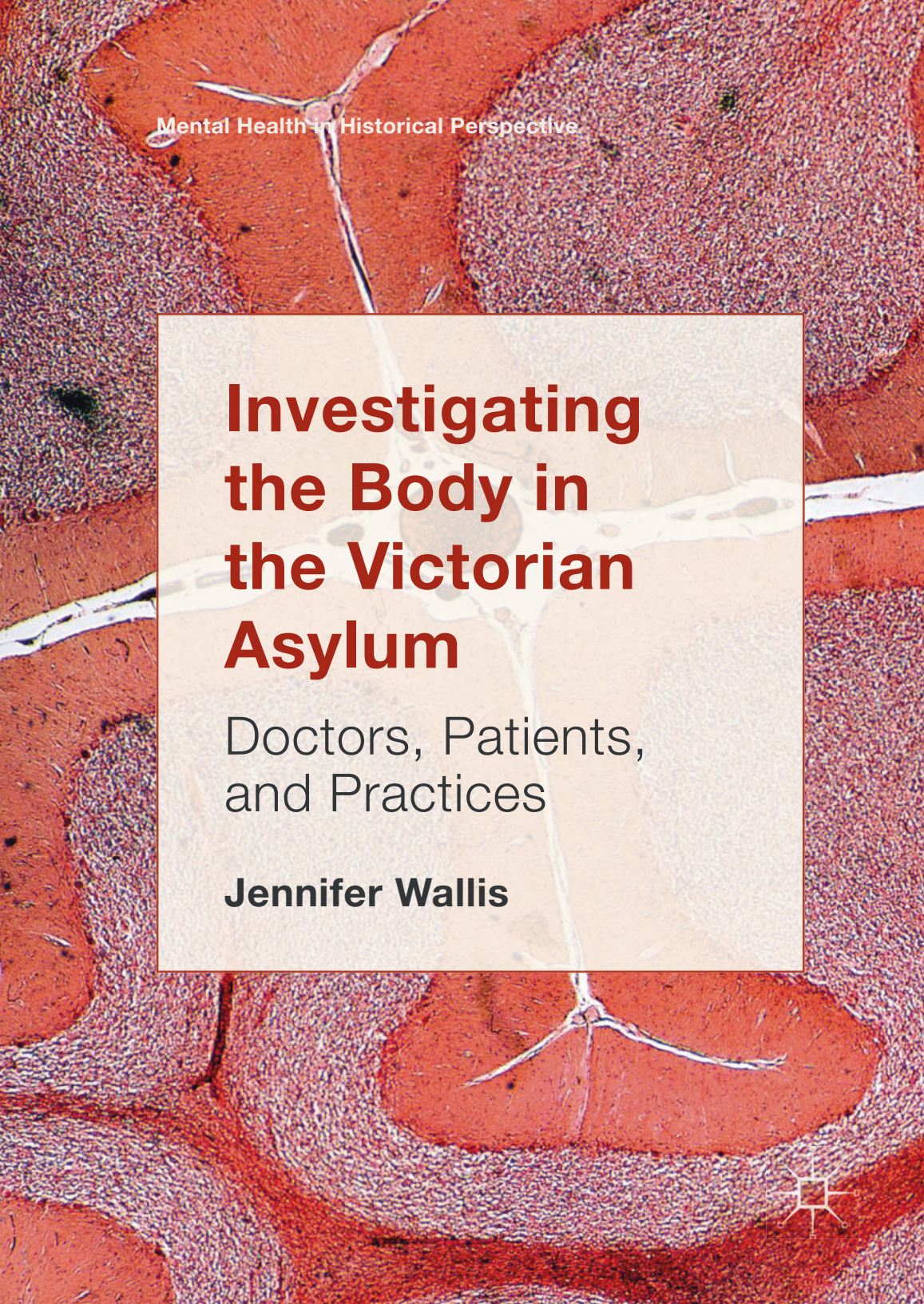
Mental Health in Historical Perspective
Investigating the Body in the Victorian Asylum
Doctors, Patients, and Practices
Jennifer Wallis

Mental Health in Historical Perspective

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Mental Health in Historical Perspective
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For Clive

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As many sections of this book will attest, a fair proportion of my research time was spent in the Wakefield office of the West Yorkshire Archive Service, thumbing through grubby volumes of postmortem records and heavy casebooks. The staff at Wakefield were wonderful, fetching countless volumes from their stores for me and answering a number of queries. I am especially grateful to them—and David Morris in particular—for allowing me to reproduce so many of the images from their holdings that have informed my research and, indeed, that are crucial to it. The financial support of the British Society for the History of Science was also an invaluable aid in funding my final stint of archival research in order to complete the book.

Some of the material in this book has appeared elsewhere in slightly different forms. Elements of "The Bones of the Insane," published in *History of Psychiatry* in 2013, are reproduced here under the terms of that article's CC-BY licence. The book also contains some material discussed in "'Atrophied', 'Engorged', 'Debauched': Degenerative Processes and Moral Worth in the General Paralytic Body," in Thomas Knowles and Serena Trowbridge's edited volume, *Insanity and the Lunatic Asylum in the Nineteenth Century* (London: Pickering & Chatto, 2015) and I am grateful to the publishers for granting permission to draw upon this.

Outside academia, many people have shown an enthusiasm for this research that has made it all the more satisfying to complete. My parents, Mike and Sarah Wallis, provided board and lodging during my frequent archive visits, as well as giving me the benefit of their scientific expertise in identifying photomicrographs. David Kerekes has put up with an inordinate amount of unsolicited detail about nineteenth-century postmortem practice and other gems of medical history, and has remained a supportive and unfailingly generous friend when he could very well have taken leave of me. Last, but by no means least, Clive Henry—who came into my life partway through the writing of this book—has been a constantly supportive voice, and this book is dedicated to him.

A Note on the Text

Throughout this book much of the terminology used is that used by contemporaries. Therefore, I generally refer to 'mental disease' rather than 'mental illness,' a term that reflects contemporary ideas of mental disorder as something connected with the body. 'Asylum doctors' is a phrase that appears frequently and is a useful shorthand for referring to staff working in an asylum in a medical role. This encompasses medical officers and superintendents, for example, but does not include attendants and nurses, or staff such as clerks and chaplains. Many staff in the former group would have undertaken varied work—both in laboratories and on the wards—and found themselves changing roles relatively frequently, so that labelling them as 'junior medical officer' or 'pathologist' is liable to become confusing, as well as potentially obscuring the wide range of work that these individuals undertook. Where relevant, however, I have made specific roles clear to avoid the reader having to look up the background of each individual mentioned.

When 'Asylum' (capitalised) appears it refers specifically to the West Riding Asylum in Yorkshire. The lower case 'asylum' refers to nineteenth-century asylums more generally. Similarly, named doctors are designated with the capitalised 'Medical Officer,' 'Superintendent,' or 'Pathologist'; the lower case signifies that I am discussing these occupational groups in a more general sense.

For reasons that I explain more fully in Chapter "Skin", but primarily for reasons of anonymity, I refer to patients by their real first name and

surname initial. Asylum doctors and other medical professionals are not anonymised, on the basis that most if not all of those discussed published work under their own names, and thus willingly made their work public.

Contents

Abbreviations

BMJ	*British Medical Journal*
CSF	Cerebro-Spinal Fluid
GP/GPI	General Paralysis/General Paralysis of the Insane
JMS	*Journal of Mental Science*
MPA	Medico-Psychological Association
WRLAMR	*West Riding Lunatic Asylum Medical Reports*
WYAS	West Yorkshire Archive Service

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Fluid

Introduction

In 1881 a middle-aged man named Thomas was admitted to the West Riding Pauper Lunatic Asylum in West Yorkshire. Diagnosed with chronic mania, he would stay in the Asylum until his death from rupture of the heart in 1907, aged 65. During his time there, he received various tonics and laxatives, had his temperature charted, his reflexes tested, and his eyes examined. After death, his heart was preserved for the Asylum's on-site 'museum' and his case recounted in a short piece for *The Lancet* by the Asylum's pathologist.[1] This story of a lengthy stay in an asylum, characterised by various treatments and physical examinations, and ending with postmortem analysis, was not unusual. The late nineteenth century saw an increasing amount of discussion among the psychiatric (or 'alienist') community about the relationship between mental disease and the body. There was a sense among many of these researchers that mental disease could be located, somewhere, deep within the bodily fabric. As asylums filled up with chronic cases, many of them bedridden and destined to live out their final days on the wards, more and more asylum doctors immersed themselves in research that aimed to uncover the bodily root of mental disease. From superintendents to clinical assistants to pathologists, asylum doctors examined and discussed the lesions of the brain uncovered at postmortem, the unusual stains they had produced in pieces of tissue, or the samples of abnormally thick skull bone that testified to their own manual dexterity as well as to the bodily state of the patient.

This search for the somatic seat of mental disease was something that stretched beyond the examination of the skull and brain. In the second half

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of the nineteenth century, muscles, skin, bones, urine, sweat, faeces, and hearts were all observed, analysed, and experimented upon by researchers aiming to solve the mysteries of mental disease. Leafing through one of the key publications of the Victorian alienist profession, the *Journal of Mental Science* (founded in 1853 as the *Asylum Journal*, today the *British Journal of Psychiatry*), the importance accorded to the physical body of the patient is clear. There are papers relating cases of tumours, of fatal accidents, of seizures, and—as the nineteenth century progresses—accounts of the microscopic investigation of brain tissue and nerve cells, or attempts to link physical and mental anomalies with discrete lesions of the brain substance. The body was a consistent point of interest for nineteenth-century asylum doctors.

Histories of the Body

Despite this contemporary interest in the body and mental disease, as historians we seem to have a degree of reluctance in addressing the place of the body within the history of psychiatry. A rich and continually expanding field, the history of psychiatry encompasses an array of approaches. These range from the biological outlook of scholars like Edward Hare that suggests psychiatric disorders evolve over time like other diseases, to Andrew Scull's account that sees madness as a phenomenon bound up with modern capitalist society, to Michel Foucault's conception of the asylum as a form of social control.[2]For a number of historians of psychiatry in the 1980s, a central concern was to reinstate the patient at the heart of the story, with Roy Porter's call for a 'history from below' having significant impact.[3] Over the last 20–40 years many researchers, both in and outside academia, have mapped the demographic characteristics of asylums in ambitious analyses that bring large numbers of these patients into the spotlight, from private asylums like Ticehurst to county asylums such as Norfolk.[4] Others have examined the architecture of the asylum, or representations of madness in contemporary fiction.[5] All of these features were of interest to nineteenth-century alienists, who were by no means averse to statistical analysis or to pondering the representation of mental disease in fiction at the same time as they considered their patients' tumours, fits, or internal organs.

Within the history of medicine more broadly, bodies have proven to be powerful rallying points. From the 1960s, as the history of medicine became something that was not simply written by doctors themselves, new

perspectives emerged that paid closer attention to the power dynamics of medicine and psychiatry. In hospital medicine as described by Foucault, the patient and the doctor came to experience the 'medical gaze' that was interested in the evidence of disease offered up by the physical body, and which can be interpreted as a separation of the patient's body and identity.[6] Crucial to this view was the autopsy, which offered new ways of seeing the body and its diseases: the bodily lesion came to take precedence over the story of illness that was articulated by the patient. In many historical accounts that emphasise the increasing dominance of medical discourse throughout the nineteenth century,[7] the body is often under-explored despite apparently being at the centre of the narrative. Here, bodies can seem homogeneous and somehow detached from the patient: doctors forget or purposefully ignore the 'person,' who is easily separated from their physical body. It was issues like these that led scholars such as Barbara Duden to call for historians to recognise patients as individuals who participated in their treatment, as well as being 'objects' of medicine.[8] In recent years a number of scholars have gone on to problematise the idea of a group of largely undifferentiated patients engaged in a power struggle with equally homogeneous medical professionals. The work of Deborah Lupton in science and technology studies, for example, considers self-tracking in conditions like diabetes. In doing so, she complicates readings of medical technologies as things simply imposed upon patients by a more powerful medical profession, while nevertheless recognising them as having implications for individual surveillance.[9] And to take an example from the history of psychiatry, many of the contributors to Stephen Casper and L. Stephen Jacyna's 2012 volume, *The Neurological Patient in History*, position the patient's body as both expressive and performative, offering a number of examples in which the patient is much more than their clinical persona and emphasising the variability of personal experience.[10]

Why, then, are bodies less present within the history of psychiatry than they are in other histories of medicine and science? Roger Cooter has suggested that the broader social history of medicine has struggled with histories of the body, having a tendency to assume that all bodies are "imposed upon."[11] Indeed, when the body appears in histories of the asylum, it is often being restrained or experimented upon: positioned under powerful shower baths, laced into straightjackets, or having metal rods inserted into the soft substance of the brain. The asylum has proven a popular backdrop for modern-day fiction, film, and television; many popular representations of nineteenth-century psychiatry like *American Horror*

Story: Asylum are somewhat preoccupied with physical treatments, particularly lobotomy as a symbol of invariably 'horrific' asylum treatment. In such representations, patients suffer in silence at the hands of doctors whose motives are presented as at best woefully misguided and at worst positively sinister. As well as the physical treatment of patients, contemporary practices of preservation—such as maintaining teaching collections of brains or excised body parts—can pose challenges when we seek to understand past medical practice. Such collections highlight how easily the body may be transformed into a scientific object, and can foster personal as well as professional anxieties. The ethics of asylum treatment or tissue preservation are not, of course, unreasonable areas for discussion. But in positing the body primarily as a site upon which 'barbaric' and 'unenlightened' treatments were brought to bear in the asylum, its fragments collected like trophies in a cabinet, we risk overlooking crucial aspects of the history of psychiatry. Further, we risk contributing little to the epistemology of psychiatric treatment by viewing it through an ahistorical "use/abuse model."[12]

For nineteenth-century commentators—both medical and non-medical—bodies were "things to think with."[13] They were appealed to as analogies to explain the sewer systems of large cities: the metropolis was imagined by many sanitary reformers as a body whose veins were clogged with an accumulation of waste material that had a grave impact on its overall health. In psychiatry the body and mind were linked in various ways. Neuro-physiological researchers explored the connections between the brain and the rest of the body, manifested in movements from the simple—such as moving the arm—to the more intricate, such as writing. Asylum doctors attempted to map the lesions found on the brain at postmortem and to correlate them with the symptoms they had observed during a patient's lifetime. By the end of the nineteenth century, psychiatry was increasingly aligning itself with a somaticist viewpoint: the idea that the roots of mental disease lay within the fabric of the body. For this reason it is vital to integrate the body and its study into histories of nineteenth-century psychiatry. In considering how asylum doctors viewed and investigated the body, contemporary medical and scientific practice is an essential part of the story. Historians of psychiatry such as Eric Engstrom—in his wonderful study of psychiatric practice in imperial Germany—have shown that the day-to-day care of asylum patients was often closely linked to work that we tend to view as the preserve of remote specialists, working apart from patients in laboratories or similar settings. As Engstrom, and several

examples in this book, demonstrate, the care of many nineteenth-century asylum patients was indebted to—and sometimes directly informed by—physiological, pathological, and bacteriological work.

The Body and Practice

It is difficult to neatly delineate 'science' and 'medicine' when it is the nineteenth-century asylum that is under discussion. These were institutions that provided basic medical care—both short- and long-term—to a huge number of patients. At the same time, a number of these institutions carried out scientific research that could blur the boundaries between 'scientific' lab and 'medical' ward. This scientific work was multifaceted, made up of various actors, instruments, and practices. Michael Worboys has urged historians of medicine to look to the 'practice turn' of the history of science: to consider the performative aspects of scientific work, and the people and processes involved in it.[14] *Investigating the Body in the Victorian Asylum* is indebted to practice theory, which grants agency not only to doctors or institutions, but also to smaller-scale, everyday, elements of scientific work. Practice theory highlights that:

> … what scientists laboriously piece together, pick up in their hands, measure, show to one another, argue about, and circulate to others in their communities are not "natural objects" independent of cultural processes and literary forms. They are extracts, "tissue cultures," and residues impressed within graphic matrices; ordered, shaped, and filtered samples; carefully aligned photographic traces and chart recordings; and verbal accounts. These are the proximal "things" taken into the laboratory and circulated in print, and they are a rich repository of "social" actions.[15]

This approach recognises that scientific work is not simply an activity confined to a utilitarian laboratory, where glass jars line the shelves and technical equipment litters the benches, but is an activity shaped by various people, processes, and places that overlap and intersect, both inside and outside traditional scientific sites.

Practices are also a way of understanding and constituting the body in medico-scientific thought, and reveal the multilayered, multi-agency endeavour of asylum investigation and administration: from the writing of case notes on the ward, to the physiological tests carried out with patients, to the pathological practices of the postmortem room. The body

was central to asylum practice as researchers moved towards a more obviously somaticist approach to mental disease at the end of the nineteenth century. In thinking about the practices surrounding the body in the asylum, one of the first things to grapple with is precisely how the body is perceived. I am reluctant, for example, to think of the body in terms of 'construction.' As well as implying a degree of manipulation, construction suggests something static—bricks being built and re-built into structures—that sits uneasily with the organic body. An approach that is more applicable to the aims of this book, and that I have found immensely useful, comes from an anthropological perspective: Janelle S. Taylor's notion of 'surfacing' the body.[16] The multiple uses of the word 'surface' mean that it can denote several things: *giving* a surface to something, a thing *coming* to the surface, or an agent intervening to *bring* something to the surface. In Taylor's words, elements of the body are 'surfaced' so that "bodies take shape and take place through practices of all sorts."[17] Here the body is recognisably physical (it "takes shape") and it has active, performative, elements (it "takes place"). It is a changeable body on account of the ability of surfaces to be altered or breached, a feature that is particularly relevant to processes of clinical and pathological investigation. As this book details, asylum doctors captured the surface signs of disease in photographs, brought the interior depths of the body to the surface during postmortem examination, and gave new surfaces to tissues and cells as they preserved them for teaching collections or reproduced them in journals. In doing so, they drew upon a variety of instruments and techniques that held out the promise of a form of scientific objectivity untainted by their own shortcomings, but which was at the same time crucial to the development of their subjective "scientific self."[18] Thus, in investigating the body of the asylum patient, we are also concerned with the person on the other side of that investigative enterprise: the asylum doctor and their day-to-day practices.

'Surfacing' may put practices centre-stage, but scientific practice in the asylum has often been a casualty of patient- and family-oriented histories despite the strong scientific research agendas of several nineteenth-century asylums. In focusing too narrowly upon the 'social' history of psychiatry, we are at risk of omitting the 'scientific.'[19] This concern for the scientific losing ground to the social was also remarked upon by contemporary alienists. West Riding Superintendent James Crichton-Browne, in his Presidential Address to the Medico-Psychological Association in 1878, suggested that "more engrossing occupations have hustled science into a

subordinate place," suggesting that this shift was due to an increased focus on matters of moral management such as ward decoration, clothing, and food.[20] He did not advocate the simple replacement of one with the other, however, noting that scientific approaches to the study of mental disease ought to be set alongside psychological work. As he wrote: "It is when [the two] converge and rush together that a spark of genuine illumination is certain."[21] Crichton-Browne's advice has continuing relevance to the history of psychiatry: we need the patients *and* the doctors, the social *and* the scientific, in order to have a fuller insight into asylums and their work. It is difficult to resist extending the metaphor of 'surfacing' to the historiography of the asylum more broadly, bringing to the surface of the narrative scientific practices that have been previously relatively submerged.

The West Riding Asylum

Like many other book-length studies that take the nineteenth-century asylum as their subject, *Investigating the Body in the Victorian Asylum* focuses on one institution in particular: the West Riding Pauper Lunatic Asylum in Wakefield, Yorkshire (later known as Stanley Royd). Opened in 1818, it was one of the first public asylums to be set up following the passing of the 1808 Wynn's Act that encouraged the establishment of county asylums. It would form the centre of a gradually expanding West Riding Asylum system with the opening of Wadsley (Sheffield) in 1872, High Royds (Menston) in 1888, and Storthes Hall (Huddersfield) in 1904.

With an increasingly standardised process of asylum committal throughout the nineteenth century, and expanding access to asylum records in the present day, we are well-placed to glean the most minute details of these institutions, their staff, and their patients. I began to do just that when, in 2010, I started a doctorate on nineteenth-century British psychiatry and focused my attentions on the West Riding facilities. Using the Asylum's reception orders (the document that allowed a patient to be committed) and admission registers, I found myself, around a year later, with a not-unrespectable sample of just over 2000 patients admitted to the West Riding between 1880 and 1900. Initially I had envisaged a thesis that charted the experiences of male patients in the nineteenth-century county asylum, a task I grandly saw at the time as something of a counter to those histories that placed women patients at the centre of a gender-specific analysis. With yearly admissions to the West Riding averaging between 350

and 450 people, this late-century institution offered strong grounds to expand upon existing accounts of gendered asylum experience. Like several other historians, I found no evidence to support the suggestion that women were committed to the asylum in disproportionate numbers compared to men.[22] The balance of admissions between men and women was roughly equal. The patient age upon admission was also consistent, averaging 39 years for both men and women. Married people tended to make up around half of each year's admissions, single people around a third. The relatively small number of patients admitted above the age of 51 also called into question the notion of the asylum as a 'dumping ground' for elderly and unproductive relatives.[23]

In looking at the spreadsheets and charts that provided me with this information, and that I had imagined would form the basis of my research, I was disheartened. My demographic analysis seemed to tell me little except that patients were men and women, middle-aged, and mostly married. Above all, the whole exercise had started to make me uncomfortable. In charting the demographic features and diagnostic information I had gleaned from reception orders, casebooks, and admission registers, I feared I was perpetuating the nineteenth-century "avalanche of printed numbers," re-diagnosing patients in an endless re-classification exercise.[24] It was difficult to meaningfully glimpse patients here, in the same way that it was difficult to see them in the annual reports of the Asylum or the records of the Commissioners in Lunacy. Having spent so much time immersed in the West Riding records, it was clear to me that the staff there were just as concerned with the micro as the macro details. These were the things that I couldn't chart in a spreadsheet: annual reports recounting the minutiae of accidents that had befallen individual patients; casebooks including stories clipped from the local newspaper; and a photograph album that made my neat charts and tables pale into insignificance as I was confronted with startling images of patients posed, dressed and smiling, or dead, naked and cut open.

It was leafing through the pages of this photograph album that the focus of my research started to shift. The West Riding Asylum had clearly made the bodily study of mental disease a key part of its day-to-day operations. As much as it matched its contemporaries in terms of patient demographics, the West Riding was peculiar in its commitment to scientific research. It housed significant resources for researchers, boasted of having one of the first pathological laboratories situated at an asylum, was the first British asylum to appoint a pathologist as a paid member of staff in 1872,

and for a time produced its own journal, the *West Riding Lunatic Asylum Medical Reports*. Many of these developments occurred under the Superintendency of James Crichton-Browne (1866–1876), who worked tirelessly to transform the West Riding into a research institution as well as a place of care. As he noted in his 1878 Presidential Address, Crichton-Browne saw the future success of alienism lying in the extension of scientific work. He urged his audience to support the diffusion of the scientific spirit throughout Britain's asylums by converting them into "clinical schools," emphasising that they were significant resources for advancing scientific work.[25] The West Riding's scientific spirit did not fade with the departure of Crichton-Browne, but was continued by successive superintendents. The period under study in this book also sees the influence of Herbert Major (1876–1884), a keen histologist who had worked closely alongside Crichton-Browne, and William Bevan Lewis (1884–1910), whose organicist approach to mental disease was set out in two significant works in the 1880s, *The Human Brain* (1882) and *A Text-book of Mental Diseases* (1889).

With its laboratory facilities and its renowned staff, the West Riding Asylum was viewed as something of a mecca for the student of mental science. A.H. Newth of Sussex Asylum wrote in 1877 that "instruction … especially in such institutions as Bethlem and Wakefield Asylums, initiate the student into all that is necessary for a knowledge of how to [for example] prepare brain sections."[26] When the British Medical Association decided to institute a regular section for mental diseases at its annual meeting in 1889, it was to the West Riding that the honour of hosting was first awarded. In Crichton-Browne's day the in-house journal had brought together specialists working in the fields of alienism, physiology, and the burgeoning field of neurology. Perhaps most notably, the Asylum played host to neurologist Sir David Ferrier, who would undertake some of his seminal experiments into cerebral localisation there. As Stephen Casper has recently discussed in *The Neurologists* (2014), when looking at the early nineteenth century it is difficult to pin down neurology as a defined speciality, and this was still very much the case in the latter half of the century, with neurologists able to lay claim to expertise in a variety of conditions. Neurology was something that could straddle different areas—not simply the neuro-physiological laboratory, but also the asylum.[27] Certainly it was an area of research that was prominent at the West Riding—particularly in the work of Bevan Lewis—and this strong neuro-physiological focus is a pertinent reminder that the Asylum was not a typical late-Victorian

institution. It enjoyed a prestigious reputation for its scientific work, visited by people such as Charles Darwin during his research for *The Expression of the Emotions in Man and Animals* (1872). It was also something of a pioneer in psychiatric outpatient provision, opening an outpatient's department in 1889 and an acute hospital in 1900. Thus, as a well-respected and prominent centre of scientific research, the West Riding is in many ways an anomaly in the landscape of British county asylums. But, as a place to study asylum practice and the body in late nineteenth-century psychiatry, it is ideal. Its facilities, its staff, and its careful record-keeping reveal a host of clear, well-documented examples of how somaticist approaches to mental disease informed, manifested in, and were shaped by contemporary practice.

General Paralysis of the Insane

For staff at the West Riding who wished to solve the mysteries of mental disease, nothing preoccupied them more than general paralysis of the insane (GPI, or general paralysis). It was the best chance that asylum doctors had to understand the relationship between the body and mental disorder. Accordingly, it is upon this condition that much of this book focuses. A progressive and chronic condition, general paralysis was characterised by a wide range of physical and mental symptoms: a staggering gait, delusions, disturbed reflexes, speech difficulties, and muscular weakness. The prognosis for patients with the condition was bleak: most would not leave the asylum once admitted, often dying within a few months, weeks, or sometimes days of admission. The steady accumulation of these chronic patients in asylums during the later years of the nineteenth century led to renewed efforts to determine the cause of the condition. R.S. Stewart, Deputy Superintendent of the Glamorgan County Asylum, wrote in 1896 that 18,438 general paralytics had been admitted to English and Welsh institutions between 1878 and 1892.[28] As most of these patients required careful and constant supervision, they taxed nursing staff, put a strain on limited physical space, and drove down the cure rates of institutions. At the West Riding, for example, in the samples I gathered, the condition accounted for between 23 and 36% of annual male patient deaths between 1880 and 1900.

Today general paralysis is generally understood to refer to neurosyphilis: the neurological manifestations of untreated syphilis that can appear several years after initial infection. But we should be cautious in making any

straightforward link between nineteenth-century 'general paralysis' and twentieth-century 'neurosyphilis.' Caution is needed, in part, because of the difficulty of mapping modern understandings of disease aetiology onto past signs and symptoms. Bruno Latour articulates this best in his 'On the Partial Existence of Existing and Nonexisting Objects': he describes how in 1976 an examination of the mummy of Ramses II took place, which led to Ramses being 'diagnosed' with tuberculosis.[29] But how, Latour asks, "could he have died of a bacillus discovered in 1882 and of a disease whose etiology, in its modern form, dates only from 1819 in Laënnec's ward?" Latour is not suggesting that tuberculosis is a mere construct, but highlighting that any disease is much more than its bacillus, coccus, or—in the case of syphilis—spirochete. The understanding of a disease, the treatment offered for it, and the attitude taken towards the sufferer, depend on much more—on the social, economic, cultural, and intellectual context in which it appears. My hesitancy in simply classifying general paralysis as neurosyphilis also stems from cautions expressed in contemporary writings. Although many late-Victorian doctors posited a link between general paralysis and syphilis, not all were comfortable with the way in which 'general paralysis' was applied as a diagnosis. Northampton County Medical Officer F. Graham Crookshank, alluding to the wide range of symptoms seen in general paralysis and the tendency to confuse it with other conditions, asked: "Is not every case of insanity in a sense a case of general paralysis—a stage in a progressive dissolution of the brain[?]."[30] As this book demonstrates, the diagnosis of general paralysis came to depend upon and evolve with particular practices such as microscopy or the post-mortem. It was a condition that became altered as emphasis was placed on new parts of the body as the disease's 'seat' and was, above all, a changeable entity.

Just as there is a degree of suspicion about the asylum doctor and his rightful place in the history of psychiatry, there also seems to be some reticence about the study of scientific practice when it is unconnected to celebrated 'discoveries' such as the spirochete of neurosyphilis. Indeed, the 'science' of psychiatry tends to be overlooked unless it is a story about failed research, now obsolete, and thus an object of some disapproval or censure.[31] *Investigating the Body in the Victorian Asylum* charts a *process* of investigation, recognising the changeability of contemporary thinking about mental disease and the body. Such a process necessarily involved failures and wrong theories. These are as valuable to the history of medicine and psychiatry as its success stories. The identification of a "wrong

microbe" behind a disease, for example, is a valuable part of the history of science for what the episode tells us about contemporary processes of research.[32] I am not concerned here with what general paralysis really was or with finding evidence to support or refute the link between neurosyphilis and general paralysis, however attractive that kind of historical detective work may be. But, in using general paralysis as a window onto contemporary scientific practices surrounding the body in the asylum, I necessarily consider how general paralysis was understood via clinical, technical, physiological, and pathological investigation of the body at a certain point in time: how general paralysis was surfaced, represented, or rendered. In many respects, my approach has similarities with that of Gayle Davis, who offers the most complete existing 'biography' of general paralysis in her 2008 book, *'The Cruel Madness of Love'*. [33] Davis is particularly concerned with the stability of general paralysis as a diagnostic category, largely in early twentieth-century Scottish asylum laboratories. I also, inevitably, come to address this issue of stability (or indeed, *in*stability) through my exploration of scientific practices. Whilst Davis focuses on the evolution of general paralysis as a disease, however, I am primarily concerned with using the condition as a way in to a broader study of the body and practice in the late nineteenth-century asylum. The wide range of experiments and tests that were used in the study of general paralysis allow me to trace how practices shaped and were shaped by the asylum, its doctors, and its patients. *Investigating the Body in the Victorian Asylum* also provides a prequel of sorts to Davis's work: although it was in the early twentieth century that the causation of general paralysis would be more clearly understood, research like that carried out at the West Riding in the late nineteenth century was crucial in providing the foundations for later work. The process of the production of scientific knowledge is a continuous one, and nineteenth-century practices—including those that did not lead to a discovery like the spirochete—are crucial both to the story of general paralysis and to histories of the body in the asylum.

The Asylum Patient

Studying scientific practice and the body need not mean that we entirely forget the patient suffering the ravages of disease. Certainly doctors themselves did not. Bethlem's George Savage lamented that, "as years pass on [general paralysis] seems to appeal to us more personally as one and another of our friends or patients fall out of rank, victims to this malady."[34]

In treating and caring for these patients, doctors would have been well acquainted with personal stories of physical debility, financial ruin, and strained relationships. General paralytics tended to share some key demographic features: they were predominantly male (Frederick W. Mott of London's Claybury Asylum estimated a ratio of four to six men for every one woman) and usually hailed from urban areas.[35] As a disease affecting men in their thirties and early forties, it hit families hard as breadwinners were removed from the labour market and admitted to asylums. This, and the disease's prevalence in towns and cities, meant that it was frequently characterised as a 'disease of civilisation': the body and mind's rebellion against industrial modernity and a regression to man's baser nature. The sense of regression, or de-evolution, to a more primitive state was given further credence in the stress placed upon the patient's behaviour: men and women with general paralysis were frequently identified as having had a rather too active sexual life, and often suspected to be guilty of alcoholic excesses. It is impossible, then, to consider the body in general paralysis from a purely 'scientific' point of view, without reference to its social aspects.

Likewise, it is not possible to study medical or scientific practice without recognising its social aspects, as noted above. In my historiographical 'surfacing' I am primarily concerned with bringing (back) to the surface contemporary practices that surrounded, interacted with, and acted upon the body in the asylum. In examining these practices it is necessary to consider the role of the asylum doctor. Whilst we should not place contemporary medical professionals on a pedestal, reverting to older and sometimes rather hagiographical approaches to the history of medicine, we also need to recognise the significance of these individuals within the history of psychiatry. Many readers—whatever their professional background—will be familiar with the trope of the psychiatric doctor as a sinister figure. Although I am not suggesting that we *ignore* such stereotypes or the concerns underlying them, it is important to avoid the tendency to imagine the asylum as a place neatly divided into two parts in which doctors stood on one side and patients on the other, the two usually at odds with one another. The idea that these two groups did not interact, or that patients were wholly alienated from the practices of the asylum, overlooks the reality of many nineteenth-century institutions. From the records of the West Riding Asylum it was clear that patients, attendants, and doctors not only interacted with one another regularly, but also built up personal relationships. Patients and their families wrote to the Asylum after their stay

to express thanks, doctors described some of the children in their care with genuine affection, and activities such as fancy dress balls or sports teams saw patients and staff come together in a social context. Of course, these are isolated elements of a wider story—there were also doctors who expressed outright disgust for their patients—but it is important to recognise the existence of diverse experience in that story.

In placing the body and asylum practices at the forefront of my analysis, my aim is not to replace or to lessen the significance of the social history of the asylum and its patients. As many chapters in this book demonstrate, the patient's personal experience of their body—its illnesses, its accidents, its unexpected and often distressing defects—is an integral part of the narrative. Patients complained about their bodies, tried to rationalise their unusual bodily sensations, and contributed to their own records and wider asylum practice in various ways. There is a tendency, when describing historical instances of patients exercising agency, to suggest that such individuals were exceptional—but it is a stance that becomes less tenable as these instances multiply.[36] Although patient experiences varied according to a range of dynamics including gender and social class, there is no reason to assume that nineteenth-century patients *as a whole* were more passive than their present-day counterparts.[37] Indeed, the study of asylum practice can complicate this idea. The body was a point of interaction between patient and doctor—in physical examination upon admission to the asylum, in physiological tests that relied on a dialogue between doctor and patient—where the dynamics and relationships of care were structured and played out.

Outline of this Book

In line with my aim of surfacing the body in the late nineteenth-century asylum, *Investigating the Body in the Victorian Asylum* takes an anatomical approach that aims to mirror contemporary processes of investigation, from admission to the asylum to examination of the body after death. It is a chapter by chapter 'dissection' of the parts of the body that most attracted asylum doctors' attention, discussed in the order in which they would have encountered them during their search for the physical proofs of mental disease.

The book begins with the skin: the outer surface of the body that was captured in asylum photography and 'read' for hints about patients' mental conditions—the rashes or scars of syphilis, for example. The stories of the

skin that are revealed in the West Riding records—and especially in the album of photographs kept by the pathological laboratory—highlight issues including the treatment of skin conditions, the carrying out of surgical interventions, and the difficulties of caring for destructive or frail patients. Chapter "Muscle", extending this focus on the exterior of the body, considers how asylum doctors investigated muscles and movement. Here, the general paralytic patient's seizures, twitches, and disordered sensations suggested correlations between motor anomalies and brain lesions, with a range of physiological methods employed to investigate these. The literal wasting away of patient's muscles also had broader personal significance (the decline of strength, masculinity, willpower) as well as serious socio-economic consequences for patients and their families. In Chapter "Bone", we encounter patients both in life and in death, via a discussion of bone fractures in the late nineteenth-century asylum. To account for 'fracture deaths' in their institutions, doctors attempted to quantify the bodily fabric by testing the strength of bones at postmortem—the assumption being that the bones of general paralytic patients would be weaker than those of nonparalytics. This chapter shows how asylum doctors incorporated technological innovations into postmortem practice, but also how the evidence of the body could contribute to administrative changes that affected patients' treatment during their lifetimes. Fractures might be detected before or after death, but the evidence of the brain could only be analysed at postmortem, and it is this organ that forms the centre of Chapter "Brain". The brain of the general paralytic patient was sectioned, mapped, photographed, and preserved, all in an attempt to understand the aetiology of general paralysis; nevertheless it was an organ that also presented the doctor with a number of challenges. In this chapter, I consider how practitioners made the brain 'readable,' adapting or evolving new techniques to do this, and subjecting the substance of the brain to microscopic investigation that led to new theories about the cause of general paralysis. Finally, in Chapter "Fluid" I explore how such pathological investigation fed *back into* clinical practice, by considering the place of fluids in the body—primarily cerebro-spinal fluid (CSF). The apparent excess of this fluid in cases of general paralysis led to attempts to drain it from the skull during life via trepanation. In addition, by studying the urine and other waste products, this chapter describes how asylum researchers were moving closer towards the toxic aetiology of general paralysis that would become central to twentieth-century conceptions of the disease.

Taken together, these chapters aim to shed light on a relatively neglected aspect of asylum history: the clinical and pathological investigation of the body. By investigating the body in the Victorian asylum, I hope to show that asylums were not simply isolated and scientifically backward sites. Rather, they could be places where—in an era increasingly concerned with the links between body and mind—various and complex 'ways of knowing' mental disease were developed, refined, and sometimes discarded.[38] In charting these ways of knowing mental disease, we are able to glimpse not only the scientific practices of the asylum, but also some of its social aspects, perhaps coming closer to that melding of the scientific and the social that James Crichton-Browne advocated in his address to the Medico-Psychological Association nearly 140 years ago.

Notes

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8. Barbara Duden, *The Woman beneath the Skin: A Doctor's Patients in Eighteenth-Century Germany*, trans. Thomas Dunlap (Cambridge: Harvard University Press, 1991).
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12. Ludmilla Jordanova, "The Social Construction of Medical Knowledge," in *Locating Medical History: The Stories and their Meanings*, ed. Frank Huisman and John Harley Warner (Baltimore: Johns Hopkins University Press, 2004): 345.
13. See for example Erin O'Connor, *Raw Material: Producing Pathology in Victorian Culture* (Durham: Duke University Press, 2000).
14. Michael Worboys, "Practice and the Science of Medicine in the Nineteenth Century," *Isis* 102, no. 1 (2011).
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22. See for example David Wright, "Delusions of Gender? Lay Identification and Clinical Diagnosis of Insanity in Victorian England," in *Sex and Seclusion, Class and Custody: Perspectives on Gender and Class in the History of British and Irish Psychiatry*, ed. Jonathan Andrews and Anne Digby (Amsterdam: Rodopi, 2004).
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28. R.S. Stewart, "The Increase of General Paralysis in England and Wales: Its Causes and Significance," *JMS* 42, no. 179 (1896): 761.
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Skin

In the Introduction, I suggested that within histories of the asylum the physical body of the asylum patient has often been overlooked. This chapter introduces an archival source—an album of photographs—that graphically illustrates the value placed on the body as a site of information in the late nineteenth-century asylum. In its depiction of both the external body and its internal organs, the album highlights the converging research concerns—physiological and psychological—that increasingly characterised late-Victorian research-oriented British asylums like the West Riding. The chapter explores the place of medical photography in psychiatry before going on to discuss the outermost surface of the body that it captured: the skin.

The skin was credited with the ability to reveal something of the body's inner workings, and the developing field of dermatology used photographs and other illustrations to document skin conditions in great detail. This was a practice that extended to asylums, as doctors 'read' the skin for hints of their patient's medical history as well as for what it might say about their present mental condition. In the case of general paralysis, patients were often assumed to have a history of syphilis—evidenced by scarring, for example—but also suffered from phenomena such as anaesthesia of the skin, a condition that could put them at particular risk within the asylum. In documenting skin conditions, photographs reveal not only the importance of the surface of the body, which had the potential to reveal what was going on inside it, but also the working practices of the asylum—such as the testing of sensation in general paralysis. Thus, this chapter considers

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how the information contained in photographs can illuminate the asylum's treatment of skin conditions, the surgical intervention employed, and the challenges of caring for the frail or destructive patient, one of whom was the general paralytic.

Fragments of Asylum Practice

Within the archival records of the West Riding Asylum, amidst volume upon volume of case records and annual reports, is a heavy book of photographs. The ageing, leather-bound volume is undated, and there are no indications of authorship or curatorship. The feelings evoked by the album's contents are reflected in its entry in the archival catalogue: though identified by a slip of paper between its pages as "Photographs of patients. Male & female patients. Undated. Path lab records," it is described in the catalogue as a collection of photographs of "various complaints, deformities etc."[1] The morphing of "Path lab records" into the rather more evocative "deformities" is a telling one, with a cataloguer presumably struck by some of the more visually arresting photographs within the book's pages.

There are 118 photographs in the album, most accompanied by a handwritten caption providing the patient's name. In one photograph, a nurse holds up a female patient's legs to display severe open sores on the back of her knees. In another a young, very thin, boy lies curled up on a neatly folded striped blanket. There are pictures of patients in the wards and Asylum grounds: two women seated in the garden in neat dresses and aprons, their hands resting in their laps; men sat in front of a greenhouse, the windows behind them filled with plants. Alongside these portraits of patients during life—indeed, often on the same page—are dead bodies and their constituent parts. In one photograph the Asylum mortuary wall and slab have been temporarily draped with black sheeting to provide a clear backdrop for photographing a deceased patient, her limbs painfully contorted. Brains are depicted in various states, some photographed in situ with the top of the skull removed and membranes pulled back to reveal a large clot of blood. Locum doctor Arthur Bodington poses for the camera during a postmortem, the patient's brain in the foreground and top of their skull resting on their knees. Several pages are occupied by photomicrographs of muscle tissue and nerves, some of them mounted carefully on thick card.

It is a startling source, and the lack of explanation regarding its content makes it possible to read it, at first glance, as nothing more than a somewhat fetishistic collecting of patients and their bodies—the "various deformities" of the archive catalogue as curiosities rather than conditions of scientific or medical interest. Large collections of photographs of institutionalised patients, and the exchange of such images between Victorian doctors, have led some historians to liken asylum photography to a hunt, which (like photographs of colonial expeditions) brought the 'primitive' elements of human nature into the hands of "the Victorian psychiatrist, a heroic explorer of the mind."[2] Images drawn from the history of psychiatry evoke "a specific type of anxiety"[3]: it is very difficult to extricate them from concerns about power, labelling, incarceration, and unnecessary medical intervention. The image of the patient in an asylum uniform, photographed almost in the style of a mugshot, sometimes restrained by the hands of an attendant, seems to foreground those elements of psychiatric treatment—imposed uniformity, surveillance, and coercion—that raise the most concern. If such nineteenth-century images are those which indulge our romantic ideal of a simpler past we feel we have lost, the photographs collected at the West Riding perhaps speak of past realities that our modern sensibilities would much rather forget. The visceral nature of the photographs in the album "overpower[s] our critical faculties" and our initial reaction to the collection is that it is somehow wrong, sinister, or questionable.[4]

It is vital, though, to view such photographs with their broader contemporary social and medical context in mind. It is clear that the West Riding's album was not intended for public perusal, but as a private and professional record of cases the Asylum staff deemed worthy of note. Whilst the taking of these photographs was made possible by a power differential between doctor, institution, and patient, recognising this fact does not invalidate the photographs as useful historical sources. Power has the ability to create knowledge, and I view these photographs as fragments of medico-psychiatric knowledge of the late nineteenth century, as windows onto contemporary concerns and practices in the Asylum.[5] The album strongly suggests the importance of certain body parts and organs in late nineteenth-century asylum medicine. Why are there several photomicrographs of muscle tissue? Why take the time (and, as we shall see in Chapter "Brain", significant technical effort) to photograph brains removed from the skull at postmortem? The care with which a brain or brain section was preserved and photographed speaks not only of the

medical or scientific value attached to it, but also of the scientific practices that made that preservation possible.

I do not wish to suggest that photographs alone are adequate sources for constructing a history of psychiatry in late nineteenth-century Britain. Though a photograph may perform multiple functions—evidential, didactic, aesthetic—it does not follow that it should be used in isolation without reference to other types of source. The photograph invites us to view it as a whole,but it is a fragment—framed, cropped, and incomplete. There are many aspects of the clinical or pathological encounter that photographs are unable to capture. Images omit the "sensual surround in which physician and patient interacted," for example, including elements such as the smell of open wounds or skin conditions.[6] Photographs are just one part, one trace, of a broader investigative enterprise. But neither should images be used simply for illustrative purposes, particularly when we consider that this was not the way that asylum doctors employed them. The contemporary motivations behind clinical photography were multiple, with varying aims of objectivity, cognition, and even aesthetic appreciation.[7] The patient portraits produced by Hugh Welch Diamond at Surrey County Asylum, for example, posed and dressed patients to resemble well-known literary characters such as Shakespeare's Ophelia. The nineteenth-century medical photograph is not something easily and uniformly readable—the result of an institutional, disciplinary gaze, for example—but an artefact dependent on many other processes and motivations.

In the Introduction I suggested that Janelle S. Taylor's notion of surfacing may be a useful way to think about investigations of the body in the nineteenth-century asylum. In line with Taylor's multifaceted concept of surfacing, this chapter is concerned with two surfaces: the surface of the skin as a site of medical investigation, both in general paralysis and other conditions, and the surface of the photograph as a route into thinking about nineteenth-century practices of medical photography and the circulation of knowledge. Mechthild Fend notes that "certain terms became more prominent in medical discourse around 1800, among them the word 'surface'."[8] Fend suggests this is due to greater attention being paid to the visual appearance of the body, as well as the growing specialism of dermatology and its conception of the skin as an indicator of other things. Nineteenth-century illustrations of skin conditions and their sufferers often portrayed these conditions with reference to the whole patient, carrying within them markers of social identity. Discussing the early

nineteenth-century dermatological watercolours of the pathologist Robert Carswell, Fend observes that although the purpose of the illustrations is to portray a disease, the disease "carrier," "in the sense of both the body displaying a disease and the sheet of paper on which an image is printed or drawn, does not always remain indifferent."[9] In many dermatological photographs of the nineteenth century, much more of the patient—and of the doctor-patient interaction—is captured than simply the surface of their skin. I also wish to emphasise here the surface of the photograph itself—to view the photograph not only in terms of the image captured, but as an artefact of and testament to nineteenth-century asylum practice. As this chapter will show, photographs were (and are) dynamic objects: important for contemporary understandings of the relationship between bodily and mental disease, and capable of highlighting the varied practices of the late Victorian asylum.

Photographs in the Asylum and the Archive

Photography was by no means confined to the medical arena in the nineteenth century. The 1851 census recorded a mere 12 photographers, but 10 years later that figure had leapt up to 2534.[10] Alongside the growth of domestic photography (such as *cartes de visite* and family portraits), the photograph was employed by those working in science and medicine. Particularly following the Great Exhibition in 1851, which gave an important publicity platform to those using photography in their scientific work, photographs were increasingly used to record and document researcher's observations, from astronomy to natural history.[11] Photographs could also provide a means of institutional surveillance. Gathering standardised knowledge about 'types' of people in the 1800s was an activity that took place in several arenas: the phrenology of Franz Joseph Gall and Johann Spurzheim, Alphonse Bertillon's attempts to codify the criminal body, and various efforts by anthropologists to 'catalogue' the races of the world. Psychiatry was no exception. If the "body's signs [were] a *text* to be read,"[12] where better to read them than in an institutional environment, where there might be several hundred examples of a broad 'type' (the insane, the criminal) collected together? The multiple functions of the photograph—surveyor, recorder, teacher—were well suited to the asylum and prison systems where a photograph could provide visual 'proof' of psychopathology, act as a legal identifier in case of escape, or, as Diamond claimed, even play a therapeutic role in forcing patients to

visually confront their condition.[13] Collections like that of the West Riding pathology lab could be found throughout late nineteenth-century psychiatry as photography proliferated. The society photographer Henry Hering had taken photographs of Bethlem patients as early as the 1850s, but it was the period after 1870 that saw the use of photography in institutional and medical settings increase substantially. Photographs became an essential part of scientific discourse, exchanged between doctors in the mail and used to illustrate journal articles. The first textbook devoted to medical photography was published in 1893 (*La Photographie Médicale*), produced by Albert Londe who had worked with Jean-Martin Charcot at the Salpêtrière, but scientific photographs were also a vital part of publications for a broader readership such as atlases and popular periodicals.

