a second book to the New York Academy of Medicine's History of Medicine Series, thus resulting in the Ramazzini publication. A third monograph in medicine appeared posthumously in 1952, shortly after her death on 16 November 1951, a translation of Lancisi's *Aneurysms*,<sup>24</sup> also part of the History of Medicine Series.

Some description of Dr Wright is in order. She was born in England and remained a British 'blue stocking', speaking of the English as 'We' and Americans as 'You'. She loved heavy jewellery, much of it Native American, walked the campus with a stick, wore lisle stockings and was greatly interested in health (oral communication, L. F. West, Bryn Mawr College Archivist, 26 April 1982), giving considerable weight to 'nutrition and roughage'. She grew up in a broken home, married

J. Edmund Wright, a professor of mathematics at the college who died in 1910 at age 32 from bacterial endocarditis. She adopted a girl and was devoted to her grandchildren. Wright was described as having 'covered a great amount of scholarly ground although what she actually produced was in no way proportionate to her learning. Insistence on minutiae and the pursuit of a point until she had it exactly where she wanted it precluded any major creative work, but she knew thoroughly and accurately everything that she undertook'.<sup>25</sup>

Her interest in and contributions to medical history, were products of conversations and dialogues held at the 'hearth and tableside' of friends she visited, much provocative talk centring around the lives of persons known to the gathered groups, their limitations, excellences, illnesses and causes of death. It was Dr Emerson's copy of *De contagione* of Francastorius that set Wright on a path of inquiry, travel and high scholarship. Her translations were not dry retellings in English of the early scientists, for 'she seized the spirit of those distinguished clinicians and gave their background and citizen, religious and political characteristics'.<sup>26</sup>

The 1940 Ramazzini translation had an initial run of 300 copies, and by January 1942 it was out of print. As seen in Figure 4, the price of the book was \$5.00 for a work of 550 pages. In 1949, Dr Emerson urged the Publication Committee of the New York Academy of Medicine to consider a second printing, but the Wright volume was not reprinted until 1964,<sup>27</sup> the edition comprising 3,000 copies, some of which are still on hand at the Academy (written communication, B. A. Kirkpatrick, Librarian, New York Academy of Medicine, 1 September 1982). The 1964 edition was in paperback and the introduction was prepared by Dr George Rosen, the late eminent medical historian. Differing from the 1940 publication was the omission of the original Latin text. Rather recently, in 1993, under the imprint of the OH & S Press of Thunder Bay, Canada, a new edition of *Diseases of Workers* appeared, with an excellent introduction by Dr T. L. Guidotti of the medical faculty of the University of Alberta.<sup>28</sup> The publication of 1,000 copies was a 'labour of love' of Gary J. Phillips, a health and safety specialist, who believed that the writings of Ramazzini should be made available to current-day readers (oral communication, G. J. Phillips, 5 April 1996). Similar to the 1964 edition, it is in paperback and carries only the English text. Guidotti concludes his introduction with this sorrowful note: 'After three centuries, Ramazzini's work is entirely too relevant to our situation today. The occupational disorders that he described should now be extinct but many are not. The working conditions that he described should have changed; some have not. The quandary that too many workers face between loss of income and safe working conditions should have disappeared in the last 300 years; it did not. Ramazzini's work is a benchmark that sometimes tells us that we have not come so far

after all'.<sup>29</sup>

In these days of political correctness and the constant struggle against inequality and racism, the fact that Ramazzini had included in his classic, a chapter on 'Diseases of the Jews',<sup>30</sup> led to some disclimation. In his discussion are many comments that unquestionably described accurately the work practices and hygiene of the day of this particular group, but which would neither be permitted nor applicable in a writing of today. A reader of the Canadian edition objected strenuously to the content of Chapter 32 and wrote the distributor of the book in the United States, the OEM Press of Beverly, Massachusetts, citing his feelings concerning Ramazzini's derogation of contemporary Jewish workers. Because of the possibility of other readers' concern with the views of 1700, each copy now bears this notice: 'The following text (*Diseases of Workers*) was reprinted to celebrate Ramazzini as a pioneer in the field of occupational health. We believe it is necessary, however, to notify our readers of the anti-Semitic nature of certain portions of the text. It reflects the prejudices of the time and must be viewed in that context; one can appreciate Ramazzini's innovative ideas about medicine while not ignoring his anti-Semitism. We seek neither to promote nor condone his anti-Jewish references'. The statement of disavowal was prepared with the assistance of the Anti-Defamation League, B'nai B'rith (written communication, Curtis R. Vouwie, President, OEM Health Information, 10 March 1996).