Although it is unlikely that all asylums kept a 'pathology lab album,' in large asylums like the West Riding it was common to maintain basic photographic records as part of administrative practice. This was a task that represented a significant undertaking for asylum staff: at the West Riding the annual report for 1870 noted that a new photographic studio had been built on-site with a small pathological museum attached (this was a 'museum' in the sense of a collection of objects for teaching, rather than a dedicated building open to the public).[14] Photographs were taken of patients and catalogued in large albums with a cross reference to the patient's casebook; later, photos were stuck directly into the casebooks, a move partly encouraged by the Commissioners in Lunacy who advised that records would be enhanced by combining the two.[15] By 1897 a complete set of photographs of all resident patients had been taken, indexed, and placed in the West Riding Asylum museum.[16] Many of the patient photographs in the West Riding's casebooks show a uniformity in their background that suggests the on-site studio was in regular use, though other photographs highlight that the camera was also introduced to other areas of the Asylum, depicting patients in the grounds or on the wards. This process of 'cataloguing' patients might involve several members of staff: at Londonderry Asylum, the superintendent took the photographs, the head attendant developed them, and a nurse printed the results.[17] At other asylums, there might be an appointed or visiting photographer who was skilled in using photographic equipment, or an existing member of staff who took on the role. At the West Riding in the 1870s, for example, Dispenser George Bracey acted as photographer.[18] The pathology lab's album gives no hint of photographer identity, and the years spanned within it suggest that it was a combined effort of several staff members. By

comparing the patients depicted in the photographs—for the most part both living patients and pathological specimens are labelled with names—against casebook and postmortem records, it is possible to date the album to between c.1879–1901.

The format of the album and its contents plays an important part in its reading. Images of living patients pasted next to photographs of their brains after death offer an uncomfortably graphic representation of mortality as well as a useful illustration of the Asylum's multiple functions. The scrapbook acts as an anchor for the images. Viewed individually, without reference to other sources that provide contextual information about their subjects, it is less easy to see the photographs as part of a broader investigative and therapeutic enterprise.[19] As the photographs are labelled only with names, with no notes about the conditions depicted, it is likely that the album was a companion source to casebook and postmortem records, with staff able to reference back and forth between them. Several of the images are reproduced or referenced in articles by staff members, suggesting the album was used by a number of doctors and that the images played an important part in the production of psychiatric knowledge. The brain of John R. was photographed and the photograph reproduced in sketch form (avoiding the costlier and sometimes difficult process of making copies of a photograph) in an 1891 article on spastic hemiplegia by Pathologist and Medical Officer Edwin Goodall; the case history and postmortem of a young patient in the album was related in detail by Medical Officer William Lloyd Andriezen in an 1897 article in the *British Medical Journal* (*BMJ*).[20] Fragments of patient bodies became part of a broader body of knowledge about mental and physical illness, with sketches of brains or written details of muscular anomalies allowing asylum doctors elsewhere to take part in a kind of "virtual witnessing."[21] The photographs are not simply illustrations, but an essential part of the clinical case, adding depth to the textual account, acting as a surrogate for real specimens, and in several cases conveying information difficult to put into words (such as the extent of degeneration of the brain substance).

Apart from its directly illustrative function, it is also necessary to emphasise the photograph as a demonstration of professional skill and as a tool in museological practice. Since the earliest days of medical photography, photographs were recognised as a useful way of charting the improvement of a disease under treatment. The *BMJ* noted in 1895: "In many cases no verbal description can surpass a good photograph of the patient."[22] Photography was used for the before and after documentation

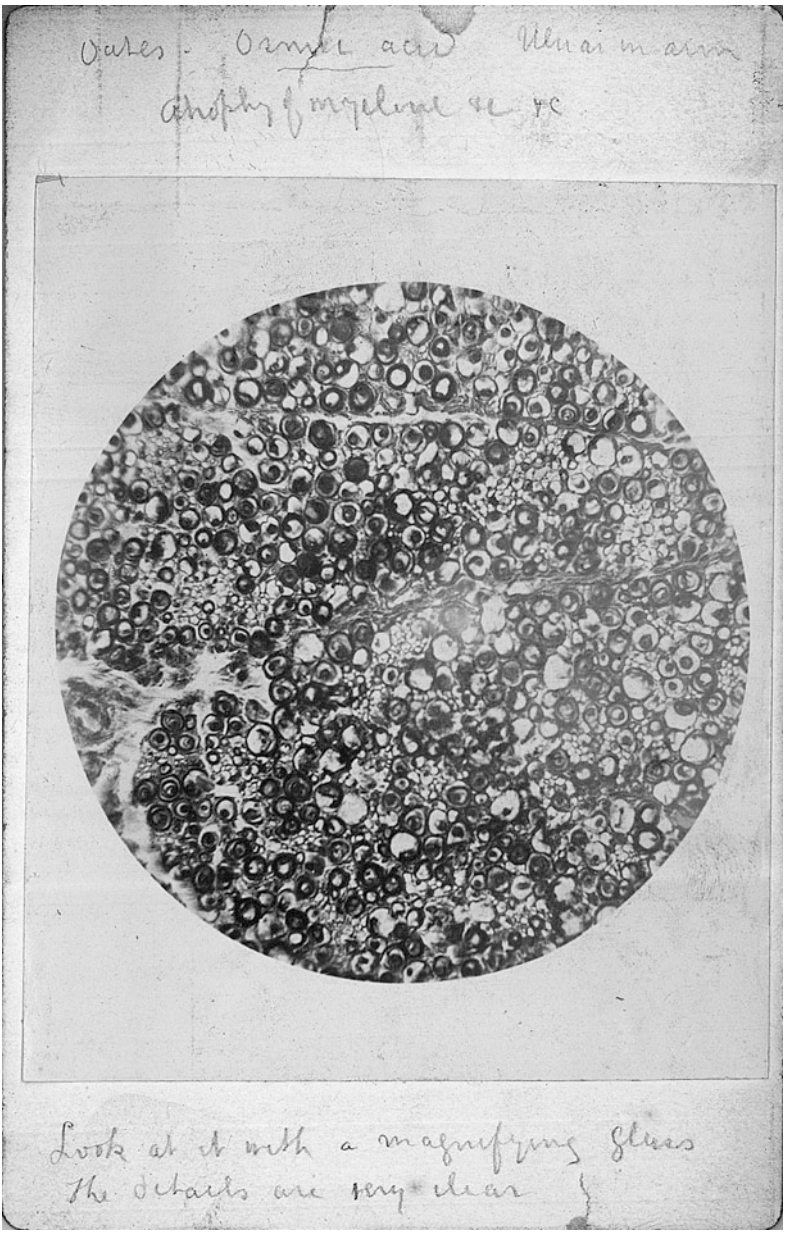
of orthopaedic cases by Hermann Wolff Behrend as early as 1852, and continued to be employed across a variety of medical specialities. William Withey Gull's pictures of anorexic patients were presented in such a way as to testify to the recovery of the patient even without any accompanying textual commentary, becoming standalone descriptors of 'health' and 'illness.' They were also, however, problematic in their depiction of the naked and emaciated female body versus the clothed and therefore 'civilised' patient.[23] The before and after photograph thus provided powerful visual proof of medicine's imagined civilising, as well as curative, capacity and thus broader societal benefit at a time when medicine—and particularly psychiatry—was becoming more conscious of its professional status. The photograph was eagerly embraced by the medical profession—both in Britain and elsewhere—to define itself and its interests in a visual discourse that was generally private rather than intended for public consumption.[24] Some portraits might depict doctors apart from the rest of the hospital: a photograph in the West Riding collections depicts Superintendent William Bevan Lewis surrounded by his senior Medical Officers, while another of the pathology lab (see Fig. 2, Chapter "Bone") depicts several of the same Medical Officers working at their bench.[25] Photographs were thus important records of professional practice as well as clinical phenomena. American neurosurgeon Harvey Cushing's photographs portrayed blood-spattered surgeons displaying the marks of their trade, and the dissection photograph was something of a rite of passage for medical students in the United States.[26] In the latter, students typically assembled in groups around their allotted cadaver, sometimes manipulating the body into comedic positions or tableaux. British dissection photography is rarer, and the portrait of Arthur Bodington in the course of a postmortem in the West Riding album is self-consciously serious. He is carefully posed to display himself within his working environment of the mortuary, behind the corpse and in front of a shelf of glass jars, underneath which hang white aprons. His hands are raised, giving the impression of a brief moment of rest from his endeavours as well as the delicacy of the task he is engaged in.

The display of medical skill and postmortem practices evident in the portrait of Bodington can also be seen in photographs of pathological specimens, many of which were photographed prior to their inclusion in the West Riding Asylum museum. This concern for pathological fragments as well as whole bodies can be seen in other collections of psychiatric photography—for instance, a photograph album kept by Colney Hatch Asylum staff in the 1890s and 1910s, and sets of photographs taken by

Alexander Johnston Macfarlan and William Carmichael M'Intosh in Edinburgh in the 1860s.[27] Both the West Riding and Colney Hatch albums are collage-like in appearance, without necessarily seeming to compile any taxonomies of disease, "challeng[ing] the viewer to make sense of the layout and individual photographs."[28] The Edinburgh photographs betray a similar preoccupation with pathological specimens, but engage particularly closely with the practical work of staff, testifying to practices such as the casting of death masks. This visual record documented the pathologist's contribution to a professional discourse as well as his practical skills in dissection and technical endeavours. On-site museums thus became sites that catalogued the work of staff as well as the bodily fragments of patients. Robert Cook, visiting the West Riding from New York's St Lawrence State Hospital, marked his trip by adding a preservation of his own to the Asylum's collection.[29]

The visual demonstration of practical, professional skill also extended to published work. An 1898 article in the *Edinburgh Medical Journal* contained a photograph of a woman's head before and after dissection, the skull sawn and photographed in a way that highlighted the thickness of the skull bones.[30] The pairing of image and text in the article made clear that such examination and display served an instructive purpose, acting as a two-dimensional mortuary for the reader unable to see the dissection first-hand. Several images in the West Riding scrapbook evidently served as teaching or demonstrative aids. Some of the photomicrographs are explicitly concerned with the correct production and use of images, annotated with guidance for their viewing. Notes such as "Look at it with a magnifying glass. The details are very clear" (Fig. 1), or "Peripheral neuritis. To show masses of fibrous tissue," have clear didactic purpose, describing not only what is depicted, but how it is to be viewed. An X-ray image of a hand notes that it is an "Exposure of one minute," suggesting the testing of new technology (the asylum had acquired a "6-inch induction coil, accumulator, vacuum tube, fluorescent screen and dark slides for radiography" in 1896).[31]

The photographs in the album thus provide a window onto asylum practices—X-rays, dissection, the preservation of museum specimens—that aimed to shed light on the links between mental health and bodily disease. These photographs are fragments, if you will, of that practice, just as the things depicted in the photographs themselves are also fragments, either literally or in their presentation. Body parts are sectioned off from the rest of the body using a clever arrangement of cloth (to highlight the degenerative condition known as 'Charcot's joint' in the knees) or sectioned


Osmic acid
Look at it with a magnifying glass
the details are very clear

◀ **Fig. 1** The didactic role of the photomicrograph at the West Riding Asylum, late nineteenth century: "Look at it with a magnifying glass." Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1111

quite literally using the scalpel (brain sections, muscle tissue). Both within medical history and more generally there is a degree of unease in dealing with this division of the body into pieces. At the same time, it is a division that fascinates us. It is a reminder that "[t]he corpse is always approaching from within."[32] In *The Body in Pieces* (1994) Linda Nochlin argues that the bodily fragment was utilised in art during the French Revolution to denote the destruction of one civilisation and the construction of a new one, a process mirrored in histories of anatomy.[33]

As ideas about disease became more informed by the visible bodily lesion in the nineteenth century, the splitting open of bodies was central to the development of the medical profession. The body became a "repository of knowledge" to decipher.[34] Medical men viewed fragments as a way of conceptualising the whole; that the photographic fragment appears flat and disconnected from the body does not mean that doctors were not, at the same time, able to conceive of patients as whole bodies and beings, using these smaller pieces of knowledge to inform the treatment of the whole. Just as Nochlin emphasises the creation evolving with and out of destruction, Jonathan Sawday says of anatomisation: "in lieu of a formerly complete 'body', a new 'body' of knowledge and understanding can be created. … As the physical body is fragmented so the body of understanding is held to be shaped and formed."[35] For both Nochlin and Sawday fragmentation is a distinctly modern enterprise, in which order is achieved by division and subsequent classification. It is an impulse to completeness rather than reduction as the scalpel "creates new surfaces as it cuts."[36]

Maria Angel, writing in *Images of the Corpse* (2004), notes the linguistic relationship between corpse (body) and corpus (text). She describes "the dead body and [the] book as a series of laminated surfaces that are unfolded, refolded, and discovered in acts of research."[37] The West Riding album acts rather like an encyclopaedia of the patient's body, cataloguing its characteristics inside and out. Whilst much of the content of the album is striking, it would be difficult to say with certainty what the book's origins were with no knowledge of its background. Few of the photographs are the images of madness we are accustomed to: the staged 'religious melancholy' of Diamond, or the spectacular bodies of the Salpêtrière analysed so eloquently by Georges Didi-Huberman.[38] Rather, they attempt to dissect madness in the most literal sense by examining the minute fabric of insane bodies.

In examining the bodily fabric, few of the album photographs reveal more of their subject than is necessary—the image of a patient suffering from Charcot's joints is concerned only with their legs, and there are several close-ups of patient's hands to show the extreme contortion and flexion of wrist and finger joints. This focus is a consequence of the doctor's interest in certain parts of the body, but it also raises the question of increasing awareness of the ethical issues surrounding clinical photography. Not all members of the medical profession were convinced that photography was a harmless or neutral exercise. Clinical photography prompted serious considerations of doctor's ethical responsibilities towards patients in the late nineteenth century, a point in time when notions of privacy were changing and evolving.[39] A letter to the *New York Medical Journal* in 1894, for example, was critical of the "craze" for medical photography which, the correspondent said, led to indecent images being produced as patient's bodies were exposed to a degree that was unnecessary.[40] In Britain in 1901, at the meeting of the Northern and Midland Division of the Medico-Psychological Association, one Dr. Powell (likely Evan Powell of Nottingham Asylum) suggested that the practice of photographing patients "was done somewhat indiscriminately, and done too much as a routine without considering whether it gave pain to the patients or not."[41] In replying to his remarks, Dr. C.K. Hitchcock of York's Bootham Asylum said that he "did not think that anyone had a right to photograph insane patients, and he had felt very strongly on the subject since some years ago he was shown in the collection of an amateur photographer photographs of patients suffering from acute mania."[42] A few years earlier, a resolution was put forward from a London infirmary that medical officers should not photograph any "persons thought to be of weak intellect" without first obtaining the permission of the local guardians. The resolution was not passed, but *The Lancet*—commenting on the suggestion—noted that certainly no photographs ought to be *published* without the consent of the patient or their representative.[43] This increased concern for patient anonymity in the 1890s manifested itself in various ways, such as the addition to photographs of black squares across the patient's eyes or the use of plain, unidentifiable, backgrounds. Whilst this was certainly no guarantee of anonymity, it signalled recognition that patients had lives beyond their condition and a right not to be defined by it.

What are the implications, then, when we choose to reproduce—as I have in this chapter—images of patients? Although nineteenth-century asylum doctors imagined photographs as items of future as well as contemporary use, they likely did not anticipate the uses to which such

photographs would be put by historians of medicine and psychiatry. The medical image is "an ethical borderland in which legal definitions of privacy, personhood, and human rights compete with the contemporary politics of witnessing, memory and memorialisation."[44] Because the photograph is both past and present—thus, capable of being constantly re-read—it enables a series of processes and interactions between subject and viewer such that a degree of emotional engagement seems unavoidable. The historian does not stand outside these processes: in analysing and re-purposing images we enter into (and alter) the present and future readings of those images. Our analysis may also be informed by our own personal experiences of illness, our past research, or the context in which we view the image. To use the present-day example of MRI scans, some people "who view an MRI in an art gallery may be swept up in its beauty, whereas those who view such an image in the examination room might find the image horrifying."[45] Similarly, whether a photograph of a nineteenth-century patient appears, alone, in a digital collection as an example of a particular disease, or alongside their contextualising case notes, can affect our interpretation of it. We might argue that, with time, the patients who are represented in such photographs are "liberated from typology" as their conditions are re-assessed in light of changing medical knowledge, and the circumstances surrounding their photograph interrogated and historicised.[46] During that interrogation and historicisation, though, and particularly in using images in publications, we produce new visual artefacts in our re-contextualisation. Caroline Bressey, working with patient records from the City of London Asylum, is one of few historians who has openly discussed this issue in relation to her own research: "in pulling out these particular photographic stories from the archive books, they become dislocated from their supportive text and context. … By digitally copying the records, cropping the images, and representing the portraits in this [new] format, I have created among them a new form of unity."[47] Bressey reminds us of our own role as historians in the reproduction of images, and the responsibility that brings. In reproducing several images from the West Riding records in this book, I have deliberately chosen those that are important to my study of the body in the asylum, and which have in fact guided it. The album kept by the West Riding pathology lab has been crucial in informing my study of the body in nineteenth-century psychiatry, with its clear focus on certain parts of the body raising questions and inspiring further research—the images highlight, for example, asylum practices as well as the preoccupations of doctors.

Throughout this book, patients (and their bodily fragments) are referred to by first name and surname initial. There is little to be gained from using patient's full names, yet there is something particularly dehumanising about taking away the patient's real first name and replacing it with a pseudonym. Contemporary doctors, when publishing clinical cases, tended to use initials only. In any case, the patient's name is not the end of the story—images may compromise privacy even as they remove identifying information.[48] By presenting the face and body of a patient to public view we also run the risk of reducing the patient to an abstract representation of a disease. Is it any less ethically problematic to present the photograph of William T., as I do in this chapter, because his surname has been truncated? Does it, in fact, further pathologise William by making him less identifiable, rather like Patient One or Patient Two? I have struggled with these issues in writing this book, and in presenting material from it to both academic and nonacademic audiences. But I have decided to include pictures like William's because I think that without them we run the risk of being too distant from the topic at hand, of forgetting that the medical and scientific practices of the asylum were done out of a need to care for very real people, and not simply introduced at the whim of needlessly interfering doctors. Where possible, I have included biographical information about patients that recognises their lives before they entered the Asylum. There is a power in these images that holds significant potential for engaging readers more fully with histories of the body, histories of psychiatry, and the ways in which we have interpreted mental (and physical) illness through time. As Elizabeth Edwards puts it in her discussion of anthropological photography, "[t]he rawness of photographs … hold[s] the seeds for recognition."[49] My concern with ways of seeing or knowing the body in nineteenth-century asylum practice makes images an integral part of this book. It would be disingenuous to imply that those various ways of seeing did not include photographic records of interactions between very real, human, doctors and very real, human, patients. Photographs were one part of those interactions, and captured elements of the clinical encounter not always recorded in written documentation, as this chapter will discuss shortly.

The Growth of Dermatology

One of the most arresting and interesting images in the West Riding photograph album is the portrait of William T. (Fig. 2), who had come to the Asylum as a criminal lunatic after apparently interfering with points on

the Great Western Railway and constructing a fire on the line. William's own account of this was that he had made a fire not with any malicious intent, but merely to keep himself warm. Sentenced to three years servitude, he was judged to be not of sound mind and subsequently admitted to the Asylum where he was diagnosed with general paralysis. Throughout his stay he was plagued by recurrent attacks of psoriasis. Psoriasis could be treated locally—by removing the scales of the skin with soap—and with specifics, the most common of which was the oral ingestion of small quantities of arsenic. In the Asylum William was treated with liquid arsenic, thyroid extract, and ointments.[50] A casebook entry tells us, unusually, the exact date when his photograph was taken, his "Very marked case of psoriasis" being photographed on 17 October 1895.[51] The photograph is a hybrid, using the conventions of portrait photography yet at the same time meeting the criteria of a clinical photograph. Many asylum photographs "borrow from, but also unsettle, three different genres: the family memento, the studio portrait and the institutional record."[52] Similarly, the asylum photography of Diamond, intended for public exhibition as well as private use, blurred the boundaries between medical and nonmedical imagery, with the medical portrait a "special performance" as well as an attempt at capturing reality.[53] Certainly, the portrait of William constitutes a notable event: a backdrop is put in place, William is carefully placed in front of this in a manner that points to his body as a spectacle, and the event is noted down in the casebook. William is photographed unclothed, side on, in order to capture the many raised, irritated patches of skin that cover his torso and legs. He crosses his arms and stares directly at the camera—his casebook photograph depicts a similarly direct engagement[54]—and it is difficult not to read a degree of defiance in his stance. It is the surface of William's skin, however—the stated reason for his photograph being taken—that jumps out most clearly to the viewer. The painted studio backdrop of a woodland scene further draws attention to his condition, the banks of a stream serving to frame his body in the centre and the dark blotches of the trees mirroring the mottled surface of his skin.

The nineteenth century witnessed a growing interest in 'markings' of the skin—psoriasis and other skin conditions, scars, tattoos—and their depiction in medical literature. As "the body's face," the skin was seen as having profound significance regarding inner mental, moral, and physical health: its "involuntary expressiveness" could reveal details of an individual's social life, wealth, and intimate contacts without the patient saying a word.[55] At the same time, the skin could be deceptive: it concealed what lay beneath

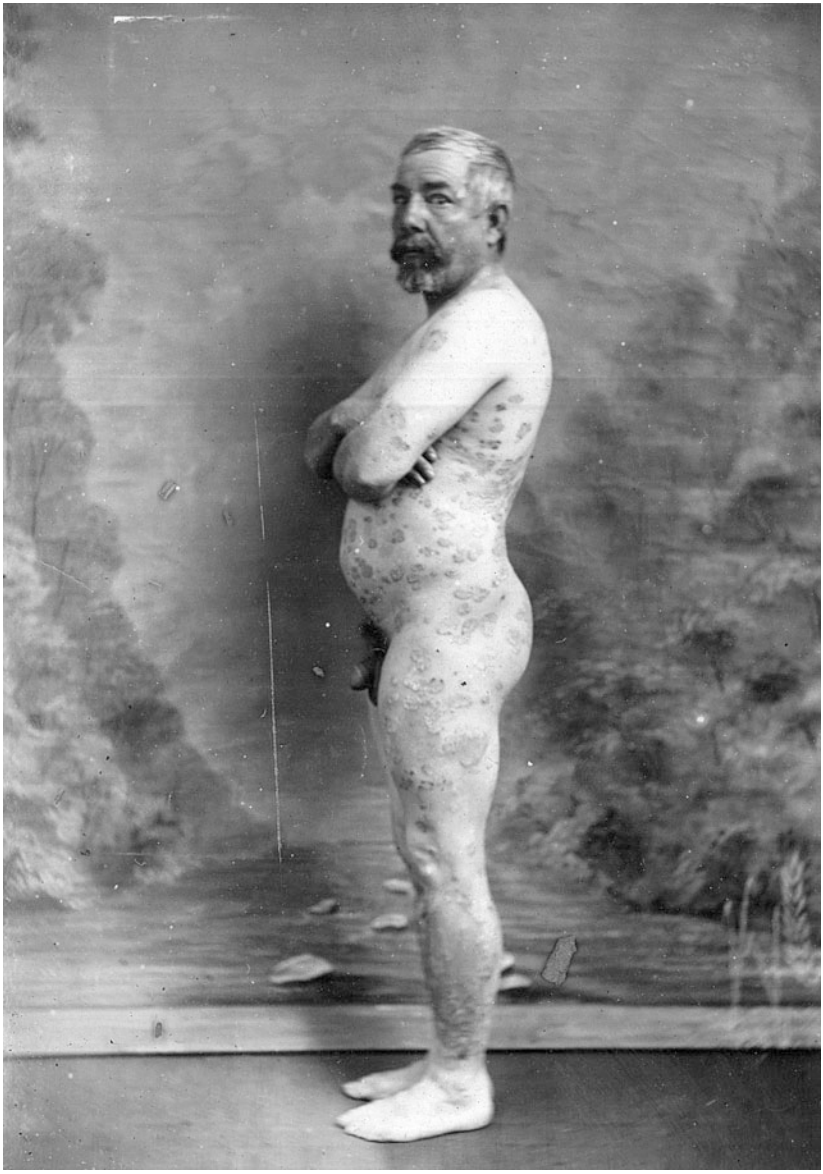


Fig. 2 William T., photographed while suffering from severe psoriasis (1895). Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1111

the body's surface and tested the doctor's medical skill with its many manifestations. Throughout the nineteenth century, the specialism of dermatology developed significantly, building on its late eighteenth-century origins. Between 1819 and 1899, 30 hospitals dedicated to skin diseases were founded in Britain.[56] There was greater professional organisation of dermatologists both in Britain and elsewhere: The Dermatological Society of London was founded in 1882 and the American Dermatological Association in 1877. From its inception, dermatology was an intensely visual specialism: Robert Willan's 1798–1808 volume, *Description and Treatment of Cutaneous Diseases*, was richly illustrated and dermatologists enthusiastically employed new technologies like photography in their work throughout the century. Jean Louis Alibert, a French physician particularly interested in diseases of the skin, was explicit in his comparison of the hospital to the theatre—though he also recognised that the audience's affective reaction to what they saw was an important element of medical practice.[57] Similarly, the Dermatological Society of London saw the illustration of skin disease—via the exhibition of living patients or models and illustrations—as one of its main objects.[58] Portable visual depictions of disease like the photograph proved vital in exchanging information with other specialists across geographic, language, and even class, barriers. For American dermatologist George Henry Fox, studying skin diseases without individual cases and illustrations was "like the study of osteology without bones, or the study of geography without maps."[59]

Dermatology went hand in hand with another expanding specialism at this time: venereology. The close connection between the two was exemplified in journals such as the *American Journal of Syphilology and Dermatology*, founded in 1870. In the link between dermatological affections and venereal disease, syphilis was central. The dermal manifestations of early syphilitic infection—small ulcers or sores, usually around the genitals, and later a blotchy rash and warty growths—had long been recognised, but it was only in the 1840s with the work of Austrian dermatologist Ferdinand Ritter von Hebra that it came to be clearly separated and recognised as different from leprosy.[60] Awareness was growing in the second half of the century of the possible causes and modes of transmission of skin conditions. The skin was increasingly imagined as a mediating surface, providing drainage for the body but also vulnerable to attack from external sources.[61] This sense of the skin as a porous barrier could be seen

in dermatologist Erasmus Wilson's 1845 book *Healthy Skin*, a volume for the lay reader that emphasised the importance of personal hygiene. Wilson was a prolific writer on dermatology, penning a series for *The Lancet* in 1850 on the cutaneous manifestations of syphilis within which he emphasised the various affections of the skin that syphilis could not only give rise to, but also imitate.[62] Syphilis had long been recognised as "capable of producing almost every form of eruption" and for this reason it posed challenges to doctors seeking to make a sure diagnosis.[63] Psoriasis like that suffered by William T. was said by some to be frequently mistaken for syphilis,[64] but it was explicitly aligned with that disease by others. Jonathan Hutchinson—well versed in the study of both dermatology and venereology—suggested that psoriasis was "a frequent result of a remote taint of syphilis"; George Henry Fox thought that in most cases of psoriasis there was an underlying "morbid condition of the economy, an ill-defined something, deeper than the scaly patches."[65] This sense that the skin could provide clues to past infection, but also point to deeper-rooted hereditary taint, was not unusual in dermatological circles at this time.

Alongside the increasingly meticulous classification of skin diseases was a recognition that not all conditions were caused by infection or trauma to the skin. Psoriasis, for example, was suggested to be dependent on a degree of predisposition by Heinrich Koebner in 1872.[66] This co-existence of predisposition and external influence in disease aetiology was a recurring theme in late nineteenth-century psychiatry. Many diagnoses at the West Riding betrayed this: William S., a 34-year-old labourer admitted in 1885, was diagnosed with general paralysis attributed to a "predisposing cause" of "hereditary influence" and an "exciting cause" of "alcoholic excess."[67] Assigning multiple causations to a disease may also have been partly due to the difficulty of obtaining reliable patient histories upon admission. The physical and mental condition of many general paralytic patients—confused, incoherent, and sometimes physically unable to speak—made it difficult to obtain clear information from them. In such cases the body could be a valuable source of information for the doctor.

The Skin in General Paralysis

That the skin could tell of latent vulnerabilities and past lives was encapsulated in Woods Hutchinson's statement in his 1901 *Studies in Human and Comparative Pathology*, that "[t]he skin has suffered many things …

and has been seriously misunderstood clinically, simply from the fact that it is the most external and superficial of our organs."[68] Hutchinson's recognition that the skin "suffered many things" is of particular relevance to the skin of patients with general paralysis and syphilis. In the asylum, as this section will discuss, the skin could tell stories: of past occupations and accidents, of previous infection, and of the state of the body's interior.

The search for markings on the body's surface began upon admission to the asylum, with patients bathed before being assigned to a ward. Bathing served an important hygienic function in large asylums, removing dirt and lice. James F., a colliery deputy, was said to be "very dirty on admission … [and was] warm-bathed & put to bed in the sickroom."[69] James W., a general paralytic patient, was admitted to the Asylum in 1899 "in an extremely neglected, filthy & verminous condition, the skin yellowish brown colour shewing numerous spots & scratches resulting from pediculi [lice]."[70] Bathing served a double purpose, as the cleaning of the patient's body also revealed any scars, tattoos, injuries, or bruises. The West Riding's Regulations for Officers of 1909 reveals bathing to be a methodical and meticulous exercise: the patient was to be "carefully undressed, and any bruises, marks, injuries, or eruptions on his person, are to be looked for and noted."[71] Tattoos were viewed as useful identifying marks and were often recorded in some detail in casebooks. James Thomas N., a 28-year-old scavenger, was noted to have a ship on his chest, a "shield & spray" on his right upper arm, "bracelets," and a "tombstone & spray" on his right leg.[72] The noting of the marks of injury served, as I will discuss in more detail in Chapter "Bone", to absolve medical attendants of blame in cases of accident in the asylum, but it could also serve a clinical function in revealing the signs of past infections.

Early syphilis treatment, such as that offered by the London Lock hospitals, may have healed or lessened the severity of the initial sores and eruptions of the disease, but it did not eliminate them entirely just as it did not cure the disease. The scars that often remained after topical treatment with mercury were regularly searched for by asylum doctors to determine past syphilitic infection. Those patients who had not sought treatment could also exhibit significant scarring. In many cases, despite the patient's denial of the fact, a history of syphilis could be read by the asylum practitioner in "the crescentic outline, the dusky margin, the depressed circular scar" on the patient's body.[73] Standing the patient in a brightly lit room, or using a mirror to reflect light accordingly, examination of the mouth, tongue, and throat could reveal old scars that were "silent witnesses of the

greatest value."[74] The body spoke of what the patient would or could not: although George S. "denie[d] syphilis … he [had] a well marked scar on the penis."[75] Fred H., whose initial diagnosis of imbecility was replaced with "dementia of GP" not long after his admission, was noted to have a "distinct history of syphilis–old scars present on edge of tongue & penis."[76] Thirty-two year old George W., suffering from a syphilitic rash, was carefully photographed—a full body shot, as well as close-ups of his torso and back—with the photographs (from life) making their way into the post-mortem records after his death just over two years later.[77] The skin of patients could also reveal something of their personal history and working life. George C., a 52-year-old labourer admitted to the West Riding Asylum in 1895 was observed to have "Numerous coal pigmented scars about [his] face & body … got in the pit."[78] Albert Walter S.'s skin was roughened, a condition linked by the doctor to Albert's occupation of blending coloured yarns.[79] The face of Joseph S., a fisherman, was marked by smallpox, and he was also noted to have "linear scars from flogging on [his] back."[80]

As well as external conditions experienced by the patient, the skin was viewed by dermatologists (and other doctors) at this time as a means of understanding much deeper goings-on inside the body. There was increasing recognition in the late nineteenth century that skin conditions might be aligned with mental or neurological disorder: the Dermatological Society of Great Britain and Ireland attracted a wide variety of doctors into its membership, including the neurologist John Hughlings Jackson as well as several venereologists. With skin identified as an organ with a complex nervous arrangement, asylum doctors began to turn their attention towards it. A number of 'dermato-neuroses'—skin conditions linked to emotional states—were identified by doctors specialising in dermatology, including the suggestion of a relationship between grief or fear and impetigo.[81] At Sussex County Asylum Patrick Nicol made a number of observations of patients with the assistance of Head Attendant Miss Buckle, compiling a list of the affections suffered. Most of the conditions that he found were minor temporary afflictions, such as eczema, though he also drew attention to some more unusual conditions, including the "sanguineous heel of the insane" (a build-up of blood in the foot).[82]

In general paralysis the surface of the body had long been recognised to indicate something gone awry, with the facial expression offering one of the earliest indications of the disease. West Riding patient Adolph K. "at times … smile[d] or laugh[ed] in a beaming jovial manner, strongly suggestive of

General Paralysis"; Thomas H. had "a pleased beaming expression of countenance & well marked G.P. Physiognomy."[83] This concern for the facial features of general paralytic patients drew upon older ideas about physiognomy and mental disease—the idea that insanity betrayed itself in an individual's facial features—but also genuine changes to muscle tone that altered the skin's appearance. As general paralysis progressed, the features of the face became flabby, the skin took on a greasy sheen, and the lines of expression became both erased (around the mouth) and enhanced (on the forehead), leading to a distorted facial balance and a strange mask-like appearance that many doctors commented on in the disease. As well as these changes to the skin and muscle tone, general paralytic patients were said to be prone to a whole host of unusual skin conditions. The *Journal of Mental Science* (*JMS*) recounted the case of one patient who had been observed to have darkening skin of the eyelids, which increased until "a narrow, black band crossed the upper part of the nose"—this remained for seven days before fading.[84] "Pemphigus blebs" (blisters) were described in several cases of late-stage general paralysis—claimed by one investigator to be the result of nerve atrophy.[85]

Besides visual anomalies, some doctors held that the skin of insane patients emitted unusual odours, described by one observer as a "mousy smell."[86] Prussian psychiatrist Heinrich Laehr suggested this odour was due to a greater secretion of sweat, and indeed strange patterns of perspiration were also noted.[87] William Julius Mickle, Superintendent of London's Grove Hall Asylum, reported a case in which a general paralytic patient of his had experienced significant perspiration limited to the right side of his face.[88] The skin was credited, then, with the potential to reveal deep disturbances within the body, with the insane imagined more prone to specific affections than the general population (a 1904 study of inmates at the Manhattan State Hospital in America claimed that "malignant growths" were twice as frequent among insane, as opposed to sane, populations[89]). Relating a case of postepileptic hysteria in 1898, F. Graham Crookshank of the Northampton County Asylum noted that the chief interest of the patient's case was "due rather to his cutaneous than his mental eccentricities": his skin was covered with warts and growths, and he had patches of psoriasis on his knees and elbows. Crookshank used the "correlation of the insane diathesis with cutaneous abnormalities" to suggest that such skin affections might be an indication of abnormal mental states.[90] Indeed, phenomena such as the unilateral sweating witnessed by Mickle suggested—as research on localisation of the brain developed—

something awry in the brain substance, with the sweating side of the body indicative of a brain lesion or nervous anomaly. An experiment on a horse by physiologist Claude Bernard in 1851, for example, had shown "that division of the cervical branch of the sympathetic [nervous system] … caused increased perspiration on the corresponding side."[91] Neurologist Charles-Édouard Brown-Séquard, in a series of lectures in 1876, suggested that simple lesions of the brain substance could cause marked changes in distant parts of the body. He cited the findings of Jean-Martin Charcot, who had noticed that bedsores developed on the opposite side of the body to the side of the brain found (at postmortem) to be affected by organic disease.[92] Alongside localisation studies, by the end of the century skin specialists were also identifying a number of 'dermato-neuroses': skin conditions of nervous origin.[93] These ranged from relatively minor stress-induced eczema to the marked symmetrical skin lesions seen in hysterics at the Salpêtrière; such conditions were often assimilated into contemporary discussions about self-inflicted injury that continued into the twentieth century, as doctors struggled to distinguish between dermato-neuroses and self-harm.[94]

As well as the visual evidence of the skin, its receptivity to external stimuli was also recognised as a useful marker of the progress of disease by asylum doctors. Many patients with general paralysis suffered from diminished, heightened, or otherwise distorted bodily sensations. In the early stages of the disease, patients might experience hyperaesthesia—a state in which "Ordinary, painless, impressions [became] painful; and painful ones agonizing."[95] Later, physical sensations tended to be deadened, making it difficult for patients to walk normally or carry out basic physical tasks that required holding on to an object such as a pen or a button. Upon admission, many general paralytic patients were tested both in regard to their sensibility to pain and general sensation. Aesthesiometers, caliper-like tools that measured the distance between which two points on the skin could be distinguished, aimed to quantify a patient's tactile sense. Benjamin U., admitted to the West Riding in 1891, had the sensation in his upper and lower limbs and face tested with this instrument. The examination was carried out the day following his entrance to the Asylum because, immediately upon admission, he "appear[ed] to be in considerable suffering" after providing a vivid and emotional account of his visual hallucinations.[96] Instruments like the aesthesiometer were just one way of assessing patient's sensations, and the Asylum often employed simpler tests that did not require specialist equipment. Joseph K. was unable to feel the

floor with his right foot, and had anaesthesia of the skin on the right leg, "tested by pinching or pricking"; the skin of his right forearm was also completely insensitive.[97] Another patient had "to reflect some time before deciding that two contiguous toes [were] being touched" by the doctor; one had a test tube placed against their skin and was asked to determine if it was filled with hot or cold water; another was asked if he was aware "whether he [stood] on board or carpets."[98] When employed in cases of general paralysis, these tests usually found significantly diminished and sometimes wholly absent sensation on the surface of the skin. This lack of sensation could easily lead to accidents, as general paralytic patients burned themselves on hot water bottles or radiators, or injured themselves in other ways. A lack of pain seemed to be a factor in 44-year-old Rawnsley A.'s perpetual gnawing at his finger to the point of producing an open wound that the doctor feared would become gangrenous.[99] This was a habit noted by Mickle to have resulted in several amputations among the general paralytic patients he had seen. Most startlingly, he claimed that some of these amputations were performed without anaesthetic due to the complete lack of sensation experienced by the patient, demonstrating just how far diminished sensation could advance in cases of general paralysis.[100]

The sense of alienation from one's body in general paralysis is frequently suggested in the supposed delusions of patients recorded by doctors in the casebooks. Although such delusions were not exclusive to general paralytic patients, many doctors recognised that delusions relating to the body were especially frequent among this group. Bryan H. declared that he had "no throat heart or liver" and that "his bones have been taken out to build other people his ribs have been taken out to build the children they make in [the] asylum and gutta percha has been put in their place." Referring to two other patients on the ward, Bryan told the doctor that "both those bodies belong to me."[101] George Savage explained cases like this with the analogy of the miller who could not sleep when the incessant noise of his mill was stopped, reasoning that "the general paralytic becomes conscious of his visceral sensations when these are cut off."[102] General paralytic patients could experience specific and often startling sensations alongside a more general anaesthesia: pricking of the skin, a sensation of electric shock to the head, and an unusual bodily heaviness or buoyancy were typical complaints. Many of these sensations were described in admission interviews in a way that could complicate the boundary between reality and imagination, as patients searched for ways to articulate their bodily experiences. As historian Brendan Kelly has noted, apparent delusions might—despite their 'false' nature

—"reflect truths, unspeakable truths, in disguised or metaphorical form."[103] James T., a suspected general paralytic admitted to the West Riding in 1875, was said by the doctor filling in his reception order to be subject to delusions, one of which was that "the flesh was dropping off his bones." Upon admission, however, James explained to the Asylum staff that this statement was an analogy that he had used in attempting to describe numbness in his toes, illustrating the gap that could exist between lay and professional language in a medical context.[104] The role of such sensations in the production of hallucinations and delusions—whether actual or merely interpreted as such by doctors—was recognised by Mickle:

> Here is a fertile field for the generation of hypochondriacal and melancholic delirious conceptions. The sensory perversions might conveniently be spoken of as hypochondriacal illusions. Under that head, and under the hypochondria of g.p., have they been described; particularly as, owing to the mental state of the patients, these perverted sensations are difficult to examine.[105]

On seeing patients suddenly shriek or declare that they had been attacked, doctors and attendants had to keep in mind that such outbursts might be due not to hallucination, but to painfully tangible physical and mental events. In some cases changes to the body—particularly visible skin affections—were interpreted by patients in light of existing persecutory delusions. Edward L. was noted to have a small sore on his leg, telling the doctor that it was caused by men blowing darts at him at night that had perforated the skin.[106] Similarly, a case of ecchymosis (bleeding beneath the skin causing a bruise-like appearance) reported in the *JMS* related that the "small purpuric spots" that had appeared on a patient's skin following an episode of excitement were "promptly fixed on [by her] as evidence of poisoning."[107] Pellagrous insanity (the mental disturbance resulting from vitamin B deficiency), in which the sufferer's skin may burn or itch as well as presenting severe lesions, could also lead to delusions of "being burned, of sorcery, and of persecution."[108] The skin was a surface, then, through which patients made sense of their contact with, and place in, their immediate surroundings. In general paralysis, the changing sensitivity of the skin limited the sufferer's interaction with and understanding of these surroundings, causing pain or a dangerous loss of sensation. At the same time, this altered sensation was investigated by asylum doctors in the hope of glimpsing the inner workings of the body and the disease that lay beneath the surface of the skin.

The Skin as Site of Surgery and Therapy

Just as the surface of the skin could conceal as well as reveal the body's inner workings, the surface of the photograph represents both the significant and the insignificant, unwittingly preserving facts considered too mundane to be recorded in written documents. In addition to saying something of the photographic practices of the asylum and of patient's conditions, the photograph reveals something else: the presence of asylum staff. In the West Riding album, there are four instances in which we can see the hand (and in two instances face) of an attendant or doctor encroaching into the frame. An elderly patient, Mary L., is touched on one shoulder by someone out of shot as her picture is taken on the Asylum grounds; it looks like a gentle touch, a momentary encouragement to remain seated for the duration of the photograph, and the fact that I feel compelled to read such a small fragment of the image in this way speaks of the significance of the seemingly insignificant. Today, we tend to judge the presence of anything besides the object of the photograph as a technical failure, yet the limited editing ability of early photography means that these unwitting glimpses beyond the photographic frame are often retained, offering the historian extra information.[109] In attempting to frame a subject, and to omit those people or things around them, the photograph often succeeds in drawing attention to those intended omissions. Rory du Plessis, discussing the photographic records of South Africa's Grahamstown Lunatic Asylum, has described how photographs may capture—despite their clinically oriented aims—acts of resistance by subjects. In the Grahamstown pictures, patients look away, close their eyes, or are depicted actively straining against the hands of attendants. The photographic details that "strike and pierce" du Plessis are "how the postures, gestures and facial expression of the patients reveal resistance," highlighting that the act of taking a photograph can never be completely neutral.[110]

Even as we recognise the agency of those patients who display resistance to being photographed, it is also important to recognise that the presence of 'others' (attendants' hands, for example) in asylum photography is not always straightforwardly readable as coercive or restraining. Illustrating a 1900 *JMS* paper on skin diseases in the insane was a photograph of a woman with unusual skin pigmentation. Looking into the camera, she clutches the hand of someone next to her with both hands; she appears to be experiencing some trepidation about the photograph being taken, and holds on to someone out of shot for reassurance.[111] Of the four

photographs in the West Riding album that depict the presence of attendants, three illustrate cases that were of especial interest to doctors on account of the conditions suffered by patients and their subsequent treatment. All involve the surface of the skin and, in following the stories behind these photographs in the final part of this chapter, it is possible to elucidate three further elements of asylum practice: the challenges of caring for bed-bound and frail patients, the carrying out of surgical procedures, and the introduction of phototherapy for the treatment of skin conditions.

Two of the four photographs depict Elizabeth B., a long-term resident of the asylum who had been admitted in 1871. The two photographs seem to have been taken at the same time and depict the severe bedsores on the back of Elizabeth's knees. With Elizabeth lying in bed, and clearly frail, displaying these sores to the camera necessitates the assistance of a nurse and another attendant or doctor, both of whom can be seen in shot as they lift Elizabeth's legs up from the bed. The presence of these staff in the photograph testifies to the challenges involved in caring for patients like Elizabeth, described in her records as restless and destructive, as well as the potentially harmful consequences of patients remaining bed-bound for long periods of time. Elizabeth's bedsores were a long-standing issue. In the Asylum's Register of Mechanical Restraint—a legal requirement under the 1890 Lunacy Act—she accounts for a large number of the entries, being regularly placed in either leather gloves or long sleeves to prevent her interfering with the dressings applied to her bedsores and, it was implied, to check her general "destructive" tendency.[112] A casebook entry in January 1895 recorded that she had "two sores on [the] front of [her] left knee which [were] being dressed daily" and some "very unhealthy looking" sores behind both knees. A month later one of these had extended to "nearly 2in. long, [the] subjacent tendons being exposed & the sores covered with a nasty slough." Elizabeth was placed in long sleeve restraints and by June the sores were said to be "quite healed."[113] The photograph was likely taken before this period of restraint commenced, offering vivid visual proof of its necessity. In Elizabeth's case, however, her relief was not to be permanent: upon her death the following year she was noted to again have extensive bedsores across her body.[114]

While Elizabeth was not suffering from general paralysis, bedsores were a widespread problem in the asylum, in many cases as a consequence of the asylum environment itself. Bedsores caused by long periods spent in bed posed serious problems, with the most severe instances leading to the destruction of ligaments, thrombosis of the limbs, joints, and internal

organs, and septicaemia. Bedsores were said to be an important contributory factor in the death of Adolph K., a death "hastened by suppuration at the seat of [a] fracture, and by large bed-sores."[115] General paralytic patients were especially vulnerable to bedsores as the disease progressed, partly because of their lack of mobility and partly, some suggested, as a result of an innate degenerative tendency. Mickle listed bedsores alongside boils, zoster crops, haematoma of the ear, and carbuncles as common features of the condition.[116] In some cases water beds were used in order to prevent or alleviate bedsores, or the patient swaddled in layers of cotton wool and flannelling. Bedsores could also increase the possibility of patients contracting erysipelas, a streptococcal infection occurring when bacteria enter the body via cuts or broken skin. Erysipelas was usually treated by painting the skin with a solution of picric acid, or the patient isolated, but in some cases it called for more serious intervention. James P., a weaver who had been admitted to the asylum in June 1898, developed phlegmonous erysipelas on his left leg in March 1902. He was regularly sponged down to reduce his alarmingly high temperature, before "five long incisions were made in the leg" and antistreptococcus serum injected. It was a futile exercise: James died a few days later from septicaemia.[117] Erysipelas was an infrequent but noteworthy cause of death among asylum patients, especially among general paralytics who were apt either to involve themselves in fights with other patients or fall when unsupported, leading to cuts and abrasions that were open to infection. A coroner's inquest in 1883 attributed Joseph P.'s death to both erysipelas and general paralysis, noting that the erysipelas was the consequence of his fighting with another patient and receiving abrasions to his nose which became infected. His subsequent treatment had also been complicated by his persistent removal of his dressings, and this appeal to the destructive tendencies of general paralytics when explaining deaths was not uncommon, as I discuss further in Chapter "Bone".[118]

Another photograph in the West Riding album that, like the images of Elizabeth B., calls attention to a physical condition while simultaneously revealing others outside the frame is that of William B. William's right arm is held steady by someone outside the frame in order to fully reveal the large tumour above his elbow. This inclusion of hands in the composition can be seen in much nineteenth-century medical photography, serving to pose the patient's body and draw attention to the condition depicted, but also to introduce a trace of professional medical attention and care.[119] William, 50 years old, had had the tumour for around 20 years—causing

sleeplessness and significant anxiety—but it was only on admission to the Asylum in 1894 that he received proper medical attention. Doctors asked William's son for permission to remove the tumour, by that time an alarming 12 inches long and 6 inches wide, but this was refused.[120] We have relatively little information about the practice of surgery within the nineteenth-century asylum, yet the West Riding's casebooks and annual reports demonstrate that it was a vital part of large psychiatric institutions. The need for surgical intervention within asylums was graphically highlighted in an 1858 article by D.F. Tyerman, Superintendent of Colney Hatch, in which he described various emergency situations involving suicide attempts by patients. In 1834 he had prevented the death of a male patient who cut his throat with a knife during dinner, but he was also called to attend situations in the immediate neighbourhood, including a man who had cut his throat in a nearby hotel.[121] As institutions that were typically placed some distance from urban centres, Tyerman's anecdote demonstrates how vital medical and surgical skill could be in asylums. J.H. Sproat, in 1899, related four cases of surgical intervention that had necessitated calling in outside help because staff at the Somerset and Bath Asylum lacked the necessary skills.[122] In some cases, though, local doctors proved reluctant to offer their services to institutions that lacked dedicated operating facilities, no doubt fearing any ensuing coroner's inquests. In large asylums, then, it was crucial to have the on-site staff and facilities to deal with medical emergencies, and to perform routine operations.