The finest edition of *De Morbis Artificum* was published as one of a series comprising The Classics of Medicine Library. The works selected for inclusion are those classics universally recognized as 'invaluable contributions to the science and art of medicine... landmark volumes that have profoundly influenced not just the effective practice of medicine on a day-to-day basis, but also the philosophy and ethical standards of the profession'.<sup>31</sup> The books are hand-bound in top grain leather, with titles stamped on the spine in 22-karat gold. The Wright translation is duplicated, and the copy is indistinguishable from the 1940 University of Chicago Press volume.<sup>32</sup> Ramazzini, in this series, is in the company of such luminaries as Osler, Harvey, Virchow, Sydenham, Lister, Cushing and Semmelweis, among others. Translations have been published in Russian,<sup>33,34</sup> Japanese<sup>35</sup> and Swedish.<sup>36</sup> The Japanese version (Figure 5) by Dr Hajme Matsufuji is of particular interest for it was published originally as an eleven-part series (from January 1962 through February 1963) in the *Japanese Journal of Industrial Health* (now the *Journal of Occupational Health*). The final product appeared in 1979 and was a complete revision of the journal series. As will be indicated later, this translator, as did others, had difficulty with the title. Matsufuji explained in his 'Translator's Note' that, 'The work has often been introduced in Japan as Diseases of Workmen, Craftsmen and Laborers.... However, since "workmen" and "craftsmen" make up only part of the working population in the mind of



**Figure 5.** Cover of the 1979 translation of *Diseases of Workers* into Japanese, by Dr Hajime Matsufuji.



Ramazzini, such naming would be limiting and thus inappropriate. The remaining term is “labourers”, which should span all occupations discussed by Ramazzini. However, the nuance of this term in Japanese is closer to workers engaged in mass production during the post-industrial revolution era than to workers of the manufacturing era. In this regard, I could not come up with a better translation than “workers” (translation from the Japanese courtesy of Kenzaburo Tsuchiya, formerly President of the University of Occupational and Environmental Health Japan). In a companion writing, Matsufuji used the Latin title throughout, avoiding the issue of exact interpretation.<sup>37</sup> The Japanese publication was illustrated through the inclusion of some historic 16th century wood engravings by Yoost Aman, ‘...to balance the text and promote understanding of the readers’.

The contemporary Swedish translation appeared in 1991<sup>36</sup> and publication was supported by the Swedish Work Environment Fund (written communication, Gideon Gerhardsson, former member of the Governing Body of the Fund, 8 April 1996), and contains a lengthy introduction by Gerhardsson. The work includes brief biographic material concerning persons named by Ramazzini and a glossary for use by less technically trained readers. While the 20th-century

American publications are bound in a dark fabric, the Japanese and Swedish versions display white covers, rarely seen in American monographs.

The international availability of this master work has made the name of Ramazzini known to medical historians and occupational health professionals in areas where the original printings might not have been available.

### References in current writings

Writers with a sense of history often will cite a reference to Ramazzini in parallel with the particular subject of their newly prepared papers, endeavouring to give origins to problems still facing today’s practitioners. As Ramazzini covered so many occupations, it is most likely that somewhere in *De Morbis Artificum* there will be a description of a work-related disorder that involves the bodily organ system of concern to today’s specialized physician.