Many asylum staff were able to perform minor surgical procedures, as well as major ones: after gangrene set in following a fall and a fracture to her leg in December 1883, West Riding patient Rhoda R. had her leg amputated in the Asylum.[123] Before undertaking such operations, it was usual for the Asylum to consult with any available family members, who were often reluctant to surrender their loved ones to the doctor's knife. Indeed, it was only after an ulceration on William B.'s arm became increasingly foul, discharging a large amount of pus, that his son finally granted permission for the tumour to be removed. Four months after admission, the operation was carried out under antiseptic conditions and was followed by a marked recovery in William's mental as well as physical condition. Medical Officer Frederic Hearder, recounting the case in the *JMS*, was emphatic in attributing William's melancholia and delirium to the tumour, stating that "the tumour produced insanity, and … the removal of the cause was followed by mental and bodily recovery." Indeed, William improved sufficiently well to be discharged "on probation" two months

after the operation (fully discharged a month later) and a year on was reported to be well and "at work every day."[124]

The Asylum was functioning here rather like a general hospital in its surgical intervention and follow-up, but William's apparent mental improvement was seen by Hearder as evidence for the close correlation between bodily and mental health. Treatment for a variety of mental and physical ailments had traditionally been done via the skin, blistering or inflaming it with caustic agents. Blistering was used by Pritchard Davies of Kent County Asylum, who was struck by the improvement in a general paralytic patient after the appearance of a carbuncle which had "pulled him down rapidly" before a recovery of strength. Consequently, he employed iodine as a blistering agent applied to the spine and neck, "keep[ing] up well-marked counter-irritation for weeks or even months together."[125] Several asylum doctors posited that naturally occurring skin conditions could have a similar effect. Edwin Goodall and F. St John Bullen, both of whom worked at the West Riding, reported some "remarkable" cases under their care in which an episode of erysipelas had precipitated a crisis and subsequent cure of a mental affection.[126] Although many asylum operations tended to be described as urgent measures—to treat an injury or remove a life-threatening tumour—surgery could also be viewed as a route to, if not complete mental recovery, then at least general improvement in quality of life. French doctor Robert Picqué considered this in a 1907 article 'The Needs of our Time in Respect of the Surgical Treatment of Insane Patients.' Picqué suggested that "restoring the use of a limb [for example], may exercise an indisputable, though indirect, action towards the restoration of mental health" by allowing the patient to resume a more active life.[127] In William B.'s case, the surgical intervention of the West Riding staff had clear beneficial effect, allowing him to return to his home and work.

The marking of the skin in therapeutic activities, though, was seen by some patients as analogous to the stigmatising marking of the skin by disease. Relating a case of myxoedema (a swelling of the skin caused by an underactive thyroid) in which the patient was to receive hypodermic injections of thyroid extract, Cecil Beadles of Colney Hatch noted that she "objected strongly … not because [the injections] hurt, but because, she said, she was now 'marked' for life."[128] Greater value appears to have been attached to pristine skin in the nineteenth century, with individuals less willing to mark the skin during attempts to bring about change or recovery, and less of a perceived need to 'open up' the body to allow the

escape of the harmful humours thought to cause disease.[129] By the later years of the century, an alternative was available to some patients—though not without its own attendant risks. In the final years of the nineteenth century, and early in the twentieth, the treatment of skin conditions with X- and ultraviolet-rays (phototherapy) was viewed as a useful alternative to surgical intervention, avoiding scarring and doing away with the need for potentially dangerous anaesthetic. Phototherapy was most commonly employed in the treatment of lupus (tuberculosis of the skin). Throughout treatment, before and after photographs were an effective way of charting patient's improvement, as well as "systematising" phototherapy and its results.[130] Another album in the West Riding archive attempts to document the treatment of skin disease in this way. Dating from c.1906–1908, this album provided space for before and after portraits of patients treated for various skin complaints, mostly lupus but also occasional cases of syphilis. Few after images are present, however; many of the patients in this album were outpatients in the acute hospital, with their return for follow-up treatment difficult to guarantee and taking place within an environment that was often too busy to consider taking regular photographs. The patients were treated with a 'lupus lamp' acquired by the Asylum in 1902.[131] In the 1890s, Niels Ryberg Finsen of Copenhagen had developed treatment for lupus using a carbon arc lamp, receiving the Nobel Prize for Physiology or Medicine in 1903; his work was first translated into English in 1901.[132] The West Riding was likely one of the first psychiatric institutions in Britain to install equipment for phototherapy. By 1925 five mental hospitals had such equipment and an inquiry by the Medico-Psychological Association in 1928 found that 16 of 47 hospitals replying to their circular were able to provide light therapy to their patients.[133] A significant number of outpatients passed through the West Riding's acute hospital for the treatment of a range of skin conditions; in 1903 alone, there were 1913 light therapy sittings by 86 outpatients.[134] Staff and inpatients also benefitted from this treatment: indeed, the first patient to receive treatment with the lupus lamp was a night attendant who had suffered from the affection on his wrists and hands for the previous five years, and a few months later its use was extended to seven Asylum patients.[135] The lamp continued to be used to great acclaim in the first decade of the twentieth century. Mary C., an inpatient, underwent the treatment for lupus between 1906 and 1907. Her before photograph, showing the raised patch of skin on the back of her hand, is unaccompanied by its after companion, but after a year of treatment she was noted to be

"nearly better" in the casebook.[136] Not all could be persuaded of the lamp's virtues: Sarah C., whose face was severely scarred by lupus, was "disinclined" to undergo phototherapy, saying that she "could soon cure" it herself by going outside.[137]

In this chapter, by following the patients, stories, and various surfaces depicted in the photograph album, we have explored the role of photographs in the history of psychiatry, as well as the medical and pathological preoccupations of contemporary asylum doctors. The West Riding album makes clear that patients' bodies were accorded significant attention, but also illustrates that patients were not simply viewed as curiosities without receiving therapeutic attention. Photographs such as those of Elizabeth B.'s bedsores, or Mary C.'s lupus, were an important part of systems of care, providing a visual record of a patient's condition and the results of treatment. Though often viewed as institutions set apart from medicine 'proper' in the nineteenth century, the West Riding Asylum was quick to take advantage of new technologies and methods from other fields, some of which (such as phototherapy) served to connect the asylum to broader local communities via outpatient treatment. This eagerness to draw upon other medical and scientific fields, and the potential of the external body to indicate inner physical (and, in the case of syphilis, moral) states is a theme continued in the next chapter, as we move onto another part of the bodily fabric deemed particularly interesting by asylum doctors: muscles.

Notes

1. WYAS C85/1111 Photographs of male and female patients suffering from various complaints, deformities etc. (n.d.).
2. Jennifer Green-Lewis, *Framing the Victorians: Photography and the Culture of Realism* (Ithaca: Cornell University Press, 1996), 48.
3. Sander L. Gilman, *Picturing Health and Illness: Images of Identity and Difference* (Baltimore: Johns Hopkins University Press, 1995), 31.
4. Eric Margolis, "Mining Photographs: Unearthing the Meanings of Historical Photos," *Radical History Review* 40 (1988): 35.
5. See John Tagg, *The Burden of Representation: Essays on Photographies and Histories* (Basingstoke: Macmillan Education, 1988), 88.
6. Katherine Ott, "Contagion, Public Health, and the Visual Culture of Nineteenth-Century Skin," in *Imagining Illness: Public Health and Visual Culture*, eds David Serlin, Liping Bu and Lisa Cartwright (Minneapolis: University of Minnesota Press, 2010), 93.

7. Luc Pauwels, "A Theoretical Framework for Assessing Visual Representational Practices in Knowledge Building and Science Communications," in *Visual Cultures of Science: Rethinking Representational Practices in Knowledge Building and Science Communications*, ed. Luc Pauwels (Hanover: University Press of New England, 2006), 19.
8. Mechthild Fend, "Bodily and Pictorial Surfaces: Skin in French Art and Medicine, 1790–1860," *Art History* 28, no. 3 (2005): 313.
9. Mechthild Fend, "Portraying Skin Disease: Robert Carswell's Dermatological Watercolours," in *A Medical History of Skin: Scratching the Surface*, eds Jonathan Reinarz and Kevin Siena (New York: Routledge, 2016): 149.
10. Jennifer Tucker, *Nature Exposed: Photography as Eyewitness in Victorian Science* (Baltimore: Johns Hopkins University Press, 2005), 3.
11. Jennifer Tucker, "The Historian, the Picture, and the Archive," *Isis* 97, no. 1 (2006): 116.
12. Allan Sekula, "The Body and the Archive," *October* 39 (1986): 33.
13. Simon Cross, *Mediating Madness: Mental Distress and Cultural Representation* (Basingstoke: Palgrave Macmillan, 2010), 58.
14. WYAS C85/1/12/3 Annual reports of the Medical Superintendent (1868–1879). *Report of the Committee of Visitors and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum, for the year 1870* (Wakefield: B.W. Allen, 1871). Report of the Medical Superintendent, 25.
15. WYAS C85/1/12/6 Annual reports of the Medical Superintendent (1894–1904). *Report of the Sub-Committee and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum, Wakefield, for the year 1896* (Wakefield: West Yorkshire Printing Co. Ltd., 1897). Copy of the Report of the Commissioners in Lunacy on the West Riding Pauper Lunatic Asylum at Wakefield, 38.
16. WYAS C85/1/12/6 Annual reports of the Medical Superintendent (1894–1904). *Report of the Sub-Committee and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum, Wakefield, for the year 1897* (Wakefield: W.H. Milnes, 1898). Report of the Medical Superintendent, 13.
17. Anon., "Notes and News: Medico-Psychological Association of Great Britain and Ireland. General Meeting. Irish Division," *JMS* 43, no. 180 (1897): 198.
18. WYAS C85/1/12/3 Annual reports of the Medical Superintendent (1868–1879). Report of the Medical Superintendent, 29 Jan. 1874, 29.
19. See Jeffrey Mifflin, "Visual Archives in Perspective: Enlarging on Historical Medical Photographs," *The American Archivist* 70, no. 1 (2007): 35.

20. Edwin Goodall, "Post-Mortem Appearances (some of which were difficult to explain) of Certain Parts of the Nervous System in a Case of Spastic Hemiplegia," *JMS* 37, no. 157 (1891); William Lloyd Andriezen, "The Pathogenesis of Epileptic Idiocy and Epileptic Imbecility," *BMJ* 1, no. 1896 (1 May 1897).
21. See Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," *Social Studies of Science* 14, no. 4 (1984).
22. Anon., "Clinical Photography," *BMJ* 1, no. 1799 (22 Jun. 1895): 1402.
23. Erin O'Connor, "Pictures of Health: Medical Photography and the Emergence of Anorexia Nervosa," *Journal of the History of Sexuality* 5, no. 4 (1995).
24. See Daniel M. Fox and Christopher Lawrence, *Photographing Medicine: Images and Power in Britain and America since 1840* (New York: Greenwood Press, 1988).
25. WYAS C85/1404 Photograph of a group of medical officers, including Dr. Bevan Lewis, director (n.d.); WYAS C85/1413 Photograph of the pathological laboratory (n.d.).
26. James M. Edmonson and John Harley Warner, *Dissection: Photographs of a Rite of Passage in American Medicine, 1880–1930* (New York: Blast Books, 2009).
27. Barbara Brookes, "Pictures of People, Pictures of Places. Photography and the Asylum," in *Exhibiting Madness in Museums: Remembering Psychiatry through Collections and Display,* eds. Catharine Coleborne and Dolly MacKinnon (London: Routledge, 2011); Mike Barfoot and A.D. Morrison-Low, "W.C. M'Intosh and A.J. Macfarlan: Early Clinical Photography in Scotland," *History of Photography* 23, no. 3 (1999).
28. Brookes, "Pictures of People," 37.
29. See Edwin Goodall, "Pathological Retrospect," *JMS* 40, no. 169 (1894); WYAS C85/1/12/6 Annual reports of the Medical Superintendent (1894–1904). *Report of the Sub-Committee and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum, Wakefield, for the year 1894* (Wakefield: West Yorkshire Printing Co. Ltd., 1895): Report of the Medical Superintendent, 15.
30. Cecil F. Beadles, "The Cranium of the Insane: Osteitis Deformans and Acromegaly," *Edinburgh Medical Journal* new ser. 3 nos. 3, 4, 5 (1898).
31. WYAS C85/1/12/6 Annual reports of the Medical Superintendent (1894–1904). *Report of the Sub-Committee and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum, Wakefield, for the year 1896* (Wakefield: West Yorkshire Printing Co. Ltd., 1897). Report of the Medical Superintendent, 14.
32. Drew Leder, *The Absent Body* (Chicago: University of Chicago Press, 1990), 144.

33. Linda Nochlin, *The Body in Pieces: The Fragment as a Metaphor of Modernity* (New York: Thames & Hudson, 1994), 10.
34. Maria Angel, "Physiology and Fabrication: The Art of Making Visible," in *Images of the Corpse: from the Renaissance to Cyberspace*, ed. Elizabeth Klaver (Madison: University of Wisconsin Press, 2004), 16.
35. Jonathan Sawday, *The Body Emblazoned: Dissection and the Human Body in Renaissance Culture* (London: Routledge, 1995), 2.
36. Nochlin, *Body in Pieces*, 39–41; Karen Dale, *Anatomising Embodiment and Organisation Theory* (Basingstoke: Palgrave Macmillan, 2001), 173.
37. Angel, "Physiology and Fabrication," 16–17.
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Muscle

Extending the focus on the exterior of the asylum patient's body that was discussed in Chapter "Skin", this chapter considers how asylum doctors conceptualised and investigated the muscular system both before and after death. As researchers in psychiatric institutions began to incorporate physiological methods and instruments into their work, general paralysis was seized upon as an ideal disease for investigation. General paralytic patients suffered from a number of physical complaints—from atrophying muscles to disordered locomotion—that, at a time of increasing interest in the connection between brain and body (such as cerebral localisation), suggested that the disease did serious harm to the brain. The link between body and brain was investigated in several ways, such as searching for structural damage to the brain substance during postmortems. It was also investigated in ways that necessitated the active or passive involvement of the patient during life. Testing the patient's articulation, strength, or walking ability became a crucial part of physical examination, with many patients also leaving their own inscriptions in historical records alongside those of doctors and medical technologies. In examining physical abilities, though, doctors also found themselves confronting the rather complex issue of willpower—the control of patients over their own bodies, for example, or the frequent and seemingly purposeless thefts often committed by general paralytics. The degeneration of the bodily fabric—particularly of the muscles, which were symbolic of strong and vigorous masculinity—was a worrying illustration of the state of the brain, then, as well as a phenomenon that could have serious socio-economic consequences for patients and their families.

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Body and Brain in the Late Nineteenth Century

In August 1870, 38-year-old David T. was admitted to the West Riding Asylum having suffered a number of seizures in the workhouse. Upon admission he was observed to be nervous, unsure of where he was, and to have an unsteady, tottering gait. Throughout his stay in the Asylum his case notes regularly commented on his bodily weakness until, in January 1872, he had a seizure whilst eating some bread at breakfast and choked to death. A coroner's inquest held at the Butcher's Arms pub in nearby Eastmoor (pubs were a common venue for inquests at this time) returned a verdict of death due to an "epileptic seizure in the course of general paralysis with weak heart."[1] This constellation of factors wasn't uncommon when explaining the deaths of general paralytic patients. Whether examining the wasting of the bodily fabric, the movement of muscles during fits, or the appearance of the heart muscle after death, the state of patient's muscles was of particular interest to doctors at the West Riding in the final decades of the nineteenth century.

This interest was not confined to asylum researchers. The mid- to late-nineteenth century saw a good deal of scientific research into the nature of human muscles and reflexes. In the 1840s neurophysiologist Thomas Laycock had used the model of reflex action in attempting to explain mental diseases, and his ideas would later be developed by physiologist Marshall Hall. In Britain during the Victorian period, physiological researchers could find themselves constrained in their experiments by religio-philosophical concerns and the anti-vivisection movement, at the same time that they expressed optimism about new modes and methods of scientific inquiry.[2] Although we should be wary of organising Victorian science along simply physiological/psychological lines, by the second half of the nineteenth century many British workers in psychiatry were signed up to a somatic model of mental disease that was indebted to physiological methods and approaches.[3] In the nineteenth century, Hermann von Helmholtz's law of the conservation of energy (showing that all energy can be used for work but at some point its force will be exhausted) and Rudolf Clausius's second law of thermodynamics (as more energy is transferred, more of it is wasted) had introduced models that could be applied to both natural and man-made objects. Energy was increasingly synonymous with health, as discourses about labour and the powers of production were both 'medicalised' and extrapolated to the social arena. Clausius's concept of entropy, for instance, suggested the possibility of social decline in a modern

world that seemed to be squandering energy in all directions: progress came with concomitant risks.[4] Gerald Geison observes that nineteenth-century British physiology had a distinctly Darwinian tone embedded within it, together with a language of political economy that expressed concern for establishing normal and abnormal measures of the body.[5] Certainly at the West Riding, doctors were keen to obtain meticulous measurements of the body. The casebook record of Michael C., a 28-year-old hawker suffering from epileptic fits, meticulously listed the length and circumference of his upper and lower limbs in order to quantify the difference in size between his right and left arm. This yielded a total of 24 separate measurements, many of them demonstrating a marked disparity between his left and right sides.[6]

A general concern for bodily 'balance' was common at this time. Imagined as an entity that could easily cross the line into malfunction, the body was a finely balanced system of intakes and outgoings. This conception of the human body was by no means novel to the nineteenth century: in the sixteenth and seventeenth centuries, clockwork and automata provided an easily understandable model of how various bodily systems worked, and René Descartes had famously compared the body to a machine. German physicians such as Emil du Bois-Reymond and von Helmholtz, in the mid-nineteenth century, emphasised the usefulness of 'mathematical' methods in physiology that introduced new ways of thinking about the body—a physical object that could be understood in terms of physical and chemical laws—that would prove influential.[7] In the increasingly industrialised Victorian era, concerns for order and organisation took on a more philosophical tone as the rationalistic outlook of science and industry became central to discussions about the nature of human life itself.[8] In an era of railways, telegraphs, and mechanised production, the obvious way to discuss matters of flesh and blood was to utilise the language of industry. Metaphors appealing to modernity likened the physiology of the nervous system to the telegraph or to electricity. These concepts of industry and efficiency were also applied to muscle physiology in the second half of the century. Utilising instruments like Jules-Etienne Marey's myograph or Angelo Mosso's ergograph (both tracing and measuring muscle contraction), it was possible to produce graphical representations of the body's 'work.' Alongside other developments in the field —the identification of muscular dystrophy by French neurologist Guillaume-Benjamin-Amand Duchenne in 1868; the almost simultaneous discovery of the patellar (knee) reflex by Carl Friedrich Otto Westphal and

Wilhelm Erb in 1875; the 1876 foundation of the British Physiological Society—discussions about energy fed into a medical discourse where the body took centre stage.

This was a body that was intimately connected with the mind, and ideas about overwork or excessive expenditure of energy were being applied to mental as well as physical matters. As cerebral localisation experiments highlighted connections between the brain and the rest of the body, the brain's involvement in physical work and fatigue became a particular point of interest—and one that asylums like the West Riding were well placed to investigate. As Susan Leigh Star argues, theories about the brain that might be seen as variants of localisation theory had cropped up throughout the nineteenth century (in phrenology, for example), alternating with "diffusion theories" that viewed the brain from a more holistic angle (such as the work of Marie-Jean-Pierre Flourens).[9] It was in the 1860s and 1870s, however, that localisation theory re-asserted itself (while not completely replacing diffusionist ideas). The name that is perhaps most closely associated with this work in Britain is that of neurologist David Ferrier. After studying mental philosophy under *Mind* founder Alexander Bain, Ferrier had assisted Thomas Laycock before taking on appointments at King's College Hospital and the National Hospital for the Paralysed and Epileptic ('Queen Square'), meeting eminent neurologist John Hughlings Jackson in the latter. Ferrier was also a friend of then-West Riding Superintendent James Crichton-Browne, and visited him in Wakefield where they enthused about Gustav Fritsch and Eduard Hitzig's work in Germany that had used dogs to investigate the effect of cortical ablation (removal of portions of the brain) on movement. Agreeing that the research should be followed up, Crichton-Browne offered Ferrier the West Riding Asylum facilities, keen to prove that serious physiological and neurological research was possible in a psychiatric hospital. Ferrier began his work there in 1873, isolating 15 motor areas in the brains of monkeys (thus surpassing Fritsch and Hitzig's estimate of five). In 1876 Ferrier was made a Fellow of the Royal Society and his seminal text *The Functions of the Brain* was published in the same year.

This was a climate, then, where the relationship between brain and body was being ever more meticulously refined. For neurologists and physicians working in asylums, physical signs and symptoms were invaluable information. In their effort to elucidate the brain–body relationship, late nineteenth-century physiologists and photographers—such as Albert Londe at the Salpêtrière—turned to bodily gestures as indicators of the

brain's workings, aiming to transform these mental processes into scientific objects.[10] Housing large numbers of chronic cases, and with many patients suffering from unusual physical afflictions—seizures, paralysis, muscle weakness—institutions like the Salpêtrière were ideal sites for studying these phenomena. And with its clear commitment to physiological and neurological research, the West Riding Asylum was no exception.

General Paralysis and Muscle Wastage

In examining the brain–body relationship at the West Riding, general paralysis was an obvious model to look towards: its sufferers exhibited perhaps the most startling physical anomalies of all psychiatric patients. As its name indicated, the motor symptoms of general (or 'progressive') paralysis altered as the disease advanced. In the early stages, motor signs were subtle (lip or tongue tremors), progressing to difficulties with finer movements (buttoning the coat, writing) and an unusual gait, often somewhat 'elastic' and resembling drunkenness. In stark contrast to their bodily condition, general paralysis sufferers often held exaggerated views of their own state of health and physical abilities. Of William J., a 48-year-old widower, it was noted at admission: "He states that he has had no fits, and that he is at present in as good health as ever he was, which is manifestly untrue." William's unsteadiness on his feet, regular fits, and jerking tongue made clear that he was in fact very ill indeed.[11] As the previous chapter "Skin" discussed, general paralysis was thought to initially betray itself via the patient's skin and facial features. Several admission notes at the West Riding commented on the unusual appearance of the face of general paralytic patients. Benjamin H.'s "facial expression [was] blank owing [to] the atonic state of the muscles,"[12] whilst tremors of the lips and tongue like William J.'s were cited by almost all writers on the subject as a sure indication of the disease. These phenomena were evident immediately upon meeting the patient or came to the fore during the initial conversation with the doctor. At admission, a patient's articulation was often tested by asking them to repeat certain words: Matilda H., one of the smaller number of women (compared with men) diagnosed with general paralysis, could not "say the Alphabet, or certain words such as 'Perambulator'" and Henry S. was unable to pronounce "spectacle case."[13] Many patients were aware of their failing abilities; recording a meeting with 47-year-old general paralytic patient Selina L., the doctor noted that she was "somewhat painfully conscious of her difficulty in expressing herself."[14] As the disease

progressed almost every muscle of the body became involved in this non-performance, visually testifying to the patient's loss of physical autonomy and strength. Finally, many patients were confined to bed, due either to a complete inability to walk, or as a precautionary measure to reduce the risk of injury as they walked unsteadily around the asylum wards. Indeed, in contrast to their physical condition many general paralytic patients were prone to "a certain ambulatory mania," walking enthusiastically without any particular goal in mind.[15] Bed rest, however, often exacerbated the muscle wastage from which many general paralytic patients were already suffering.

In an 1891 article, Brislington House Asylum proprietor Bonville Bradley Fox described one of his general paralytic patients as "a magnificently made man, well able to use his excellent muscles, and knocking the attendants over like so many ninepins."[16] His interest in this patient stemmed from the fact that such physical strength was considered rare in general paralysis. Indeed, declining physical strength and motor coordination was often the stated reason for men's committal to an asylum as they found themselves unable to continue with their everyday life and work. For one West Riding patient, Henry S., the loss of power in his lower limbs rendered him incapable of continuing his occupation as a grocer, but his delusions of wealth also proved problematic for his business: he had unnecessarily ordered in 50 boxes of coal and 100 lbs of boiled beef.[17] The mental as well as physical symptoms of general paralysis were frequently implicated in the dismissal from or giving up of work: William A. was discharged by his employer due to his excited state as well as his inability to continue physical work.[18] The transformation of these patients' bodies, marked by weakened and atrophied muscles, stood in stark contrast to the 'hard' man who was active, healthy, and vigorous. Muscles were usually the embodiment of activity and energy. Alienist Charles Mercier, in *The Nervous System and the Mind* (1888), encouraged the reader to test the correlation between muscle hardness and action by extending their knee in order to feel the thigh muscle harden: "The *hardening* of the extensors when a limb [was] flexed" he said, "indicate[d] the *activity* of the process."[19] If the body was a machine that converted energy into labour power, then the body of the general paralytic patient was a broken down and rusty one. For men afflicted with general paralysis muscle wastage rapidly removed any "embodied capital" they once had, and with it the ability to participate in productive economic activity.[20] The importance of male breadwinners to families, however, meant that they often worked for

as long as possible—despite illness—and tended only to reach asylums in the late stages of disease when they were completely incapable of taking part in everyday life. For patients suffering from acute conditions this often meant a longer stay and tougher recovery than they would have experienced had they been admitted at an earlier stage. The entrance to the asylum by general paralytic patients more often than not signified the end of their participation in the world beyond its gates and, for their family, the loss of a key contributor to household income as well as a close member of the family. General paralysis was a disease, then, with significant socio-economic and emotional consequences.

Alongside these externally visible changes, in the asylum it was noticed that the bodies of general paralytic patients seemed to undergo even deeper degenerative processes. As the body was externally diminishing, deterioration took place inside the body. Postmortem reports at the West Riding Asylum conveyed an image of the body's interior as a gelatinous mass: skulls and joints thickened, nerve tissue increased, and brains softened. As patients laid in bed or took little exercise, unused muscles began to degenerate. Not only did muscles atrophy, they were described as becoming "fatty" due to the transformation of muscle into fat. One casebook record at the West Riding noted that "the replacement of muscle by fat [was] very noticeable."[21] Upon sectioning the muscles of one patient's torso at postmortem, the muscle tissue was said to "exhibit fatty infiltration & disintegration appearance [*sic*] like a mixture of red & white currant jam."[22] Specific organs too, demonstrated these processes of fatty accumulation. Hearts were "macerable and pale, externally overloaded with fat," and livers "flabby."[23] Fat had long been seen—not only inside but outside the medical arena—as an indicator of individual self-control and, as emphasised by Christopher Forth and Ana Carden-Coyne in *Cultures of the Abdomen* (2005), it had special significance for the male body. As well as the potentially feminising effects of excess body fat in an aesthetic sense, "fat male bodies … continually raised doubts about the 'masculine' capacity to conquer appetites, brave hardships, and remain 'active' in physical, sexual, and moral terms."[24] Like body fat that altered the external shape of the body, the presence of fat deep inside it signalled the presence of "parasite[s], rather than [workers], in the corporeal economy," and indeed postmortem accounts might speak of fat as an "outside substance" that looked to have been poured into the body like tallow.[25]

Similar processes to those taking place in the muscles also began to be identified at the cell level, albeit relatively slowly, as—from the middle of the century—researchers turned their attention from tissues to cells as the primary site of disease pathology.[26] At the West Riding both were the subject of investigation, and both showed degenerative changes in general paralysis. West Riding Pathologist Edwin Goodall, along with W.L. Ruxton of Wadsley Asylum (located in Sheffield and another part of the West Riding county asylum system) examined the nerves of 10 patients at Wakefield, nine "undoubtedly" suffering from general paralysis and one whose exact diagnosis remained unclear.[27] Nerve portions of two and a half inches in length were taken from the arms of patients at postmortem, hardened, and stained. In Chapter "Skin" we saw the importance of photography to both the administrative and clinical practices of the asylum, and this was a technology applied to microscopic work too. By the 1880s photomicrography had become easier and more widespread as apparatus improved. The introduction of orthochromatic plates, for example, reduced the problems previously experienced in photographing stained specimens by balancing colour tones. Two mounted photomicrographs in the West Riding pathology lab's photograph album are those reproduced in Goodall and Ruxton's published article; physiology and microscopy often went hand in hand at the West Riding, evidenced by the large number of photomicrographs in the pathology lab's album that depicted the degeneration of nerves and muscle tissue.[28] Goodall and Ruxton's findings emphasised the unusual masses of material found in affected muscle tissue: increased amounts of connective tissue, clots, increased fat, and blood vessels with thickened walls. William Julius Mickle detailed similar changes to nerve cells in general paralysis, which became "ill-defined" and "podgy" and took up stains with difficulty.[29] As we'll see in more detail in Chapter "Brain", taming the softened and damaged tissues of the general paralytic body for further investigation proved continually challenging to asylum researchers.

The largest muscle in the human body, the heart, did not escape these degenerative processes. Particular emphasis was placed on functional change—including "the belief that emotions, by disrupting the circulation and the blood flow, could cause changes in the heart's action" even if the heart itself was unaltered.[30] The heart muscle was said to be commonly altered in general paralysis. In 64% of a patient sample of Mickle's, the heart was found to be "unduly flabby, friable, or fatty."[31] The hearts of general paralytic patients tended to exhibit thickened, atheromatous, or calcareous

changes to the valves—changes that were described by Woods Hutchinson in his 1901 *Studies in Human and Comparative Pathology* as "the commonest simple structural cause of disease in the adult and senile body."[32] There was an expectation, though, that such structural abnormalities would occur more often in insane patients, many of whom seemed prematurely aged both physically and mentally. West Riding Medical Officer and Pathologist Francis O. Simpson addressed this issue in an 1898 article, 'Congenital Abnormalities of the Heart in the Insane,' tabulating the results of 4252 postmortems that had been performed over a period of 31 years. Simpson said he had found congenital abnormalities of the heart in 148, or 3.5%, of this sample.[33] The hearts of two of his patient sample, Elizabeth S. and Frances T., were photographed and added to the pathological lab album on account of them having four (rather than three) cusps to the semi-lunar valve of the pulmonary artery (Fig. 1); in another

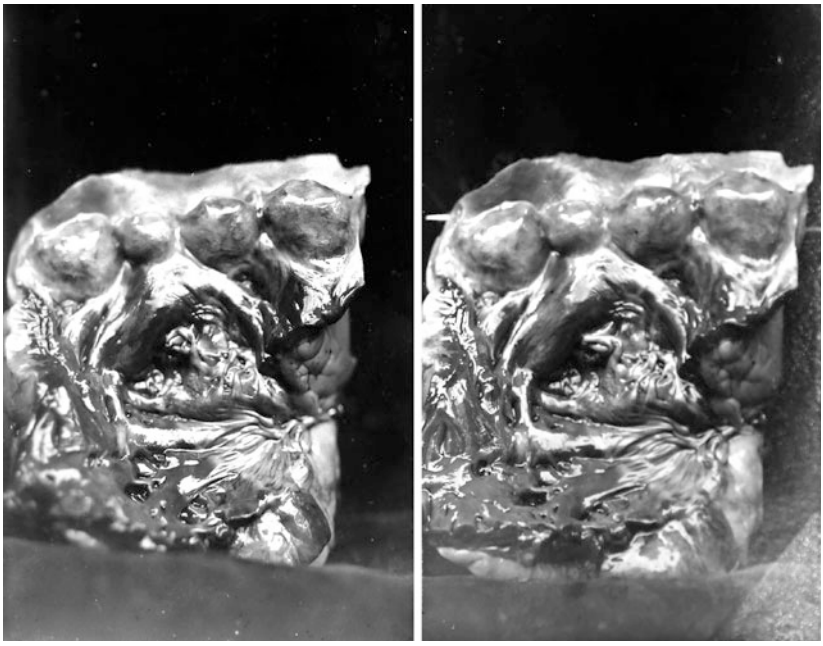

Fig. 1 Heart specimens showing anomalies of the valves, mid 1890s. Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1111

case the heart of 15-year-old John C. was preserved, along with his stomach, for the Asylum museum.[34]

As well as the degenerated or anomalous appearance of the organ that could be seen at postmortem, several asylum doctors made heart disease the subject of physiological investigation. Official statistics seemed to show a rise in the incidence of heart disease among the general population at this time, and popular knowledge of it was spreading with the condition becoming something of a 'fashionable complaint' in the second half of the nineteenth century. Popular periodicals like *The London Journal* ran accessible, easy to understand, accounts of the condition; 'A Conversation on Heart Diseases between a Physician and his Patient,' for example, highlighted the bad habits that could exacerbate heart conditions, namely over-eating.[35] Physician John Milner Fothergill suggested that disorders of the heart were also increasing in the general male population due to the struggle for success that characterised the late nineteenth century—not unlike the competitive and tense 'Type A personality' of the 1950s who was thought to be at increased risk of heart attack.[36] Heart disease was linked by Fothergill and others to minor emotional or mental changes such as irritability or personality change, and the behaviour of asylum patients appeared to offer an exaggerated version of these states. It was not unreasonable to suppose, then, that heart disease, circulatory problems, and degeneration of the organ would be prevalent among asylum patients. Indeed, Cecil Beadles of Colney Hatch Asylum was emphatic that what was "popularly known as a fatty heart [was] common in lunatics."[37]

The heart has long been an organ that "[blurs] the boundaries between cultural supposition and apparent medical fact," linked to other physical and emotional disturbances and held up as a symbolic object signifying much more than the merely physical.[38] In the eighteenth century, disorders of the heart were associated with high living and over stimulation; by the late nineteenth century, this association was still evident despite the shift towards pathological anatomy and precision measurement with instruments such as the sphygmograph to chart the pulse and blood pressure. Although the brain was the primary object of investigation for asylum researchers, it did not eclipse other parts of the body, all of which were considered to have some relationship with that organ. At the West Riding, J. Wilkie Burman tabulated the results of 500 postmortems to investigate the incidence of heart disease among the insane, reasoning that if insanity was to be cured by "removing bodily disorder" then heart disease should be a major area of investigation.[39] With more attention being paid to the

links between mind and body, the physical connections between heart and brain made it commonsensical that the state of one would affect the other. Commenting on his findings, Burman suggested that hypertrophy of the heart in asylum patients was likely due to the strain put upon the organ, comparing West Riding Asylum patients with people in the general population whose condition was attributed to overwork or mental stress. This comparison to the general population was apt, as investigators like Fothergill struggled to prove that either heart disease or congenital abnormalities were more common in the insane than the sane population. Fothergill had come to the conclusion that heart disease was actually comparatively *rare* among the insane and Burman, too, had to admit that heart disease "as a certified cause of death, [was] scarcely more common in the West Riding Asylum than in the West Riding of Yorkshire generally."[40] In addition, it was difficult to establish a chain of cause and effect with regard to heart disease and insanity: it was possible that the circulatory problems came first, altering the circulation and nutrition of the brain, or that the heightened emotions of insane patients had impacted directly upon the organ. Though the results of investigations like Burman's or Fothergill's were inconclusive regarding the prevalence of heart disease among 'the insane' more broadly, the physical state of the heart as seen at postmortem suggested that it was directly and profoundly affected in general paralysis. The degeneration, fattiness, or deformity of the heart muscle in these patients neatly paralleled their external bodily appearance and that of other body parts, from the large (muscles of the limbs) to the microscopic (nerves).

Rather like the eighteenth-century gentleman suffering from heart problems as a consequence of an overly luxurious lifestyle, general paralytic patients were personally implicated in the aetiology of their disease. Although it would be some years before a conclusive link was established between general paralysis and syphilis, doctors in the late nineteenth century made a connection between the disease and what they considered to be abnormal or illicit sexual activity, or behaviours such as excessive drinking. Patients diagnosed with general paralysis were frequently noted to have a history of venereal disease, to have been involved in a large number of sexual liaisons, or to be given to drinking to excess. William C., a police constable, was diagnosed with general paralysis that was attributed to sexual excess and syphilis, having previously been treated with mercury, and was said to have attempted rape several times before being committed to the Asylum.[41] This lack of moral self-control was mirrored in patient's

physical movements. The often unruly and chaotic body of the general paralytic patient was described in terms that suggested a lack of central control, with cells imagined as wayward 'soldiers' and whole bodies as 'armies without commanders.' An 1888 article by Charles Mercier provides an excellent example of such language, where he justifies his use of military analogy: "the whole military machinery may be actually regarded in the light of a nervous mechanism. It is by the direct action of their nerve-centres that the officers conceive and issue their orders to their subordinates."[42] Similarly, John Hughlings Jackson described the "march of the convulsion," in which the progression of the convulsive movement of a fit could be seen to sweep across the body from its extremities like troops invading a country's borders.[43] Men's bodies were being taken over by something much stronger than themselves, and the use of militaristic analogies highlighted well the issue of strength in relation to bodily control, as well as the sense of a war between opposing forces. If muscle was 'good,' then muscular weakness or atrophy might be conceptualised as somehow amoral: just as "physical fatigue did not exist in isolation from the will [or] from morality," the wasted body reflected the past actions of its owner.[44] An article by West Riding Medical Officer F. St. John Bullen, for example, related the case of A.C. who had suffered a paralytic stroke. The stroke and its subsequent effects were correlated with a profound change in character: A.C. appeared "half dressed" in the street, began using foul language, and engaged in "reckless debauchery."[45] Bullen attributed the attack to sexual excess, alcohol, and syphilis, stating that "[t]he two latter especially of all, tend to produce a vitiation of nerve tissue and an intellectual and moral deprivation."[46] Like the inveterate masturbator, the exercise of a man's sexual energy could sap the very flesh from his bones. The nineteenth-century notion of a "spermatic economy," with men feared to be squandering both their own livelihood and the future of the human race via excessive masturbation, was heavily dependent on the notion of bodily balance.[47] Such ideas also extended into early twentieth-century physical culture. In his wonderfully titled *Superb Virility of Manhood* (1904), physical culturist Bernarr Macfadden warned readers that masturbation was one of the chief causes of diminished virile power, weakening both the willpower and the physical bodies of those who indulged in the habit.[48] Muscle might be used up by a man's 'immoral' over-exertions—Macfadden offered a range of muscular exercises to regain strength—so that the bodies of the general paralytic or self-abusing patient

stood as testament to the polluting, debasing, and degenerating effects of modern society.

For many asylum doctors, general paralysis was concerning not only in terms of the clinical challenges that it posed, but also due to the threat that the general paralytic patient was thought to pose to society more broadly. Nineteenth-century conceptions of diseases were explicitly related to the external environment, such as consumption as a result of poor sanitation. Connections like these served to tie the body to its immediate environment and lay the responsibility for disease at the feet of sufferers themselves.[49] Softened, atrophied bodies that failed to behave in the usual way implied a failure to maintain one's own body, in contrast to the ideal of the controlled and self-regulated man. Roger Smith suggests that control of the body and its actions became linked to the state in this period: as the franchise was extended, it was expected that men would internalise the state's traditional values of law and order, producing an outlook and attitude that complemented the requirements of industrialisation.[50] Unnatural local changes signalled a disharmonious body at odds with its environment and with the needs of industrial, capitalist society—this was clear in the inability of general paralytic patients to continue working in their normal occupations. The disordered male body was an anomaly, yet at the same time it was crucial to imagining order. It was an example that, in demonstrating the deviant body, painted a clearer picture than ever of the desired ideal.[51] In addition, as a disease concentrated in towns and cities, general paralysis illustrated the apparently emasculating effects of urban life, raising the disturbing possibility that the converse of industrial progress was de-evolution and degeneration.

Muscle and Mind

It was not only the atrophy and degeneration of muscle tissue that doctors identified as a key feature of general paralysis, but also the accompanying derangement of motion like that seen in A.C.'s case, above. Despite visceral changes to the bodily fabric, evolving awareness of "a psychophysical parallelism" made many doctors hesitant to locate the problem simply in the muscle substance.[52] Alongside postmortems and tissue samples, they looked to signs and symptoms that could be observed during life. William T. (whom we met in Chapter "Skin") was noted to have a gait that "exemplifies [the] maniacal condition of G.P., he struts, bounds, swaggers, does everything in an exaggerated manner."[53] Although general paralysis

clearly had profound effects on the patient's movements, there was some disagreement on the place of motor symptoms in the condition's progression, and the ease with which particular disorders could be mapped on to the stage of the disease. The Scottish physician David Skae had observed disorders of gait that preceded any mental manifestations of the disease, and Mickle had observed several patients "insane for some time … before any motor indications [could] be detected even by close examination."[54] The variable nature of general paralysis's physical and mental effects is borne out by many West Riding records: one man, though exhibiting only slight mental disturbance, showed "exceedingly well-marked" physical symptoms (difficulty in speaking, tongue tremor, shaking limbs, walking on his heels, and an inability to stand still with his eyes closed).[55] John L. was "not extravagant in his ideas [upon admission]. But his voice walk & manner [were] all indicative of General Paralysis."[56] As well as disorders of gait, general paralytic patients could experience seizures or muscle twitching, sometimes with alarming frequency. James E. exhibited spasmodic twitching of the right side, starting in the foot, "on average about 51 times in a minute."[57] Whole body epileptiform seizures were characterised by severe muscular movements, with or without loss of consciousness. Many writers were in agreement that such seizures were a worrying portent. They "usher[ed] in the gravest reductions, often leaving the subject a complete mental wreck," representing something of a final straw that heralded a steep decline in mental acuity.[58] In 24 of 60 West Riding cases surveyed by Rainhill Asylum's Charles Newcombe, death occurred within a month of a major seizure taking place.[59] William F.B., likely one of the patients in Newcombe's sample, died just over a month after "a series of 13 Epileptic fits, passing out of one into the other."[60]

In its motor manifestations, general paralysis was a convincing argument that brain lesions could act as naturally-occurring 'experiments,' highlighting links between the brain and bodily movements and offering evidence that mental disorder was organic disease of the brain tissue. Excited to contraction by the nervous system, the muscles of the body showed how the work of that system was carried out, as well as when it had malfunctioned. "The knowledge that we already possess of the nerve-centres," wrote London Hospital physician Francis Warner, "is from observation of the condition of the muscles … during life as they may be affected with paralysis or spasm with the brain lesion found after death."[61] The casebooks of the West Riding demonstrate the increasing confidence that its doctors had in external bodily movements as indications of what was

occurring beneath the surface of the skull—a physiological 'surfacing.' William H., whose left upper arm was flexed and left leg paralysed, was thought to be suffering from an "embolism of the right middle cerebral, affecting the Corpus Striatum."[62] Unilateral disorders of motility were common in general paralysis and pronouncements like that of William H.'s doctor echoed those of Hughlings Jackson, who asserted that symptoms such as limb paralysis were signs, like mental derangement, of "what [was] going on wrong, in the highest sensori-motor centres."[63] The link between mental and physical degeneration was sometimes also made by patients and their families. The explanation for William C.'s illness suggested that the beginnings of the problem lay in William's back pain. Thirty-eight years old, married, and employed as a boot finisher, William was conveyed to the Asylum from Holbeck Workhouse in Leeds. On admission he was described as thin and undersized, with exaggerated right knee jerks and marked elbow jerks.[64] A letter from his brother gave a detailed account of William's condition over the preceding three years, describing how his

> … neuralgia in the muscles of the back [caused him to] suffer something dreadful. He would lie a handkerchief round his head when the pain went in, he used to cry and say he made no wonder that people went out of there [*sic*] mind if they suffered as he did. … Last Saturday he woke up saying he had plenty of money, went to his work giving [his workmates] rows of houses each. They took him home and he went clean off.[65]

For this writer, his brother's back pain was recognised to be a phenomenon bound up with his mental disturbance. But for some medical commentators, muscular pains and disorders were not simply coincidental accompaniments to mental disease; rather, they were parts of the body that—in their apparent agency—revealed a great deal about diseases of the mind. "That the muscles possess a sensibility of their own," wrote Ferrier, "is proved beyond all doubt by their nervous supply and by physiological and clinical research."[66] Here, Ferrier was echoing the ideas of his former tutor Alexander Bain who, in his 1855 work *The Senses and the Intellect*, set in motion "a sustained consideration of muscles as active and independent participants in the constitution of mind."[67] Ferrier's own research described a hierarchically organised community of muscles that varied in strength, with "the powerful extensors of the back, and muscles of the thighs keep[ing] the body arched backwards and the legs rigid."[68] Experiments such as Eduard Friedrich Wilhelm Pflüger's decapitated frogs

(which continued to twitch after the head had been severed) suggested a degree of autonomy within the bodily fabric, as did tests in which muscles continued to contract when electrical stimulus had been removed. The electrical experiments of Guillaume-Benjamin-Amand Duchenne further implied that coordination required a harmonious relationship between different muscle groups—an "instinctive association."[69] In 1893–1894 neurophysiologist Charles Scott Sherrington identified a feedback mechanism in muscles that played a significant part in regulating posture and movement, demonstrating the importance of simple reflexes in "the purposeful life of the organism as a whole."[70]

In investigating reflex anomalies at a time when the relationship between body and mind was being explicitly and meticulously discussed, it was difficult not to view muscular anomalies through the lens of willpower and self-control. Muscles "identify us as genuine agents," and this is a perception that stretches back to the days of Galen when even sitting was defined as an act regulated by the will.[71] A strong-willed man kept his muscles in check as, "if liberated from control, [they would] perform their function spontaneously."[72] Disordered reflexes and seizures suggested a lack of central control, and it was not a huge step to aligning this lack of physical control with defective willpower and moral reasoning. "The most perfect inhibitory capacity," suggested American physician Charles Bancroft, "is met with in those individuals that present a strong and healthy will power."[73] The will, an elusive but enduring concept in nineteenth-century alienist science, was most forcefully expressed—or most notably absent—in the movements of the body. As the counterpart to primitive desire, the will represented higher evolutionary development, with an individual's powers of inhibition increasing with age. The role of the healthy brain was to maintain control over the body and its actions. The view that only the will stood between order and chaos was well suited to physiological descriptions of the nervous system that emphasised a hierarchy of muscles, nerves, and impulses, where the loss of control over bodily movements was conceptualised as a "de-education."[74] This could be glimpsed in the tottery but energetic gait of tabes dorsalis (a condition caused by the degeneration of the spinal cord in untreated syphilis). The loss of finer movements in general paralysis suggested that the most complex motor abilities were good indicators of the brain's condition. On many asylum wards one could see examples of patients engaged in purposeless, repetitive activity that pointed to a grave prognosis, such as walking in circles or rocking back and forth.