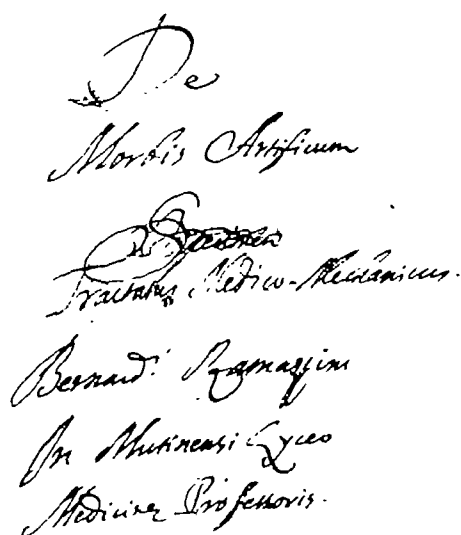
In an article on ‘Grain Itch’<sup>38</sup> reference is made to Ramazzini’s description of what was ‘doubtless’ the same disorder. A dermatologist looks back at skin injury from the arum lily,<sup>39</sup> and in 1985 it was suggested that Farmer’s Lung be renamed Ramazzini’s Disease.<sup>40</sup> Selected specifically for review by Brieger was ‘The diseases of runners’,<sup>41</sup> exemplifying a practice encountered in writings on Ramazzini wherein a specific occupational group or a specific work-associated affliction is selected for reflection and comment. Rare indeed is the inclusion of the Italian pioneer in the *Congressional Record*, but in 1979 the Hon. George Miller of California, when introducing H.R. 4973 to amend title 18 of the United States Code ‘to impose penalties with respect to certain nondisclosure by business entities over personnel’, opened with a quotation from Ramazzini that began with the oft-cited statement, ‘Tis a sordid profit that’s accompanied by the destruction of health’.<sup>42</sup> Included were brief reviews of asbestos, the pesticide DBCP, kepone, benznidene, and some design flaws in corporate products.

Despite innumerable retellings of Ramazzini’s observations from the early 15th century to the present day, it was Britain’s eminent Medical Inspector of Factories and Workshops, Thomas M. Legge, who wrote in 1920, ‘No useful purpose would be served by republishing Ramazzini’s book’,<sup>43</sup> initial 1700 printing being deemed adequate. Yet he closed his Boston presentation with the same citation used by the Hon. George Miller.

### Unusual ‘trades’

Most treatises on work diseases, over the years, have related the disorders concomitant with the more physically demanding occupations. ‘Stress’ and ‘burnout’ were not considered for compensation in the early days. But Ramazzini discoursed on the ‘Diseases of Learned Men’<sup>44,45</sup> comprising discussions of executives writers, orators, lawyers, the professoriate, theologians,

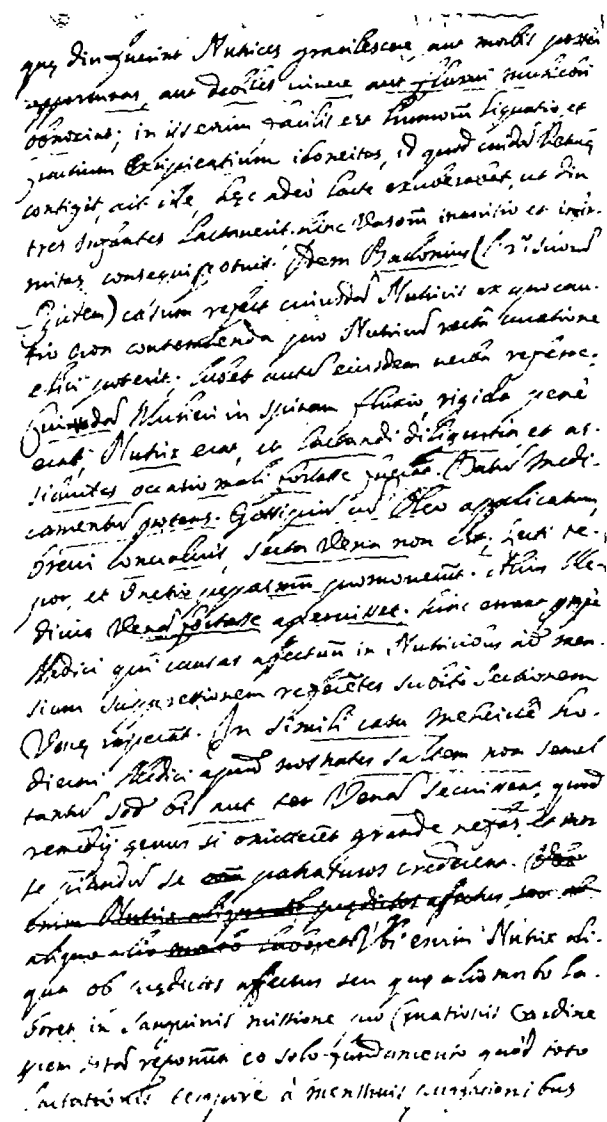
Figure 6. Title page of original manuscript of *De Morbis Artificum*, courtesy of the State Archives, Modena, Italy.