Reduced willpower and thoughtless motor activity could also account for some of the more unusual symptoms of general paralysis, such as theft. In some cases theft was related to the delusions of grandeur held by the patient, as in the case of a 39-year-old man admitted to the West Riding in 1872: he had stolen a number of wine glasses from a hotel in order to host a "grand dinner party" for his friends.[75] Several patients entered the asylum via the courts in consequence of their stealing; Robert H., also admitted in 1872, had been found guilty of larceny after taking two wheelbarrows and a quantity of coal. His wife emphasised that he had no need to steal the coal as the family was comfortably off at the time, also noting that the crime had been committed openly, in daylight, with no attempt at concealment.[76] This clumsiness and lack of concern for being caught characterised most cases of theft by general paralytics, for many of whom a criminal act was out of character and caused serious problems both for themselves and their families. Forty-year-old Thomas G. had returned home to his wife on several occasions with articles stolen from the market: "on Monday two boxes of herrings one of which he sold, on Wednesday, a barrel of crab fish, and on Thursday, five fishes."[77] Mickle suggested that as well as being a result of delusions of grandeur and general confusion, some instances of theft were "nothing more … than an absent-minded, and practically automatic, involuntary act."[78] William H. had been in the Wakefield House of Correction for stealing and was then sent to the workhouse before being admitted to the Asylum on account of his unusual conduct. As well as restlessness and frequent undressing, he had been found wandering in the local market "with pockets full of useless articles – pieces of glass etc."[79] Once in the asylum, this automatic picking up of items was manifested in the collection of rubbish rather than the theft of goods. On the wards, many general paralytic patients could be observed collecting dead flies, dust, and other rubbish, hoarding it in their pockets. For Mickle, behind this collecting of items lay the same automatic impulse or failure of willpower that 'motivated' theft, with both actions purposeless and mechanical.

Physiological explanations for such automatic or mechanical actions, by bridging the gap between the biological (reflex action) and the mental (the will), allowed alienist science to move closer towards the realms of natural science. Willpower was a force that could be weakened by physical changes including "impaired nutrition, defective functional activity, or more gross structural lesions."[80] The study of the will and its operation (or nonoperation) allowed for the immaterial and invisible to be joined with the

material, visible, and measurable. John Hughlings Jackson's theory of dissolution—an opposite process to evolution—well illustrated this joining, connecting muscle with the will in a manner that questioned the view of the former as a 'low' element disconnected from the 'higher' mind. Dissolution of the nervous system, a concept that Jackson explicitly linked to the work of Herbert Spencer, was evident when those movements or faculties which were last to be acquired—those most dependent on the will—were the first to be affected, such as the movements of the fingers. To Jackson, muscular atrophy was a visual representation of the degree of dissolution of the nervous centres. Even a patient's facial expression might indicate "coarse degenerative changes" in the brain, with general paralysis being "the most striking [example] of … dissolution of expression."[81] Like dissolution, William Bevan Lewis's "muscular element of thought" was also conceptualised as a function guided by evolutionary principles, being the first to decline in insanity; when it declined "the apparent *energy and freedom of the will [was] restricted*," as seen in the melancholic's resting muscles and sluggish eyes, for example.[82] Generally, though, loss of will-power was thought to increase automatic movements. In a case related by Bevan Lewis in *The Lancet*, he described the course of seizures in one of his general paralytic patients in a way that clearly emphasised the disease as a form of 'de-evolution': "The movements around the mouth were peculiar, and strongly reminded one of the movements of the lips in animals about to snap when the canines are exposed by the retracted lips."[83]

That seizures were viewed as significant insights into the workings of the mind can be seen throughout the West Riding's casebooks. Michael C.'s epileptic fits were described in great detail and vividly conveyed his loss of consciousness as well as his own awareness of his condition:

> … a terrified look suddenly appeared. Patient's legs became stiff, & slowly contracted, & he exclaimed rapidly 'Oh, I'm in a fit by God'. … He appeared not to lose consciousness for a few seconds, then Tonic contractions of the muscles of the Legs, & of R[ight] arm supervened, the L[eft] arm not appearing to be affected. The face twitched violently. … After P[atient] had taken a breath or two, the Eyes turned strongly to the R[ight], & sudden jerks of the Body appeared. The R[ight] arm was rapidly extended. Finally the Eyes were directed strongly upwards. P[atient] lay for a considerable time unconscious after the fit.[84]

Michael C. was clearly painfully aware of his oncoming seizures, and some other patients were able to describe their experiences of fits to the doctor. Michael D. recounted how "Sometimes before [the] advent of [a] fit, a red & white star is seen. … This comes slowly towards him, and seems as if going into his head."[85] Another patient, in conversation with the doctor, expressed concern for the language used to describe his experiences; he objected to them being called "dizzy fits" and preferred his own term of "amaze-abouts."[86] The physical movements of patients during fits or muscular spasm were occasionally captured in photographic form. William S.—admitted to the West Riding Asylum at age 18 and diagnosed as an "epileptic idiot"—was one such patient who attracted the interest of the staff. His movements, described as "very fantastic on account of the contractions (permanent) of the muscles of his arms and legs" prevented him from walking, though he was able to "shift about the ward by moving his feet when sitting in a chair." His notes suggest that he was rather a favourite of the staff, described as "cheerful and bright," intelligent, and fond of looking at pictures and playing games.[87] Three photographs in the pathology lab's album depict the extreme contortions of William's fingers and wrists. Other images depict the uncomfortable warping of his body as he is pictured on a bed and sitting in a chair, in all instances with arms and legs flexed sharply at their joints.

Photography was just one way of seeing that compensated for what could not be seen during life: the state of the brain. Like photography, the observation of a patient's movements could be an efficient diagnostic tool when the patient's verbal testimony was unreliable or impossible. This was particularly important in general paralysis: the patient's power of articulation was often limited, as was their ability to follow lines of questioning. In the case of Abraham B., the doctor noted that his speech was "thick and rather indistinct," and that he showed "great obtuseness in understanding what [was] said to him."[88] Compensating for these difficulties, his body was coaxed into 'speaking' for him: "Patellar tendon reflex absent in each limb; plantar reflex almost absent, no cremasteric reflex. Tactile sensibility of lower limb diminished in acuteness."[89] Tests like these were a crucial part of examination alongside other forms of evidence, with new medical and scientific practices bound up with and complementing developing psychiatric theory. As the final sections of this chapter show, various forms of physical examination aimed to shed light on what was occurring inside patients' bodies. By studying accounts of such examinations in the historical records, we are able to uncover the wide range of manual, technical

—sometimes verging on artistic—practices that took place within the asylum, but also the place of patients in relation to the practices of physical examination and record-keeping.

Physical Examination and Inscription

That David Ferrier had undertaken his localisation research within the walls of the West Riding Asylum testifies to the institution's importance to physiological and neurological research in the later years of the nineteenth century. Early physiological research had tended to use the limbs of insects as raw material, and later in the century vivisection allowed links to be more clearly made between the muscles and the brain (though not without serious criticism from antivivisection campaigners, who targeted Ferrier's work in particular). Yet for many practitioners the mortuary remained the best source of specimens for study, and more so as alienism moved in a self-consciously scientific direction in the 1870s and 1880s, drawing upon the methods of the natural sciences. At the West Riding significant space was allocated to the laboratory study of mental disease. Under the Superintendency of Crichton-Browne, a new mortuary room and pathological laboratory were constructed in 1872–1873 and a pathologist appointed in 1872.[90] This was a forward-thinking step; pathologists tended to have a low status in medicine in the nineteenth century, but at the West Riding it was clear that they held an important place in the institution. In 1890 Bevan Lewis noted that although all medical officers should be capable of performing postmortem examinations, the study of the nervous system was so complex that it was preferable that "one official should more specially devote his time to this object."[91] By 1895, the Asylum could boast:

> … a complete outfit of … Laboratories and other rooms as are essential to the scientific investigation and treatment of disease … [comprising] Pathological, Histological, and Bacteriological Laboratories, rooms for Physio-psychical research and Physiological Chemistry, Opthalmoscopic Room, rooms for Electrical treatment, Photographic studio, Library, and Lecture room.[92]

A large asylum full of chronic cases was, as Crichton-Browne put it, "stored with only too vast an accumulation of pathological material … [and

afforded] unusual facilities for observation and research," both during life and after death.[93]

Much of the work carried out in the West Riding laboratory depended upon the dead body. Efforts to secure the bodies of psychiatric patients for postmortem investigation and scientific research are discussed in some detail in Eric Engstrom's study of German psychiatry in the imperial period. He tells us that patients who were judged to be "valuable neuropathogical specimens" were offered free beds in order to obtain access to their bodies after death.[94] This reflected the belief of many practising alienists at this time that much knowledge might be contained within the fabric of the body that would, in turn, lead to the eradication of many mental diseases. In Britain, too, the importance accorded to the bodies of asylum patients can be glimpsed in appeals during the 1870s for postmortems to be made a universal and automatic practice within medical institutions, and in the encouraging tone of the Commissioners in Lunacy regarding the number of postmortems undertaken. The Commissioner's 1885 report on the West Riding Asylum noted that "The number of postmortem examinations, 193, [was] very satisfactory."[95] Some commentators, however, worried that postmortems were a waste of time and were liable to "excite suspicion of neglect during life, and of ignorance of the cause of death."[96] Despite the support of Crichton-Browne and others, efforts to institute universal postmortems were rejected in 1877, though this did not mean that all asylums followed the same protocol. Jonathan Andrews summarises the situation thus: "At some asylums post-mortems had become *de rigueur*, formal consent not even being sought. At a minority, prior consent was procured from patients while living. Whereas a few sought written consent using purpose-specific pro-forma, others relied merely on verbal consent."[97] At the West Riding the intent to perform a postmortem was discretely noted on the certificate of admission sent to relatives: "In case of death the usual postmortem examination will be made in order to certify correctly the cause of death. Relatives in any case objecting to this course are requested to communicate immediately upon receipt of this notice, personally, with the Medical Superintendent."[98] It is impossible to know how many families responded to this, but towards the end of the century it is clear that a significant number of relatives were voicing their objection to postmortem, either wholly or in terms of the body parts examined. Casebooks kept during the patient's lifetime were occasionally annotated "Post mortem objected to," or alternatively "No objection to P.M."[99] Postmortem records show that some families had very specific ideas about where the boundaries lay:

often the head was not permitted to be examined, though there were some rare exceptions in which the head only was specified. Usually the chest and abdomen were the parts of the body viewed by families as an acceptable area of investigation, indicated by notes such as "Thorax only permitted to be examined."[100]

This increasing awareness of, and objection to, postmortem practices was just one factor in the asylum researcher's drive to study mental and physical disease as it appeared during life, *before* postmortem. Watching and recording movement during life was an invaluable opportunity, unavailable after death, to see the body-brain connection in action. Although small pieces of muscle might be analysed during life using a tool such as Duchenne's trocar (a pointed instrument that punctured the skin), this said more about the substance of a muscle than of the forces guiding its use. William Gowers' 1886 *Manual of Diseases of the Nervous System* was one of the first neurological textbooks to discuss means of uncovering conditions that would otherwise only be revealed at postmortem.[101] Tests like Babinski's sign (stroking the sole of the foot, the big toe extends while the others curl downwards) were important props to the professional self-image of modern neurologists and physiologists, but also promised to bring doctors to a closer understanding of chronic cases of mental disease. Some patients found themselves the centre of particular attention, visited by doctors and researchers from other institutions; Samuel N., a 47-year-old man admitted to the West Riding in 1890, was visited by Queen Square neurosurgeon Victor Horsley on account of his disturbances of sight and motor and reflex anomalies.[102]

With its plethora of somatic manifestations, general paralysis was fertile ground for the employment of physiological tests. Before carrying out reflex or other tests, though, disorders of gait or movement could be easily observed in everyday actions such as getting into bed or dressing. A doctor noted of Jeremiah B. that his "movements [were] very tremulous when any exertion [was] made. This was well seen when he tried to remove his shirt."[103] Such actions formed an informal but illuminating element of physical examination, with doctors noting whether patients were able to "perform a simple act, such as buttoning, readily."[104] The action of walking, as well as suggesting a diagnosis of general paralysis in cases of haltering or unsteady gait, could also be innovatively inscribed using large sheets of paper upon which patients walked with inked feet to leave imprints of their footsteps. Jean-Martin Charcot had a "gait laboratory" at the Salpêtrière in which patients would walk across paper in this manner to

produce a bodily 'text.'[105] These relatively informal methods of investigation were used alongside more precise instrumentation and procedures drawn from physiology. Bevan Lewis tested the muscular sense of patients using an instrument of Francis Galton's; this consisted of a box containing a number of trays and weights. Patients were asked to hold the different trays and rank them in order of weight. Using this device in combination with the aesthesiometer, Bevan Lewis found a "distinct impairment of muscular discrimination" in general paralysis, with patients struggling to distinguish between heavier and lighter objects.[106] The reaction times of patients were also tested at length by Bevan Lewis using an instrument that aimed to measure reactions to both visual and aural stimuli.[107] Often, however, making a series of careful measurements required a significant time commitment on the part of both doctor and patient; Bevan Lewis's results regarding reaction time represented the average of 20 separate trials for each patient.[108] That doctors at the West Riding were getting to grips with both the practice and accompanying technical language of such tests is evidenced by casebook records. One writer—possibly a student—placed some of his phrases within quotation marks: "'cutaneous stimulation' altogether absent" and "'coordinate movement' present & almost normal."[109] Employing such methods on an asylum ward—as opposed to in a physiological laboratory—could also prove challenging. Physical examination depended upon the cooperation of the patient, and it is evident from the West Riding records that this was not always forthcoming. Percival F. "[refused] to have his genitals exposed, for the purpose of testing the cremasteric reflexes."[110] Others viewed such tests through the lens of prison life, judging examinations to be assessments of their fitness to undertake physical work. James E., a fish dealer suffering from Charcot's knee (chronic degenerative disease of the joint), told a doctor that a few days previously another member of staff had tested his knees to ascertain whether he would be able to work the treadmill.[111]

Some forms of testing required less input from the patient, namely electrical and reflex testing. Several researchers investigated the electrical excitability of the muscles in general paralysis: whilst Richard von Krafft-Ebing claimed such excitability was retained in the disease, John Charles Bucknill and Daniel Hack Tuke argued it was lost.[112] Hughlings Jackson suggested the possibility of a "superpositive" response to electricity as a result of tissue destruction, in which reactions increased; in line with his notion of dissolution, however, the form of action that increased was "of a simpler, more fundamental, less elaborate [character] … The most

elaborate forms of conduct [were] lost."[113] At the West Riding Bevan Lewis's experiments found the lower body reflexes "extremely deficient, and in several cases almost totally abolished" and in two cases investigated by Wadsley Medical Officer John Lowe no contraction of a muscle in the lower leg could be obtained at all, even at the highest power.[114] Most interesting to these researchers was the effect of electrical current in simulating—on a reduced time scale—the progress of general paralysis itself. "In general paralysis the motor symptoms follow a course resembling that of the symptoms induced by electric excitation," observed the French neurologist Achille-Louis Foville. "At first there is a slight trembling in certain groups of muscles, then the trembling becomes more marked, and may be accompanied by violent functional excitation, while later convulsions … occur, to be followed often by paralysis."[115] Rather like a seizure, electrical current could reveal in microcosm larger-scale, longer-term, disease processes. However, electrical equipment involved significant commitment in terms of finances and space, as well as being dependent upon a reliable electricity supply. The installation of a hydro-electric bath at the West Riding in 1902 necessitated a three-day stay by an electrical engineer from London.[116] Bucknill and Tuke noted that electrical experimentation could be replicated more conveniently (if "less effectually") by tickling the soles of the patient's feet.[117]

Certainly, the reflex test was a quick and simple method of investigating the mind–body relationship. Viewed as objective signs of organic disease, the late nineteenth century witnessed "a veritable deluge of 'new reflexes'" inaugurated by Joseph Babinski's systematic study of the plantar reflex.[118] General paralytic patients exhibited distinct reflex anomalies: of 44 cases studied by Bevan Lewis, the knee jerk was found to be normal on both left and right sides in only six.[119] The general consensus was that general paralytic patients suffered increased knee jerks upon percussion. Again, though, general paralysis's changeable and progressive nature complicated what was at first sight a straightforward test. Mickle, writing on the knee jerk, noted that it "may be normal, or may be increased, diminished, or absent," as well as varying according to the stage of the disease.[120] More certain and more minutely quantifiable signs were needed, then.

In an 1881 article, Parisian neurologist E.C. Seguin offered three methods of testing the functions of movement: having the patient make passive or active movements, physical inspection, and use of the dynamometer.[121] As a measure of physical strength, the dynamometer was an instrument used by many physiologists and neurologists from the late

nineteenth century, particularly following its promotion by American neurologist William Hammond. The instrument consisted of a steel spring attached to a scale and was placed in the hand; pressing the spring caused a steel arm to indicate the force exerted on the scale. The dynamometer was one of several tests carried out on West Riding patients who presented notable motor anomalies; it could be employed immediately upon admission as part of the physical examination with the results recorded in the casebook alongside the patient's height, weight, and other physical details. As a measure of the force exerted by muscles, the dynamometer often simply confirmed what could be surmised with the human eye: Joseph K., who had noticeably smaller right than left limbs and a lack of plumpness to the right side of his face, exhibited a grasping power in the right hand that was half that of the left.[122] It might also back up other test results, such as Edinburgh surgeon Byrom Bramwell's use of it in a patient with an increased right knee jerk. In this case, the patient's right hand exhibited a lower grasping power, and at postmortem a tumour was found on the left hemisphere of the brain, taken as evidence of the connection between lesions of the brain substance and disorders of movement.[123]

With a little modification, however, the dynamometer could produce a direct visual representation of motor phenomena. Manufactured by French instrument maker Mathieu and advertised by Hammond, the dynamograph connected a dynamometer to mechanical recording apparatus. Though its use was somewhat limited by its higher cost, the dynamograph "indicate[d] the perfection of … the muscular sense" via the straightness of a line drawn by the patient.[124] Hammond went further than most in extolling the instrument's virtues when he employed it in a murder trial. As the accused was unable to keep the pencil still in order to draw a straight line, Hammond argued he had a generally reduced willpower, correlating this impaired physical ability with reduced moral control and homicidal tendencies.[125] Hammond's use of the dynamograph in this case highlights the assumed relationship between cerebral mischief and bodily incoordination that was gaining credence at this time, as well as the role of the will and of intellectual effort in physical exertion. Paul Broca, for example, had used the dynamometer to test the physical abilities of different social classes. He claimed to have found greater strength not among manual workers, but those whose work was of a more intellectual flavour, positing a link between mental activity and physical strength.[126] C.H. Féré, at the Salpêtrière, tested this mind/muscle strength correlation by having patients perform various mental tasks whilst squeezing the dynamometer.

He found that strength increased when simple tasks (such as counting to 45) were performed at the same time; conversely, intellectual fatigue had the effect of reducing muscular energy.[127] Muscular movements, then, seemed to represent activities going on, unseen, elsewhere in the body. For the general paralytic patient, bodily action (and inaction) suggested that significant degenerative change was occurring in the cerebral substance: in the gradual enfeeblement of the body, one could almost watch the progress of a mysterious lesion eating its way through the brain.

Like reflex and other tests, though, dynamometry was not an exact science, yielding inconsistent results even within the same individual; in four trials conducted by Bullen, he recorded results of 27/31, 24/30, 24/30, and ("with swing") 32/32 in the same patient.[128] Establishing a normative standard of grasping strength was difficult as it required practitioners to take into account various factors such as handedness and occupation. Just as ergographs and aesthesiometers could only measure fatigue indirectly, the dynamometer captured transient phenomena that could not be considered a direct representation of brain activity: the instrument could never properly capture the 'gap' that separated the brain impulse and the movement of the hand.[129] Although Stanley Reiser, discussing the use of the stethoscope, identifies "a new class of disease signs" that replaced the patient's narrative in the nineteenth century,[130] the 'signs' elicited by technologies such as the dynamometer were limited and rarely used as stand-alone indicators of nervous disease. Their use was further complicated within the asylum environment: by definition, asylum patients' responses to questions and verbal reports of sensations were considered to be of doubtful utility, even when medical technologies were employed. This can be seen in some of the records of the West Riding—for example, "Tested [with the] aesthesiometer, if his answers are reliable, there is manifest reduction of sense-acuteness."[131] Taken together, however, doctors were relatively confident that a series of tests would elicit the required information by "turn[ing] the patient's body into a machine of its own revealing."[132] Significant value was attached to certain physical signs, demonstrated by the results of physical examination in terms of negative findings—such as "No positive evidence of altered gait when eyes are allowed to be fixed on floor."[133] The search for the tell-tale signs of general paralysis began as soon as patients entered the asylum, but it was a search that was ongoing—particularly as the condition's signs and symptoms changed over time.

The Patient and the Case Record

Throughout a patient's stay in the Asylum new observations or test results were added to their casebook records, which in many cases ran to several densely handwritten pages. Indeed, the labour of writing patient records was described by Sussex's A.H. Newth as "terribly trying." He had suffered his own muscular problems with an attack of scrivener's palsy (writer's cramp) due to writing casebook records, also developing a ganglion on his wrist.[134] The West Riding casebooks are often unruly despite their apparently rigid structure: doctors wrote beyond pre-printed sections, inserted newspaper cuttings between the pages, left spaces for photographs, and pasted in temperature charts or pulse tracings that sometimes obscured the text beneath. Fragments of experimental physiological work were complemented by written notes and observations, with note-taking and case-taking contributing to the process of knowledge-production just as photomicrography or dynamometer testing did. Casebooks were not necessarily intended to stand as complete histories of a patient, but acted as "clinical and managerial aids to those treating and attending the patient."[135] The casebook served to dissect the body "epistemically" as knives dissected it physically, and as such they provide a vital window onto contemporary medical practice.[136] As Volker Hess and Andrew Mendelsohn observe, case records also served to link different areas of an institution.[137] In the West Riding casebooks it is possible to glimpse the multiple practices (photomicrography, physiological research, interviewing patients) and sites (photographic studios, laboratories, admission rooms) within the Asylum, as well as the institution's connections to researchers elsewhere such as Horsley and Ferrier.

Casebooks contain multiple—albeit mediated—narratives and stories: the thoughts of various doctors, the evidence of family members and friends, and sometimes the reported speech of patients themselves. An interesting example from the West Riding casebooks shows that family members could also participate in discussions between patients and asylum doctors. William Douglas A., a glass painter whose record was supplemented by his own beautiful stained glass window designs, showed particular resistance to talking about his wife with Medical Officer Frederick St. John Bullen. Though it had been reported on his reception order that William entertained delusions about his wife being unfaithful to him, he—not unreasonably—saw this as a private matter, noting: "had I any suspicions, I might either have due grounds, or at least refuse to communicate

them to a stranger." In an attempt to resolve the matter, Bullen held an interview between husband and wife, during which William's conduct led Bullen to believe that his patient was suffering from a degree of "morbid suspicion, probably amounting to delusion."[138] It was a worrying portent of things to come: after being transferred to Colney Hatch Asylum and subsequently released, William would find himself in Holloway Prison after being charged with the manslaughter of his wife.[139] As part of medical material culture, then, casebooks can highlight the social aspects of medical encounters.[140] Catching that which was beyond direct visible or physical reach using a variety of technologies and tests, late nineteenth-century asylum doctors necessarily engaged in a form of social interaction with patients, and not simply in admission or family interviews: listening to and recording their accounts of seizures, putting them at ease when taking dynamometer or sphygmograph readings, and trying to ensure their cooperation in carrying out reflex and weight discrimination tests.

Besides the results of physiological tests and doctor's observations, many casebook records include traces made by patients themselves. Recent work in the history of psychiatry has emphasised the "need to explore the interactive dimensions of the doctor-patient relationship," emphasising features such as the recording of patient's words in case records.[141] Sarah Chaney has recently uncovered instances of friendships and forms of professional collaboration between some psychiatric patients and their doctors.[142] It seems that in many cases patients may have been more aware of the assessments and judgements being made about them than we typically expect. Upon admission to the West Riding, the statements contained in reception orders were at least occasionally put to patients for their response, as evidenced in the admission notes accompanying William S. in 1877: the doctor noted that he "[d]enied ever attempting intercourse with cattle" as had been recorded on his reception order.[143] B.C. Barrett, a male patient, seemed in good humour regarding the taking down of his history in the casebook, apparently saying "I should like to have a copy of that narrative of Dr Lewis … framed & hung-up in my room. It was grand."[144] Francis C., as well as reading his admission certificate, was keen to be an active participant in his examination: "So far from objecting to physical examination, he helps it. Asked to write down the reason for his silence, takes, after much hesitation, the pencil & scrawls illegibly."[145]

Forms of patient inscription like that of Francis C. demonstrate a literal 'writing in' to the medical record that could have clinical as well as social significance. As Alicia Puglionesi puts it in her analysis of drawing as an

instrument in the mind sciences, "paper, pencil, hand and brain served as … 'soul catcher[s]', fixing developmental, supernormal and pathological aspects of the self in a material form" and transforming simple patient inscriptions into scientific objects.[146] At the West Riding, this 'fixing' exercise sometimes took the form of illustrating a story told by the patient. A 20-year-old porter admitted to the Asylum in 1895 told the doctor of "a little black thing that came out of his mouth," drawing the object in the casebook.[147] In their interest in physical signs as indicators of cerebral disease and nervous function, asylum doctors might have the patient write their name or a short passage as a simple form of physical assessment, particularly if the patient was unable to speak. Handwriting was seen as a uniquely useful tool in late nineteenth-century psychiatry. As an expressive and intentional movement, its disturbance suggested illness, with resulting inscriptions constituting one form of graphical trace that sat alongside others in the casebook to aid diagnosis and chart progress or decline. In their illegibility or incoherence these traces provided a window onto the patient's mental state. Thus, slips of paper were inserted into casebooks that demonstrated the spidery handwriting of the general paralytic patient as their control over finer movements was lost. As general paralysis progressed, writing became increasingly difficult; Mickle described how a patient might "[write] a word or two, or a part of a word … and then, after a pause, [make] several irregular strokes or flourishes, or [put] down the pencil in momentary confusion or disgust."[148] Joseph B.'s attempt at writing a letter to his wife, consisting of the date and one nonsensical sentence, was tacked into a West Riding casebook with the doctor's note, "The result of 3 hour's work."[149] Like the confident pronouncements of general paralytic patients as regarded their physical prowess, their inability to write contrasted markedly with the grandiose content of their letters, addressed to politicians or monarchs with whom they believed themselves to be on intimate terms. Inscriptions by patients were a more permanent record of delusions than fleeting speech, then, but they were also particularly useful in illustrating motor disorders. Michael D., who had described his fits to the doctor (above), wrote his name into the casebook (Fig. 2) in order to demonstrate how he wrote vertically with his left hand, a trait thought to indicate some cerebral disturbance.[150]

In the West Riding Asylum the investigation of muscles and their movements took place across several sites, then, from the mortuary and pathological laboratory to the ward and admission room. Whilst physiological research played a large part in the drive for alienism to be recognised

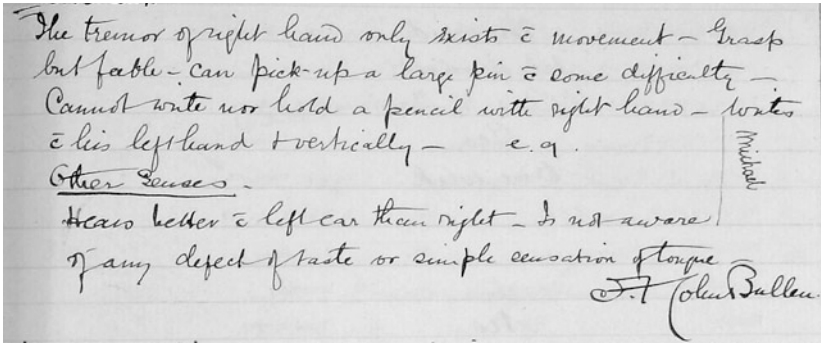

Fig. 2 Casebook record of West Riding patient Michael D., demonstrating his vertical handwriting (1890). Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/3/6/149

as something close to the natural sciences, investigating the links between body and mind was a complex and ongoing exercise that was dictated by the barriers of the living body and reliant upon technologies and methods that could make those invisible processes visible and quantifiable. The outward signs of inner degenerative processes were actively elicited (or 'surfaced') by asylum doctors and as such, we might construe many of the tests described in this chapter as intrusive methods concerned less with therapeutics than with furthering the march of alienist science. Their employment, though, was directly connected to the belief of many asylum doctors that general paralysis offered a model of mental disease that—if its mysteries could be solved—held out the hope of curing not just that condition, but a whole range of mental diseases. Yet many of the methods taken from physiology—however controlled the circumstances in which they were employed—were complicated in the asylum environment: a number of general paralytic patients either refused, or were physically unable, to cooperate with tests, and even when they did doctors were hesitant to take their responses as wholly accurate. One thing was certain, though: general paralysis was a disease that had a serious impact on the bodily fabric. The softening and atrophy of the muscles of the limbs, heart muscle, and even the cells made clear that doctors were dealing with a disease that required serious scientific and clinical attention—both to reduce its incidence and to ensure that those patients under their care

received careful attention in light of their vulnerability. It is these two issues—the voices of patients and the belief in an inherent bodily weakness among general paralytics—that come together in the next chapter, on bone fracture in the asylum.

Notes

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11. WYAS C85/3/6/122 Medical casebook M28 (1873–1889), 241–43.
12. WYAS C85/3/6/141 Medical casebook M47 (1885–c.1889), 326.
13. WYAS C85/3/6/67 Medical casebook (1900–1907), 206; WYAS C85/3/6/133 Medical casebook M39 (1879–c.1889), 234.
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16. Bonville Bradley Fox, "Some Unusual Cases of General Paralysis," *JMS* 37, no. 158 (1891): 389.
17. WYAS C85/3/6/119 Medical casebook M25 (1870–c.1888), 463–65.
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19. Emphasis in original. Charles Mercier, *The Nervous System and the Mind: A Treatise on the Dynamics of the Human Organism* (London: Macmillan & Co., 1888), 60–61.
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21. WYAS C85/3/6/150 Medical casebook M56 (1890–c.1891), 242.
22. WYAS C85/1131 Postmortem reports vol. 14 (1898–1899), 81.
23. WYAS C85/1127 Postmortem reports vol. 10 (1888–1891), 193–94. See also Thomas Smith Clouston, "Fatty Embolism of the Vessels of the Lungs in an Epileptic who had died Comatose, after a Succession of Fits," *JMS* 25, no. 110 (1879); F. Jolly, "On the Occurrence of Fat-Emboli in the Acutely Excited," *JMS* 27, no. 118 (1881).
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Bone

This chapter examines how asylum doctors responded to allegations of harm and abuse within their institutions. Such allegations arose from a number of cases in the 1870s in which patients were found to have sustained multiple fractures, usually of the ribs. Many of these patients were suffering from general paralysis, with bone fracture seemingly providing further evidence of the inherently 'weaker' state of general paralytic patient's bodily fabric. At a time when death registration was becoming more carefully regulated and suspicious deaths closely investigated, asylums and their staff—including the West Riding—found themselves under scrutiny for these fracture deaths. Although the blame for fractures was initially pinned on asylum attendants—judged by much of the popular press, and indeed some doctors, to be an untrustworthy and callous body of workers—other explanations soon surfaced. Many of these explanations pointed to the mental and physical symptoms of general paralysis: impaired muscular sensibility leading to falls, mental excitement causing reckless running around the wards, and grandiose delusions precipitating fights with other patients. In the 1890s, both in the laboratory of the West Riding and at other asylums, attempts were made to quantify the strength of general paralytic patient's bones during postmortem investigation. Pathologising the patient's body in this way had a number of practical consequences that impacted upon both medical officers and attendants, but by the turn of the century it was becoming less certain that pathological investigation was a useful, or indeed appropriate, way to respond to allegations of institutional violence.[1]

J. Wallis, *Investigating the Body in the Victorian Asylum*, Mental Health in Historical Perspective, DOI 10.1007/978-3-319-56714-3_4

A Culture of Violence?

In the 1870s several British asylums came under close scrutiny in the popular and medical press. A number of patient deaths were reported that had a disturbing feature in common: broken ribs. The most alarming was the case of Rees Price, an elderly blind patient admitted to Carmarthen Asylum who had died shortly after admission. A postmortem found eight broken ribs and it was alleged that Price had received no proper medical examination upon admission, nor any special attention when he began to exhibit breathing difficulties.[2] One of the responses to these revelations was a letter to the *Pall Mall Gazette* from novelist Charles Reade. Reade's 1863 novel *Hard Cash* included a character who found himself committed to a private asylum where he was placed at the mercy of sadistic asylum attendants. Reade claimed that the research he had undertaken when writing this book cast light on the circumstances surrounding cases of rib fracture:

> The ex-keepers were all agreed in this that the keepers know how to break a patient's bones without bruising the skin; and that the doctors have been duped again and again by them. To put it in my own words, the bent knees, big bluntish bones, and clothed, can be applied with terrible force, yet not leave their mark upon the skin of the victim. The refractory patient is thrown down and the keeper walks up and down him on his knees, and even jumps on his body, knees downwards, until he is completely cowed. Should a bone or two be broken in this process, it does not much matter to the keeper; a lunatic complaining of internal injury is not listened to. He is a being so full of illusions that nobody believes in any unseen injury he prates about.[3]

While there was more than a hint of self-promotion in Reade's correspondence to the *Gazette*, letters from former asylum patients backed up his stories of attendants "kneeling" on patients.[4] Thomas Laqueur, in 'Bodies, Details, and the Humanitarian Narrative,' identifies "an extraordinary number of hitherto untold stories of human suffering" (with particular focus on the poor) being disseminated in the late nineteenth century. These appeared in Blue Books of parliamentary inquiries and filtered into the mainstream press.[5] The process of inquiry was, Laqueur argues, tied to sympathy for strangers based on common experiences of the body: vivid accounts of injuries (such as multiple rib fractures) were powerful calls for ameliorative action and institutional reform. Stories about broken ribs in asylums were coincident with concerns for other

forms of violence; *The Times* showed a particular interest in "kicking assaults" during the 1870s, for example.[6] Details of broken ribs in asylums were printed in both popular newspapers and the medical press, including a particularly damning piece in the *BMJ* that listed seven such cases and claimed that "rib-crushing" was just one of many methods by which asylum patients were "hurried out of existence."[7] *The Lancet* also printed attention-grabbing news items and, in discussing the death of a patient at Lancaster Asylum, proclaimed it "quite impossible that such injuries could be inflicted by anything but direct violence."[8]

The blame for injuries was first pinned on asylum attendants, whose custodial role within a system of nonrestraint was viewed with some suspicion. That asylum attendants were a body of workers peculiarly unsuited to their vocation—uneducated, intemperate, and untrustworthy—was a long-standing preconception. By his own admission, Scottish alienist Thomas Smith Clouston had been suspicious when one of his nurses said that she had taken the position due to a wish "to do good to her fellow creatures."[9] Such altruistic motives were rare, it seemed, and enthusing asylum workers for an often unpleasant vocation was a difficult task, with many moving on to other jobs after a short period. High staff turnover was often a reflection of an unrewarding and gruelling vocation. John Sheehan, examining male West Riding attendants between 1852 and 1889, found that 51% left within a year of appointment, and suggests that a degree of "petty tyranny" on the part of attendants may have been a response to their surveillance by more senior asylum staff.[10] In contrast, John Walton emphasises the favourable pay and inclusion of board and lodging as key perks of the job for Lancaster Asylum attendants, and David Wright has demonstrated that the occupational and geographical mobility of asylum attendants may have been motivated by a desire to build up varied work experience, rather than simply a result of repeated dismissal or boredom.[11] Dismissal figures and other official records should also be viewed with caution; Neil Brimblecombe notes that in some cases nurses or attendants were allowed to 'resign' in order to avoid the disgrace of being 'dismissed.'[12] Regardless of the truth behind dismissal figures, in many contemporary accounts the role of the asylum attendant was often that of villain. In 1889, the *Ipswich Journal* reported a familiar tale of an attendant charged with theft from fellow workers, taking a gold ring from one and several books and a pair of cricket gloves from another.[13] The *BMJ* referred to a case involving an attendant who had given a patient a weapon before "inciting" him to kill and rob two other inmates, also helping to arrange

the patient's escape.[14] In cases in which attendants found themselves accused of abuse or misconduct, they could be presented as just as unbalanced as their charges (and indeed it was not unknown for attendants to cease work on account of developing nervous illnesses, sometimes finding themselves transformed into patients).

The good conduct of attendants was crucial considering that they were responsible for the safety of patients who were often at increased risk of injury, whether due to self-harm, impaired sensations, or altercations with other excitable patients. Attendants were responsible for patient welfare and this meant not only the avoidance of direct violence, but careful supervision to avoid any accidents. In the late nineteenth century, as the dangers of modern industrial life intersected with naturalistic thinking, "people thought that accidents took place when someone who should have been able to control events did things wrong."[15] There was no such thing as a 'pure' accident, even if this was how asylum staff or boards referred to incidents; in 1880 five cases of fracture at the West Riding were described as "purely accidental," with the exception of a patient who was "wilfully pushed down by another patient when in the Airing Court."[16] Accidents are not as random as their definition might suggest. They tend to occur towards the lower end of the socio-economic scale, and—just as occupational diseases or deficiency diseases such as rickets "had a strong tendency to social class specificity in their choice of victims"—so too could the broken ribs of asylum patients be viewed as an "epidemic by instalment" affecting a particular social group.[17]

As broken rib cases continued to come to light, many newspapers expressed scepticism that this 'epidemic' was the result of anything other than sadistic conduct on the part of attendants. In 1887, *The North-Eastern Daily Gazette* mocked a coroner's court jury who had returned a verdict of paralytic stroke for a Colney Hatch patient ("whether with fist or stick or poker was not stated, but I believe paralysis in its worst forms occasionally avails itself of one of these instruments"), and suggested that all cases of broken ribs in asylums should incur an automatic manslaughter charge.[18] Other commentators suggested that, if attendants were not personally inclined to be violent towards their charges, they were working within a system that made such violence inevitable. William Lauder Lindsay, of Murray Royal Institution for the Insane in Perth, Scotland, blamed the broken rib phenomenon on the system of nonrestraint, commenting that "if England *is* the country of nonrestraint, it is also the country of broken ribs among the insane!"[19] The nonrestraint movement,

most closely associated with the Quaker-run York Retreat, argued for the discontinuance or minimal use of manual restraint in asylums, instead relying on cultivating better relationships between staff and patients through various activities and the maintenance of a 'family' atmosphere. Lindsay argued that the disappearance of mechanical means of restraint over the course of the nineteenth century had in fact *increased* the potential for injury as attendants struggled to subdue patients single-handedly or to manually convey them to seclusion in an excited state. Florence Hale Abbot, writing in *The American Journal of Nursing* in 1903, also noted that in many cases being manually restrained by an attendant made a patient more excitable than they might be when simple mechanical restraint was used, thus increasing the risk of injury.[20]

The impact of the nonrestraint system on the incidence of injury was debatable, but there were undoubtedly some cases in which the violent actions of attendants were a direct cause of patient injury or death. The medical director's journals at the West Riding suggest that such instances were dealt with in a serious manner. In 1893, William Bevan Lewis expressed his hope that the prosecution of an attendant for assault would establish "a healthier feeling" amongst those staff who rigidly followed the regulations and attended to their patients with care.[21] This concern for the conduct of attendants and care of patients was evident in previous Superintendent James Crichton-Browne's practice of holding leaving interviews with patients.[22] He further requested that every patient, once discharged, "write to [him] one week after their return home" detailing their experiences.[23] This complemented the investigations of the Lunacy Commissioners and the Asylum's Committee of Visitors, both of whom were expected to speak to patients about their treatment during their visits. Such checks could prove difficult in practice, however—especially in large asylums—and criticisms of the asylum system rumbled on in the press. Alienists felt compelled to respond to each new charge, so that "by the 1860s and 70s there was a siege mentality developing in some quarters, as asylum professionals sought to rescue the reputation of their supposedly violent staff, and the system itself."[24]

If not all cases of fracture were the result of calculated aggression by attendants, there was still scope for an explanation that highlighted violence. The fatal potential of interpatient conflict was starkly demonstrated at the West Riding in 1889 when a patient was repeatedly hit on the head with a kneeling board (used when cleaning floors) by a fellow patient and died.[25] Another patient, 55-year-old Richard P., who had been placed in

the refractory ward at admission, came into conflict "with some of the patients … [who] pushed him and hit at him."[26] Not long after his move to a regular ward, he died and was found at postmortem to have four injuries to his ribs. At inquest, the role of interpatient conflict in his death was made clear:

> A patient named [John B.] stated on oath before the Coroner that he had seen [Edward A.] strike & kick [Richard] … and that [Richard] was knocked off his seat by [Edward] and that he (John B.) told [Edward] to give over striking [Richard] … [Edward] himself admits having knocked [Richard] down and kicked him.[27]

More damningly, culprit Edward A. had been given the task of looking out for Richard upon his arrival on the ward, as he was "considered a quiet man & not likely to injure any patient without provocation."[28] This practice of pairing up a new patient with an existing resident was a means of assimilating patients into asylum wards, but also undoubtedly a useful way of managing the large numbers of patients for whom attendants could find themselves responsible. Asylum staff, as well as patients, found themselves at the mercy of those they tended: West Riding Medical Officer Ernest Birt reportedly had a narrow escape in 1884 when a patient attempted to stab him in the neck.[29] Interpersonal violence was a matter affecting all levels of residents and staff in the asylum, with incidents taking place between patients and staff, between patients, and even between staff members.[30] As well as direct violence by attendants or other patients, debates in the medical press placed the blame for patient injuries on superintendents for not surveying their staff properly, and on the Commissioners in Lunacy for appointing superintendents too busy to run their asylums satisfactorily, as well as their own tardiness in investigating deaths. In a case at Hanwell Asylum, for example, there was a gap of almost one month between the patient's death and the Commissioners' visit—but this was not an uncommon delay considering the small size of the inspectorate and the tasks allotted to them.[31]

The question of who was ultimately at fault for patient's broken ribs did not yield a clear answer. At the heart of the issue was a more philosophical problem about who was to blame for the deaths of patients who were unable to look after themselves. Although fractures were also observed in general hospitals, it was noted that patients there were generally able to avoid accidents and to describe properly any incidents that did occur, and

would in any case be turned out in the event that they became unruly.[32] The excitement, delusions, or physical infirmities of asylum patients, on the other hand, could account for a wide range of events, with apparently inexplicable injuries rationalised by attributing them to dysfunctional behaviour. Though an accident traditionally implied no human agency, changing understandings of the accident blurred the boundaries between accident and intentional act. 'Accidents' coalesced to form a body of cases that were explained in the press as events neatly attributable to an inefficient and immoral asylum system. The broken rib scandal occurred at a time when "accidents went public," both in terms of the arena in which they occurred and in terms of rising public concern for safety.[33] Both Roger Cooter and Jamie Bronstein have emphasised the penchant of the Victorian press for the large-scale accident such as the mining disaster.[34] Generally "it was the somewhat atypical 'single event catastrophe' that captured newspaper attention," or shock epidemic diseases like cholera.[35] However, in the case of factories and workshops, individual cases could also be crucial in raising public awareness of the need for preventative measures such as safety railings or breathing respirators.

Stories of individual asylum deaths like Rees Price's carried within them a distinct thread of humanitarian concern and tapped into contemporary fears about the medical profession. The broken rib scandal was reminiscent, for example, of fears surrounding "chloroform deaths" (patients dying whilst under sedation) in the 1840s and 1850s.[36] Whilst it was not until 1885 that the *BMJ* felt it appropriate to comment on factory accidents—and even then in a manner which suggested such things were private matters—it published a lengthy list of stories from the 1870s that dealt with the 'asylum problem.'[37] Yet official statistics suggested that broken ribs in asylums were not as common as many supposed: the Blue Book of 1896 recorded 7182 deaths in English and Welsh asylums that year, 11 of which were a result of fractures or dislocations.[38] Some speculated that incidences of fracture were less common in asylums due to extra precautionary measures, whilst others cited increased inspection as the reason for deaths coming to public attention.[39] The recording of accidental injury was indeed increasing at this time and just as we may read slightly sensationalist accounts of broken ribs as evidence of a widespread phenomenon, we may also read the reports as representative of a few isolated cases—as Edward Baines observed of the cotton industry in the 1830s, where singular cases of injury led to condemnation of the industry as a whole.[40] Leonard Smith has noted that the "mythology of cruelty" emphasised by lunacy reformers

and the nonrestraint movement has continued to affect perceptions of nineteenth-century psychiatry up to the present day.[41] Whilst instances of attendant-on-patient violence undoubtedly occurred, we should be cautious of assuming that they were widespread or that they were unquestioningly accepted by asylum staff. In seeking to understand contemporary perceptions of the body in the asylum, then, it is essential to consider the full range of explanations that were offered for broken bones and the ways in which the phenomenon was investigated.

The Role of the Inquest

In solving the mystery of broken ribs in the asylum, discussion centred upon the bodily evidence that was 'surfaced' at postmortem examination and coroner's inquest. After the 1836 Births and Deaths Registration Act it became a legal requirement to report all deaths and make any suspicious circumstances known to the coroner. In the case of asylums, the 1862 Lunatics Amendment Act required all deaths that occurred within the institutions to be reported to both the local coroner and the Commissioners in Lunacy. At the West Riding, and elsewhere, it was standard practice to hold an inquest not only in cases of suspicious deaths, but those that occurred a few days after admission. The number of coroner's inquests into deaths of West Riding patients was apparently inflated by the latter group, as many patients were admitted in a serious and often helpless state. James Crichton-Browne drew attention to the hopeless character of many admissions in 1875: "The condition of the patients admitted into the Asylum during the last quarter, has been so deplorable as to call for special comment. Many have been brought here in an actually dying state, and many far advanced in incurable disease."[42] Crichton-Browne was critical of the local population's tendency not to seek help until it was too late, and suggested that such inaction led to the Asylum being filled with incurable and chronic cases requiring significant levels of care—if they survived long enough after admission.