physicians, mathematicians, and philosophers. Chemists, apothecaries, voice-trainers, singers and midwives, now considered to be professionals, were included as tradesmen. The title of Ramazzini's work presented difficulties. As indicated by Wright,<sup>46</sup> 'The title must have given him some trouble, as it still does to his translators. It must include workers of both sexes and a wide range of occupations, and his choice was limited to *artifex* and *opifex*, common to either sex. By taking *ars* into its widest sense as profession or trade, he could classify as *artifices* learned men and even soldiers, athletes, and laundresses', though there would be hesitancy today in calling such persons 'artificers' or 'tradesmen'. 'Workers', in its most liberal usage, would include all occupations, and as managed care enters today's practice of medicine, the term may be most appropriate. Included in Ramazzini's other works is *De Principium Valetudine Tuenda*, on the preservation of the health of princes.<sup>47</sup> Meiklejohn, late of Glasgow, used the discussion of the 'Diseases of Corpse-bearers'<sup>48</sup> to review the exhuming of corpses from graves or 'body-snatching' to supply cadavers for the study of gross anatomy.<sup>49</sup> There may be currency in such a look back at possible disease, as mass graves are being uncovered in the former Yugoslavia. The same Meiklejohn sought the scholarly assistance of a Roman Catholic priest so that a translation into English could be had of the original Latin version of Ramazzini's dissertation on the Care of the Health of Nuns.<sup>50</sup> As a true pioneer in preventive medicine, Ramazzini wrote, 'It was my intention to discuss the ailments of nuns and their treatment, but have thought it better to write...on the care of their health first, judging it to be far more praiseworthy to prevent disease than cure it'.<sup>50</sup>

That consideration of the health of nuns was not limited to an 18th century discussion is given evidence in as recent a study as early 1996, when a review of

Figure 7. Typical manuscript page from *De Morbis Artificum*, courtesy of the State Archives, Modena, Italy.



Alzheimer's disease in nuns was reported.<sup>51</sup>

That medical entities tend to be known to succeeding generations is seen in Ramazzini's diatribe against smoking, as presented in the chapter devoted to 'Diseases of Tobacco-workers'.<sup>52</sup> In addition to his condemnation of the use of tobacco in any form, he discourses on the workers who 'make tobacco'. That there is still concern about 'green tobacco sickness' is seen in a recent study by the National Institute for Occupational Safety and Health (NIOSH), wherein 47 persons sought medical care in 1992 for the disorder resulting from contact with wet tobacco.<sup>53</sup>

Another issue which time has not altered is the desirability of conducting autopsies, particularly on persons dying from work-associated diseases so that appropriate diagnostic procedures can be instituted early in suspected occupational clinical disorders and so that, for epidemiologic exactitude, the stated cause of death will bear greater accuracy. In the 18th century, autopsies were rarely carried out, but a few years after

Ramazzini's book appeared, the eminent Italian anatomist and pathologist Giovanni Batista Morgagni confirmed by necropsy the lesions which Ramazzini had described by their clinical manifestation. He wrote, 'I wished to have opened the cadaver of some chalk worker but neither a request nor money can induce the people of Modena to permit the opening of the bodies of those who die from an extraordinary disease.'<sup>54</sup>

That the opposition to post-mortem study is still extant is seen in the continuing decline of such procedures. A special conference was held in 1995, 'Restructuring Autopsy Practice for Health Care Reform', where Lundberg, the Editor-in-Chief of the *Journal of the American Medical Association* indicated that 'Medicine needs the autopsy. It is the one place where truth can be sought, found, and told without conflicts of interest'.<sup>56</sup> The arguments continue, participants remaining blind to the fact that few persons presumably dying from work-related disease are ever subjected to necropsied study, thus limiting learning in occupational medicine.<sup>57,58</sup>

### Eponymous organizations

As it is customary in many families to identify with an antecedent, a beloved relative, or even a famed person, so it has been with organizations in occupational medicine which take the name of Ramazzini for their new group. Perhaps the oldest of today's associations is the Ramazzini Society, the first meeting of which was held in St. Clair, Michigan, USA, from 17–20 May 1942. It was established by 'physicians of the Americas engaged in occupational disease work and medical industrial hygiene'.<sup>59</sup> The one objective is the sponsorship of an annual lecture to honour the memory of Bernardino Ramazzini, the 'patron saint of industrial medicine'. World War II precluded meetings during the 1942–1946 period. One or more 'servants' — members of the Society — each year carry on the necessary correspondence and perform other functions relating to the annual meeting. The initial 31 members represented most of the eminent names in the speciality, some five of the group serving in the Armed Forces. The first Ramazzini oration was given by Dr Robert T. Legge of the University of California, Berkeley (USA), appropriately enough entitled, 'Bernardino Ramazzini: His Life, Deeds, and Book'. It was presented on 17 May 1946, in St. Clair, Michigan, USA. As was customary in the early years, the lecture was published,<sup>60</sup> being reprinted one month later in a second journal.<sup>61</sup> Legge concluded with the thought that 'One cannot but admire the man who

breaking through the conventions of centuries, thought it no indignity to learn of scavengers and pit diggers'.

The Society continued its yearly meetings at various locales in the United States, the members being termed Ramazzinians, and more recently back-clipped to the Rams. Descriptive of the gatherings was the observation in 1952 that the group was '...well dedicated...to hilarious and nonponderous matters, [and was] no less committed to sober reflection on a single medical presentation — the RAMAZZINI ORATION'.<sup>62</sup> The lectures have covered such topics as lead poisoning, manganese poisoning, the pneumoconioses, Ulrich Ellenborg, and voluntarism in occupational safety and health, among others. Some of the more recent orations concerned 'The Human Genome', 'Man-made Vitreous Fibers' and 'Benzene' (written communication, J. M. Cannella, 8 April 1996). The annual meetings continue.

In 1982, some 300 years after Ramazzini, an international community of scholars organized a society commemorating his name called the Collegium Ramazzini, in order to advance the study of occupational and environmental health issues around the world.<sup>63</sup> It was founded by the late Dr Irving J. Selikoff of the Mount Sinai School of Medicine in New York. As indicated in the Collegium's description,<sup>63</sup> it '...assesses present and future potential for injury or disease attributable to the environment or workplace and transmits its views to policy-making bodies, authorities, agencies and the public'. Governing the Collegium is a Council of 180 elected fellows, the membership representing over 30 nationalities. An annual meeting is held in Carpi, in the Province of

**Figure 8.** Ramazzini award given by Collegium Ramazzini, November 1995, courtesy of J. Carl Barrett, Ph.D., National Institute of Environmental Health Sciences, Research Triangle Park, NC (USA).



\* Ramazzini expressed similar feelings when he wrote, 'I should have liked to dissect one of the corpses of these workers [with gypsum and lime], but neither by entreaty nor bribes can you persuade our common people in Italy to allow an autopsy when the death is due to some unusual disease.'<sup>55</sup>

Modena, Italy, where Ramazzini was born in 1633. The official journal is the *Ramazzini Annals*, and a Ramazzini Award is conferred annually by the town of Carpi on those Collegium-designated scientists who have made outstanding contributions to the furtherance of the aims of Ramazzini in safeguarding health. Such an award appears in Figure 8, courtesy of J. Carl Barnett, of the National Institute of Environmental Health Sciences, the 1995 recipient. The awardee presents the Annual Ramazzini Lecture. Cesare Maltoni, of the Institute of Oncology, Bologna, serves as the Secretary General. The European Ramazzini Foundation (of Oncology and Environmental Sciences) is located in Bologna, but its programme and activities may extend wider nationally and may be involved in international cooperation.<sup>64</sup> It is actively concerned with epidemiologic studies of high-risk groups; experimental studies of potentially toxic and carcinogenic risk factors; experimental research on chemoprevention and on chemotherapy; mass screening for early diagnosis; clinical monitoring of high risk groups; clinical diagnosis; therapy and clinical trials of chemoprevention. A hospice is under construction, adjacent to the local hospital, which will provide care for terminal cancer patients and their families.

The Ramazzini Institute for Occupational and Environmental Health research evolved from the Collegium Ramazzini and 'is a free-standing research institute-without-walls governed by an independent Board of Directors', founded by Dr Selikoff. It administers the Selikoff Fund for Occupational and Environmental Cancer Research, formed to assure the ethical application of molecular biology to the prevention and treatment of cancer among workers and their families'.<sup>65</sup> Administrative functions have been relocated to the Mt. Sinai School of Medicine in New York, USA. Arthur C. Upton is President, former Director of the National Cancer Institute and Sheldon W. Samuels is Executive Vice President. Frequent conferences are held in keeping with its founding objectives.