There are two coroner's warrant books spanning the nineteenth century at the West Riding. The first, covering the years 1834–1879, contains 118 cases, the second (1879–1919), 266.[43] Of the 384 inquests held between 1834 and 1919, 44 mention fracture as an element of the verdict, usually of the leg bones, ribs, or skull. Rib fractures accounted for 19 of the 44 fracture cases, including that of 51-year-old Thomas E. who was admitted to the Asylum on 13 October 1864. Thomas was very feeble and unable to

stand or walk on his own, but was placed in a chair in the dayroom whenever possible. On 4 December he fell from this chair, incurred a bruised hip, and was returned to bed. On 7 December the casebook recorded:

> It appears this patient was lifted out of bed & placed on the night stool by [the night attendant] in order to change his shirt which was wet. The attend[ant] states that finding he had not "sufficient sheets" he left this patient on the night stool & went to the store at the other end of the ward for them, being absent about 5 minutes. On his return [he] found the patient on the floor, having fallen off the commode, close to & probably against the bedstead. He changed the sheets, lifted [the patient] into bed & left him as he thought none the worse for his fall … At 5.30am the House Surgeon (W J Lancaster) was called to see this patient in consequence of a great change for the worse.… A broken rib was suspected as the cause, but at first was not detected (no report made at this time of any fall) but at 9:30am fractures of the 4th & 5th ribs on right side were discovered on again examining this patient and a slight though recent bruise over the seat of fracture … [T]his patient gradually sank and Died Dec. 8th 1884.[44]

Postmortem examination confirmed the fractures as suspected, as well as a "small wound" of one lung which had collapsed. The coroner returned a verdict of "General Paralysis accelerated by fracture of the ribs."[45] This term, 'accelerated,' appeared on just less than half of the 44 fracture cases subject to an inquest at the West Riding. Laqueur addresses the use of this phrase in the context of occupational illness, and suggests that it was a useful means of absolving employers of responsibility.[46] Certainly its use in the case of Thomas E. could be seen to remove some culpability from the night attendant, suggesting that—though he had been negligent in leaving the patient alone for five minutes—he could not have foreseen the severity of the injuries that had resulted from a minor fall. But 'accelerating causes,' as well as being a potentially useful semantic tool, also reflected understandings of death as the result of a combination of factors. An 1845 circular to coroners on correct death registration made clear that all elements pertaining to a case were to be recorded, noting that "It often happens that a complication of causes conspires to produce death; for instance, a person '*falls*—on a knife.'"[47] Death was rarely an event with a single causative factor. "Fracture of the skull," for example, was one of the examples given on a list of 'Imperfect Returns of the Causes of Violent Death' as it was an "exclusively medical view" that neglected to mention

intent—whether the case was one of accident, murder, or suicide.[48] In cases like Thomas E.'s the attribution of death to general paralysis as the primary factor, and broken ribs as the 'accelerant,' seems rather disingenuous. Yet it reflects the sense of inevitability surrounding general paralysis: that it was a desperate and incurable disease, and that the patient could die as a result of any number of complications that came with it. In the context of late nineteenth-century psychiatry, the 'accelerating' physiological cause also parallels the 'exciting' psychological cause so often found in asylum case records. Joseph B., for example, diagnosed with general paralysis upon admission to the Asylum in 1885, was assigned a predisposing cause of "heredity" and an exciting cause of "alcoholic excess," a combination that can be seen in several other West Riding records.[49]Predisposing and exciting causes reflected the fluidity of psychiatric diagnosis at this time. General paralysis, in particular, had so many mental and physical manifestations—occurring at different points in the course of the disease—that it was not unusual for a diagnosis to be made some time after admission, and sometimes not with certainty until after death.

It was doubly difficult to account for deaths in an asylum environment where simple cause-effect relationships were complicated by the patient's behaviour and subjective sensations, as well as the presumed unreliability of fellow patients as witnesses. Although some patients—such as John B., above—testified at inquests, many were not considered appropriate witnesses. An 1882 case against a Gloucester County Asylum attendant, for example, did not receive the testimony of patients who claimed to have witnessed the defendant using violence as "[t]he coroner did not consider that the patients were proper witnesses."[50] This was a period when so-called 'expert witnessing' was increasingly employed; the 1836 Medical Witnesses Act provided for coroners to pay one medical witness per inquest who was to be selected "for their supposed capacity to provide evidence in relation to the specific circumstances of a specific death."[51] Ideally this witness would have been familiar with the patient prior to death, and in accordance with this the asylum surgeon often gave evidence, along with those who had attended a patient. The appointment of a medical witness was often as much "a choice between versions" of a death than the presentation of any objective fact.[52] At the inquest of Henry D., who was discovered to have seven fractured ribs at postmortem, the evidence of five people was recorded: the prison warder and the master of the workhouse who had both seen him before his committal to the Asylum, the daytime asylum attendant, the asylum surgeon, and the night asylum attendant. An

explanation for Henry D.'s injuries had been volunteered to the prison warder by a fellow prisoner who "admit[ted] having struck him with a stick when he disturbed the dormitory and messed the floor, & … [who] had seen others strike [Henry D.]. He also mention[ed] a heavy fall which he had one night on[to] the floor when standing on his bed."[53] Nevertheless, a verdict of pleurisy caused by fractured ribs was returned, noting "when where or by what means the ribs were fractured there is no evidence to shew [*sic*]."[54]

Not all cases of fracture resulting in, or occurring close to the event of, death became the subject of coroner's inquest. In 1891 West Riding patient Zelia H. was found to have five broken ribs at postmortem. No inquest was held, however, and after corresponding with the Commissioners it was decided that her injuries "were not the result of carelessness."[55] Similarly, Thomas T. was found to have three broken ribs at postmortem, yet the coroner attributed his death to a combination of bronchitis, pleurisy, and erysipelas of the arm: "As to the fractured ribs it was evident they were not of quite recent date and it was thought probable that they had occurred by one or more falls, which could hardly be prevented."[56] This tendency to dismiss some fractures as contributory causes of death according to their circumstances was also evident in the case of Widdop P., a general paralytic patient who died 11 days after admission:

> A broken rib was found after death and an enquiry held accordingly. From the probable date of the fracture (it was but quite recent) and from the fact that previous to being brought to the Asylum, the patient had fallen headlong down stairs, it was decided by the Jury that the accident had occurred to the patient previous to admission, the Attendants being exonerated from all blame or suspicions.[57]

In ascertaining the cause of death, the coroner was obliged to look not only at the evidence of the physical body, but also the circumstances surrounding or leading up to death. This was an exercise that could prove complicated in the asylum context, especially where a patient's excitable or violent behaviour was often involved in accidents; however, patients' own reports of incidents were considered unreliable.

The cases described so far illustrate the difficulty in relying on coroners' warrants as master narratives of death, but also the complexities of fracture deaths that—particularly in cases of general paralysis—proved difficult to account for with any degree of certainty. When the registration of cause of

death began in 1838, accidents were typically grouped together with other 'violent' deaths such as drowning, but as the century progressed and birth/death statistics became more sophisticated, deaths involving violence (including accidents) began to be classified along lines of culpability and more thoroughly investigated.[58] An injury without a sense-making event was not acceptable. Yet in the nineteenth-century conception of nature as an "aggregate of events," both diseases and accidents could be the result of many subtle occurrences.[59] It was the special vulnerability of the asylum patient that journalists used to great effect, emphasising how asylum residents were heavily reliant on the watchful eyes and careful hands of others, and asking readers to consider the "kneaded bod[ies]" of patients being "shovelled out of the way" by asylum staff.[60] At the same time, though, evoking sympathy on this basis inevitably positioned the patient (as well as the careless or violent attendant) as 'other.' Ishita Pande, working on bodily evidence in inquests into child rape deaths in late nineteenth-century India, suggests that part of Laqueur's humanitarian narrative remains unelaborated. The narrative works, Pande writes, "not so much by arousing selfless compassion for a distant stranger, but by provoking the very opposite sentiment:" distancing the victim and 'othering' them as someone in need of special protection by a more powerful social group.[61] Whilst Pande is examining the nineteenth-century colonial context, this uneasy pairing of sympathy and disdain can be seen in some of the coverage surrounding broken rib cases in Britain, including that in the medical press. *The Lancet*, condemning the violent treatment of asylum patients in 1870, nevertheless described such patients as "unpleasant."[62] T.L. Rogers, Rainhill Superintendent, also singled out the problematic behaviour of general paralytic patients, who had "very exalted notions of their own power and ability, and a strong propensity to order and direct every one [*sic*] else … combined with great muscular weakness, diminished sensibility to pain, and inability to protect themselves; leading to quarrels with others where they were at physical disadvantage."[63] The idea that asylum patients were fundamentally different to other people was not simply a matter of behaviour, then, but also a matter of somatic distinction. As the next section shows, asylum doctors were increasingly coming to believe that people suffering from general paralysis were profoundly *physically* different.

General Paralysis and Softened Bones

In accounting for the fragile bodily state of general paralytic patients, it was possible that—if blame did not lie with attendants—the broader asylum environment was at fault. Like the bedsores or flabby muscles that were the consequence of prolonged bed rest and inactivity, fractures could be explained by asylum life. Shawn Phillips' bio-archaeological study of the Oneida County Asylum in America demonstrates how the peculiarities of institutional life might have a material impact on the body: he links spinal burst fractures to Oneida's labour therapy, in which patients undertook manual work involving heavy lifting. Phillips concludes, however, that institutional life at Oneida served to increase overall skeletal robustness.[64] In the cases described in this chapter, asylum life had the opposite effect, as Edinburgh physician William Carmichael M'Intosh explained: "I do not think that asylum life [produces bone] disease," he wrote, "but certainly it would aggravate the tendency."[65] Many contemporary writers on degenerative conditions and diseases of the bones highlighted the importance of exercise to bone development. Like muscle, bone was a tissue that needed to be nurtured, and disuse could lead not only to atrophy, but even a reduction in the amount of bone. If patients spent their days sat on wards, taking little exercise or confined to bed, it was hardly surprising that their physical health would suffer. Ringrose Atkins of the Waterford District Lunatic Asylum found the most pronounced degeneration of the bone in those parts of the body that were unused, such as the lower limbs during bed rest.[66] The poor state of many patients also militated against their recovery from relatively minor injuries: upon Charles K.'s death, West Riding Superintendent Herbert Major noted: "In a younger and healthier subject than the patient was, the injury would not probably have been attended with any serious consequences but in the debilitated, unhealthy constitutional state in which he was … it brought about a fatal issue."[67]

In accounting for fractures, then, the patient's constitution or general bodily health was a vital part of the narrative. The discourse surrounding rib fracture in the asylum recalls that surrounding haematoma auris in nineteenth-century Germany: asylum staff, dismissing the possibility that haematomas of the ear were caused by attendant violence, explained them as the result of an underlying condition in patients.[68] Bethlem Superintendent George H. Savage, for example, aligned haematomas with the tendency of general paralytic sufferers to bruise remarkably easily:

> In one case a patient, simply by slipping out of his bed, bruised the outer side of his thigh, producing no abrasion of the skin, but within two days there was an enormous bruise with œdema and tense swelling, resembling a bad case of phlegmonous erysipelas [a severe skin infection, see Chapter "Skin"], which led to a large abscess.[69]

In another case, Savage described the case of a patient who was admitted exhibiting "bruise-like marks," which within a few days had become larger and more numerous, "some … so placed that no ordinary bruises could arise in the situation," others "appear[ing] in the night."[70] The belief that asylum patients were especially susceptible to haematomas inspired some practitioners to investigate the phenomenon more closely. In 1875 Lennox Browne of the Central London Ear and Throat Hospital conducted research at the West Riding, publishing his results in volume five of the *West Riding Lunatic Asylum Medical Reports*. He found men particularly prone to haematoma, making up 24 of the 32 cases studied.[71] Though most haematomas occurred in maniacal patients, eight cases were found in general paralytics and—like fractures—these were explained by appealing to the physical behaviour of the patient. "It would appear," Browne concluded, "that othaematoma is a disease which occurs for the most part in patients subject to attacks of a violent and paroxysmal character"—those whose physical behaviour predisposed them to injury.[72]

Both haematomas and broken ribs were alighted upon by doctors at the West Riding and elsewhere as phenomena that particularly affected general paralytic patients. Henry H.'s case, for example, was "almost certainly one characterised by extremely brittle bones so frequently associated with General Paralysis." Despite being kept in a padded room he was found to have several fractures at death, the most likely explanation for which seemed to be his sudden attack on an attendant five days previously.[73] As a progressive and degenerative condition, general paralysis appeared in almost every discussion of bone disease amongst the asylum population (there is little reference in the West Riding records to the 'worm-eaten' bones of tertiary syphilis, but this symptom is not universally present in the disease). George J. Hearder, Carmarthen Superintendent, referred directly to the broken rib scandal in his 1871 paper, 'Fractured Ribs in Insane Patients,' where he said that nine out of 20 postmortems at Carmarthen had revealed ribs in a "diseased state."[74] Postmortem observations from several asylums highlighted the unusual appearance of patient's bones. Before detailing these appearances, a brief caveat: whilst I am reluctant to

project current pathological knowledge onto that of the late nineteenth century, it is worth noting that variations in bone structure may occur according to the time at which postmortem was performed. Decomposition varies in its speed and character according to the external environment, so that if bone is exposed to the air for a length of time it will become dry and more liable to breakages or cracks.[75] That the bones under study in asylums may have been affected by such variables is a distinct possibility. The West Riding's postmortem records typically note how long after death the postmortem was performed, and this could vary widely according to staff availability and time of death; it was not unusual for the examination to take place over 24 hours after death, as in the case of Elizabeth H., whose postmortem took place two and a half days later.[76] Some researchers offered ways to get around the problem of postmortem degeneration: in studying the brain, for example, A.H. Newth advised injecting hardening solution directly into the skull through trephine holes, allowing the postmortem to be delayed but preserving the brain in its original state.[77] The possible impact of such delays on the state of bones was rarely mentioned by contemporary observers, however, and indeed many of the changes to ribs that they detailed seemed too extreme to be the result of natural decay. Ribs could be snapped between two fingers, "broke with a soft rotten sort of fracture," were "soft and boggy," "mere bands of a fibrous substance, like wet leather" or "greasy" and "rough," like "sponge soaked in fat," and when cut exuded "a thick bloody fluid."[78] Some researchers claimed to have been able to tie bones in a knot due to their incredible flexibility, and their anomalous appearance might be evident for years to come, remaining dark and rotten when preserved.[79] George Henry Pedler's analysis of the bones of 540 patients at the West Riding declared only 49% of the average insane patient's bone to consist of "true bone," the rest having been replaced by "oily and fatty matters."[80] Like the muscles, then, the bones of many patients appeared to be liable to a form of fatty degeneration.

This startling degenerative condition was identified by most writers on the subject as mollities ossium, or osteomalacia: an abnormal softening of the bone. Some described it as the adult counterpart of rickets, as it appeared to be similarly dependent on the external environment. Thomas Markoe, for example, drew attention to the poor living conditions of many rickets and mollities sufferers.[81] Other writers argued that mollities was a distinct disease involving muscle degeneration alongside skeletal abnormalities.[82] It was not uncommon to cite mollities ossium as a cause of

death as it was understood as a progressive condition with no cure; indeed, orthopaedic specialists often dismissed the condition as one worthy of detailed investigation for precisely this reason.[83] Despite disagreement on the exact nature of mollities ossium or osteomalacia, it was clear to most commentators that the condition was peculiarly prevalent in women, usually those who had borne children. Brigitte Fuchs argues that the construction of the condition as female was bound up with the gynaecological specialism of pelvimetry in Central Europe, with treatment increasingly dependent on gynaecological expertise and sometimes surgery.[84] One of the most famous cases to be found in the medical literature was that of Mme. Supiot (Elizabeth Querian) who came under observation in 1752 at the age of 36. She had borne three children before she began to complain of aching pains in her limbs; the pains were soon accompanied by distortion of the bones and apparently became so extreme as to force her legs into an upright position parallel to her torso.[85] David Walsh, examining four instances of mollities in female West Riding patients, singled out for particular comment one woman who had the condition despite having never borne children; her case was also noteworthy as she was the only one of the four still living at the time of his writing.[86]

In the previous chapter I argued that degeneration of muscle tissue was a bodily process with significance beyond the merely physical, impacting upon men's ability to work and on perceptions of their masculinity. Similarly, mollities ossium in male general paralytic patients signalled a profound change in the fabric of the body. Joseph Jones had distinguished between mollities ossium (softening) and fragilitas ossium (a brittleness or fragility in which fractures took place from trivial causes), noting that fragilitas ossium was more likely to affect men: he gave the example of a 24-year-old American man who had experienced over 50 fractures during his lifetime.[87] Yet post-mortem evidence in the asylum—the bones like "wet leather"—pointed to a definite softening of the bone. Although osteomalacia 'proper' was generally considered to occur in women, several cases of the condition in men were related that, rather than being taken as evidence for the disease's greater reach, were interpreted as evidence of the 'feminisation' of the male body. Sidney Barwise, Surgical Officer at Birmingham General Hospital, prefaced his 1887 article, 'A Case of Mollities Ossium in the Male' with the note that "Mollities ossium [was] such a rare condition, especially in men, that no apology [was] necessary for recording the following case," in which a 31-year-old man exhibited bone softening that had forced his spine into a semi-circle.[88] In 1880 Ringrose Atkins reported the case of a man who had

been resident at Cork Asylum for over 15 years, during the final seven of which he had been bedridden. The patient's history was of particular interest. Some years before, he had—in an act of self-castration—"removed the entire scrotum and testes" and as a result had "the peculiar effeminate physiognomy and scanty and almost colourless hair of those deprived of the organs of generation."[89] At the asylum, a fellow patient had "playfully [thrown] himself on him," breaking both of his thigh bones; due to the contortion of the limbs, they were splinted and left in the position they had assumed, drawn up towards his stomach. A week later, with the groin and abdomen inflamed, the patient died and a postmortem revealed bones "almost as fragile as rotten timber" that could be cut through with a scalpel.[90] Atkins' interest in the case was primarily as an example of bone softening in the insane, but Charles Macnamara, relating the case in his *Clinical Lectures* (1881), noted that "it [was] at any rate a coincidence worth noticing in connection with the frequency of this disease of the bones among pregnant women that [Atkins'] patient had mutilated himself so as for many years to have lost virile power."[91] Macnamara thus linked bone softening in a male patient explicitly to the loss of the reproductive organs, mirroring Central European explanations for osteomalacia in women that associated the condition with ovarian disorders, and that led to curative attempts such as oophorectomy (removal of the ovaries).[92] That even bone could be considered gendered was evident in J.C. Brown and T.L. Rogers' 1870 article for the *Liverpool Medical and Surgical Reports*, where they described the ribs of a (male) patient D.D. as "much thinner and slighter than usual, resembling those of a female."[93] Bone softening, like muscle degeneration, suggested that the normally hard bodily fabric of male general paralytic patients was being transformed into unproductive and feminine soft matter.

There was an alternative explanation for fracture in cases of general paralysis, however, that attributed breakage to the behaviour of the patient. Private asylum proprietor H.R. Octavius Sankey thought that the extent of fractures seen in general paralysis was beyond what one would expect as the result of a simple fall; neither, he surmised, could so many breaks occur as a result of attendants kneeling on patients. Sankey attributed such injuries to the dulled sensations and impaired reflexes of general paralytic patients that, as we saw in Chapters "Skin" and "Muscle", occupied an increasing amount of asylum doctors' attention. General paralytic patients, said Sankey, "[threw] themselves about with reckless violence," increasing their risk of injury.[94] Even when left alone, their restlessness and lack of physical control might impact upon their physical wellbeing: Thomas H., whose

two fractured ribs occasioned an inquest, was "extremely restless at night" and his rolling about in bed was judged to be the cause of his injuries in the absence of any other evidence.[95] In the case of Thomas S., a 44-year-old draper from Skipton, both a lack of reaction to injury and excitability were evident. He was diagnosed with acute mania at admission, but the doctor also noted his suspicion of oncoming general paralysis.[96] Thomas's death was preceded by the discovery of several fractured ribs, attributed to an incident on the ward:

> …the patient after having been washed and dressed in the morning and having been taken to a seat in the dayroom of his ward, suddenly got up ran down the gallery and kicking over a bucket which was in use fell headlong upon it. The patient did not seem hurt at the time and ate a good breakfast afterwards so that although the accident was reported by the attendant it did not attract special attention at the time.[97]

The importance of general paralysis in Thomas S.'s death was clear in the coroner's verdict: "accidentally falling over a slop pail in the gallery of no. 18 ward, and thereby fracturing his ribs and causing pleurisy – he being at the time in an advanced stage of general paralysis."[98] The characteristic excitement of the disease led to the accident, but also complicated subsequent treatment as his diminished sensations allowed him to eat "a good breakfast afterwards" in the dining room and give no particular cause for concern. Communal areas like dining rooms (Fig. 1) and workrooms were often cited in coroner's inquests and other accounts as spaces where accidents might take place, or where the apparently healthy condition of the patient had been observed by several people. Watching Thomas S. eat "a good breakfast" was an important mode of informal observation, with an apparently mundane activity capable of being transformed into a vital piece of clinical and legal information. Lack of complaint about injury, like that in Thomas S.'s case, was a common theme among general paralytic patients. Walter M., a regular patient at the West Riding, was diagnosed with recurrent mania upon his final admission but, like Thomas S., signs of general paralysis were recorded prior to his death such as "thick and indistinct" speech.[99] It was while working in the Asylum mechanic's shop that Walter's accident took place: "he had a severe fall but said nothing about it[,] went about as usual and made no complaint of injury until, attention being attracted by his delicate appearance he was examined physically."[100] Fractures were found that Walter attributed to a blow from

Fig. 1 The West Riding Asylum dining room, late nineteenth century. Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1416

a piece of wood, but which he dismissed as painless. It is notable that, in the Medical Director's journal where this case was recounted, the words "but said nothing about it" were an addition to the record inserted above the original sentence—a pointed and careful reminder that, due to the patient's (in)experience of pain, the Asylum staff could not be held fully accountable for failing to notice the injuries earlier. Such amendments to the written record in cases of injury can also be seen in postmortem findings. In the record for Richard P., whose case is discussed above, a doctor or clerk noted that some of his ribs were found to be "broken"; another staff member, however, crossed out this word to replace it with the less emphatic "cracked."[101] Such retrospective engagement with the written record can be seen in other West Riding casebooks, which were used as reference tools when a death became the subject of inquiry. In the case of Henry D., described above, elements of his casebook entry were

underlined in blue pencil, suggesting a search for evidence after his death that might shed light on the case and absolve the staff of responsibility for his injuries: that yellowish bruises were found at admission, and that he had moved his bedstead around his room at night.[102] Whilst the patient's behaviour was relevant in many cases of fracture, as this section has described, when dealing with such a serious issue as patient death there was a sense that something more than an account of the patient's movements was needed. Was there, in fact, something about the fabric of the bones themselves that explained their liability to fracture?

Quantifying the Bodily Fabric

Were fractured ribs the result of a culture of violence among attendants, an unfortunate corollary of patient excitement, or the consequence of a genuine alteration of the bone that led it to become soft, fragile, and liable to fracture? Many asylum doctors pinned their hopes on the last option. The discovery that weakened bones were one of the consequences of general paralysis would not only help absolve asylum staff of the charges made against them, but it would also demonstrate the value of asylum science to the study of mental disease, and indeed to the field of osteology (Joseph Jones, in 1869, had stressed the need for a thorough investigation of mollities ossium, for instance).[103] It was not enough, however, to simply reiterate examples from personal experience to prove the tendency to bone breakage; indeed, the retrospective tone of many such examples might merely fuel public suspicion. If alienists were to demonstrate conclusively that fragile bones were a common phenomenon in insanity (and particularly in general paralysis), they would have to offer concrete proof. The obvious way to do this was via the postmortem, which had already uncovered the softened muscles and fatty degeneration of the heart in general paralysis. Like the study of muscle, though, there was always scope for more detailed quantitative observation or new instruments and techniques to complement a doctor's own visual and tactile observations. Alongside analysing the make-up of bones (finding increased amounts of fat and so on), their strength was repeatedly tested. Clouston had tested the bearing weight of the ribs of insane patients in 1870, and Pedler had investigated the state of patient's ribs at postmortem for his 1871 article in the *West Riding Lunatic Asylum Medical Reports* (neglecting, however, to give any detailed information about his methods).[104] Bethlem Superintendent Theo Hyslop, reflecting on his time as Clinical Assistant at

West Riding, said that he, too, had undertaken experiments into breaking strain there using "an ordinary concrete testing machine."[105]

It was Joseph Wiglesworth of Rainhill Asylum who offered one of the most thorough accounts of fractured ribs in asylums by the 1880s. In 'On Bone-Degeneration in the Insane' Wiglesworth tested 30 ribs from insane patients, comparing these with eight "healthy" ribs. In 17 of the 30 he found trivial changes, eight were normal, and the remaining five he pronounced "altogether abnormal" on account of cavities and thinning, and the results of minute measurement: he claimed that the average depth of the outer layer of bone in sane patients was 0.59 mm, but in the insane just 0.32 mm.[106] The entry 'Bone Degeneration in the Insane' (cross-referenced with 'Ribs, fractures of') in Daniel Hack Tuke's *Dictionary of Psychological Medicine* (1892) was written by Wiglesworth. Here, he summarised present knowledge about bone disease, noting that "there [was] nothing remarkable in the circumstance that the … failure of nutrition [seen in the insane] should extend to the nervous system."[107] Though Wiglesworth admitted that such nutritive failure wasn't confined to the insane, he argued that wasting diseases affecting the bodily fabric were more common among such patients. He concluded that the ribs were healthy in a minority of cases, and that although most cases of fracture could be associated with the wasting effects of old age, in around 10% there existed abnormal fragility. It was this 10% that would be the main topic of investigation over the next 10 to 15 years. "The investigations which have already been made into the condition of the bones in general paralysis tends to the belief that they are much more fragile in that disease than in health, or other forms of mental disease," wrote Frederick Needham (a passionate opponent of mechanical restraint) in 1872: "An accumulation of facts upon this point will materially affect the question of death from apparent violence in such cases."[108] Though Wiglesworth and others had based their conclusions on relatively small samples, it was at the West Riding that some of the most systematic investigations into bone strength occurred in the 1890s, utilising large patient populations and making the breaking strain of ribs a standard object of postmortem inquiry. This investigative exercise was aided by a device invented and distributed by Charles Mercier.

Mercier, who had served in several public asylums before going into private practice, was himself afflicted with a chronic bone disease, osteitis deformans (or 'Paget's disease'), which led to misshapen bones. In the early 1890s he devised a method of testing the 'breaking strain' of ribs, an innovation that promised to solve the question of rib fragility in the insane

once and for all. The fullest description of Mercier's innovation appeared in Rainhill Pathologist Alfred W. Campbell's 1894 paper, 'The Breaking Strain of the Ribs of the Insane: An Analysis of a Series of Fifty-Eight Cases tested with an Instrument specially devised by Dr C.H. Mercier.' To ascertain breaking strain, one "extract[ed] a certain length of the eighth pair of ribs, and [tested] the breaking strain of one of these lengths against the convexity, of the other against the concavity"; an inch of bone was also sawn from the end of each rib for microscopic examination.[109] Mercier's own description of the instrument suggests that it resembled an osteoclast (used to break bones before re-setting them) with measuring apparatus attached: "It had a stirrup at one end and a screw at the other, and between these was a spring which registered the number of pounds pressure exerted. The bone … was put through the stirrup resting on the fork of the machine; the screw was then turned till the rib broke."[110] Mercier sent the instrument to several asylums as well as the larger London hospitals, suggesting that he had on some scale mass produced these instruments.

His interest in the breaking strain of ribs, although it took place several years after the height of the broken rib scandal in the 1870s, intersected with several developments in the 1890s that focused attention on the role and responsibilities of asylum staff. First, the increased regulation of workplaces, encapsulated in legislation such as the 1895 Factory Act, had interest beyond factory walls: the Act's model of employer liability could be extended to a variety of contexts, including the relationship between patients and staff in institutions like the West Riding where many patients undertook work on-site.[111] Second, the 1890 Lunacy Act had obliged all asylums to keep registers of mechanical restraint. The 1845 Lunacy Act had stipulated that abuse of patients by asylum staff was a chargeable misdemeanour, and the Lunatics Amendment Act of 1853 required asylums to make known to the Commissioners any cases of dismissal for neglect or cruelty. The 1890 Act required asylums to record the reasons for restraint, the methods used, and the length of time patients were kept under it. Third, the concerns of the 1890 Act coincided with a resurgence of public interest in anaesthetic deaths in the 1890s, which had partly contributed to the establishment of the Society for the Protection of Hospital Patients in 1897.[112] As the medical professional was himself pathologised as a slightly sinister figure, both pre- and post-mortem procedures had to be absolutely necessary, with the overriding concern being the benefit to the patient.[113] In the asylum the postmortem was partly rationalised as a deterrent, preventing attendants from "ill-using patients, as injuries inflicted upon them

[were] sure to be detected, and it thus [proved] a safeguard and protection to patients."[114] In investigating the strength of patient's bones, though, the postmortem also held out the potential of a reprieve of sorts for asylum staff—proving that broken ribs were not the fault of attendants, but the result of unusually weak bone structure.

Campbell's initial research confidently identified an average breaking strain of 44.8 lbs against the convexity of the rib and 44.4 lbs against the concavity in male general paralytics (compared to 62 and 65 lbs, respectively, in a healthy adult male), as well as a marked difference in the breaking strain of male and female bones.[115] His second paper on the subject, published only a few months later, was more hesitant: "The difference between the average breaking strain of the ribs of the insane and that of the ribs of persons free from mental disease is not so great as one would anticipate."[116] In this larger sample of 58 Rainhill patients and 50 Royal Southern Hospital patients, Campbell found very little difference between the breaking strain of the ribs of the male asylum patient and that of the male general hospital patient. He theorised that wasting diseases had more impact upon bone structure than mental afflictions, though of course general paralysis (a wasting disease with marked mental effects) had a place on both sides of the argument. Campbell was also forced to admit the existence of anomalies making any concrete conclusions difficult: two female patients from the Royal Southern Hospital had exhibited a breaking strain as low as five pounds.

The inconclusive nature of Campbell's second set of results did not make the measurement of breaking strain redundant. At the West Riding it became quite the opposite. Mercier noted that, apart from Campbell, he had received no reply from any of the asylums who received his instrument with the exception of William Lloyd Andriezen.[117] Andriezen had joined the West Riding as a Medical Officer in 1893 at the age of 26, having obtained First Class Honours from the University of London.[118] He said he had used Mercier's instrument in 122 West Riding postmortems,[119] and the postmortem records testify to this: breaking strain was systematically recorded alongside other facts (such as organ weights and measurement of the hemispheres of the brain) from September 1895. Preprinted certificates for pasting into postmortem books appeared with spaces for the name, date of death, and usual particulars. These certificates contained at their base a pointed reminder of the details to be included in the record:

> The following particulars are Statutory:- Condition—External Appearances —Bedsores—Head—Thorax—Describe *ribs* in every case—Abdomen—Weights—Microscopic Appearances and Special Notes.[120]

The postmortem's dual purpose—a means of discovering bodily disease and proving the good treatment of patients—was evident in the need for 'Microscopic Appearances' alongside rib condition and the presence of bedsores. Judging standards of care in the asylum, then, was an activity that took place throughout a patient's stay, including following their discharge (Crichton-Browne's urging of patients to write to him, for example) and after death.

The investigation into breaking strain did not resolve the issue of whether attendants were or were not responsible for patient's bone fractures, however. Rather, it brought the debate full circle, because it placed the responsibility for preventing injury squarely on the heads of asylum attendants. While the duties of the attendant were not clearly defined in the early nineteenth century, the later years of the century saw a concerted effort to mould attendants into a more efficient and effective workforce. In 1890 the Medico-Psychological Association (MPA) adopted the *Report on the Training of Nurses* and in 1891 the Certificate in Attendance and Nursing upon Insane Persons was introduced. By 1899 over 500 of these were being granted each year, with candidates sitting an exam that included questions on the causes of lung disease, the description of sensory and motor nerves, the prevention of patient escape, and how to set "a good example" to patients.[121] This official qualification complemented other moves towards a better-regulated occupation, such as the introduction of the MPA's *Handbook for the Instruction of Attendants on the Insane* in 1885. Peter Nolan also notes a Rule Book for attendants devised by the matron at Morningside Asylum, suggesting that there was a drive for more formal instruction among many nursing staff themselves.[122]

The contents of the MPA's *Handbook* ranged from an overview of the Lunacy Acts to good practice in matters such as ward ventilation. The issue of restraint was also prominent, with readers advised never to place their knees on the body of the patient in instances when "a struggle [was] unavoidable."[123] The risk of broken ribs was explicitly articulated (and highlighted in bold text) in Mercier's own handbook, *The Attendant's Companion* (1898): "under no circumstances whatever should a patient be knelt on," he warned, as this could lead to broken bones.[124] Attendants were advised that many patients—but especially the elderly and general

paralytic—had unusually fragile bones, and they were instructed to report any complaints of pain or 'shrinking away' from physical contact to a senior member of staff, as well as any bruises or abrasions noticed during dressing and bathing. Mercier emphasised that only a medical officer could provide a definitive diagnosis, reflecting the view that for asylum attendants "a little learning [was] a dangerous thing."[125] Indeed, when the fifth edition of the MPA's *Handbook* was published in 1908, it was criticised for its increasing focus on anatomy.[126] There was a sense that, despite the introduction of official certification and training, many asylum staff remained if not morally then at least intellectually inferior. Bevan Lewis worried that the "intellectual element" that had been introduced into the nurse's or attendant's life via the MPA's training scheme risked making them a hindrance rather than a help: "obtrusive in [their] desire to exhibit [their] knowledge" and "worr[ying] and distract[ing] the physician by [their] constant attempt to note facts."[127] Others—like Clouston—had long emphasised the benefits of collaboration between attendants, nurses, and medical officers, proudly relating that Morningside's "miles of beautifully kept charts" and conversations with its nursing staff had helped its doctors to produce an original investigation into the treatment of general paralysis.[128] Yet, as the final section of this chapter discusses, not all original research was necessarily meaningfully incorporated into the broader research culture of an institution. At the same time, some asylum doctors were also beginning to question the utility of such meticulous investigation as that encouraged by Mercier's breaking strain instrument.

Questioning Pathological Research and Alienist Expertise

By the early twentieth century, the West Riding's postmortem books displayed a distinct lack of concern for the breaking strain of bones. Despite new preprinted books providing a specific line for 'Ribs,' there was no meticulous charting of breaking strain. Instead, vague statements were used such as "Normal," "Rather Soft," and "Softish."[129] That the postmortem records were kept in this fashion by a number of staff members suggests that breaking strain was considered less useful as a pathological fact. Even if researchers could prove, via meticulous pathological investigation, that the bones of many asylum patients were more fragile, or softer,

than those of the general population, it was not a fact that would alter the responsibilities of asylum staff.

Other technical innovations had arisen out of concerns for the mistreatment of patients, such as the development of rectal feeding as an alternative to oral force-feeding.[130] Technologies like rectal feeding had clear beneficial effect, as the emaciated patient grew in strength despite having refused to take, or being unable to be given, food orally. However, pathological technologies that acted upon the dead body, as well as possibly reinforcing the public image of the pathologist as ghoul, were of little practical benefit to patients. The most basic argument for pathological research was the benefit to future patients from knowledge gained in the comparison of bodies and disease—and as we'll see in Chapter "Fluid", postmortem findings could directly inform clinical and surgical practice. Investigations into breaking strain, though, were notoriously inconclusive and to many commentators added insult to literal injury as they subjected the body to further indignities. Certainly such tests would have played into the hands of a number of vocal anti-vivisectionists in the 1890s, who—alarmed by the animal experimentation taking place in many hospitals and asylums across Britain—proclaimed that human experimentation would be next on the scientific agenda.[131] Whilst Lindsay extolled the virtues of the postmortem in uncovering conditions which were "quite unsuspected during life," the very same argument could be turned around to argue that time might be better spent in making closer observation of patients during their lifetime.[132] Constructing the patient as an individual who was unusually physically weak merely served to increase the importance of careful attendance. In the early twentieth century the West Riding's *Regulations and Orders* for attendants continued to remind readers that "On no account must the knees be placed on the body."[133]

Gathering knowledge of mental diseases took place across several sites in the asylum: from the observation of a patient's excitable behaviour on wards or in dayrooms and dining rooms, to the physical testing and microscopic observation of bones in the mortuary and pathological laboratory. The skill of those conducting such tests into breaking strain was often questioned, however, with some physicians criticising the supposedly amateur postmortems that went on in asylums. There was a tendency to view the asylum pathologist—rather like the asylum attendant—as under-qualified for his position, and one can well imagine the response to a researcher conducting experiments with a concrete testing machine, as Hyslop had done. Because his own experiments had found no changes to

bones, surgeon Charles Macnamara was doubtful of the value of experiments into breaking strain and questioned the skill of asylum pathologists. He argued that such investigation should only be undertaken by those possessing special knowledge of the osseous system.[134]

Additionally, there was sometimes a surprising lack of dialogue among asylum doctors during the course of their experiments. Francis Simpson's *Pathological Statistics of Insanity* (1900), which collated a huge amount of postmortem data on both brains and rib strength at the West Riding, made clear that he was unaware of similar data collection undertaken there by Frederick St. John Bullen.[135] Simpson was later able to locate a small amount of Bullen's research material that remained at the Asylum, but was unable to use much of it "on account of the confusing mass of detail involved, and the use of private symbols by the collector."[136] A.H. Newth had complained in 1899 that the value of asylum pathological research was being compromised not only due to a failure to compare it with other work, but also by a tendency to treat it as disposable material. Newth had mounted thousands of microscopic slides at Sussex Asylum but, he related, "practically they were all thrown away, and this, no doubt, [was] the experience of many."[137]

Proponents of laboratory-based research—though now symbolic of scientific rigor—still had a long way to go in the late nineteenth century in convincing some of their colleagues of its use. In 1900 *The Lancet* condemned the proliferation of pathology laboratories, which it described as "emblematic of the dangerous trend toward insularity in modern medical practice."[138] Although many staff at the West Riding undertook significant pathological, histological, and physiological work, Newth's anecdote is a reminder that the simple acquisition of laboratory equipment—as detailed in the Asylum's annual reports—should not necessarily be taken as evidence for the widespread *use* of that equipment, or indeed for sustained courses of scientific investigation. Some pieces of equipment were acquired at the request of individual medical officers, such as Simpson's desire for a "calculating machine" to deal with his large amounts of data.[139] This, and the use of "private symbols" in some doctor's work, suggested that a degree of insularity could exist even within the same laboratory (Fig. 2) as staff members pursued their personal research concerns.

The skill of staff could also be questioned when they attempted to apply their knowledge and findings outside the asylum walls. Those asylum doctors taking an active part in lab-based research were perhaps at a double disadvantage here, as both laboratory science and 'professional' alienism

Fig. 2 The West Riding Asylum pathological laboratory, mid 1890s. Medical officers are joined by Lab Assistant Richard Howden (standing). Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1413

were still developing disciplines in the late nineteenth century. The reaction to alienist evidence in court cases (and in the popular and medical press), which in the era of expert witnessing was cross-examined and questioned, led many alienists to feel it was *they* who were on trial rather than the defendants. This suspicion of their knowledge inevitably extended to discussions of bone fragility, in which there were distinct legal implications. Many articles by asylum doctors read as though they were explaining any doubtful incidents in their institutions before they were brought to light by a sensationalistic press. T.L. Rogers, for example, in 'On Fractured Ribs in Insane Patients' carefully concluded: "I have now given an account of all the cases of fractured ribs that have occurred lately (or at least that have been detected) in the Rainhill Asylum."[140] If superintendents like Rogers were "in terror of the coroner," then the volunteering of accounts of deaths in

their institutions might be perceived as a commendable action, and their provision of data on the subject evidence of their scientific expertise.[141] Such confessions, however, did not overcome the gulf that often existed between alienism and medicine more broadly, and alienism and the public.

Roger Smith, in *Trial by Medicine* (1981), provides a good example of why "[w]hat was an obvious empirical reality to insanity specialists was unknown, and therefore assumed fictitious by others."[142] He cites the case of Thomas Donelly, who was accused of assault with intent to rape in 1862. At his trial medical witnesses argued that Donelly's insanity was a consequence of his epilepsy, but Smith notes that "[t]he jury's insanity verdict probably owed more to [Donelly's] delusions than to the medical view that epilepsy led to a lack of control."[143] The case is used by Smith to illustrate that there were conditions (such as epilepsy, but one could add general paralysis to the picture) that would rarely be identified as such outside the asylum context, making it difficult for alienists and nonalienists to operate within a shared discourse. Conflicting professional knowledge was often evident in court cases investigating fracture deaths. Joseph Workman of Canada's Toronto Asylum was critical of a case in which it had been argued that multiple ribs could not possibly be broken without some pain, but in which no testimony as to the diminished sensations common to general paralysis had been heard from a doctor well-versed in asylum care.[144]

This emphasis on the place of medical knowledge in cases where interpersonal violence was suspected recalls the situation in British India in the late nineteenth century as described by Jordanna Bailkin. There, in cases in which Indian patients had died from ruptured spleens, medical evidence was used to suggest that Indian bodies were peculiarly vulnerable due to the ravages of malaria. Like broken rib cases, ruptured spleen cases were carefully documented and medical evidence was introduced that served to absolve British officials of the charge of murder on account of the supposed fragility of the Indian body.[145] Both the Indian malarial patient and the fragile-boned asylum patient were appealing explanatory models. Indeed, broken ribs became something of a self-fulfilling prophecy: "the more attention [that was] called to [them], the more frequent [did] the occurrence seem to become,"[146] suggesting that broken ribs may have fulfilled what Richard Kanaan and Simon Wessely have termed a "diagnostic need."[147] Fractures may have risked throwing asylums and their staff into disrepute but they could also, as the subject of detailed pathological investigation, furnish new knowledge about mental disease and speak directly to contemporary attempts to find a physical basis for patients'

conditions. The idea that general paralytic patients were peculiarly prone to bone disease was one that fitted logically alongside contemporary theories about both disease susceptibility and the generally reduced health of the asylum patient.

Whilst the insanity defence might absolve an individual of responsibility in cases of 'deranged' actions, the insanity-as-pathology defence at the heart of the broken rib debate rarely served to exonerate asylum officials. Attributing deaths to softened, fragile bones did not—in a medico-legal climate that was increasingly emphatic about the multiple factors involved in deaths or accidents—prove that no violence was involved, or alter the responsibilities of asylum attendants. The idea of the fragile-boned asylum patient is echoed in the turn-of-the-century concept of accident proneness described by John Burnham. He argues that, around 1900, a group emerged in occupational health discourse who "suffered injuries and caused damage" on a greater scale than the majority of the working population.[148] These were people who, through no calculated effort of their own, were apt either to endanger their own safety at work or jeopardise that of others. Like the broken rib phenomenon, accident proneness raised questions of how to "deal with [people] who [showed] a pattern of inadvertent but sometimes dangerous destructiveness" and who could not be held accountable for their actions.[149] The accident-prone individual and the fragile-boned insane patient were both conceptualised as "natural objects" and dependent on external intervention for their own safety: railings around machinery for the former, padded rooms and physical restraint for the latter, and careful surveillance for both.[150]

In configuring the broken or softened bone as an object worthy of particular investigation, it was accorded a significance that impacted upon the alienist profession in several practical ways. Concerns about broken ribs structured postmortem records (the preprinted slips used at the West Riding) and case records (the careful recording of incidents taking place on the wards), and became incorporated into official guidance for attendants (the MPA *Handbook* and Mercier's *Attendant's Companion*). If bone disease was an area that some thought asylum doctors ought not to be meddling in, however, there was one part of the body where their extensive investigation was more justified: the brain. In the next chapter, we look at how the brain—as the pinnacle of pathological examination in the asylum—was examined at postmortem, but also how it, like bones, could structure and impact upon investigative processes and practices.

Notes

1. A version of this chapter appeared as Jennifer Wallis, "The Bones of the Insane," *History of Psychiatry* 24, no. 2 (2013). SAGE Publications; doi:10.1177/0957154X13476200; http://hpy.sagepub.com/content/24/2/196.full.pdf+html.
2. Anon., "The Broken Ribs in the Hanwell and Carmarthen Asylums," *JMS* 16, no. 74 (1870): 251; Anon., "A Death in a Lunatic Asylum," *The Lancet* 95, no. 2419 (8 Jan. 1870): 58.
3. Charles Reade, "How Lunatics' Ribs get Broken," *Pall Mall Gazette* (20 Jan. 1870).
4. See for example John Green, "Experiences in a Lunatic Asylum," *Pall Mall Gazette* (2 Feb. 1893); Anon., "In a Lunatic Asylum," *Pall Mall Gazette* (9 May 1870).
5. Thomas Laqueur, "Bodies, Details, and the Humanitarian Narrative," in *The New Cultural History*, ed. Lynn Hunt (Berkeley: University of California Press, 1989), 190.
6. Jordanna Bailkin, "The Boot and the Spleen: When was Murder possible in British India?" *Comparative Studies in Society and History* 48, no. 2 (2006): 482–83.
7. Anon., "A Social Blot," *BMJ* 2, no. 512 (22 Oct. 1870): 441.
8. Anon., "Death in a Lunatic Asylum": 58.
9. Thomas Smith Clouston, "On the Question of Getting, Training, and Retaining the Services of Good Asylum Attendants," *JMS* 22, no. 99 (1876): 384.
10. John Sheehan, "The Role and Rewards of Asylum Attendants in Victorian England," *International History of Nursing Journal* 3, no. 4 (1998): 28–29, 31.
11. John K. Walton, "The Treatment of Pauper Lunatics in Victorian England: The Case of Lancaster Asylum," in *Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era*, ed. Andrew Scull (Philadelphia: University of Pennsylvania Press, 1981); David Wright, "Asylum Nursing and Institutional Service: A Case Study of the South of England, 1861–1881," *Nursing History Review* 7 (1999). Also see Lee-Ann Monk, "Working in the Asylum: Attendants to the Insane," *Health and History* 11, no. 1 (2009).
12. Neil Brimblecombe, "Asylum Nursing in the UK at the end of the Victorian Era: Hill End Asylum," *Journal of Psychiatric and Mental Health Nursing* 12, no. 1 (2005): 62. On asylum attendants also see Louise Hide, *Gender and Class in English Asylums, 1890–1914* (Basingstoke: Palgrave Macmillan, 2014), Chapter 3.