### Contemporary remembrances

The name of this Italian pioneer has been applied to several institutions in the occupational health world, not necessarily buildings, but publications and other means of honouring the name. Early in this century *Ramazzini — Giornale Italiano di Medicina Sociale* was published in Florence from 1907–1917, Volumes I–II (see Figure 9), and a set is currently housed in the History Division of the National Library of Medicine in Bethesda, Maryland, USA.

Of more recent vintage was the issue of a philatelic first-day cover in Brighton, England, on the occasion of the XVIII International Congress on Occupational Health held from 14–19 September 1975. The envelope carries the likeness of Ramazzini, his inclusive years, and the postal cancellation reads 'XVIII International Congress on Occupational Health/19 Sep 75 /Brighton'. Inserted in the envelope is a brief history

Figure 9. Cover of eponymous short lived journal, *Il Ramazzini* for February–March 1915. Published from 1907–1917.



of the triennial Congress and a short biography of Ramazzini who is regarded as the 'Father of Occupational Medicine' (cover courtesy of Sarah I. Jenks).

The Canadian Centre for Occupational Health and Safety, created in 1978 by Parliament, was mandated to 'provide information and advice in occupational health and safety Across Canada'. A tripartite council (labour, employers, government) oversees the Centre. As many inquiries were received from readers of *At the Centre* it was decided to create a question-and-answer type of column to be totally reader-friendly. The column was given the title, 'Ramazzini's Corner', and the material offered in response was usually taken from the Centre's more technical publications (written communication, David Cohen, Staff Writer and Press Officer, the Centre, 1 May 1986). Some of the topics that were covered included 'Hazards of Photocopiers'; 'White Finger Disease'; 'Diesel Fumes'; 'Machine-Guarding: Are Some Workers Accident-Prone?' and 'Lung Diseases'. Each 'Corner' ended with a paragraph description of Ramazzini and the quotation from his





Figure 10. Via Bernardino Ramazzini in the heart of Modena, Italy.

work ending in 'What is your occupation?'

The column remained a feature of the monthly report until about 1992 when the agency was down-sized, and the column was discontinued. Some syndication had taken place during the life of the 'Corner', particularly in labour publications.

From 21 September to 23 November in 1994, the Grolier Club of New York mounted an exhibit, 'One Hundred Books Famous in Medicine'. In a chronologic listing from Hippocrates, published in 1525, to an article from the *British Journal of Radiology* on 'Computerized Transverse Axial Scanning (Tomography)', *De morbis artificum diatriba* (1st edition, 1700) was placed in 38th position. The exhibition chronicled 'the formation and dissemination of significant theories and discoveries in medicine from the ancient world to the present...' The Collection was borrowed from 34 North American institutions and private collectors, '[bringing] together those books which have had the greatest impact upon the development of the health sciences'.<sup>66</sup>

Images of Ramazzini have been produced over the years. The late Dr Carey McCord, while at the University of Michigan, traced various graphic and sculpted likenesses. Most commonly seen is the engraving which appeared in his *Opera Omnia* (1717) which was reproduced as the frontispiece in the Wilmer Cave Wright translation.<sup>5</sup> A bust is in the Department of Geology and Mineralogy of the University of Modena, placed there in 1922 on the occasion of the 289th anniversary of his birth. A painting of Ramazzini is located in the 'shabby art gallery of the municipal building'<sup>67</sup> in Carpi, his birthplace.

Also in Carpi is a stylized head (more of an idealized image) and a stone marker of Ramazzini's burial site remains following World War II bombing of the Chapel

of the Nuns of St. Helena (also referred to as the Church of the Blessed Elena Enselmini). The stone was placed there in October 1933 and is installed on the facade of the church. In the gallery of the castle of Pio of Savoia in Carpi there is a plaque commemorating the second centennial of Ramazzini's death, and a marble medallion is located in the courtyard of the Hygiene Institute of Parma University, where he was a student.\* In 1914, on the occasion of the 200th anniversary of Ramazzini's death, a celebration took place in Milan at the eminent Clinica del Lavoro, and its founder, Professor Devota had a medal struck off to commemorate the event.<sup>59,68,69</sup>

Other eponymous honours remain. The Via Bernardino Ramazzini is a short street in the heart of old Modena (Figure 10), and a hospital in the same city bore his name (Figure 11). The most significant contemporary remembrance is Ramazzini Hall, added to the University of Occupational and Environmental Health (UOEH) in Kitakyushu, Japan. The university was founded in 1978 with the purpose of promoting occupational medicine and training occupational physicians,<sup>70</sup> and currently comprises several schools of the health sciences.