13. Anon., "Charge against a Lunatic Attendant," *The Ipswich Journal* (25 Jan. 1889).
14. Anon., "Tampering with a Patient," *BMJ* 1, no. 900 (30 Mar. 1878): 457.
15. John C. Burnham, *Accident Prone: A History of Technology, Psychology, and Misfits of the Machine Age* (Chicago: University of Chicago Press, 2009), 221.
16. WYAS C85/1/13/3 Medical Director's journals (1874–1881): Quarterly meeting 20 Oct. 1880.
17. P.W.J. Bartrip, The *Home Office and the Dangerous Trades: Regulating Occupational Disease in Victorian and Edwardian Britain* (Amsterdam: Rodopi, 2002), 2.
18. Anon., "London Gossip," *The North-Eastern Daily Gazette* (3 Mar. 1887).
19. Emphasis in original. Cited in T. Christian, "On the Alleged Fragility of the Bones of General Paralytics," *JMS* 31, no. 136 (1886): 457–58.
20. Florence Hale Abbot, "Feeding and the Use of Restraint in Caring for the Insane," *The American Journal of Nursing* 4, nos. 1, 2 (1903). Anne Digby argues that the risk of injury for attendants increased with the end of mechanical restraint. See Anne Digby, *Madness, Morality, and Medicine: A Study of the York Retreat, 1796–1914* (Cambridge: CUP, 1985), 151.
21. WYAS C85/1/13/5 Medical Director's journals (1888–1894): Quarterly meeting 21 Sept. 1893.
22. WYAS C85/1/12/3 Annual Reports of the Medical Superintendent (1868–1879). *Report of the Committee of Visitors and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum for the year 1868* (Wakefield: Hicks and Allen, 1869). Report of the Medical Superintendent, 36.
23. WYAS C85/1/12/3 Annual Reports of the Medical Superintendent (1868–1879). West Riding Pauper Lunatic Asylum, *Report of the Committee of Visitors and of the Medical Superintendent of the West Riding Pauper Lunatic Asylum for the year 1870* (Wakefield: B.W. Allen, 1871). Report of the Medical Superintendent, 32.
24. Robert James Ellis, "A Field of Practise or a Mere House of Detention? The Asylum and its Integration, with Special Reference to the County Asylums of Yorkshire, c.1844–1888" (doctoral thesis, University of Huddersfield, 2001), 244.
25. WYAS C85/1/13/5 Medical Director's journals (1888–1894): Quarterly meeting 20 Jun. 1889.
26. WYAS C85/3/6/112 Medical casebook M18 (1864–c.1890), 493–94.
27. Ibid., 490.
28. Ibid., 493–94.
29. WYAS C85/1/13/4 Medical Director's journals (1882–1888): Quarterly meeting 30 Oct. 1884.

30. Hide, *Gender and Class in English Asylums*, 160.
31. D.J. Mellett, "Bureaucracy and Mental Illness: The Commissioners in Lunacy 1845–90," *Medical History* 25, no. 3 (1981).
32. Brown and Rogers, "On Fractured Ribs in Insane Patients": 96.
33. See Roger Cooter, "The Moment of the Accident: Culture, Militarism and Modernity in Late-Victorian Britain," in *Accidents in History: Injuries, Fatalities and Social Relations*, ed. Roger Cooter and Bill Luckin (Amsterdam: Rodopi, 1997).
34. Ibid.; Jamie L. Bronstein, *Caught in the Machinery: Workplace Accidents and Injured Workers in Nineteenth-Century Britain* (Stanford: Stanford University Press, 2008).
35. Bartrip, *Home Office and the Dangerous Trades*, 10.
36. Ian A. Burney, *Bodies of Evidence: Medicine and the Politics of the English Inquest, 1830–1926* (Baltimore: Johns Hopkins University Press, 2000), 139. See also Jonathan Andrews, "Introduction: Lunacy's Last Rites," *History of Psychiatry* 23, no. 1 (2012), who notes "institutional authorities' propensity to blame mortality on families and patients themselves" (3).
37. Anon., "Accidents in Factories," *BMJ* 1, no. 1276 (13 Jun. 1885): 1210. Cited in Roger Cooter, *Surgery and Society in Peace and War: Orthopaedics and the Organization of Modern Medicine, 1880–1948* (Basingstoke: Macmillan, in association with the Centre for the History of Science, Technology and Medicine, University of Manchester, 1993), 82.
38. J.F. Briscoe, "The Osseous System in the Insane," *BMJ* 2, no. 1979 (3 Dec. 1898): 1677.
39. John Batty Tuke quoted in Anon., "Quarterly Meeting of the Medico-Psychological Association," *JMS* 16, no. 76 (1871): 634; Anon., "The Medico-Psychological Association: The Report of a Quarterly Meeting of the Medico-Psychological Association, held in London, at the Royal Medico-Chirurgical Society, by permission of the President and Council, on the 27th January, 1870," *JMS* 16, no. 73 (1870): 140–41.
40. Bartrip, *Home Office and the Dangerous Trades*, 26.
41. Leonard D. Smith, '*Cure, Comfort and Safe Custody*': *Public Lunatic Asylums in Early Nineteenth-Century England* (London: Leicester University Press, 1999), 247.
42. WYAS C85/1/13/3 Medical Director's journals (1874–1881): Quarterly meeting 29 Apr. 1875.
43. WYAS C85/1117 Coroner's warrant book (1834–1879); WYAS C85/771 Coroner's warrant book (1879–1919). This is a fine example of the importance of careful proofreading: in "The Bones of the Insane" (note 1) I mistakenly suggested that 384 inquests took place in the period 1834–1879, rather than 1834–1919. The figure stated here is the correct one.

44. WYAS C85/3/6/112 Medical casebook M18 (1864–c.1890), 329–30.
45. WYAS C85/1117 Coroner's warrant book (1834–1879), 9 Dec. 1864.
46. Laqueur, "Bodies, Details, and the Humanitarian Narrative," 194.
47. Great Britain General Register Office, *Registration of the Causes of Death. Circulars to Medical Practitioners, and to Registrars. A Statistical Nosology, for the use of those who return the causes of death under 6 and 7 WILL.IV, c.86. Circular to Coroners, and A Classification of the Causes of Violent Deaths* (London: W. Clowes, 1845), 75.
48. Ibid., 78.
49. WYAS C85/3/6/140 Medical casebook M46 (1884–c.1888), 489–92.
50. Anon., "Alleged Murder of a Lunatic," *BMJ* 2, no. 1142 (18 Nov. 1882): 1012.
51. Burney, *Bodies of Evidence*, 109. On expert witnesses see Christopher Hamlin, "Scientific Method and Expert Witnessing: Victorian Perspectives on a Modern Problem," *Social Studies of Science* 16, no. 3 (1986).
52. Burney, *Bodies of Evidence*, 136.
53. WYAS C85/3/6/111 Medical casebook M17 (1862–c.1889), letter placed between 321–22.
54. WYAS C85/1117 Coroner's warrant book (1834–1879), 20 May 1863.
55. WYAS C85/1/13/5 Medical Director's journals (1888–1894): Quarterly meeting 18 Jun. 1891.
56. WYAS C85/1/13/3 Medical Director's journals (1874–1881): Quarterly meeting 29 Jul. 1880.
57. Ibid.: Quarterly meeting 23 Oct. 1876; WYAS C85/600 Register of admissions Male nos. 7282–7575, Female nos. 7425–7688 (1876–1877).
58. Judith Green, "Accidents: The Remnants of a Modern Classificatory System," in *Accidents in History*, ed. Cooter and Luckin.
59. Karl Figlio, "What is an Accident?," in *The Social History of Occupational Health*, ed. Paul Weindling (London: Croom Helm, 1986), 197.
60. Anon., "Ill-Treatment of the Insane (from the *Daily Telegraph*)," *The Examiner* (12 Mar. 1870).
61. Ishita Pande, "Phulmoni's Body: The Autopsy, the Inquest and the Humanitarian Narrative on Child Rape in India," *South Asian History and Culture* 4, no. 1 (2013): 21.
62. Anon., "The Treatment of Lunatics," *The Lancet* 95, no. 2421 (22 Jan. 1870): 130.
63. Anon., "Broken Ribs and Asylum Attendants," *JMS* 16, no. 74 (1870): 254.
64. Shawn Phillips, "County Institutions as Crucibles of Social Judgment: Bioarchaeological Evidence of the Consequences of Disease and Social Stigma," *Northeast Anthropology* 61 (2001).

65. William Carmichael M'Intosh, "Mollities Ossium in Insanity," *Edinburgh Medical Journal* 8 (1862): 150.
66. Ringrose Atkins, "On Osteomalacia (Mollities Ossium) occurring in a Case of Chronic Dementia, with illustrative specimens of the affected bones," *BMJ* 1, no. 1017 (26 Jun. 1880): 966.
67. WYAS C85/1/13/4 Medical Director's journals (1882–1888): Quarterly meeting 25/26 Oct. 1882.
68. Kai Sammet, "Controlling Space, Transforming Visibility. Psychiatrists, Nursing Staff, Violence, and the Case of Haematoma Auris in German Psychiatry c.1830 to 1870," in *Madness, Architecture, and the Built Environment: Psychiatric Spaces in Historical Context*, ed. Jonathan Andrews, James E. Moran and Leslie Topp (London: Routledge, 2007), 293.
69. George H. Savage, *Insanity and Allied Neuroses: Practical and Clinical*, 2nd edn (London: Cassell & Company, Limited, 1886), 333.
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Brain

The skin, muscles, and bones of patients could all be studied during the patient's lifetime to some degree. The brain, though, could only be fully investigated after death even as its functions could be studied indirectly and its structural defects inferred via reflex and other tests. Looking at the brain of the general paralytic patient in the postmortem room, it was clear to asylum researchers that the condition had a serious impact on the brain substance: it was soft and often riddled with unusual lesions. Doctors seized upon the general paralytic brain as an object that had much to tell them not only about the course of general paralysis, but also about mental disease and neurophysiology more broadly. Lesions were meticulously mapped in diagrammatic form to investigate localisation of brain function, and microscopic examination of the brain tissue revealed the 'spider cell,' which promised to reveal something more of the disease's aetiology.

In seeking to make the brain readable for such investigation, or to preserve it for future study or teaching, however, the organ itself posed challenges. Dealing with this softened substance called for new methods of preservation and modes of investigation in order to make the brain properly legible. This chapter considers the challenges that asylum doctors faced when dealing with the brain as well as what their resulting investigations suggested, both about general paralysis's effect on the brain and the aetiology of the disease.

J. Wallis, *Investigating the Body in the Victorian Asylum*, Mental Health in Historical Perspective, DOI 10.1007/978-3-319-56714-3_5

Studying the Brain

James F. was admitted to the West Riding Asylum in May 1887. Unfortunately, he was no stranger to the institution, having been discharged just a few months earlier. His sister reported that since his discharge he had continued to wander the streets, often disappearing for days at a time. He refused to give any explanation for his disappearances and when he was at home was said to be going about frightening the local children by "making grimaces" at them. Entering the Asylum for a second time, James told the admitting doctor an elaborate story about a divorce, an illegitimate child, and a large quantity of jewellery that he possessed. Listening to the delusions of grandeur so characteristic of general paralysis and noting James's tremulous tongue, flabby muscles, and sluggish reflexes, the doctor diagnosed "Dementia, with General Paralysis."[1] During his time in the Asylum James's doctors could do little but watch him slowly succumb to the disease as he lost control over his movements and suffered an increasing number of seizures. Two years after his admission he was having fits every two to three weeks, his speech was slurred, and his patellar reflexes had disappeared completely. Upon James's death in July 1889, the West Riding doctors continued to examine his body for hints to the root of his condition. As one trace of James ended in a case-book record, another began in the postmortem book, where his major organs were examined and their appearances recorded in meticulous detail. Half of James's postmortem record was dedicated to his brain, particularly whether any unusual appearances could be seen on the organ's surface. Imagined as the root of James's disorder, the brain was the final part of his body to come under the doctor's gaze: it was examined closely, divided into sections, and the weight of each section carefully recorded.[2]

James's doctors were not unusual in their interest in his brain. What was notable at the time of their investigations, though, was the level of detail with which they were able to investigate the organ. Scholars had been musing upon the structure and functions of the brain for many years; in the seventeenth century Thomas Willis had suggested that the complexity of the convolutions of the brain could indicate an individual's intellectual ability. This analogy between intellect and physical structure could also be seen in Franz Joseph Gall and Johann Gaspar Spurzheim's early nineteenth-century phrenology. The rationale of phrenology was quite simple: the outer shape of the skull was used to make estimations of the structure of the brain inside. Gall and Spurzheim produced elaborately

detailed 'maps' of the brain, attempting to locate discrete psychological attributes in specific areas, including characteristics such as amiability or wittiness. Though intriguing, their conclusions rested on some questionable evidence. A frequently cited example was Gall's recollection of a classmate who had peculiar bulging eyes and an excellent verbal memory, leading him to the conclusion that the frontal lobe was the seat of language (the lobe in his classmate's case being so well-developed as to push the eyes outwards).[3] At the same time that Gall and Spurzheim were espousing their doctrine of phrenology, medical men in France were beginning to correlate clinical symptoms with the findings of pathological anatomy and physiological experiment. Here, the focus was less on personality traits or intelligence than the kinds of motor functions and anomalies met with in Chapter "Muscle". Paul Broca was said to have presented some of the most convincing evidence for a link between cerebral damage and loss of function at an 1861 meeting of the Paris Société d'Anthropologie. There, he presented the brain of a patient, nicknamed 'Tan' on account of the only syllable he could utter, who had suffered from language difficulties; his brain had marked frontal lobe damage.[4] Work like Broca's made a strong case for the place of pathological anatomy in localisation work, gaining a deeper understanding of the brain and mapping its functions. It did not take long for the French model to reach England, where it arrived into an atmosphere of enthusiastic innovation in medicine—the rise of anaesthesia and antiseptics, for example—and a healthy increase in professional journals that allowed researchers to disseminate their findings beyond their own institutions.

The concept of localisation of function clearly appealed to the physiological method for its supporting evidence, and was closely tied to the earlier doctrine of phrenology. By the end of the 1840s, though, "the full-time, pure physiologist, who … devoted all his time to research on the nervous system" may have distanced himself from the (by then somewhat outmoded) theories of Gall.[5] Instead, as L. Stephen Jacyna argues, he found in physiological psychology "a partly novel way of continuing an old argument."[6] The work of researchers such as Marshall Hall, on the 'reflex arc' of the spinal cord, had made the distinct separation of mind and matter increasingly difficult. The reflex model of function as articulated by Thomas Laycock and Wilhelm Griesinger, for example, precipitated the kind of tests described in "Muscle" that turned the patient's body into "a machine of its own revealing."[7] The reflex model provided the tools through which alienists could imagine the somatic origins of mental disorder.[8] It

underwent an important development in the work of John Hughlings Jackson who—influenced by Herbert Spencer (in turn influenced by Gall)—applied evolutionary logic to neurological disorders and achieved widespread renown for his work on epilepsy in the 1870s.[9] To Jackson mind and body were parallel yet separate, a concept expressed in his "doctrine of concomitance"; this idea allowed the nervous system to be understood from both a psychological and a physiological point of view.[10] Historians have emphasised the contribution of Jackson's work as primarily conceptual, rather than practical (though it drew strongly on principles from the natural sciences).[11] Even as a basic conceptual framework, Jackson was able to use his theory to remind researchers of the importance of the structure and function of the nervous centres to normal mental and bodily processes. In extending and modifying the theory of evolution with his notion of a "dissolution" that could affect the brain's functions, he provided a neat, if somewhat vague, explanation of the mechanics of mental decline (though Jackson's concern was the sensory-motor functioning of the brain, it was difficult to do away entirely with the psychological aspect as studied by Gall).

Jackson's work strongly influenced David Ferrier; the latter's investigations into cerebral localisation at the West Riding referred back explicitly to Jackson's epilepsy studies as he attempted to induce seizures in animals using electric current. James Crichton-Browne, who had invited Ferrier to conduct his research at the West Riding Asylum, encapsulated at once the various influences described above. The French model of matching clinical symptoms to pathological anatomy was central to his approach, and his family background in phrenology (his father, W.A.F. Browne, lectured on the subject) had convinced him of the links between material change to the brain and mental disease, leading him to view gross pathology as the "staple of [asylum] research."[12] Browsing the contents of the in-house journal the *West Riding Lunatic Asylum Medical Reports*, one can see that this was an interest held by other staff and visiting doctors to the Asylum, with papers on everything from brain weight to cranial injuries and insanity.[13] Successive superintendents maintained Crichton-Browne's focus: William Bevan Lewis was a particularly keen observer, producing various articles on pathological technique as well as a substantial guide to histological methods, *The Human Brain*, in 1882.

The rationale behind this kind of asylum work in the nineteenth century—insanity as a disease of the brain—meant that the alienist profession was one that could be cautiously optimistic about its ability to relieve the

symptoms of, and possibly even cure, mental disease via physical methods. We might view the popularity of such an approach as being in its practical —somewhat self-serving—basis, as holding out the promise of professional autonomy for alienist science. Equally, though, it was an approach that reflected contemporary scientific concerns and, in the case of general paralysis, a degree of desperation. In 1876 Crichton-Browne asked whether "our professional descendants may look back with pity and censure upon the helpless attitude that we have been content to assume in the presence of general paralysis?"[14] It was a devastating disease and its rapid, vicious spread suggested—more so than other mental diseases—that the condition had a physical basis in the brain. Here, then, was a vague sense of hope: that there was a physical condition of the general paralytic brain that could be uncovered by careful investigation and thus form the basis of preventative or curative treatment.

A variety of work took place in the West Riding Asylum that aimed to uncover such a condition and to make the brain a legible object of scientific enquiry. David Gooding, Trevor Pinch, and Simon Schaffer refer to the 'work' needed to make an object an instrument ("a reliable transmitter of nature's messages"), and I use the term here to refer to the means of visualising brain disease that contributed to theories about the character and aetiology of general paralysis.[15] Whilst I do not consider scientific knowledge a straightforwardly determinative force, the productive effects of scientific labour are important when considering perceptions of general paralysis in the late nineteenth century. The parts of the body that could be surfaced by new forms of technology or scientific work were altered in this period and had a direct impact upon the pathological changes that were considered proof of the disease.

Studies of the brain in the late nineteenth-century asylum aimed to uncover the essential lesions of disease: visceral alterations to the brain substance. Investigations into the pathological nature of conditions such as general paralysis took place alongside efforts to make the recording and classification of pathological information more consistent. Like the meticulous recording of muscle strength or the breaking strain of ribs, the physical properties of the brain became one part of a wider quantitative exercise. The large volume of patients in the country's asylums, many of them chronic cases, made the need for an efficient bureaucratic apparatus increasingly urgent if doctors were to deal effectively with this growing population. In 1870, Montrose Asylum's James C. Howden emphasised that a standard system of recording lesions at postmortem should be

instituted so that comparisons could be made between different asylum populations, and he tabulated 235 cases according to the lesions present. John Batty Tuke at Fife and Kinross Asylum quickly took Howden's advice to heart and included a table of 75 cases in that asylum's 1871 annual report. Three years later, W.G. Balfour put together another table of lesions as found in 390 patients at Colney Hatch.[16] Unfortunately, these efforts were not the beginning of a widely accepted system, as researchers continued to use their own classification schemes or terminology according to their personal interests and theories. As a result, data from one population could often be interpreted in different ways. At the West Riding Francis Simpson criticised the conclusion of his colleague William Lloyd Andriezen that sclerosis of the brain (an overgrowth of cells) was common in epileptic idiocy and imbecility.[17] Although Andriezen's research "[led] the reader to suppose that [sclerosis] was present in nearly every case out of fourteen examined by him," when Simpson checked the postmortem records he found that Andriezen had performed 15 autopsies, only six of which were of the epileptic type he had described.[18] Simpson suggested that the high number of abnormalities during Andriezen's time at the Asylum was mere coincidence rather than evidence of characteristic changes in imbecility and idiocy. Andriezen's selection of case studies for his article was to some extent a consequence of contemporary publishing practices. It was much more attractive to write and publish perfect illustrative cases that justified one's work (and that of one's institution) than it was to relate ambiguous findings. Detailed case reports and studies "transformed uncertainty" and made sense of the sometimes anomalous results of lengthy investigations that had been carried out according to the individual researcher's or institution's specifications.[19]

The difficulty of instituting standardised systems didn't discourage asylum doctors from recording postmortem findings in great quantity and detail, however. There was, as we saw in Chapter "Bone", broad agreement about the value of detailed postmortem records, with the postmortem an important test of patient care as well as a means of closely investigating the pathological features of general paralysis. In 1889, West Riding Pathologist Frederick St. John Bullen assessed the results of 1565 postmortems carried out at the Asylum over a period of 11 years by a number of people, including three successive superintendents (James Crichton-Browne, Herbert Major, and William Bevan Lewis). Though Bullen acknowledged that not all had followed the same system, he was still able to present a wealth of material on the condition of the brains under

study.[20] Looking at the Asylum's postmortem records that Bullen drew upon, it is clear that staff were taking a steadily more systematic approach to recording their findings. Between 1880 and 1900, postmortem records evolved from a continuous block of text to text split into separate sections (head, thorax, and so on), later supplemented with the printed certificates described in Chapter "Bone", which reminded the recorder of the need to note any bedsores or broken bones.

In 1899, preprinted books for recording the results of postmortem investigations took on a more standardised format, with a specific number of lines allocated to heart, lungs, brain, and other organs and systems.[21] These record books are a clear contrast to the blank book of earlier years in which doctors were free to write as much as they wished and suggest, in their proscriptive layout, that prior investigations had highlighted the importance of specific features of the body and brain. Leafing through the postmortem books, however, it is clear that this more rigid layout garnered much less information than the free-form book of previous years, with many doctors completing each line or section with nothing more than a short sentence or one or two words. The layout of the books had a further function, though, acting as a guide or checklist for how the postmortem was to be carried out and which parts of the body were to be accorded special attention. From "External appearances" such as bruises, the record guided the observer from the head—the density of the skull, brain adhesions, state of the vessels—downwards, to the neck, thorax, and abdomen (each of these meriting much less space than the brain). How had the West Riding's doctors come to decide, via the increasing range of methods and technologies at their disposal, which pathological features were most important and worthy of record?

Viewing and Reading the Brain

As clinical and pathological methods developed in the second half of the nineteenth century, the parts of the body that could be studied in greater detail multiplied. And with these new ways of seeing, the physical features that were considered to be evidence of mental disease changed. The dynamometer ("Muscle") correlated low muscle strength with reduced mental ability, and the breaking strain test ("Bone") added softened bones to the pathological profile of general paralysis. Whilst new techniques and practices were readily applied to the study of skin, muscles, and bones, the brain remained the pinnacle of the investigative enterprise. Here was an

object that could act as a model for other conditions due to the staggering array of mental and physical symptoms that general paralysis generated. The brain in general paralysis was attacked in much the same way as the other bodily fabric discussed so far. Like the skin riddled with sores, the muscles replaced by fat, or the bone that was softened and greasy, the fabric of the brain was gradually broken down in a way that all too clearly mirrored the disease's devastating mental and physical effects. James F.'s brain appeared "reduced," contained clots and opaque areas, and was surrounded by a large amount of cerebrospinal fluid; the brain of a female general paralytic patient, Ellen W.H., was covered with thickened membranes that had stuck to the surface of the brain.[22]

In 1876, Crichton-Browne listed the typical features seen in the brains of general paralytic patients at postmortem and emphasised that his West Riding colleagues—upon seeing such changes—could "determine with accuracy … whether or not a brain submitted to them, of the history of which they knew nothing, had belonged to a patient affected by general paralysis."[23] In this he concurred with other researchers such as Berlin psychiatrist Carl Friedrich Otto Westphal, who claimed to find no anomalies in any insane brains at postmortem *except* in cases of general paralysis. In Westphal's opinion "it would be impossible to designate amongst a hundred miscellaneous brains those which have belonged to insane persons, if the cases of general paralysis had been eliminated."[24] Staff could, it seems, diagnose the disease purely on the basis of pathological appearances, with general paralysis at postmortem becoming a definite physical issue divorced from its clinical and social aspects. As Gayle Davis highlights, the diagnosis of general paralysis was a process, with different diagnoses possibly being made at a patient's admission, during their stay, and after death.[25] Certainly, there are several records at the West Riding in which general paralysis was only diagnosed towards the very end of a patient's life, and ultimately confirmed at postmortem.

The disease was evidenced, said Crichton-Browne, by softening and atrophy of the brain substance, a 'flattened' appearance of the whole organ, a thickening of the arachnoid (one of three membranes surrounding the brain and spinal cord), staining of the dura mater (the membrane outside the arachnoid and closest to the skull), and adhesion of the pia mater (the membrane closest to the brain) to the cerebral substance.[26] William Julius Mickle, arguably the most prolific writer on general paralysis, echoed Crichton-Browne's observations: a thickened arachnoid, discolouration, atrophy, and adhesions—though he also sounded a note of caution that "it

[would] not do to make too much of one factor in the morbid histology" of the disease.[27] By 1913, the essential lesions of general paralysis were little changed in Emil Kraepelin's *General Paresis*: cloudiness and thickening, adhesions, a "sinking-in of the brain substance," and a decrease in weight.[28] In the late nineteenth century a confident link between general paralysis and syphilis had not yet been made (though many suspected it), so that the presence of a gumma on the brain (a similar kind of growth to that affecting the skin in early-stage syphilis) was—if discovered—typically attributed to cerebral syphilis, which was often recorded as a separate condition. In a sample of brains from 95 male general paralytic patients, Francis Simpson noted only two instances of gumma, for example.[29]

There were, then, several appearances consistently mentioned in discussions of general paralysis's pathology that promised to reveal a little more of the disease's character. These could map the disease's progress as well as explain its clinical manifestations: anomalous blood vessels, brain wasting and softening, false membranes (or arachnoid cysts—an accumulation of fluid in the arachnoid), and cortical adhesions (the adherence of the pia mater to the brain substance). These were well illustrated by Harvey Baird's results of 131 postmortems performed on male general paralytic patients at the West Riding who had been admitted between 1896 and 1902. His results demonstrated the most common lesions seen in the disease, finding false membranes in 30.5%, cortical erosion in 55.7%, and "diseased basal vessels" in 53.2%.[30] The postmortem examination of Thomas S., whose death was the subject of a coroner's inquiry (as we saw in Chapter "Bone"), revealed a classic example of the general paralytic brain:

> The brain is pale externally – the membranes opaque & thickened over all but the occipital region. There is a considerable effusion of serum beneath the arachnoid. … There is considerable adhesion of the pia mater the adhesions much most [*sic*] marked over the left hemisphere, especially along the marginal convolution & angular gyrus. There is some thickening & opacity of the arachnoid over the inferior aspect of cerebellum on either side of the middle line. The grey matter of the convolutions is shallow & pale. The white matter has a shiney [*sic*], greasy appearance & shews some pale yellow discolouration. There are very many coarse vessels. … About 4 ½ ozs. of fluid escaped upon removal of the brain.[31]

Upon removing the brain from the skull at postmortem, the most immediately evident of these changes was cerebral softening. One brain, when

placed on a flat surface, had "hemispheres [that] separate[d] widely."[32] Like the muscles and bones, the brain was susceptible to degenerative, softening influences. Causes of death in asylum annual reports and minutes regularly included "softening of the brain" and the term was still used by some doctors at the beginning of the twentieth century as a synonym for general paralysis. In asylum admission documents, it is clear that "softening of the brain" was a term that could be used by doctors outside the asylum to refer to what they saw as a specific variety of mental disease. One doctor related that the patient had "[m]arked symptoms of brain softening," and another noted of a criminal lunatic: "His disease is softening of the brain, known as general paralysis of the insane."[33]

Although terms like this may appear somewhat vague and even 'quaint' to modern eyes, nineteenth-century diagnoses like softening of the brain should not simply be dismissed as mistaken explanations to be corrected by more 'enlightened' terms, nor should we assume that they were used by all doctors in a uniform manner. Indeed, the term 'softening' appeared to cause some controversy in contemporary medical circles, used in a variety of ways as well as in an extra-professional context. Guy's Hospital physician Samuel Wilks was critical of the unthinking use of terms like softening, arguing that it was an extra-medical expression often used as though referring to a disease itself—and indeed a layman might jokingly explain a friend's eccentric behaviour as the result of "softening of the brain."[34] Whereas softening of the brain was a long-term process, Wilks suggested that softening could also occur as the result of acute inflammation.[35] It was not unusual for inflammation itself to be viewed as "a disease process"—in contrast to the idea of inflammation as a beneficial response to damage as articulated by chemist and physician Georg Stahl in the eighteenth century.[36] Crichton-Browne expressed his support for the inflammatory theory of general paralysis, citing the presence of headache as proof of the brain's congested nature.[37]

Softening of the brain might have been a key indicator of mental disease, but it was a process that was maddening to the pathological investigator, in some instances reducing the brain to nothing more than a boggy mess. Taming this softened tissue was a frequent challenge for asylum pathologists. Bevan Lewis wrote a series of articles for the neurological journal *Brain* between 1880–1882, titled 'Methods of Preparing, Demonstrating, and Examining Cerebral Structure in Health and Disease.' One part of this series, 'Physical Properties of Grey and White Matter,' emphasised the importance of the student's own senses in observation, as there was "no

more exact gauge of consistence of texture than the rough-and-ready methods afforded by the sense of sight and touch."[38] Here, he described the key differences between a normal brain and the softened, diseased brain: whilst the former was "plump, rounded and compact," the latter was "flattened," "squat," and, when removed from the skull, revealed "flabby" convolutions and little resistance to pressure.[39]

Despite an obvious interest in these softened brains, they proved difficult to preserve as pathological specimens, although they could sometimes be salvaged as teaching materials. The brain of Hannah Y., although wasted and "flabby," was retained to be "used for injection" and one hemisphere of Joshua T.'s brain was reserved for "anatomical purposes."[40] Brains were often photographed during preservation as both an additional record of the specimen and as testament to the skill of asylum staff—such as the brain of William H., added to the Asylum museum as an example of a general paralytic brain (Fig. 1).[41] Contemporary concern for general paralysis—the large number of incurable patients in asylums, and the disease's debilitating mental and physical effects—was reflected in the number of brains from general paralytic patients that were preserved for museum use. A key step in making these brains ready for preservation was stripping away the outer tissues with a fine pair of forceps or a needle. Crichton-Browne complained that "[t]he brain in general paralysis [was] so soft that stripping with the forceps [was] not very successful," and noted that stripping the brain while it was immersed in water merely exacerbated the problem.[42] This added further frustration to the task of determining the seat of the disease. Bevan Lewis urged caution when dealing with such specimens: "the brain-tissue clings to the blade with unusual tenacity … As a result the cerebral tissues … are lacerated and tear away in shreds, leaving an unmistakable softened rottened [*sic*] aspect of the surface."[43] Postmortem reports repeatedly testified to the challenges of handling and preserving the softened brain: one noted that "[t]he cerebral substance was too soft to permit of fresh sections being obtained," another that "[s]ections failed."[44]

To study mental disease successfully it was necessary to overcome such obstacles. Crichton-Browne described a method he used in which the brain was "preserved in nitric acid, which [had] the property of hardening and condensing the cerebral substance, and which at the same time blacken[ed] and [ate] away all animal membranes with which it [came] into contact."[45] By steeping brains in this acidic solution for a few weeks the pia mater was consumed, leaving the convolutions of the brain intact and ready for further study.

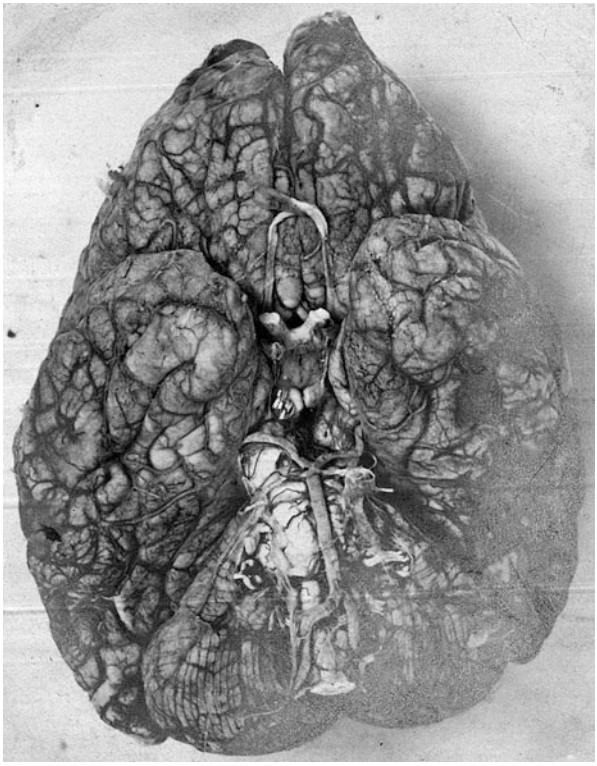

Fig. 1 The brain of general paralysis patient William H., added to the West Riding Asylum museum in 1896. Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1111

Making the brain more easily readable was a central concern, then. Serial sectioning (cutting tissue into a series of thin sections) was crucial to a new view of the brain in the nineteenth century, as it exposed a number of the brain's features to the observer.[46] The West Riding's J.O. Wakelin Barratt, for example, cut whole sections of brain to trace the course of the ventricles through the organ, and Rainhill's Alfred W. Campbell pioneered the study of cytoarchitectonics (the cellular composition of bodily tissues), which relied heavily on serial sectioning.[47] The freehand sectioning or stripping employed in the 1870s was generally replaced by serial sectioning by the

1880s, but this too was a delicate task. H.R. Octavius Sankey advocated the use of an amputation knife, describing how to hold a brush in such a way as to keep the specimen constantly wet and thus easier to cut.[48] Cutting fine sections of tissue by hand—using a specially designed 'Valentin knife' or a razor blade for the purpose—was an exercise requiring significant skill and patience, but the introduction of the microtome made lighter work of a lengthy chore. Simple hand microtomes were "little more than a metal tube that [held] the embedded specimen and whose edges support[ed] the knife or the razor," yet they struggled to deal with large pieces of tissue like a whole brain.[49] Heini Hakosalo credits Bernhard von Gudden in Munich as the first to design a specialised microtome to deal with large specimens in 1875, though it seems likely that similar endeavours were occurring simultaneously elsewhere as innovative efforts tended to cluster together.[50] Bevan Lewis's freezing microtome was concomitant with similar innovations by Richard Hughes in Manchester and William Rutherford in London.[51] Freezing tissues prevented distortion under the scalpel, as well as removing the need for hardening a specimen—a process that could take months depending on the method used and which was, noted Bevan Lewis, "extremely tedious."[52] Freezing instruments typically used either ice and salt, or ether. The former had a tendency to break up tissue with ice crystals, so Bevan Lewis's microtome utilised the ether method. Using this apparatus, frozen sections could apparently be cut within 20 to 30 seconds.

The late nineteenth century saw an influx of equipment to aid the investigation and preservation of the brain substance at the West Riding, including a "Sliding Microtome (Rivett-Leiser Model)" and a "Cambridge Rocking Microtome" acquired in 1894–1895.[53] Besides technical apparatus, though, doctors evolved their own, simpler, methods of pathological investigation. We have already touched upon innovation in technology with Charles Mercier's breaking strain instrument and Theo Hyslop's use of a concrete-testing machine in the last chapter, and the same spirit was evident in studies of the brain. In 1872 Herbert Major described his tephrylometer, a hollow glass tube for measuring the depth of brain substance.[54] Similarly, Edwin Goodall related how a composition of glue and treacle was obtained from a local printer to make plaster casts of the brain in place of the usual plaster of Paris that—as Barratt had noted—tended to alter the shape of the tissues it surrounded due to its weight.[55] Such innovations and practices were a useful way of showcasing the practical talents of the researcher. Even the well-rehearsed methods of the skilful pathologist might not be sufficient to tame the extremely softened brain,

however. Sometimes the best that could be hoped for was obtaining "a little of the creamy pulp upon the scalpel, and transferring it to a slide" for microscopic examination.[56]

Softening of the brain was a phenomenon that invited a variety of readings as to its significance in mental disease, and it inspired the adoption and adaptation of existing sectioning instruments to deal with its problematic substance. Just as softened bone came to be seen as an important element of the disease profile of general paralysis, so too did the softened brain. And, as bone necessitated the evolution of new instruments and practices to study it, the brain highlighted the need for creativity in preservation and sectioning techniques. The softened brain was a material that had an impact on scientific practices in the asylum: new techniques and methods were evolved to make it readable and to render it suitable for preservation or further study. To the nineteenth-century alienist and physiologist, the brain was a highly charismatic object and, by the later years of the century, an increasingly rich substance with which to imagine the mechanics of mental disease, yielding as it did such clear physical evidence of degeneration. Brain softening, though, presented both practical and conceptual problems for the investigator: softening came to be viewed with some unease as an explanation for mental disease as nineteenth-century psychiatric research became increasingly physiologically oriented. Towards the end of the century, it was the specific lesion of the brain that began to arouse most interest, as postmortem investigations suggested the possibility of matching clinical symptoms to pathological findings.

Localising Lesions

A 'lesion' is generally defined in terms of harm, a change in structure as the result of injury or disease. For many historians of medicine, the lesion has particular significance as a sign of the increasing professionalisation of medicine in the nineteenth century. In *The Birth of the Clinic* (1963), Michel Foucault argues that the lesion became the focal point of disease in the nineteenth century—a reorientation of perspective that was assisted in large part by postmortems and hospital medicine.[57] It should be noted that although an interest in morbid anatomy can be discerned before the nineteenth century, certainly asylums and hospitals routinely allowed the exploration of lesions. Pathological investigation like that described by Foucault is often imagined to have reduced the importance of clinical

phenomena, as doctors directed their attention to the physical fabric of patients' bodies rather than their reported physical and mental symptoms. Andrew Hodgkiss has described the lesion as a powerful means of transferring decisions about bodily health and disease from patient to doctor: whereas the patient may decide that they are ill, the ability to identify disease as evidenced by a lesion rests only with the doctor.[58] The bodily lesion was not simply proof of the physician's or pathologist's specialist knowledge, however. To the asylum investigator it was the key to unearthing the cause of mental disease and the possibility of relief or even cure. As Edward Long Fox put it, disease was "nature's most delicate experiment," "her constant mode of teaching": by looking at the anomalous appearances of the insane brain, one could trace the sequence of events that produced them.[59] There had been attempts to systematically investigate brain lesions in the insane earlier in the century, such as James George Davey's survey of 100 brains in which he tabulated unusual appearances including softening and colour changes.[60] By the 1850s cerebral dysfunction was commonly "explained in terms of deformity in the tissues of the hemispheres," mirroring wider views of disease as the result of physical deformities.[61] Increasingly, medical journals printed accounts of postmortem work "in which researchers [tried] to link softening, discoloration, or erosion of areas of the brain … with loss or disturbance of functions."[62] At the West Riding, one staff member systematically recorded lesions found at postmortem by adding a short summary of brain lesions to the end of each postmortem record; later books contained an index of "abnormalities," with page references for records containing "Tumours & Cysts" and "Cortical Erosions."[63]

Lesions didn't always reveal a neat sequence of events, however. The work of late nineteenth-century alienists makes clear that the lesions they discovered at postmortem were often related to existing definitions of disease with some difficulty. W.J. Collins, of Claybury Asylum, commented on the disparity between "the proportional littleness of [brain] lesions with the magnitude of the malady": it seemed inconceivable that a tiny blemish on the surface of the brain could be responsible for the profound changes to patients' lives.[64] How could one rationalise the experience of William T., a 42-year-old tailor who, unable to continue his work, found himself in the workhouse and then the asylum?[65] Or that of William R. who, by the time of his admission in 1873, had lost his job and attempted to strangle his wife?[66] At the postmortem of John H., a criminal lunatic and "undoubted G.P." who had died just two months after admission, the doctor seemed to

express some surprise that no lesions had been found on the brain. Before death, John's doctors had speculated that—following a seizure that had ushered in almost constant twitching of the right side of his body—they would see lesions on the left side of the brain after his death. At postmortem it was noted: "Nothing whatever special is found on the left hemisphere at the site supposed to correspond with the movements of [the] right arm."[67] From a practical point of view, there was also the difficulty of charting a lesion's development: by the time postmortem was carried out, it could be impossible to identify a lesion's starting point, not to mention the problem of differentiating between lesions and natural processes of decay. Contemporary ideas of what constituted a lesion could vary between practitioners: Fox, in *The Pathological Anatomy of the Nervous Centres* (1874), suggested that alterations in blood vessels could be considered lesions, whilst Bevan Lewis referred to "the lesion termed yellow softening of the brain."[68]

In general paralysis, it was the occurrence of several lesions at once that merited attention. Bullen pointed out that the deciding factor was not necessarily the specific lesions themselves, but their appearance in the same brain: "It can hardly be said that appearances exist which by themselves are distinctive of *general paralysis*. Nevertheless, there are many common to it and other varieties of insanity which, by their grouping and aggregation in especial plenitude, denote certain characteristic features, having rightly an association with this disease."[69] The brain of the general paralytic patient seemed susceptible to a whole host of degenerative processes, but of these one in particular stood out, both on account of the perceptible change to the brain and the practical challenge that it posed to those undertaking pathological work. Morbid adhesions—in which the pia mater became stuck to the brain's surface—caused the brain substance to tear away from the membranes encasing it when it was removed at postmortem, leaving behind a distinctive worm-eaten appearance:

> On attempting to strip off a portion of adherent membrane, there are seen by the naked-eye numerous tough fibrous prolongations, which look like enlarged blood-vessels, connecting the under-surface of the pia with the cortex of the brain. When forcibly removed, the upper layers peel away to varying depths upon the pia, leaving an eroded surface which presents a highly characteristic aspect. The surface looks gnawed or worm-eaten along the length of the gyri with irregular sinuous margins, so that it somewhat

> resembles the aspect presented by a succulent leaf which has been attacked by a caterpillar.[70]

This condition was well illustrated by the frontispiece to Thomas Smith Clouston's *Clinical Lectures on Mental Diseases* (1883), which clearly showed the small pieces of brain substance adherent to the membrane that had been pulled back from the organ (Fig. 2).[71] Both Clouston's illustration and Bevan Lewis's observation that these changes could be "seen by the naked-eye" backed up the assertion of Crichton-Browne that the importance of adhesion in general paralysis had been overlooked due to an over-reliance on the microscope. Crichton-Browne emphasised the importance of naked-eye examination at postmortem, though he was clear that this was to be far from a "cursory glance."[72] Whilst he had seen adhesions in 80% of the general paralytic cases coming under his gaze, Crichton-Browne noted that adhesions were not always immediately obvious and required careful detective work as they were sometimes hidden within the folds on the brain's surface. In this endeavour, Crichton-Browne brings to mind Christopher Lawrence's "gentleman-physician," whose special skill was evidenced by his disembodied judgement as well as his manual activity.[73] The asylum doctor, though he might carry out postmortems as well as make psychological diagnoses from the comfort of his office, could perhaps still distinguish himself from the dissector or surgeon by emphasising the "incommunicable" knowledge that he possessed, such as how to find or infer adhesions of the brain in general paralysis.[74] Those cases of the disease where adhesions were *not* found at postmortem aroused Crichton-Browne's suspicions, suggesting to him that a "laborious and time-consuming examination of the brain" had not been carried out.[75] Even when not present, then, adhesion could be inferred, and the expectation that the brains of general paralytic patients would present adhesions is evident in the West Riding's postmortem books. One noted that "[t]he extent of the adhesion was not marked, for General Paralysis," another that "adhesion of the pia mater [was] ascertained to be present in every lobe and region of the brain," suggesting a purposeful search for this feature.[76] The importance of adhesion to contemporary observers is evident in the notations added in red ink to many postmortem records, denoting whether the case was one of "GP with adhesions" or "GP without adhesions."[77]

Most interesting to Crichton-Browne was the location of these adhesions. The degenerative character of general paralysis, evidenced in both

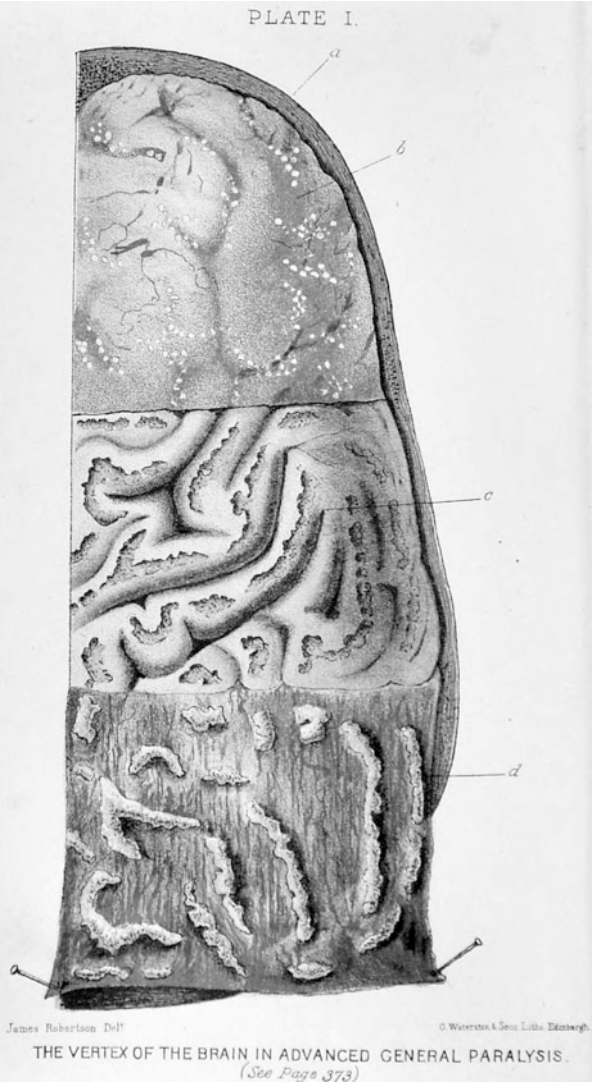

Fig. 2 Adhesions of the brain in general paralysis. The frontispiece to Clouston's *Clinical Lectures on Mental Diseases* (1883). Reproduced with permission of the Wellcome Library, London

the patient's mental state and physical ability, had led several alienists to suggest that the condition was a perfect example of Jackson's theory of dissolution. It was unsurprising that doctors would link visceral changes to the brain substance with the 'dissolution' of mental and physical functions. General paralysis had clear relevance for localisation theory, "[imitating] the experiments of the physiologist upon the brain" by producing lesions on the brain's surface.[78] The brain of the general paralytic patient offered a kind of natural experiment, with the physical damage the organ underwent simulating the ablation studies of the physiologist. For Crichton-Browne, pathological findings could inform and reflect upon wider theories of general paralysis as a kind of de-evolution. He had become more confident about the potential of pathological studies of the brain by the time of the final volume of the *West Riding Lunatic Asylum Medical Reports* in 1876. His paper on cranial injuries and mental disease in the first volume five years earlier was tentative about the links between the state of the brain and mental health, concluding that "derangement of the mental powers" could depend on a range of factors "which even aided by scientific instruments we are unequal to discover."[79] By 1876, however, he felt able to advise that the brain of a general paralytic patient should be obvious to "the practised eye."[80]

In charting the site of adhesions on the brain substance, the West Riding staff were following in a long tradition of producing morphological and functional maps of the brain, from medieval maps of the senses to phrenological drawings of character traits.[81] Such images were a means of proving and circulating one's own knowledge and experiences, as well as guiding other researchers in their experimentation. Brain lesions were systematically recorded at the West Riding from 1875 on small printed diagrams of the brain stuck into the postmortem book, upon which the doctor could shade in areas of adhesion or softening as well as mark the site of specific lesions.[82] In some cases the elaborate and careful detail of such diagrams and drawings sits in stark contrast to the content of the rest of the record. A haemorrhage in the brain of a melancholic patient who died in the first years of the twentieth century was meticulously illustrated by hand; the facing page—usually dedicated to the rest of the body—was blank and crossed through, however, where it was noted that postmortem examination of the rest of the body was "not allowed."[83] In the late nineteenth century, it is likely that the Asylum's pathologist would also have used 'brain slates' to record the location of lesions, an innovation introduced by James R. Whitwell at nearby Menston Asylum:

> MESSRS. DANIELSSEN & Co. have recently, at the suggestion of Dr. Whitwell, of Menston Asylum, made a set of engraved diagrams of the brain on slates for use in *post-mortem* and dissecting rooms. The diagrams are life size, twenty-five in number, and arranged on ten slates. The engraved outlines are filled in with white enamel, the Sylvian, Rolandic, and parieto-occipital fissures being, however, coloured red.[84]

Such slates were ideal for the postmortem room, marked in chalk, able to be used by the pathologist while his hands were wet, and reusable. The technical detail included in these slates demonstrates a clear concern for recording the site of lesions as accurately as possible. Slate six, for example, depicted a "Vertical section through the corpus callosum, anterior pillars of the fornix and optic chiasma; vertical section through the corpus callosum, optic thalamus and crura cerebri."[85]

Looking at the location of these lesions, whether on slates or printed diagrams, Crichton-Browne said he was reluctant to link them with clinical symptoms.[86] Here he agreed with his successor Herbert Major who, despite finding noticeable lesions in all general paralytic brains at post-mortem, could not "see his way to connect them with the abnormal symptoms present during life."[87] In practice, though, it proved difficult to discuss these lesions without appealing to symptomatology. The lesions of general paralysis made the dismissal of clinical symptoms particularly problematic due to their location, as they were typically found within the same area of the brain—one that was of special interest to asylum researchers. Crichton-Browne's 1876 paper noted that the frontal lobe of the brain was the "favourite site" of adhesions in general paralysis and this was a feature also noted by researchers elsewhere.[88] The West Riding's postmortem reports frequently referred to frontal lobe adhesion. In cases of "Dementia with GP" like James F.'s, adhesion was often noted: "adhesions exist at one or two points on the 2nd and 3rd left frontal convolutions"; "Strong adhesion between pia mater and the convolutions of the frontal and parietal regions on both sides; more especially over posterior part of 1st and 2nd of ascending frontal convolutions."[89] This apparent preference for the frontal lobe was too perfect to ignore as it epitomised the idea of general paralysis as a de-evolution, a disease that was little more than a reversion to baser instincts as it attacked the part of the brain believed to be the seat of the higher intellectual functions. Cases such as Broca's 'Tan' or that of American railway worker Phineas Gage around mid-century had illustrated the complexity of the frontal lobe, with injuries to discrete

sections of it leading to striking functional changes and even—in the case of Gage's injury to the prefrontal cortex—an apparent change in personality.

This notion of the frontal lobe—specifically the prefrontal—as an intricate entity that represented the pinnacle of human development was one explicitly appealed to in late nineteenth-century physiological writings. This was particularly evident in the work of Spencer and Jackson, both of whom drew strongly upon evolutionary theory, but also in works by other researchers. Mickle, in an 1895 article 'Atypical and Unusual Brain Forms,' noted the "enormous importance of the evolutionary advance of the lower part of the frontal lobe in man as compared with other animals, in the human adult as compared with the foetus."[90] His explanations of deviations from normal "brain-surface morphology" clearly aligned the atypical human brain with that of the animal or "savage." Of six possible reasons that he offered for deviation, two noted the concept of 'reversion'—either to the brain types of "lower animals" or to those of "lower mankind."[91] Bevan Lewis, referring to Ferrier's experiments in which he had removed the prefrontal region of monkey's brains, was "struck by the remarkable similarity presented, in the mental deterioration of [insane patients], to the animals in whom the prefrontal lobes had been removed": the animals had become apathetic, sleepy, and appeared to lose "the faculty of attentive and intelligent observation."[92]

By the last quarter of the nineteenth century, the importance of the frontal lobes in higher functions was increasingly accepted by the medical community, bolstered by animal experimentation and postmortem findings. It made sense that the symptoms of general paralysis—inarticulate speech and loss of control over motor functions—might be due to a lesion of the brain substance in the frontal lobes. Crichton-Browne also appealed to localisation theory when explaining the motor symptoms of general paralysis: the order in which these occurred, he said, corresponded "pretty closely with the order in which, according to Ferrier, the motor centres are arranged in the cerebrum from before backwards."[93] Crichton-Browne saw a footprint of the disease where the site of adhesions could not only explain its clinical manifestations, but also account for the various stages of general paralysis, with mental and motor symptoms appearing in a more or less predictable fashion as the disease spread through the substance of the brain. Initial minor problems with speech progressed, as in James F.'s case, to slurring and incoherent shouting, and motor ability diminished until the patient could do nothing but lie helplessly in bed.

To Mickle, the lesions visible at postmortem did not indicate the heart of the problem; the worst affected centres were "not necessarily those most obviously diseased," but those that felt the effects of disturbed circulation and nutrition—a phenomenon that was much less visible.[94] Like Crichton-Browne, Mickle's theories resulted from carefully mapping lesions at postmortem—in 1873 he began to record the location of adhesions of the pia mater to the cortex[95]—and like Crichton-Browne he could not avoid linking lesions with symptoms seen in life. In an 1881–1882 set of papers, 'Hallucinations in General Paralysis of the Insane,' Mickle examined what he saw as an overlooked clinical phenomenon. He had directly observed hallucinations in over half of his own general paralytic cases, he said, and combed the case histories of 100 patients—the majority of them soldiers—to conclude that hallucinations were present in 55%.[96] Visual hallucinations were especially common, and notable for their consistency: seeing people in rooms at night, huge birds flying through the air, angels, and heaps of corpses piled up on the wards. For Mickle the links between a patient's mental degeneration and the physical degeneration of the brain substance could not have been more explicit, as he argued that the symptoms of the disease flowed from structural lesions of the brain substance. Thus, the "crude, coarse, confused nature" of early hallucinations in general paralysis was directly related to the "coarse, gross, material character of the morbid process."[97] Reading Mickle's article, one is struck by his conclusions: whilst clearly keen to match adhesions with patient's hallucinations, this was not always possible. Observing that adhesions "sometimes [did], and sometimes [did] not, affect the supposed cortical sensory centres described by Ferrier," Mickle used this discrepancy to question localisation theory.[98] In discussing the lack of evidence for a link between auditory hallucinations and lesions of the temporo-sphenoidal region, he deduced that "the morbid anatomy of general paralysis fails to support the exclusive view that these gyri are, or contain, respectively the sole cortical centres of sight and hearing."[99] In 1883, during the discussion following a paper on cerebral localisation delivered by Bevan Lewis, Mickle's continued doubt about localisation theory was evident: he "did not agree with the rigid localisation attempted by some observers who made diagrams of the brain, and on it placed circles, within which they definitely locate[d] the movement of the arm or leg."[100]

Hallucinations in general paralysis were, for Mickle, one way of considering the much broader issue under discussion at the time: whether mental functions could be localised. General paralysis appeared to be the

ultimate test of cerebral localisation, with striking clinical symptoms matched by equally startling pathological lesions. Yet, as the work of Crichton-Browne and Mickle showed, these seemingly definite signs of disease could be used in very different ways. A review of volume six of the *West Riding Lunatic Asylum Medical Reports* containing Crichton-Browne's piece on the pathology of general paralysis was sceptical about the possibility of a characteristic general paralytic lesion. "The fact is that these adhesions merely represent the points where the disease has been most marked," said the anonymous reviewer, noting that their own investigations had not always uncovered adhesions.[101] Crichton-Browne reasoned that in protracted cases of the disease the adhesions may naturally, with time, break down.[102] This was a common means of explaining cases that lacked adhesion, and echoed Fox's claim that lack of postmortem lesions didn't mean there had been none during life.[103]

The fact that one could infer previous lesions when none were visible at postmortem suggests a strong professional attachment to the lesion in the later nineteenth century. For example, in an 1874 article, Hampstead Asylum Superintendent W.G. Balfour suggested that the failure to find lesions in the brains of asylum patients "must be regarded as due entirely to the absence of sufficient power on the part of observers to discover them."[104] In this he was not simply positing the lesion on the brain as symbolic of more advanced medical knowledge, but also had in mind the practical obstacles that doctors faced in undertaking such investigations. Lesions such as adhesion frequently posed problems for the asylum investigator. Barratt vividly reported a case in which he experienced "difficulty … in removing the skull-cap, which was thin but dense, owing to the existence of adhesions on the part of the dura mater."[105] Adhesions might also alter how postmortem technologies were employed. Major's tephrylometer (for determining cortex depth) first required the pia mater to be stripped from the brain, but this proved difficult in cases where adhesion existed.[106] As the utility of the lesion as a means of revealing the true nature of general paralysis was questioned, and the fabric of the brain was exposed to increasing attention, asylum investigators began to shift their view to even smaller elements within the skull. This was a reorientation of gaze strongly bound up with emerging medical technologies and techniques, and the last section of this chapter examines how microscopy's revealing of a particular kind of cell added a new layer to late nineteenth-century understandings of general paralysis.

Putting the Brain Under the Microscope

If the location of a lesion wasn't the answer to the mystery of general paralysis, perhaps the key lay deeper within the substance of the brain. Bevan Lewis, investigating the softened brain, had suggested that one possible method of analysis was the microscope, and indeed this was an avenue pursued on a regular basis in order to investigate all types of brain material, not just that of the general paralytic patient. As interest in bacteriology and microscopy grew in the later years of the century, there was a sense that the truth of any disease lay deep within the fabric of the body. In 1896 Bevan Lewis suggested that the microscopic appearances of all brains should be recorded by the pathologist and published at the end of each year.[107] Like the records of investigations into bone strength discussed in the last chapter, different schemes used by different researchers could be a barrier to such collection, and suggestions for universal methods were frequent. Francis Simpson, for example, proposed a chart—supplementary to the postmortem book—upon which the pathologist could simply tick the relevant boxes regarding the brain's appearance (adhesions, clots, and so on), then cut the chart into strips at the end of each year to count up the numbers in each column.[108] By the early twentieth century, a systematic record of microscopic observations was being kept at the West Riding, with reference in postmortem reports to various volumes of "Microscopical records" (unfortunately these have since been lost).[109] The importance of microscopy within the nineteenth-century asylum is often overlooked, but Eric Engstrom has noted how the craft could "to a degree even [prefigure] the concepts of madness and normality" by making new objects of investigation—such as nerve fibres—visible.[110] Microscopy also offered the opportunity to resolve the issue of why some general paralytic brains showed limited change by arguing that pathological lesions *did* exist if only one looked carefully enough. As with the cutting of sections, however, different brains and their constituent parts required tailored methods of investigation to properly comprehend their structure.

Once sectioned, slices of brain tissue were often preserved. Like photomicrographs of muscle tissue, they were important material teaching aids, allowing the staff of the Asylum to compare and contrast specimens in its on-site museum. Specimens could also be exchanged; one whole brain from the West Riding was preserved and sent to John Batty Tuke.[111] Edwin Goodall, Pathologist in the early 1890s, dedicated a good deal of attention to specimen preservation in his *Microscopical Examination of the*

Human Brain (1894) and in regular articles for the *JMS*, explaining how to take plaster casts of the brain (pulling the body into a sitting position using a rope and pulley)[112] and which preservatives were best suited to different tissues. Particular attention was paid to the quality of the specimens, with Goodall using a novel range of substances to make them as aesthetically pleasing and useful as possible: when placing brain specimens in glass vessels, he advised painting the back and sides of the jar with black bicycle varnish in order to give a clean black background.[113] He also listed the equipment needed to furnish an autopsy room, including Whitwell's brain slates and an ether-freezing microtome. If an asylum had a photographic studio—as the West Riding did—then this added the possibility of photographing specimens as well as preserving them. Goodall offered detailed instructions for photographing brains: the camera was to be fixed vertically and the organ "placed in water in a basin painted black; the basin stands on the floor. By immersing the brain in water the surface glistening is obviated."[114] A similar technique was in use at the Salpêtrière, with a camera fixed above the postmortem table to photograph organs in situ.[115] In the photograph album kept by the West Riding laboratory, it is clear that Goodall's technique was in use: one photograph shows a brain sitting in a vat of water, photographed from above. Taking photographs of specimens in this way also allowed them to be disseminated beyond the asylum to doctors elsewhere. In an article in the *JMS*, an image of West Riding patient John R.'s brain was reproduced, matching a photograph in the pathology lab album. Here, pathological knowledge went alongside clinical information to provide a complete picture of John's stay in the Asylum from his admission to his death.[116] The article described John's symptoms during life and the appearance of his brain after death, with the inclusion of the image allowing doctors elsewhere to engage in a kind of "virtual witnessing."[117] The study of the brain also extended beyond human specimens. In 1878 Bevan Lewis was awarded a government grant for research into the histology of the brain in animals, spending £6 9s. buying mammalian brains, ether for frozen sections, and paying the necessary postage costs.[118] Similarly, in 1879 Major detailed his observations of the brain of a white whale, which he had obtained from the Westminster Aquarium. A photograph of this brain was sent to Professor William Turner, Professor of Anatomy at the University of Edinburgh, who produced a detailed sketch of the specimen to accompany Major's article.[119]

In order to perform any didactic function, pathological specimens—whether as images in journals, photographs and specimens mailed to

colleagues, or preparations in a museum for medical students—needed to be rendered readable. The substance of the brain was a precious learning material for asylum doctors, as Goodall suggested in his advice for saving "old, over-hardened brains" by simmering them in almost-boiling water for several days.[120] After this somewhat basic method came the more meticulous business of sectioning and staining. In his history of microtechnique, Brian Bracegirdle describes how, in the 1870s–1880s, a host of coloured substances were investigated for their use in microscopy.[121] At the time of his 1882 article, Bevan Lewis listed six key stains in general use: hæmatoxylin, carmine, picro-carmine, aniline blue-black, aniline blue, and osmic acid. In choosing a stain he advised that the student should consider whether he was aiming for a uniform stain or a differentiation of the various tissue elements, and the particular tissue under study. Blue-black aniline, for example, was "by far the most valuable of the aniline series of dyes for the brain and spinal cord," giving "the clearest and sharpest definition of elements in a tissue without modifying their structure by shrinking or other change."[122] Postmortem reports demonstrate how the staining of a tissue could guide the observer in his identification of the elements before him, and how evolving microscopic techniques were being incorporated into the day-to-day work of the asylum. Following one postmortem, examination of the grey matter revealed:

> round or oval bodies … like swollen corpuscles … [that] took a faint lilac or pink hue with logwood [but] gave no reaction to the iodine & sulphuric acid test nor were they affected by ether, chloroform, or osmic acid. They were undoubtedly genuine colloid bodies [gelatinous material that appears in diseased tissue].[123]

Evolving microscopic techniques, then, affected what was seen by the researcher, with the cells of the brain coming under closer scrutiny beneath microscopes of increasing power and coloured by newly developed stains. Microscopy was not without its problems, however, and by the second half of the nineteenth century many practitioners would have consulted handbooks that set out the precautions to be taken in accounting for both the technical shortcomings of the microscope and the limited visual abilities of the observer.[124] Staining merited particular attention. Hæmatoxylin could easily overstain, requiring correction with other solutions and thus raising questions about the naturalness and ultimate usefulness of the result. Stains were taken up more easily in fresh (rather than preserved)

tissue, so that 'better' stains were dependent on the medium used. Ernest C. Carter, like Bevan Lewis, complained that the softened brain was particularly difficult to study microscopically: its easier take-up of stains caused the observer some difficulty in ascertaining "how far the condition [was] actually morbid and how far due to faulty sectioning."[125] The method of hardening used and whether the staining was carried out on a bright or dull day, were also highlighted as important factors that could alter the final result.[126] An awareness of these problems—and a note of caution about the rush towards microscopy—could be glimpsed in Brentwood Medical Officer John Turner's analysis of motor cortex cells, where he expressed his reservations about "these days of elaborate technique."[127] His own solution, however—"colouring small pieces of the fresh cortex with methylene blue, and pressing the fragment out under a cover-glass"—did not necessarily reduce the amount of labour required to obtain a satisfactory sample.[128]

Despite the difficulties accompanying microscopic observation, several researchers attempted to link minute cell-level changes to the clinical characteristics of general paralysis. Both Mickle and Bevan Lewis had attempted to type general paralysis according to the stage of the disease and relate these to changes in the fabric of the brain. Bevan Lewis divided the disease into three: the first stage was one of general inflammation, the second saw the growth of what he called "spider cells," large cells found in abundance in areas of connective tissue overgrowth, and the third saw the spread of these cells throughout the brain.[129] In one postmortem of a general paralytic patient: "Sections … cut by Bevan Lewis's fresh method and stained with Aniline Blue Black shew[ed] [an] immense number of spider cells in the superficial layer of the cortex and considerable increase in number of nuclei in vascular walls."[130] Also referred to as "phagocytes," spider cells provided physical and nutritive support for the brain's neurons, as well as ingesting foreign bodies or waste material.[131] It seems likely that the term spider cells as used at this time referred to what we now call astrocytes: these are specific to the brain and spinal cord and perform a number of functions, including repairing the brain tissue after injury. Indeed, astrocyte was used "as a synonym for 'spider-cell'" by Whittingham Hospital Pathologist F.W. Eurich in 1897.[132] The prolific presence of these cells in general paralysis thus appeared to be evidence of the body's response to invasion or injury. However, Bevan Lewis attributed the spider (or "scavenger") cell a novel double role, as both healer and destroyer:

> The function of a scavenger is to remove refuse, effete and useless material. But Bevan Lewis enlarges the function of these cells still further by attributing to them an active and aggressive part in the production of the diseased condition. He figures them as attacking and disintegrating the nerve cells with their processes which he regards as suckers.[133]

In diseased states, these cells "enlarge[d] very considerably into great amœboid-like masses" from which "radiate[d] on all sides numerous branching fibrils, forming an intricate and delicate network around it as a centre"[134]—hence the name spider cells. Though they were sometimes observed in healthy brains, spider cells were most easily spotted in diseased brains where they accumulated in vast numbers, shown up by deeper staining. Their sprawling growth had a destructive effect on outlying tissue and vessels:

> They become the "phagocytes" or *scavengers of the tissue*; live, thrive, and multiply upon the degenerating protoplasmic masses of nerve-cells and their extensions, and all effete material lying in their neighbourhood is ultimately appropriated to their use. These active scavengers are also destructive of the living tissues; they affix their sucker-like processes to any portion of their structure.[135]

These spidery outgrowths acted like ivy, strangling everything around them. Under such conditions, it was no surprise that an individual's motor or sensory powers might be altered. Prolific growth of these elements could "[grow] out in the form of brush-like processes into the infiltrated pia and thus [form] an adhesion between this and the cortex."[136] These were cells, then, that could also explain how adhesions appeared in the brain. Like adhesions, the presence of the spider cell suggested a form of reversion or atavism:

> In man [the spider cells] appear in scanty numbers; in the Barbary ape, they become more frequent; in the cat and ocelot, they are still more abundant; in the pig and sheep so profusely scattered are they that they form a most characteristic stratum immediately below the pia mater … We find these corpuscles in human brain which has undergone senile degeneration – in other diseases attended by reduction in functional activity, and in vascular affections resulting in retrogressive changes and a reversion to a low type of structure.[137]

It is difficult to gauge just how much support existed in wider medical circles for Bevan Lewis's theories about the spider cell, but his research into them was contemporaneous with that of Elie Metchnikov in Russia, who in 1882–1883 described white blood cells engulfing bacteria. Metchnikov, like Bevan Lewis, regarded these cells (which he later termed 'phagocytes') as primitive elements in the body, simultaneously protective and "wild" in their action.[138] He also associated them with the degeneration of tissue, including the brain. Despite support for his theory from the prominent German pathologist Rudolf Virchow, elsewhere Metchnikov's work caused significant and critical comment—particularly his notion of phagocytes as purposeful protective agents in the body. Back in Britain, Goodall claimed he had heard no criticism of the spider cell theory five years after Bevan Lewis published on it in 1889, but Tuke's *Dictionary of Psychological Medicine* (1892) pondered whether "too much importance [had been] attached to the function of these so-called scavenger cells."[139] Like the doubts expressed about pathological investigation in the previous chapter, some remained cautious of a comprehensive turn towards microscopy at the expense of other methods. George Thompson, Superintendent of Bristol City Asylum and previously Medical Officer at the West Riding, asked how useful it was to view phenomena under the microscope when one could see the manifestations of disease during life by utilising technologies such as the stethoscope.[140] Nevertheless, spider cells were a finding of some significance to those interested in the pathological 'footprint' of general paralysis. Goodall, keen to investigate the topic in more detail, carried out experiments using rabbits to discover how spider cells developed "in inflamed states of the cerebral cortex."[141]

Using animals for experiments was not unusual at this time, but research like Goodall's had come under attack more frequently since the foundation of Frances Power Cobbe's anti-vivisection organisation, the Victoria Street Society, in 1875. Following the 1876 Cruelty to Animals Act, vivisection could only be undertaken with a licence granted by the Home Secretary and the Society kept a watchful eye on scientists who they suspected to be operating illegally (they took Ferrier to court on this basis in the 1880s, but lost the case when it was argued that his assistant had carried out those parts of experiment requiring a licence). Susan Leigh Star suggests that such scrutiny succeeded in bringing together those researchers who were working on matters such as localisation of function, ironically aiding their research.[142] For Goodall and researchers elsewhere, animal experimentation played an important role in investigating the functioning of the brain,

but this rarely makes the accounts of Goodall's experiments less unsettling. Goodall seemed to be more involved than other members of the West Riding staff in animal experimentation and surgical intervention—including some operations carried out on patients during life, as we will see in the next chapter. Pursuing his research on spider cells, Goodall first trepanned a hole in a rabbit's skull, before injuring the brain mechanically (using a piece of wire) and chemically (introducing turpentine, carbolic acid, and other substances). He observed changes in the brain for a period of five weeks, though he noted that even "Within 28 *hours* … there was found great enlargement of the spider cells *beneath* the cortex."[143] Summing up his findings, Goodall concluded that it was the process of inflammation that brought these cells into view, confirming earlier observations of the general paralytic brain that had suggested inflammatory processes as an explanation for anomalous appearances such as softening. The spider cell's sprawling growth, then, was suggested to be the cause of other phenomena such as softening and adhesions.

In a short space of time the characteristic signs of general paralysis had become increasingly specific—from the rather vaguely defined 'softened' brain identified by Crichton-Browne to the tiny spider cell of Bevan Lewis. Softening and adhesions were brought into focus by the systematic, large-scale practice of postmortems and the tabulation of their results, whilst the spider cell was dependent on the microscope for its existence. Techniques such as serial sectioning and microscopy fed into evolving theories about the workings of the brain: sectioning techniques, for example, could undermine the significance of surface lesions by revealing the inner depths of the brain substance to be relatively intact. At the same time, these techniques threw up obstacles that asylum researchers had to negotiate, such as differentiating between unusually degenerated brain substance and over-staining. Although technologies like microscopy "inevitably framed the terms of psychiatric research," then, they did not necessarily "guarantee scientific consensus" or "produce any information [that merited] the hours spent collecting it."[144] With techniques still evolving and the results of detailed examination dependent on a whole array of variables, simple visual and tactile assessment remained crucial, as demonstrated by Bevan Lewis's advice to make use of "the rough-and-ready methods afforded by the sense of sight and touch." Despite these challenges, doctors at the West Riding continued to expend significant time and effort on the study of the general paralytic brain,

experimenting with new techniques and evolving their own unique practices.

The brain of the general paralytic patient, as a valuable scientific object that evaded a simple reading, brings to mind modern efforts in brain preservation, with brain banks holding tissue for research into a range of conditions from multiple sclerosis to dementia. Just as researchers in the twenty-first century hope to find physical abnormalities that will shed new light on impenetrable neurological conditions, the nineteenth-century asylum doctor placed a high value on human material in his study of diseases like general paralysis. Though the techniques and ethical frameworks used to understand the brain in the nineteenth- and twenty-first century may differ, in both cases the substance of the brain was viewed as a route towards understanding "the apparently unfathomable experience presented by a subject"—a way of explaining the profound behavioural and intellectual changes that mental disease entailed.[145] Opening up the skull of general paralytic patients to uncover softened, atrophied brains and large amounts of fluid raised the possibility that physical changes within the skull were affecting the functioning of the brain. And the spider cell, as an element of the brain that reacted to injury or infection, suggested that general paralysis was a disease dependent on some form of external infection that the body was fighting back against. It would be these twin concerns—the possibilities of physical and clinical intervention and of an infective basis for general paralysis—that would inform research into the condition in the final years of the nineteenth century. As the next and final chapter discusses, central to this research were the fluids of the body.

Notes

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Fluid

This chapter considers the place of bodily fluids in the study of general paralysis, particularly cerebro spinal fluid (CSF) and urine. The study of the former was directly informed by postmortem evidence, which in turn fed into clinical interventions including trepanation. Though it did not lead to any breakthroughs in the systematic treatment or cure of general paralysis, trepanation was hotly debated by nineteenth-century practitioners both in terms of its efficacy and its ethical justifiability, and it is significant as an example of a physical operation that aimed to directly affect the brain. As the final chapter of the book, this chapter also brings us out of the nineteenth and into the twentieth century, when toxic theories of mental disease expanded upon existing work on the nature of general paralysis by suggesting that the condition was the result of toxins within the body. In studying the urine and other waste products of general paralytic patients, asylum researchers aimed to identify this toxin and thus the cause of general paralysis. During this investigative enterprise, the clinical picture of the condition as something often coincident with excessive drinking came to be reinforced by pathological findings that aligned the general paralytic body with that of the alcoholic. By the early twentieth century, laboratory-based studies had not eclipsed the social aspects of the disease, with significant attention still accorded to the role of heredity and the patient's personal history in the development of general paralysis.

J. Wallis, *Investigating the Body in the Victorian Asylum*, Mental Health in Historical Perspective, DOI 10.1007/978-3-319-56714-3_6

The Possibilities of the Postmortem

Chapter "Brain", described the time and effort expended by asylum researchers in examining the substance of the brain after death, much as—in "Bone"—we saw them dedicate significant attention to the study of the bones at postmortem. In the case of bones, despite initial enthusiasm for quantifying the bodily fabric using tools like Charles Mercier's breaking strain instrument, doctors increasingly recognised that such postmortem investigation did little to alter the lived experience of the patient or the asylum staff's responsibilities in caring for them. Was the asylum postmortem, then, a redundant exercise? Was it a practice that doctors undertook more for the sake of professional advancement and intellectual curiosity than for the good of the patient? Some historians have argued that postmortem pathology in the asylum was a practice that "seldom established new medical breakthroughs."[1] In assessing postmortem work in terms of its ability to produce medical breakthroughs, though, we are in danger of reverting to models of the history of medicine within which those productive effects of everyday practices that did not lead to a concrete discovery are lost. Michael Worboys, discussing the concept of a "bacteriological revolution," cautions against navigating through the history of medicine by means of specific discoveries such as the tubercle bacillus or the spirochete of syphilis. He argues that late nineteenth-century "Bacteriomania" was not defined by the rapid adoption of newly evolving practices and ideas, but rather "the uncertainties and possibilities of the new aetiological and pathological models."[2] What Worboys emphasises—and which is crucial here—is that ambiguous results did not necessarily mean unproductive or stagnant scientific investigation. In their examination of muscle tissue, bones, and lesions of the brain substance, asylum doctors were not stumbling blindly down an uncharted path, or carrying out pathological investigations without purpose. They were using these opportunities for observation and experiment to navigate complex issues of vulnerability, aetiology, and therapeutic possibilities. Though it might fail to solve an issue, the process of investigation could nevertheless lead to practical and theoretical developments that were important to contemporary observers (and continue to be so for historians of science and medicine). In the case of bones, although the investigations of asylum staff may have come to little in the sense of formulating an explicitly *medical* answer to the problem of fracture, they undoubtedly contributed towards a greater appreciation of the need to handle patients with extreme care, evidenced in

handbooks for attendants like that produced by the Medico-Psychological Association.

In examining the brain in general paralysis, as we saw in chapter "Brain", doctors found similar degenerative appearances to those seen in the bones. The importance of the physical brain to the study of general paralysis was agreed upon by almost all asylum investigators in the later years of the nineteenth century, but it was not necessarily a natural end point of investigation. Although death may be considered a source of authority, telling "the truth of disease"[3] (in, for example, the certain diagnosis of general paralysis that could replace a tentative diagnosis during life), the postmortem was often followed by a reorientation of the medical gaze towards the living body—sometimes due to a recognition of the limitations of pathological investigation. This tendency was identified in imperial German psychiatry by Eric Engstrom, who describes how alienists there "began going back to the patient's bedside in search of a viable system of disease classification" due to their "disappointment in the results of pathological anatomy."[4] This may also have been prompted by some practitioner's anxiety that, in locating the origins of disease in ever more discrete elements of the bodily fabric, the techniques of pathology and microscopy were overshadowing their own clinical skill.[5] The bedside and the bench could not be easily separated, however, and many published case studies included reference to both clinical and pathological findings in order to offer a complete narrative of disease. Although pathological results might be disappointing (the difficulty of definitively linking general paralysis and softened bones, for example), what was seen in the course of postmortems had the potential to influence what went on at the bedside as doctors linked pathological changes with clinical symptoms. There were two phenomena found at postmortem that suggested to doctors that the problem lay not in the substance of the brain itself, but in the fluid that surrounded it: false membranes and large amounts of CSF.

False membranes were said, like adhesions of the membranes to the brain substance, to be common in cases of general paralysis. The West Riding Asylum's J.O. Wakelin Barratt described them thus: "The fully formed membrane … consists of a very delicate, more or less grey or brownish-grey oedematous layer, lying upon, and adherent to, the inner surface of the dura mater, and exhibiting large thin-walled dilated vessels together with extravasations of blood of varying size."[6] In other words, these were a kind of blister or sac of blood found between the membranes surrounding the brain. In Joseph Wiglesworth's 1888 study of 400 postmortems, 42

(10.5%) of his sample had false membranes, 22 of these occurring in general paralytics.[7] At the West Riding, James Crichton-Browne found that general paralysis was aligned with 29 of 59 cases of false membranes, and William Bevan Lewis's later analysis of 73 cases found 34 occurring in general paralytic cases.[8] Postmortem reports frequently noted the presence and size of false membranes or blood clots in the brain, also depicting them in diagrammatic form like other lesions of the brain. False membranes were of sufficient interest to inspire a number of specialised instruments for dealing with them: a set of forceps for extracting false membranes were listed in a 1908 catalogue from London-based instrument makers Krohne & Sesemann.[9] That false membranes were connected with the profound changes taking place in the brain seemed apparent to many commentators: how could lesions of the brain substance occur without some morbid activity in the membranes and fluids surrounding it? The effusion of blood making up a false membrane, as well as suggesting underlying disturbance, implied some form of active production: upon patient John B.S.'s brain there was a "film of organised blood."[10] False membranes seemed to have their own network of blood vessels, aiding growth and providing stark visual evidence of the spread of disease. This was a disturbing sign, then, of unnatural changes taking place within the skull.

Charles Rosenberg, writing on early nineteenth-century American medicine, concludes that at that time "the body was seen as a system of intake and outgo—a system which had, necessarily, to remain in balance if the individual were to remain healthy … Equilibrium was synonymous with health, disequilibrium with illness."[11] Athena Vrettos, in *Somatic Fictions* (1995), argues that though Rosenberg's argument concentrates on the early nineteenth century, "his explanation of an internal paradigm of bodily economy" also informed medical thinking in later years.[12] The fixed energy model of the body was extended to the nervous system by a number of theorists in the second half of the century, and—from the 1860s—there was increasing reference to the "forces" of body and mind in works by prominent psychiatrists such as Henry Maudsley.[13] Balance was something that informed the body's workings at the most minute level, and the balance of fluids within the cerebrospinal system was something that caught the attention of a number of researchers working in asylum mortuaries and laboratories. Many postmortem examinations found the atrophied brains of general paralytic patients to be surrounded by an unusual amount of fluid. Joseph Workman found an astonishing one and a half pints in a skull

at postmortem, intimating that this explained why the brain had been compressed to half its normal size.[14] George Robertson, Superintendent of the Perth District Asylum, offered a neat explanation that harked back to ideas of humoral balance in the body: "As the cranium is a closed box, and its contents always completely fill it, when the active agent, the blood, increases or diminishes in amount, the passive agent, the CSF, must alter in amount inversely, the brain substance being regarded as neutral."[15] Thus, the fluid compensated for the loss of other bodily substances. This notion of fluid moving in to fill the space previously occupied by the brain and its blood supply could be seen in a number of articles, books, and postmortem reports: one West Riding postmortem examination found "wasting of the convolutions which [was] compensated for by 6oz. of fluid," another "Three ounces of compensatory fluid."[16] This fluid was used by some to make estimations of the brain's state prior to the patient's illness. T.W. McDowall's 1886 paper, 'An Unusually Heavy Brain in a General Paralytic,' clearly illustrated his belief that CSF was a compensatory product, arguing that the 11 oz. of escaped fluid "without doubt represented some ounces of brain tissue."[17] McDowall felt confident enough in this assertion to publish his results under a title that highlighted brain weight despite the brain being wasted; his "unusually heavy" brain was based on the brain substance present as well as the surrounding liquid that he believed represented several more ounces of degenerated brain tissue. At the West Riding the degree of brain atrophy or shrinkage was estimated in another way. Frederick St. John Bullen, writing in 1889, said that it was usual at every postmortem to preserve a ring of bone from the skull—and this is indeed noted in many postmortem reports. This segment of the skull —"taken through the occipital protuberance behind and through the frontal bone at about an inch above the root of the nose"—allowed the measurement of skull thickness. In conjunction with a wax cast of the cranial cavity, the pathologist could ascertain the volume of the skull more accurately than via external measurements, comparing the cast with the size of the brain to determine the extent of brain wasting.[18]

Not all were convinced that excess CSF was the result of a compensatory process in which fluid represented lost brain tissue. John Batty Tuke, Fife and Kinross Asylum Superintendent and Assistant Physician to the Royal Edinburgh Asylum, argued that it represented "an effusion produced by morbid processes going on in the brain."[19] Others highlighted the effects such liquid had on the brain and the rest of the body. An 1892 piece in *The Lancet* graphically portrayed the notion of balance as applied to the brain,

theorising that cerebral pressure had the effect of hindering respiration. A patient, on the operating table for the removal of a brain tumour, stopped breathing, whereupon the surgeon "punctured the brain, and witnessed the gratifying return of respiration in proportion as the pus flowed out."[20] Pressure within the brain caused by an increased amount of fluid might also be estimated by the 'gravity' of the brain tissue, determined by suspending the tissue in fluid.[21] The exchange of brain mass for fluid, then, fit into a wider picture of dynamic exchange within the body, with the fixed-energy model capable of being extended, at least theoretically, to other bodily material. Bodily balance was subverted by the body of the general paralytic patient, in which the maintenance of equilibrium had descended into chaos; this imbalance was graphically illustrated by the production of large amounts of fluid in the skull. In the final decade of the nineteenth century, several doctors theorised that it was this fluid—seen so often in the postmortem room—that was responsible for many of the symptoms of general paralysis. If this theory was correct, then perhaps there was some hope for the patient, though it could only come via one route: draining the fluid from the skull.

Trepanation and General Paralysis

In 1890, writing in the *BMJ*, T. Claye Shaw and Harrison Cripps related the case of a male general paralytic patient at Banstead Asylum. W.F. was suffering from a build-up of fluid in the skull that seemed to be exerting considerable pressure on his brain and causing severe headaches. The suggestion that their patient was suffering from excessive fluid in the skull was based on the many postmortems that Shaw and Cripps had witnessed, which had revealed large amounts of fluid in general paralytic cases. Removed to the care of Cripps at St. Bartholomew's Hospital, trepanation was performed: W.F. was given chloroform before Cripps made two one-inch trephine holes, one of them revealing bulging of the dura mater, a portion of which he removed. On returning to Banstead a few days later the patient's delusions and headache seemed to have abated.[22]

Physical intervention in the brain during the nineteenth century is probably most associated with the work of Swiss alienist Gottlieb Burckhardt. Burckhardt, who performed surgery on at least six patients under his care in 1888, is often credited with the birth of modern psychosurgery, having removed small portions of these patients' brains.[23] Indeed, he was declared "the first to propose and undertake a destructive

operation upon the anatomically intact brain in the hope of relieving mental symptoms" by his almost contemporaries and pioneers of lobotomy, Walter Freeman and James Watts.[24] Burckhardt's method of accessing the brain by making holes in the skull was a procedure that had gained significant interest in the second half of the nineteenth century, partly inspired by anthropological findings. In the early 1870s Paul Broca had examined a Peruvian skull sent to him by anthropologist Ephraim George Squier that bore the marks of trepanation; Squier wished to ascertain whether the patient had lived following the operation and Broca said that, in his opinion, they had.[25] Such archaeological discoveries found a receptive audience among alienists and neurologists who were actively investigating the connections between body and mind. Victor Horsley, for example, studied prehistoric skulls held in Paris's Broca Museum and used these to inform his own theories of the surgical treatment of conditions including epilepsy.[26] At around the same time, others were performing craniectomies (removing bone from the skull to increase the space available for the brain), usually on children diagnosed with idiocy. The Royal Albert Asylum's T. Telford-Smith estimated that over 200 such operations had been performed in Britain, America, and France between 1890 and 1896.[27] Yet within histories of surgery on the brain in the late nineteenth century, the use of trepanation in cases of general paralysis is barely discussed, with the notable exception of the work of German Berrios.[28] Berrios argues for trepanation as a form of psychosurgery—though practitioners were not removing portions of the brain, they were aiming to change its physical status in order to change behaviour—and calls for more research on such nineteenth-century interventions as well as the responses to them. The different responses to the work of Burckhardt, Shaw, and Cripps highlight—as Berrios notes—that sustained courses of experimentation and operation on the brain depended on social as well as medical forces.

In part, the relative paucity of historical work on physical interventions in nineteenth-century psychiatry likely stems from our own unease with the topic. The popular view of the Victorian asylum is usually one of sinister doctors needlessly operating on their helpless charges, and in tackling the history of psychosurgery we are forced to confront instances that come close to confirming that stereotype. Within the history of psychiatry, somatic treatments such as insulin therapy are also often used to signify profound shifts in psychiatric thinking, which can lead us to assume that somatic treatments were universally adopted and practised.[29] In surfacing

the body and the practices that surrounded it in the nineteenth-century asylum, we are obliged to examine not only the medical or scientific reasons behind those practices (both theoretical and practical), but also their social and ethical position. It is important to recognise that surgical interventions such as trepanation were not carried out without explicit discussion of their merits, risks, and ethical implications. Berrios argues that the use of trepanation in cases of general paralysis was not presented unproblematically by alienists and that its proponents "were aware of the potentially serious consequences of their treatment, and of the fact that—as well as careful antiseptic precautions—they needed scientific, ethical and social warrants."[30]

Shaw and Cripps were enthusiastic in their advocacy of trepanation, appealing to data that apparently demonstrated "increased arterial tension" in the early stages of general paralysis and arguing that "[t]he only way of stretching the brain [was] by giving it more space in which to expand."[31] In justifying the procedure, Shaw looked to established methods of counter-irritation: if blistering or cutting the skin to allow the escape of fluids could alleviate mental symptoms, then why not the release of fluid from inside the skull? Though logical considering contemporary observations of the brain at postmortem, Shaw and Cripps' surgical solution to general paralysis was not without controversy. Between 1889 and 1892, a number of articles and letters in the *BMJ* debated the appropriateness of trepanation in general paralysis on both theoretical and ethical grounds. To some, the intractable nature of general paralysis merited such measures. "[I]n the words of Professor Ferrier," wrote John Macpherson and David Wallace of Stirling Asylum, "the disease [was] so fatal that any experimental attempt to relieve it [was] justifiable."[32] Others took the view that trepanation was at best a temporary palliation of suffering via its relief of immediate symptoms, noting their contempt for the practice. Prestwich Asylum's George Revington criticised Shaw as well as John Batty Tuke (who had also utilised trepanation in a case of general paralysis) .[33] "I may mention the practical point," wrote Revington, "that general paralytics are quite sufficiently apt to injure themselves [as we saw in "Bone"], and to be injured by others without the additional facilities which a trephine hole in the skull would afford."[34] For Revington, once signs of general paralysis were discernible, the brain substance was already too far degenerated to expect any improvement to result from surgical intervention. Tuke was confident, though, that the operation could be performed with benefit for the patient—even if it only offered temporary relief—especially considering

the "simplicity" of the procedure.[35] Indeed, the operation was viewed as a relatively minor one; Shaw advised, for example, that there was no harm in carrying out a "primary trephining" to inspect the region of the brain suspected to be at issue.[36]

As we saw in Chapter "Skin", the West Riding staff were accustomed to carrying out operative procedures such as the excision of tumours. On at least one occasion, they also carried out trepanation. In January 1893, 40-year-old Elizabeth Ann A. was admitted to the Asylum after being found naked in an empty house. Though she expressed a number of delusions—one of which was that she was about to be married and required 15 carriages for the wedding day—she was described as "not at all excited," had experienced no fits, and was noted to have a facial expression that did not indicate any "special mental state," although she did have slightly slurred speech. It was likely this slurring, along with a slight anomaly of her right pupil and absence of knee jerks, that led the admitting doctor to record a tentative diagnosis of "? General Paralysis." Elizabeth Ann's casebook charts a startling development in her care shortly after her admission: an entry of 29 March 1893 noted that she was possibly "in remission," showing no mental symptoms of general paralysis, although her knee jerks were still absent. Less than a month later, however, on 17 April 1893, she "was trephined." The operation, undertaken by Edwin Goodall, made a hole in the right side of her skull. This did not reveal a large amount of fluid in the skull or any unusual appearances of the membranes covering the brain, although it was noted that at the moment of incision her right pupil "contracted distinctly." Over the two months following the operation, Elizabeth Ann experienced various ups and downs —primarily defects of speech and fits—but was soon sent out on trial before being fully discharged ("recovered") on 25 July.[37] A month later an article by Goodall in the *BMJ* described the operation as a general success, though he was chiefly interested in the aural hallucinations that Elizabeth Ann seemed to have experienced following the operation.[38]

Goodall would have been wise to wait a little longer before penning his article, as the following month—on 25 August 1893—Elizabeth Ann was readmitted to the West Riding. In contrast to her happy delusions of marriage upon her previous admission, this time she was described as "despondent," saying that she had died and come to life again and was "sure she will have something done to her."[39] It was a stark contrast to the spirit she had shown immediately following the operation, telling Goodall that he had "done his best to kill her" and that once her father heard of the

procedure he "would make him 'smart' for it."[40] It seems clear from the notes on Elizabeth Ann's second admission that the procedure had had a definite impact upon her mental state—she was said to be particularly distrustful of the medical staff—but no doctor attending her explicitly acknowledged this in the casebook. The trephine hole on her head was by now covered over in soft tissue (the piece of bone had not been replaced during the operation), her speech was slurred, her knee jerks were absent, and her pupils were of unequal size. This time diagnosed with "Melancholia [and] ? of Gen. Paralysis," she spent her time wandering the wards, not speaking, and had to be spoon-fed.[41] The notes for her second admission describe several years of fits and complaints of pain in the head until she died in January 1897, her death attributed to "Mania" and "Dementia of General Paralysis." Her postmortem found extensive erosion of the brain substance, and a microscopic examination by Francis Simpson seemed to suggest that trepanation had had some beneficial effect despite her condition in the years leading up to her death. He found "a much less degree of pathological change than [was] usual in G.P.s of such duration … [and] hardly any proliferation of spider cells."[42] Even when a patient died, then, it was possible to position trepanation as a positive and beneficial measure—emphasising that the operation *itself* was a success, but that the patient had (inevitably) died as the result of a fatal condition.