Dr Kenzaburo Tsuchiya, an eminent academician, researcher, and spokesman for occupational medicine in Japan, served as the university's first president. He wished to have the name of Ramazzini attached permanently to the institution in some commemorative connection. As the author of the highly formative work was known only to a few individuals on campus, Dr

\*The present locations of the indicated images have not been verified, but the commemorative pieces were in place at the time of Dr McCord's visit in 1952.

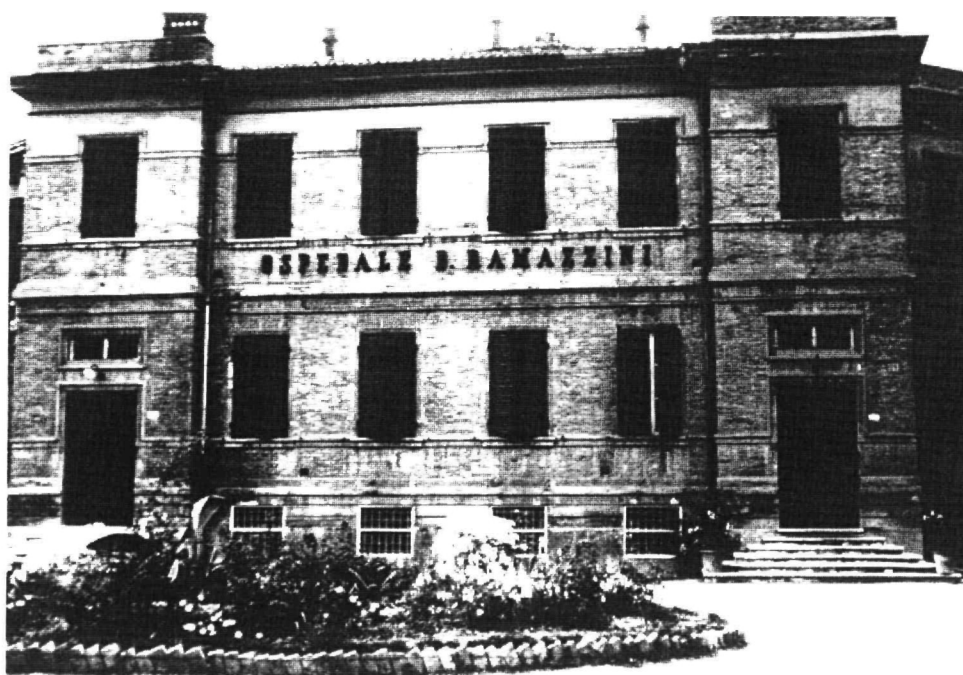


Tsuchiya began a campaign of familiarization through discussions with the members of the Ministry of Labor, the university faculty and staff, and the Board of Directors and through lectures to the students. Support for the naming of the structure-to-be began to grow, and Ramazzini Hall as a designated university building became a reality. In January 1974, a dedicatory ceremony was held with appropriate presentations being made by Dr Tsuchiya, Dr Taro Takami (the late President of the Japanese Medical Association and Chair of the Master Planning Committee for the Creation of UOEH), Dr Robert Murray (then President of the International Commission on Occupational Health) and the Italian Ambassador to Japan. A large assembly hall can accommodate 1,000 persons and attached are six booths for translators, one for Japanese, and five

for foreign languages. A smaller hall contains 250 seats, and a smaller lecture room will hold 100 (see Figures 12–14). In a small adjoining anteroom, on display in a glass case, is a rare copy of the first edition of *De Morbis Artificum*, 1700.

Most memorable is a bronze sculpture of Ramazzini in front of the hall (see Figure 14), placed on a stone pedestal, with the figure correctly accoutred in the dress of the day. Facing the viewer, on the base, is a reproduction in bronze of the title page of the 1700 publication, bearing the name of its contemporary owner. The figure was produced by a member of the Academy of Japanese Art, a Mr Hiruma. It was the aim of Dr Tsuchiya and the artist to have the statue portray both 'the spirit of humanity' and 'the sharp eye of medical science' as demonstrated by the subject

**Figure 11.** Hospital bearing the name of Bernardino Ramazzini, Modena, Italy.



**Figure 12.** Exterior of Ramazzini Hall, University of Occupational and Environmental Health, Japan, in Kitakyushu, courtesy of Kenzaburo Tsuchiya, M.D., former President.



**Figure 13.** Auditorium of Ramazzini Hall, University of Occupational and Environmental Health, Japan, in Kitakyushu, courtesy of Kenzaburo Tsuchiya, M.D., former President.



**Figure 14.** Sculpture of Bernardino Ramazzini in front of Ramazzini Hall, University of Occupational and Environmental Health, Japan, in Kitakyushu, courtesy of Kenzaburo Tsuchiya, M.D., former President, showing duplication in bronze of the title page of *De Morbis Artificum*.



through his writings (written communication, K. Tsuchiya, former President of the UOEH, 16 June 1996).

Although not structural, and possibly not even permanent, mention was made of Ramazzini by Alistair Cooke at the end of 'The Citadel', part of the programme *Masterpiece Theatre*, which was broadcast by Public Broadcasting Station WGBH in Boston in 1984. At the show's conclusion, Mr Cooke cited the counsel of Hippocrates, adding the previously quoted recommendation concerning the patient's occupation. *The Diseases of Workers* was noted and he concluded his post-show remarks saying, 'Now this classic work goes into the afflictions of all sorts of trades...even writers, even journalists. He says that we suffer espe-

cially from indigestion, poor eyesight, bad backs, tension and hypochondria. But he has a remedy which had just come in in the 18th century, and he says that this thing soothes the stomach, banishes depression, and insomnia, tones up the whole constitution. It was — chocolate. Alistair Cooke — *Masterpiece Theatre* — Good night'. (Written communication, Mary L. Lora-ditch, WGBH, 12 June 1984.) Thus, occupational medicine was touched upon somewhat tangentially and heard by listeners throughout the United States. Ramazzini's exact recommendation read, 'Nowadays a delicacy much in vogue with men of letters is chocolate, very comforting to the stomach and spirits; and...producing a better crasis [blending of humours or elements] of the constitution'.<sup>71</sup>

Lastly, as part of the 1995 National Safety Council Congress and Exposition held in Dallas, Texas (USA) toward the year's end was the Safety and Health Hall of Fame International Induction Ceremony and Banquet. There were illustrated four inductees: one each from the United States, Republic of South Africa, and the United Kingdom, and the fourth was (as Dave Barry puts it, 'I am not making this up') Dr Bernardino Ramazzini (deceased), whose 'Field of Expertise' was given as Occupational Medicine.<sup>72</sup> It is difficult to determine if this nominee was included in jest or if it takes some period of time for experts to warrant inclusion, such as nearly 300 years.

### Continuing recognition

Although Ramazzini wrote in many scientific areas, the emphasis has been given here to his treatise on occupational disease, for this contribution was unique in both its subject matter and its timeliness. References to his seminal documentation and counsel continue, long after his first edition appeared in 1700. His early insight in determining disease aetiology is still given emphasis. In a piece published as recently as February 1996, the authors, in discussing kaolinosis, indicate that, 'This case illustrates the importance of obtaining a complete occupational history in reaching a diagnosis'<sup>73</sup> — not too different from 'What occupation does he follow?'<sup>6</sup>

Writings concerning Ramazzini continue to appear in several languages and references to his observations at the workplace are legion, as introductions in contemporary writing. As more practitioners lend belief to the concept that every disease or injury has emotional concomitants, we see a parallel philosophy in Ramazzini: 'He extended his observations to all workers, to work itself as a cause prejudicial to the health of those so engaged, arriving at the conclusion that there is no employment which by its very conditions might not be a cause of health disturbance, and that to every type of work there are corresponding morphological and pathological alternatives or functional disturbances of a strictly professional nature'.<sup>74</sup>

In a recent study, 'mental stress' was seen as causative in adverse cardiac events rather than physical stress,

the prime activity in utilized exercise testing.<sup>75</sup> And work is causative of mental stress in many individuals — thus Ramazzini's belief is still fresh at the end of the 20th century. He remains, as termed by the eminent medical historian, Fielding H. Garrison, one of 'a group of very original men'.<sup>76</sup> As Ramazzini wrote in 1713, '...it would benefit the commonwealth of mankind if I should examine carefully the special diseases of workers and prescribe suitable remedies, a task that no one had undertaken hitherto'.<sup>77</sup> May today's specialists in occupational and environmental medicine carry on the task of clinical discernment at the workplace as tellingly as did this 18th century icon.

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