One thing that is notable in Elizabeth Ann's case is that trepanation was carried out when there seemed no extensive evidence for her disease being general paralysis. No explanation was offered as to why the operation was done only a month after she had been described as possibly in remission, except that she was suspected to be in the early stages of general paralysis and thus able to benefit from treatment. Remission was not unheard of in general paralysis, with some patients recovering sufficiently well to return home for a period. Others—like male general paralytic patient Samuel W.—were allowed home at the request of their families; Samuel's wife wrote to the Asylum after his death, thanking the superintendent for "granting is discharge so that we cud se the last of him at home [*sic*]."[43] Although some doctors undertook trepanation in cases where the signs of the disease were marked, Goodall seemed to have done it in a case with minimal indications. Berrios suggests that, in utilising trepanation, doctors such as Goodall were able "to target *individual* (troublesome) mental symptoms without committing themselves to having to treat the entire disease," influenced by a view of mental disease as the result of multiple lesions.[44] To Shaw and Cripps, the operation on W.F. still had its merits as the "painful urgent

symptoms" had been relieved. Underlying both W.F.'s case and that of Elizabeth Ann was the awareness that the general paralytic patient could not be expected to make a full recovery in any case. Surgical intervention was less about curing general paralysis than relieving its symptoms. Interventions such as these are a good example of why we should be cautious in dismissing surgical procedures like trepanation as misguided and 'extreme' attempts at bringing about complete cure; contemporary doctors did not necessarily view them in this way, but rather through the lens of palliative care or temporary relief. The case of Elizabeth Ann, though, raises the possibility of misdiagnosis: the operation was carried out without a great deal of evidence that she was suffering from general paralysis, and indeed justified as a measure that was to be taken early on in the disease, when only a limited number of symptoms might be present. And, crucially, in general paralysis—a condition with many varied physical and mental manifestations—it was not uncommon to confuse the condition with something else. Tuke warned that before undertaking any operation, the asylum doctor was to be absolutely sure that the case *was* one of general paralysis.[45]

Differential Diagnosis: General Paralysis and Alcohol

Surely, considering the many lesions left by the disease and its distinctive clinical character, there was little danger of confusion? As detailed in "Brain", many doctors expected general paralysis to leave noticeable lesions in its wake that testified to its distinctive and ferocious character. The picture though, was easily blurred, especially if one did not keep in mind that it was the appearance of these lesions *together* that confirmed the presence of general paralysis, as we saw in "Brain". Far from resolving the mysteries of general paralysis, pathological evidence in many cases had served to complicate the picture. Physician Edward Long Fox declared, when discussing arachnoid cysts (like the false membranes discussed in the last chapter, but filled with CSF instead of blood), that "Idiocy, dementia, and general paralysis [were] the forms of disease most usually associated with … cysts of the arachnoid; but, like many other cerebral lesions, they [were] found in persons who have not been insane."[46] Atrophy of the brain, too, was associated with all conditions of dementia. Thus many—if not all—of the essential lesions of general paralysis could be present in

other forms of insanity. Thomas Smith Clouston noted that false membranes were not only seen in general paralysis, but also "in some epileptics, a few maniacs, a few cases of senile insanity, some cases of ordinary dementia, and a small number of the cases of organic dementia with hemiplegia or local paralysis."[47] Even Crichton-Browne had to admit that he had seen adhesions in tuberculosis, meningitis, encephalitis, atrophy of the brain, and chronic alcoholism.[48] Later, Bevan Lewis would note that adhesion of the membrane to the cranium was common in all forms of chronic insanity—a logical result of long-standing inflammation.[49]

In relating a case of trepanation for the disease, Tuke noted that throughout his article he had placed 'general paralysis' in inverted commas in order to "indicate the opinion that it is really a generic term applied to very various and varied morbid conditions."[50] In an 1895 article, Reginald Farrar of Stamford and Rutland General Infirmary concluded that as the pathological signs of dementia and general paralysis were almost identical, they were the same disease. It was merely the demographic characteristics of the patient that tipped the balance, said Farrar: younger patients were said to be general paralytics whilst the elderly were diagnosed with dementia. Farrar labelled general paralysis nothing more than "a convenient clinical term for a *symptomen-complex*" with clinical and pathological signs that could simulate almost any other form of insanity.[51] Others expressed similar concerns. Alfred Fournier called general paralysis "a theory that [had] been allowed to run riot," and Samuel Wilks cynically surmised that alienists divided their cases into two: "functional and curable diseases such as mania and melancholia … [and] the organic and fatal … which in an asylum seem to be called general paralysis of the insane."[52]

The varied symptoms that could be seen in the disease made it all too easy to diagnose a case as general paralysis based on the findings of reflex tests or observations made at admission. A number of conditions existed that were said to be commonly confused with general paralysis, not only by the student but by experienced observers. Several clinical cases were reported throughout the period that noted the difficulty in differentiating general paralysis from tumour of the brain, for example. Some tumours presented no clinical symptoms (such as the Cane Hill Asylum patient who "never complained of headache, and had no vomiting," yet at postmortem was found to have a tumour as large as an orange in his frontal lobe), but more often they presented the kind of symptoms normally seen in general paralysis.[53] German neurologist Moritz Jastrowitz noted the peculiar cheerfulness seen in many tumour cases, and his contemporary Hermann

Oppenheim identified a tendency for such patients to "joke" and "make sarcastic or trivial answers."[54] Lead poisoning, or plumbism, was another condition that had some clinical similarities with general paralysis, inducing hallucinations, paralysis of the limbs, and tissue degeneration resembling muscular atrophy. In some poisoning cases death might also be preceded by fits or coma.[55] Henry Rayner, Alexander Robertson, George H. Savage, and Ringrose Atkins contributed their observations on the subject to an 1880 article, 'Insanity from Lead Poisoning,' which highlighted how easily the two conditions might be confused. F.S., a painter, described "in a confidential manner and with great evidence of self-satisfaction, the way in which he destroy[ed] [the] figures [he saw at night] by some power which he possesse[d]," whilst J.P. (also a painter), "In the early stages of his disorder … might well have been mistaken for a general paralytic" due to his maniacal attacks.[56] The use of the term "lead encephalopathy" by Rayner and his colleagues made clear that lead could affect the brain in a most direct manner, having serious neurological effects even after recovery (and also mirroring the symptom-free periods of some general paralytics). Less widely discussed but also bearing some resemblance to general paralysis was pellagrous paralysis. Caused by the consumption of diseased maize, pellagra was extensively studied by Franz von Tuczek, who performed eight autopsies on cases of pellagrous paralysis and claimed to find pathological changes similar to those seen in general paralysis.[57]

These were relatively uncommon conditions, however. Lead poisoning could be ruled out among those patients whose lives had not brought them into close or sustained contact with the substance, and pellagra was generally found only in areas where maize was the dominant crop (the condition was most often seen in rural areas of Europe, but also increasingly in the American South from the late nineteenth century).

The most difficult problem facing the British asylum doctor was how to differentiate the general paralytic from the alcoholic. Tuke's warning about being sure the disease was indeed general paralysis before performing trepanation singled out alcoholic insanity as the key complicating factor due to its demographic and clinical similarities.[58] Like general paralysis, alcoholic insanity often claimed men as its victims. Examining the histories of 464 patients at the West Riding whose insanity was attributed to excessive drinking, Bevan Lewis reported that 344 of these were male.[59] The initial clinical symptoms were remarkably similar to general paralysis: the staggering gait and boastful plans of the general paralytic often meant that his friends "very likely [thought] he [had] been drinking."[60] This

confusion worked both ways. Tuke was one of several practitioners who could relate cases that presented all the usual signs of general paralysis (slurred speech, disordered gait, and so on), but that had completely recovered after a short asylum stay; that their attacks had coincided with heavy drinking led him to warn other doctors about the possible simulation of general paralysis by alcohol and not to be too hasty in their diagnosis.[61] Twenty-five-year-old West Riding patient F.S. exhibited a range of delusions that on paper looked remarkably similar to the characteristic expansiveness of general paralysis, having "exalted notions respecting his muscular powers" and proclaiming he could "easily lift half-a-ton, and [had] often raised many hundred tons aloft." Within a fortnight he was considerably calmer, and after a short stay in the Asylum was discharged recovered.[62] As Samuel Wilks pronounced, "a drunken man might be said to have an acute general paralysis of the insane."[63]

In the late nineteenth century, medical concern for the effect of alcohol was growing, both in Britain and elsewhere. Alcoholism claimed the attention of medical professionals outside and inside asylums, from the man who arrived at work rather worse for wear and caused an accident in the factory, to the sufferer of 'alcohol-induced delirium' who took up valuable space in the country's asylums (and who was a prime candidate for the new inebriate asylums provided for under the 1898 Inebriates Act). A reinvigorated temperance movement, Habitual Drunkards legislation, and a growing appreciation of the unhealthy effects of excessive alcohol consumption meant that alcoholism occupied an increasing amount of doctor's thoughts and day-to-day work. In 1882, 19% of the West Riding's total admissions were attributed to alcohol use/abuse (in the same year, beer was discontinued as an item of the Asylum dietary).[64] Such statistics should be read with caution, however; high rates of admissions for alcoholism could be a result of strong local temperance movements.[65] Although the West Riding Asylum did not diagnose a disproportionately large amount of patients with alcoholic insanity (in 1885 just four of 202 men admitted were diagnosed with alcoholism or 'mania *a potu*'), it remained a point of interest in terms of its connection with general paralysis.[66] By the late nineteenth century, the basic tenets of Benedict Augustin Morel's theory of degeneration were bound up with medical findings that highlighted the coincidence of alcoholism and more serious conditions (including insanity).[67] Prominent alienist Henry Maudsley viewed the insane as the "waste-matter" of evolutionary struggle, whilst groups such as the British Society for the Study of Inebriety began to

explicitly link new models of alcohol addiction with traditional denouncements of deficient moral sense.[68] "[C]hronic soaking" not only "rubbed off … the finer points of moral character and feeling," but could also mark the beginning of the path to serious brain disease.[69]

Many were beginning to ask how far alcohol was implicated in the aetiology of general paralysis, whether as cause, catalyst, or simple coincidence. Forty-eight-year-old grocer's drayman Joseph B., admitted to the West Riding in 1885, was diagnosed with general paralysis with the exciting cause identified as "alcoholic excess."[70] As Farrar noted: "Alcoholic insanity frequently merge[d] into general paralysis" as many general paralytic cases were "the direct result of alcoholic excess."[71] Similarly, Norman Kerr, President of the Society for the Study of Inebriety, said that in his own experience alcohol had been the leading factor in 22% of general paralytic cases.[72] Historian Patricia Prestwich, writing on perspectives on alcohol in nineteenth-century France, has emphasised how alcoholism could be integrated into existing definitions of mental illness, but could also expand that definition:

> … alcoholism provided a powerful example for those who argued for the biological or organic origins of mental diseases and their degenerative nature. In alcohol they found a physical substance whose toxic qualities could be tested in the laboratory, whose destructive impact on tissue could be revealed by pathology, and whose extreme effects, such as *delirium tremens*, bore a strong resemblance to accepted symptoms of mental illness.[73]

That alcohol loomed large in late nineteenth-century debates about health and mental disease is clear, but alcoholism was also—as Prestwich suggests here—aligned with general paralysis as a consequence of laboratory or postmortem examination. Similarities between the two were evident pathologically as well as clinically: Crichton-Browne confessed that there was a tendency among less experienced observers to confuse the general paralytic brain with that of the chronic alcoholic.[74] The effect of alcohol on the human brain had been investigated by a number of researchers throughout the nineteenth century, many of them aligned with temperance reform. Early in the century, John Percy's thesis on the presence of alcohol in the ventricles of the brain made clear the dangers of ingesting excessive amounts of alcohol. Percy related the case of a man brought to Westminster Hospital, already dead, having "drunk a quart of gin for a wager" and whose brain yielded "a considerable quantity of a limpid fluid,

distinctly impregnated with gin, both to the sense of smell and taste, and even to the test of inflammability."[75] Percy's experiments, in which he injected dogs with alcohol to determine how quickly and in what form alcohol reached the brain, led him to suppose that there was "a kind of affinity … between alcohol and the cerebral matter."[76] At the West Riding, the far-reaching effects of alcohol abuse were similarly investigated by observing the effect of the substance on dogs. Bevan Lewis related the case of:

> a dog, to which alcohol had been administered for a lengthened period, [that] not only succumbed to all the symptoms described in alcoholism in animals by [French psychiatrist Valentin] Magnan [such as a savage temper] … but the nutrition of the skeleton also became effected, so that a *notable* degree of mollities and attendant deformity ensued.[77]

Here, Bevan Lewis emphasised the deleterious effects of alcohol on the whole body, not just the brain (note too the reference to mollities ossium, discussed in Chapter "Bone"). He wasted no time in extrapolating these results to the local, human population, attributing the "dwarfed stature of [the] mining community" to drink and noting that excessive drinking was all too common amongst this occupational group.[78]

As a poison that affected the whole body, the expectation that alcohol would leave its mark on the delicate brain matter was clear. Bevan Lewis listed those appearances in the brain of the chronic alcoholic that resembled those of the general paralytic: a cloudy pia mater, atrophy of the brain substance, and anomalous blood vessels.[79] These features can be seen throughout the West Riding's postmortem reports. An 1898 postmortem examination of the brain of a patient who had suffered from alcoholic dementia revealed the dura mater to be "considerably thickened … & intimately adherent universally to [the skull] cap."[80] The spider cell, initially considered an anomaly specific to the general paralytic brain, was also found in the brains of alcoholic patients. Microscopic examination of alcoholic brains had uncovered spider cells "pervad[ing] the upper or outermost region of the peripheral zone of the cortex lying immediately beneath the pia."[81] Like the spider cells in general paralysis, they took on deep staining that was easily discernible with the naked eye. If microscopic appearances really could reveal underlying pathological processes, the presence of these cells in both general paralysis and alcoholism suggested that the two conditions were pathologically aligned.

The similarities between the two conditions were also evident when comparing one organ and another, as Mickle demonstrated: "By the increase and proliferation of interstitial tissue, leading to destruction of … nervous elements, the lesion of general paralysis was held to be brought into line, and to rank, with a cirrhosis of liver or of kidney."[82] This alignment of the general paralytic brain with the cirrhotic liver or the inflamed kidney of Bright's disease was a common one, inspired by "the adherent meninges, the atrophied cortex, the indurated medulla, and the great shrinking of the brain" which in their general appearance were reminiscent of the diseased abdominal organs.[83] Wiglesworth called general paralysis "a true cirrhosis of the brain" like that of the liver.[84] Savage observed that the "bright capillary congestions of the malar bones [cheekbones] … resemble[d] the patches seen in cirrhosis of the liver" and that alcoholics tended to have "the aspect [during life] of persons suffering from cirrhosis of the liver," such as visible blood capillaries on the skin.[85] All of this suggested that the liver and the brain were similarly affected by changes occurring in the body—raising the question of whether general paralysis was dependent on a toxic agent akin to alcohol.

Toxins in General Paralysis

In the late nineteenth century the possibility that toxins entering the body could be responsible for a whole host of diseases was something being discussed by medical professionals both in Britain and further afield. The idea that disease could be caused by toxins made sense in a climate where micro-organisms were generating significant interest. Working from the assumption that most diseases could be explained by the action of bacteria, auto-intoxication theory posited that toxins produced by these bacteria entered the bloodstream and affected internal organs, including the brain. Richard Noll describes two strains of auto-intoxication theory. The classic theory—with its roots in German medical literature—identified the intestines as the centre of the infective process, but evolved in the early twentieth century to focus on the teeth and tonsils as sites of focal sepsis (memorably analysed by Andrew Scull in his 2005 book, *Madhouse*).[86] The other strain of auto-intoxication theory arose with the endocrinology of the 1890s, focusing on the glands as source of infection and disturbance.[87] Here, chemicals secreted internally were the key concern, with over- or under-secretion implicated in disease. Thus, Emil Kraepelin linked dementia praecox—a condition characterised by headaches, delusions, and

hallucinations—with myxedematous insanity (caused by thyroid disease), pointing to enlarged thyroid glands and alterations of the skin as evidence.[88] Indeed, beside their interest in the surface appearance of the patient's skin as discussed in "Skin", many researchers in psychiatry were also investigating the chemical constituents of the skin's secretions. In Daniel Hack Tuke's *Dictionary of Psychological Medicine* (1892), A. Wynter Blyth described experiments in which ear wax and the contents of cysts (both considered by him to be "skin secretions") were analysed.[89] This concern for the chemical make-up of parts or secretions of the body was also evident in regard to other bodily fabric: that the explanation for bone disease could lie in individual strains of bacteria rather than as part of a generally disordered system had been suggested by some bone specialists, for example. Charles Macnamara had pondered the role of impure air in infecting open wounds, thus causing or aggravating bone disease, and some years later William Ford Robertson appealed to the state of the bone marrow as evidence for the bacterial origin of general paralysis.[90] Alfred Mantle, in the 1880s, had implicated bacteria in rheumatism based on his observation that rheumatism and scarlatina tended to be present in the same households, and in 1883 W.D. Miller put forward his "chemico-parasitic" theory of tooth decay.[91] It should also be noted that infection continues to be implicated in delirium today, particularly amongst elderly patients. Though it remains difficult to identify infection as a *primary* cause, a 1997 study of the causes of delirium in 171 elderly patients attributed 73 cases (34%) to infection, a large proportion of which were due to urinary infection.[92]

One of the most commonly investigated of bodily products in the nineteenth century was blood. Studies of the blood of the insane were carried out as early as 1854, when William Lauder Lindsay at Crichton Royal Institution examined "the relative numbers or proportions of the structural elements of blood as counted through microscopic observation."[93] Later research would focus on the specific elements of haemoglobin content and red and white cell counts across a number of mental diseases. Garlands Asylum's S. Rutherford Macphail found a steady decrease in blood quality as general paralysis progressed, so that in advanced cases "the individual corpuscles were … irregular in outline and deformed," but also identified an increase in white blood cells (leucocytosis), suggesting a response to an outside infective agent.[94] Like the investigation of blood flow, the content analysis of blood depended on the use of specialist instruments such as the haemoglobinometer and

haemocytometer, which aided assessment of the colour and quantity of blood cells. The altered state of the blood might also be evident without microscopic analysis, however, flowing sluggishly and making collection of it difficult.[95] The content of the blood, then, was a topic of interest some years before the early twentieth century, when the spirochete causing syphilis was identified and general paralysis was firmly linked with syphilitic infection.

For the late nineteenth- and early twentieth-century doctor, toxins of various kinds were thought to be responsible for mental symptoms such as delirium or acute excitement but were also suspected to have longer-term effects. Chronic forms of insanity depended on a toxin's effect on internal structures—changes taking place over an extended period of time that would eventually become evident to the asylum pathologist. The steadily advancing physical symptoms of the disease, and the varied body parts found to be affected at postmortem, illustrated the movement of the toxin around the body. The 'toxic theory' of general paralysis thus seemed to provide answers to questions that had dogged alienist researchers throughout the last quarter of the nineteenth century—particularly, what had caused such striking lesions in different parts of the body? Making these connections between general paralysis and some form of toxin, researchers found themselves leaning more towards the idea—voiced by several doctors in the final quarter of the nineteenth century—that general paralysis was dependent upon earlier syphilitic infection. As the link between general paralysis and syphilis became more certain, Ford Robertson wrote:

> I would summarise what appears to me the most probable hypothesis regarding the pathogenesis of general paralysis as follows. The disease depends upon the occurrence of a general toxic condition, the exact nature of which is still obscure, but which is certainly in many cases the result of antecedent syphilitic infection. The first important effect produced by the toxins is a proliferative and degenerative change in the walls of the vessels of the central nervous system, including those of the capillaries of the cerebral cortex. This alteration in the capillary walls interferes in various ways with the nutritive exchanges between the blood and cerebral tissues. Consequently the adjacent cortical neurons undergo primary degeneration, and the neuroglia [supporting structure of nervous tissue] also tends to suffer certain morbid alterations. At the same time these tissues are to some extent affected directly by the toxic agents circulating with the blood.[96]

Ford Robertson's comments echoed those of writers such as Clouston, who had surmised that subjecting the nervous system to "imperfectly purified blood" could cause permanent and serious damage to the brain.[97] The toxic theory of mental disease also fit with an existing discourse that emphasised the peculiar bodily characteristics of the general paralytic patient. In 1900, eminent physician Sir Dyce Duckworth noted that general paralysis was by that point "regarded as coming into the category of auto-intoxications" (he did not think that syphilis provided the toxin, rather that it set in motion a degenerative process that released other toxins from the tissues), and in John Macpherson's *Mental Affections* (1899), general paralysis appeared in the section devoted to "toxic insanities."[98] That the bodies of general paralytics harboured a number of corrupting elements seemed evident in their bodily fabric: the sores on the skin, the wasted musculature, the fractured bone, and the softened brain. Toxins explained this range of bodily transformations, as their spread around the body via the bloodstream allowed them to alter almost any organ or structure. Indeed, Ford Robertson argued that the wide-ranging changes to the body seen in general paralysis could only be explained by toxins: "The urine almost constantly displays various important abnormalities. In advanced cases the bones and cartilages always manifest certain gross structural changes which can only be adequately accounted for by toxic action."[99] Ford Robertson was enthusiastic about the potential of the toxic theory in explaining insanity, and led a great deal of work on the subject at the Royal Edinburgh Asylum where he was Pathologist as well as Director of the Scottish Asylums' Pathological Scheme, which had been set up by Clouston. In order to test his toxic theory, Ford Robertson attempted to induce general paralysis in rabbits by adding cultures taken from patients to the animal's food but, as he himself recognised, it was difficult to generalise the reactions and behaviour of rabbits to that of humans.[100]

Similar experiments using animals were undertaken later in the twentieth century by Edwin Goodall. He was particularly interested in questions of bacteriology and toxic theories of insanity, a line of work that he was strongly supported in during his time at the West Riding. In 1890 he was granted a month away from his duties to attend "a course of Lectures & Practical Work in Bacteriology" at Guy's Hospital.[101] By the following year he had apparently "fitted-up a complete Bacteriological Laboratory" at the West Riding.[102] Later leaving the West Riding to take up a position at Carmarthen, then the Superintendency of Cardiff Asylum, Goodall continued to pursue an active research career. Together with Laboratory

Assistant A. Dignam at Cardiff, Goodall experimented with transferring bodily substances from general paralytic and dementia praecox patients into animals, injecting human CSF into rabbits, for example.[103] These tests resembled earlier experiments Goodall had undertaken on human subjects at the West Riding, investigating the efficacy of blistering in general paralysis, and transferring pus between patients. This latter procedure—and the precautions to be taken when undertaking it—was described in an 1893 article, 'The Effect upon Mental Disorder of Localized Inflammatory Conditions.' In this article he recounted injecting patients with pus obtained from boils, hoping to discover whether a bodily reaction might "bring about or accelerate cure in recent and acute forms of insanity."[104] The rationale was to precipitate a bodily crisis, as mercurial treatment had done for many years, as Julius Wagner-Jauregg's fever treatment had attempted to do in the 1880s, and as malarial therapy would do in the early twentieth century. The results of Goodall's tests with the rabbits at Cardiff were inconclusive: 33% of the animals died during the course of intravenous injection, 25% of unknown causes.[105] Goodall's method of causing a somatic crisis was aimed at acute cases of insanity, and thus was not especially well suited to the chronic condition of general paralysis, but there was still room to suspect that—like trepanation—it could provide temporary relief from painful mental symptoms that were dependent on the action of some toxic agent inside the body.

In exploring the possibilities of the toxic theory and locating the toxins that were suspected to be the cause of mental symptoms, many bodily products came under closer scrutiny. This included CSF, which, it was surmised, might carry toxins that were responsible for both the symptoms of general paralysis and the material changes to the brain substance that we saw in "Brain". In the postmortem record of 34-year-old Annie L., the large amount of fluid found in the ventricles of the brain was noted in the section dedicated to the ventricles, where the writer was also instructed to make notes about the choroid plexus (the network of cells that produce CSF). In this case, the choroid plexus was examined under the microscope and meticulously drawn by a staff member, who also carefully noted which objective lens and eye piece ("Leitz No 3 obj. No 4 Eye piece") he had used during his observation (Fig. 1).[106] It is a striking example of the "scientific self" cultivated by nineteenth-century researchers, with the image produced by careful subjective observation in conjunction with the appropriate technical equipment.[107]

The study of CSF during life was aided by the lumbar puncture, a procedure which had been developed in the 1890s. (At the West Riding,

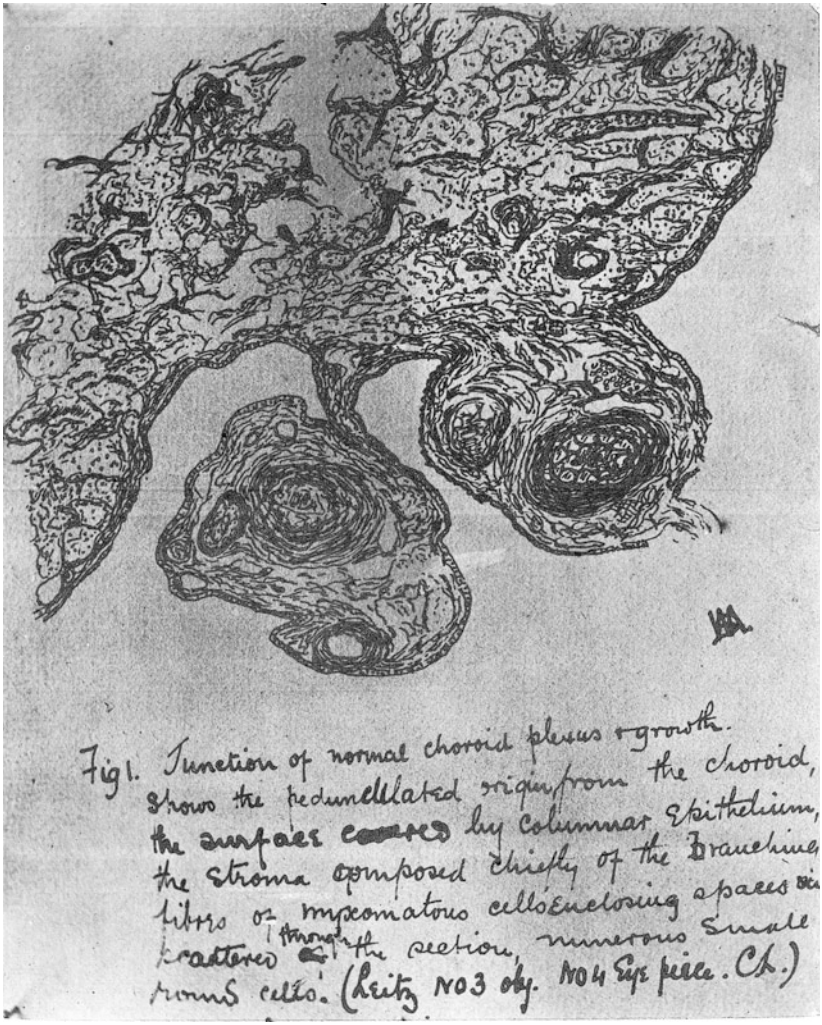

Fig. 1 Sketch of the choroid plexus by one of the West Riding's staff in 1901. Reproduced with permission of West Yorkshire Archive Service: Wakefield and the South West Yorkshire Partnership NHS Trust. WYAS C85/1133

lumbar punctures—by no means a straightforward procedure—were being regularly performed in the 1910s.[108]) A 1901 report from the West Riding also noted that sputum, pus, semen, and urine had been "specially examined" by staff in the laboratory.[109] Urine had been investigated by asylum doctors and others for some time. London physician Samuel Wilks related a case in his 1874 article 'Mania as a Symptom of Bright's Disease,' in which he suggested that the build-up of waste products in the blood due to failure of the kidneys (uræmia) explained the maniacal symptoms seen in some cases of Bright's disease. He described a trial that had taken place a few years previously, when a man on his death bed made a will in favour of his wife:

> … a person beneath him in station, and to whom it was not known at the time that he was married. In an attempt to set aside the will, a *post-mortem* was made, in the description of which a hesitating opinion was given as to the healthiness of the kidneys; whereat the solicitor in the action gathered information relative to the existence of cerebral disturbance in connection with the diseases of these organs, and on which he tried to found an argument as to the soundness of the testator's mind.[110]

Called in to give their opinions, Wilks and a colleague were inclined to agree with the general theory, but believed the symptoms of the man were not in line with such poisoning (whereas he was suffering mere mental 'disturbance' in his apparently irrational wish to leave his possessions to his wife, the more usual signs of uræmia were unconsciousness and coma). Looking back on the case, Wilks said he still could not bring himself to entirely agree with the solicitor, but noted that "in uræmia certain aberrations of mind are occasionally found."[111] If an excess of urea and other products in the blood could cause temporary mental derangement in otherwise sane patients, could it also be at the root of more chronic mental diseases?

At the West Riding in the 1870s, coincident with Wilks' article, doctors were investigating patient's urine both on the wards and in the laboratory. Thirty-nine-year-old John E., diagnosed with general paralysis, was noted to occasionally suffer from retention of urine, which needed to be manually drawn off. In doing this, and in observing John's normal unassisted evacuations, it was observed that his urine contained a "thick deposit," and that he often passed strings of mucus and pus. Subjected to microscopic examination, "granular matter," "crystals," and "pus or mucus corpuscles" were found.[112] Brentwood Asylum's John Turner surmised that the larger

amount of phosphoric acid found in the urine after seizures and periods of excitement was a result of cerebral activity and the flushing out of waste products from the brain.[113] By the turn of the century, examination of the urine was a routine part of admission procedures at the West Riding. James W., admitted in 1901 and diagnosed with general paralysis, had his urine examined in terms of the amount passed, colour, specific gravity, and albumen and sugar content.[114] Goodall, in his post at Cardiff City, investigated the urine of patients for micro-organisms and claimed that, in his own experience, 48% of general paralytic patients had bacteria of various kinds present in their urine.[115] Similarly, Harvey Baird (previously of Cardiff City) examined the urethras of general paralytic and non-general paralytic patients for bacteria, finding "Organisms [to be] … much more abundant in the paralytics."[116] Urine could also be assessed in terms of the amount passed, though this could sometimes prove tricky in the asylum environment: West Riding Medical Officer Ernest Birt noted that even with the use of catheters many patients would accidentally urinate in bed, frustrating his attempts to monitor the quantity of urine.[117]

Like excess CSF as a rationale for trephining, the presence of bacteria in the waste products of the general paralytic body also went on to inform some treatment options, although—like trepanation—their impact was limited. Goodall, working with E. Barton White at Cardiff, examined the faeces of general paralysis patients, noting that "the number of total organisms per gramme of faeces … was above the average normal figure in a large proportion of [the] cases."[118] Goodall and White did not, though, frame this above-average bacterial count as the *cause* of mental disorder. In attempting to get rid of the organisms using orally administered disinfectants, they noted that the treatment had no effect on the patient's mental state. It was almost as if the body of the general paralytic patient was particularly suited to the growth of bacteria. Indeed, in an earlier article, Goodall and Bullen had suggested that "micro-organisms [found] a favourable soil in the degenerate tissues of the paralytic."[119]

Predisposition and Mental Disease

This idea of a favourable, fertile soil suggested that mental disease (of any form) was never entirely unexpected, and that all that was needed was a catalyst (like alcohol or bacterial infection) to start the process. Discussing alcoholic insanity, Bevan Lewis identified a predisposition to insanity in 37% of his male cases, with alcohol acting as the catalyst or 'exciting cause'

in the development of mental disease.[120] Clouston, referring to a patient suffering from the "insanity of Bright's disease," surmised: "No doubt the mental portions of his brain were the weak points of his central nervous system from his hereditary predisposition to insanity and the uræmic poison took effect there."[121] In the case of general paralysis, Sharon Mathews remarks that many late nineteenth- and early-twentieth century commentators on the disease accorded limited importance to heredity; Gayle Davis also notes a relative lack of concern for heredity in the discourse surrounding the condition, and astutely observes that the linkage between general paralysis and late nineteenth-century degeneration theory perhaps looks stronger to the historian of medicine than it did to the contemporary alienist.[122] Heredity did play a part in explanations of general paralysis; though this was more discernible as the turn of the century approached, it was an explanation that built on established ideas about disease aetiology. Charles Rosenberg notes of the early nineteenth century that "both learned physicians and the common man saw disease as the sum of one's transactions with the environment … Hereditary constitutional endowment was one given, the peculiar pattern of life through which that original endowment passed, another."[123] The brain predisposed to insanity had by no means disappeared by the end of the nineteenth century in light of advancing bacteriological knowledge or toxic theories of insanity (indeed, Rosenberg observes that the "most enthusiastic hereditarianism" of c.1885–1920 "coincided with the most enthusiastic and uncritical acceptance of the germ theory").[124] Compare, for example, these sentences written by Adam Addison in 1862, and Edwin Goodall in 1923:

> Addison: "It is quite consonant with our present physiological notions and our knowledge of insanity to believe that some ultimate "irritability", constitutional or acquired, resides in the nervous tissue of the insane, which, on the addition of another link, rapidly developes [*sic*] into disease of the mind."[125]
>
> Goodall: "[There are] several types of neuro-toxic bacterial infection to which the cortical nerve-cells of patients with predisposition to mental disorders show extreme sensitiveness."[126]

Developing bacteriological and neurological knowledge did not push the idea of a 'natural' susceptibility to mental disease from alienist minds, but rather led to its recasting in a new language. Germ theory could not explain why some people became ill but not others; rather than replacing existing

theories, it was drafted into existing accounts in order to provide a detailed, multicausal, explanation of mental disease. That a disease such as general paralysis could have so many varied manifestations suggested a slightly different reaction in each individual affected, according to their heredity, temperament, or predisposition.[127] Though we may be inclined to draw a clear line between the research climate of the 1890s and that of the early twentieth century, "a continuous structure" existed "of what might be called the predisposed body, the body between danger and disease."[128] The constitutional, predisposed, body was vulnerable, not only in its innate excitability, but because it predisposed the patient to even more ailments.

The body of the general paralytic patient around the turn of the century is a fine example of this, and demonstrates how seemingly disparate explanations of mental disease were able to co-exist within one body, and within alienist discourse. The notion of predisposition could complement laboratory findings too, such as Barratt's investigation into the production of false membranes in 1902. His research, funded by a British Medical Association grant, consisted of:

> Portions of subdural membranes varying in size from a pin's head to that of a hemp seed … placed in the subdural space of cats and dogs, being introduced through a small slit in the dura mater covering a cerebral hemisphere which had been previously exposed by trephining.[129]

Examining the animals several weeks later, no progressive changes could be seen—sometimes the implanted membrane had disappeared altogether—leading Barratt to conclude that it was likely impossible that the process of membrane formation could be set up in healthy brains. A similar conclusion was reached by Goodall in his experiments on inflammation: "In cases of general paralysis we may suppose that the vitality of the tissues is so much reduced as to permit the entry (by surface-wound or by the normal passages) and the development of organisms incapable of flourishing in the healthy body."[130] Bacteriological and pathological investigation, then, could prompt researchers to investigate pre-existing differences between people rather than viewing them all as essentially the same and their conditions as an inevitable consequence of bacteria or unknown toxins.[131] Here was another parallel with alcoholism, which some temperance advocates blamed on what they called an "inebriety-centre," a portion of the brain "in which the capacity to crave for, and to be involuntarily impelled to, intoxication reside[d]."[132] The toxic effects of alcohol on the

system did not come about entirely independently, but depended on the supplementary actions of the drinker themselves.

A 1902 address to the Medico-Psychological Association by Clouston also suggests that we should exercise caution in viewing toxic explanations of insanity as signifying a profound shift in contemporary understandings of mental disease. Clouston suggested that there was something amounting to a fashion for toxaemia among younger members of the Association who seemed to exist in an "all-pervading pathological atmosphere."[133] Though he did not dismiss the toxic theory of insanity entirely, he urged caution in embracing it wholesale at the expense of other long-established explanations. Many researchers were keenly aware of the need to focus on hereditary as well as pathological factors. Goodall, who had carried out trepanation for general paralysis as well as numerous other experiments investigating the bacterial basis of mental disease, was a vocal advocate for thorough history-taking in the early twentieth century. This was not simply a personal preoccupation of Goodall's: at the West Riding in the early 1900s, preprinted case files that replaced the more cumbersome casebooks of the previous century demonstrate that family history was still viewed as important. These family histories were much more detailed than they had been previously—especially notable considering the reduced space given to the rest of the patient record in the files—with preprinted sections provided to record information about paternal and maternal grandparents, uncles, aunts, and cousins, as well as parents and siblings.[134] The impulse to collect such information extended beyond the asylum walls: the drive to gather information about heredity and illness grew with the success of the British Eugenics Society in the 1930s. Beginning in 1936, Goodall wrote and talked frequently about the necessity for families to keep pedigrees. Influenced by the Eugenics Society's pedigree-schedules, he called for "discipline" among the population, which entailed the compulsory recording of "maladies, defects, and disabilities" in order to check the spread of mental diseases such as general paralysis.[135]

That Goodall cast his call for keeping detailed family histories in light of the Eugenics Society's practices is a timely reminder—as this book comes to a close—that the social aspects of diseases were not erased by post-mortem or laboratory investigation, and that asylum doctors were not operating in a vacuum without reference to wider social or political ideas. General paralysis was in many ways a prime example of how "the language of disease continually aligns pathological processes with social forces."[136] The anomalous appearances of the general paralytic body—softening of

tissue, atrophy, large amounts of CSF, sprawling spider cells—were stark symbols of waste and decay, and epitomised the nineteenth-century economic conception of health in which the internal balance of the body was paramount. The excessive fluid found in the skull, for example, was a graphic illustration of a breakdown in this balancing act. Pamela Gilbert, discussing Herbert Sussman's work on Victorian masculinity, notes how notions of liquidity or "pulpiness" were used to describe the "unformed masculine self" that required constant and careful vigilance.[137] She suggests that divisions between health and illness were constantly threatened by a liquidity that threatened to "burst out" and "sink [those around] the individual": "wetness and liquidity often ground[ed] descriptions of the body disintegrating as a threat to the larger social body."[138] Certainly from the mid-nineteenth century more attention was accorded to waste—not only the waste produced by the body, but the refuse of the growing city and the classical ruins abandoned by previous generations—and its scientific and cultural "worth" was re-evaluated.[139] In the late nineteenth and early twentieth centuries, the waste products of the general paralytic patient were accorded greater significance as urine and faeces were examined for anomalous bacteria. If waste products are "fundamental to the ordering of the self"[140]—maintaining balance and a system of intake and outgoings—then the general paralytic was a profoundly disordered soul. Urine filled with strings of pus or bacteria-laden CSF suggested that not only was the general paralytic patient suffering at the hands of a cruel degenerative disease, but that they also posed a potential infective threat to those around them.

In considering the 'immorality' of the general paralytic patient who—even before the connection of general paralysis with syphilis—was considered an over-indulger in alcohol and sex who had put excessive strain upon his or her system, this notion of social threat is particularly relevant. The nervous patient of eighteenth- and nineteenth-century Britain, as studied by W.F. Bynum, highlights the "mixture of moral and medical language" that could surround psychiatric conditions at a time when alienists and neurologists were discussing functional explanations of disease.[141] Though functional diseases were real, they could affect different patients in different ways and depended upon a combination of moral and physical factors. In general paralysis, too, there was still room to consider questions of morality as well as physiological and pathological facts. Davis notes that those working on general paralysis drew heavily upon ideas about responsibility and respectability when considering the causes of the

disease. Although the causative factors suggested for general paralysis were numerous, "most alienists … combined shared notions of debauchery and strain in their aetiological explanations of this disease."[142] The general paralytic patient possessed a body that quite literally liquefied and softened as a consequence of failed sexual vigilance or over-indulgence in alcohol. By the final years of the nineteenth century, the link between sexual behaviour and general paralysis was strongly suspected, but not definitively confirmed. In this sense the general paralytic patient bears some resemblance to the transgressive member of the Nuer tribe as studied by Mary Douglas in her seminal work, *Purity and Danger* (1970).[143] The prohibition of incest among the Nuer was bolstered by the belief that any breaking of this rule would be punished in the form of visible skin disease that 'advertised' their crime. Like the potentially infectious general paralytic, the Nuer "polluter" is "a doubly wicked object of reprobation, first because he crossed the line and second because he endangered others."[144] The visible degeneration of the bodily fabric—from the muscles to the brain substance in general paralysis—encapsulated the "fear of collapse, the sense of dissolution, which contaminates the Western image of all diseases," in which the patient becomes the disease anthropomorphised.[145] At the same time the disfiguring transformations of the body and subjective experiences of the sufferer highlighted the patient as victim as well as vector.[146] The reduced physical state and diminished mental acuity of general paralytic patients called for special attention within the asylum—the careful physical handling detailed in "Bone", for example—and also marked them out as interesting from a clinical and pathological point of view.

Bacteriological and pathological investigation could draw upon and confirm social and personal factors in disease, then, but what of such investigation's scientific merit? Berrios is sceptical of the significance of scientific research at the West Riding after the Crichton-Browne era, arguing that work there "came to a premature end … because the scientific methods available then were incapable of producing significant new knowledge."[147] A sense of contemporary frustration is also articulated by Juliet Hurn in regard to the study of general paralysis more broadly: she says that despite the condition being described as "key to the potential of mental science, [alienists] remained painfully aware that their rhetoric was not being translated into theoretical developments or practical benefits."[148] Certainly, discussion of a *cure* for the condition was rare, but the volume of work and discussion on the toxic nature of the disease do not suggest that the discourse surrounding general paralysis was a stagnant one

in the final years of the nineteenth century, least of all at the West Riding. At the same time, we should be cautious in extrapolating findings from the West Riding to other institutions. More so than the other investigations and interventions described in previous chapters, sustained and detailed bacteriological research was possible only in those places with adequate laboratory facilities. The investigation of the toxic theory of general paralysis was to a degree place-specific—dependent on the facilities of institutions like Ford Robertson's Royal Edinburgh Asylum, Frederick Walter Mott's Claybury Asylum, and the West Riding. Similarly, the ability to carry out surgical interventions such as trepanation depended upon staff and operating facilities. Nevertheless, the lively debates about these topics at meetings of the Medico-Psychological Association, or in exchanges within the pages of *The Lancet*, *BMJ*, and *JMS* suggest that this was not a conversation entirely confined within asylum walls.

That general paralysis was not redefined in terms of its aetiology with each new avenue of work did not militate against treatment options, as this chapter has shown, though we may debate their utility. Therapeutic interventions such as trepanation were crucial as general paralysis remained an asylum-based condition into the twentieth century, with patients suffering from the condition taking up a large number of beds and requiring constant care. By this time, outpatient departments and acute hospitals were being built as adjuncts to many of the larger asylums. At the West Riding, an outpatient department was in operation from 1889 and an acute hospital opened in 1900.[149] Like many of the West Riding's activities, these were not entirely separated from the scientific work of its staff. Goodall and Bullen, discussing the West Riding and Whittingham asylums, commented on "the desirability of concentrating attention upon the acute block, and of associated work there by the medical officers and the pathologist" (in the twentieth century, Goodall anticipated that the 1930 Mental Treatment Act would provide a rich source of "material for research").[150] The number of patients utilising outpatient departments in their early years was limited, however, with the initiative largely viewed as "*a stepping stone to the asylum*" for those patients who would otherwise be cared for at home.[151] Cases of general paralysis generally remained cases for asylum treatment proper, and any outpatients diagnosed with the condition tended to find themselves swiftly transformed into inpatients.[152] Despite moves towards intervention beyond the asylum environment, the general paralytic patient remained—along with other chronic cases—a long-term problem for asylum staff well into the twentieth century.

The theories and practices described in this chapter—like those of previous chapters—are significant in highlighting the centrality of scientific work in the asylum, as well as the evolution of general paralysis as a disease entity. They highlight the gradual move away from the fabric of the body towards ideas of external, disease-causing agents. This conception of the disease would be given further credence with the identification of the spirochete as the causative organism in syphilis in 1905 and the discovery of these spirochetes in general paralytic cases in the early 1910s by Hideyo Noguchi and J.W. Moore at the Rockefeller Institute and Central Islip State Hospital of New York. The work of researchers such as Noguchi and Moore, though they may take the credit for definitively demonstrating the link between syphilis and general paralysis, was dependent on several decades of prior clinical and pathological research into the disease. The physiological tests, personal histories, and postmortems that have been described in this book all contributed to the disease's profile, bringing researchers closer to the truth behind the mysterious and fatal condition known as general paralysis.

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Conclusion

This book has examined how the body and its constituent parts were investigated in the late nineteenth-century asylum. It has focused particularly on one institution, the West Riding Asylum in Yorkshire. There, staff took especial interest in the body and employed a variety of clinical and pathological techniques in their attempt to find a physical explanation for mental disease. *Investigating the Body in the Victorian Asylum* has demonstrated the value of studying the body in the history of psychiatry—particularly when it is the nineteenth century that is under discussion, a period when asylum doctors were dedicating significant time and resources to establishing a link between the body and mental disease. In 'surfacing' the body in the West Riding Asylum, I have also tried to 'surface' the institution's practices. Looking at the skin, for example, led to a consideration of photography in asylums as well as the performance of surgery. By examining the bones, I was able to consider pathological techniques, the role of coroners' inquests, and the training of asylum attendants. Throughout this book I have focused primarily on general paralysis, seen by many asylum doctors as a model of mental disease which, if its mysteries were solved, could inform the treatment of many other diseases besides. Knowledge about general paralysis was gathered and developed incrementally—informed by wider theories about localisation or infection, for example—and dependent on available ways of seeing and knowing the disease in the fabrics and fluids of the body.

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Bodies and Practices

Several patients' bodies have been presented and discussed in this book: William T., whose psoriasis was vividly captured by the Asylum photographer in "Skin"; Michael D., in "Muscle", who described the progress of his seizures to the doctor; and Elizabeth Ann A., in "Fluid", who found herself undergoing trepanation that seemed to have a profound effect on her subsequent mental health. Each of these patient's bodies can be considered a "body multiple." This term, used by anthropologist Annemarie Mol in *The Body Multiple* (2002), refers to how the body and its diseases are visualised or rendered.[1] At the West Riding, each patient's body was visualised and rendered in a number of ways: in photographs, in the inscription of footsteps on large sheets of paper, or in the cells sketched in postmortem and microscopic records. These ways of seeing the body, whether disseminated in journal articles or pasted into the pages of the pathology lab's album, were a crucial part of knowledge production. Not only did they allow doctors elsewhere to witness the work done at the West Riding, but they were also a means for the West Riding staff themselves to gather information about the possible links between the physical fabric of the body and mental disease, also sometimes using these to inform clinical practice.

Such visualisation was, of course, just one element of the Asylum's work. This book has explored administrative practices, too: the taking and cataloguing of large numbers of photographs, the process of holding inquests, and the evolution of case records from large free-form books to smaller, and sometimes more limiting, case files. It has considered how asylum doctors integrated methods and instrumentation from outside alienism into their practice. These were important in establishing alienism's 'scientific' credentials, but could also be crucial in day-to-day asylum management. As well as methods and instruments taken directly from physiology —such as the dynamometer of "Muscle"—we have seen how simpler methods could be used to great effect, such as asking a patient whether they stood on board or carpets in order to test sensation. Of all the asylum's practices, the postmortem examination has been central to much of the work described in the latter half of this book. It is clear that the postmortem did not always offer a straightforward narrative of death or disease. In the case of bone fracture, postmortem findings, however meticulously detailed, were complemented with sometimes very thorough written records recounting a patient's behaviour, or the evidence of

witnesses. This does not mean that we should dismiss the postmortem as a practice that had little relevance to clinical medicine. In the case of fracture, though, while postmortem findings may not have solved the problem, they nevertheless had a direct impact on patient care. The concern to prevent fracture, and to detect it when it had occurred, was built into training manuals for attendants and into postmortem administration—the slips of papers that directed the pathologist to record something about the state of the ribs.

The clinical or pathological facts of the disease of general paralysis—psoriasis, disordered gait, weak ribs, sprawling spider cells, and prolific bacteria—were both dependent upon, and interacted with, ways of seeing them. These ways of seeing were numerous, from the camera to the reflex test, the instrument to measure breaking strain of bone, and the microscope. But we should not fall into the trap of technological determinism here, imagining a one-way process in which a new piece of equipment leads to a quick reorientation of research. As we have seen throughout *Investigating the Body in the Victorian Asylum*, technologies interacted with bodies and could also be shaped by them. The bodily fabric had to be made legible before it could form the basis of any meaningful scientific enquiry, and—as detailed in "Brain"—this could prove a time-consuming exercise. The softened substance of the general paralytic brain necessitated novel techniques such as the use of the acid bath to facilitate its study, and also complicated the use of the tephrylometer and the microtome. Many of the techniques and instruments discussed in this book were considered—despite their potential for uncovering new information about mental disease—limited in their utility, as they were often frustrated by the degenerated fabric of the body itself. Doctors thus remained enthusiastic about such methods as naked-eye observation and the sense of touch for determining the extent of degenerative change in the brain substance, while new technologies like the breaking-strain instrument ("Bone") were not unthinkingly incorporated into practice.

Medical technologies, too, do not perform themselves: they require the body of the doctor (and the patient) to carry out their work, to become 'instruments.' Although the primary rationale of this book has been to consider the investigation of *patients*' bodies, throughout we have also seen glimpses of the body of the asylum doctor. With the acquisition of more and more pieces of new technology in the nineteenth century (microtomes, X-ray equipment, lamps for phototherapy, microscopes), it is easy to forget about the physical body of the doctor. Yet the practices the doctor engaged

in, and the technologies that he employed, were constantly mediated by his own body, whether that was the performance of reflex tests or the delicate work of making brain sections with a razor blade. Although this embodied experience is particularly hard to get at—particularly as some doctors strove to *dis*embody their observations in line with ideals of 'gentlemanly' practice—there were instances in which the bodily skills and subjective experiences of the doctor were explicitly discussed. William Bevan Lewis advised students to examine the brain with their fingers as well as visually; A.H. Newth bemoaned the scrivener's palsy he had developed as a result of writing so many casebook records; and several doctors, in describing the odour of the skin in general paralysis, made clear that their own senses were a vital, if untranslatable, part of the physical examination.

Equally difficult to access is the subjective experience of the asylum patient. Though I do not claim to recover this, I do believe that focusing on the body in asylum practice need not eclipse the patient as an individual, feeling, and active, being. As several instances in this book have shown, patients could be active participants in the work of the asylum. Their life stories, their hallucinations, their bodily sensations, and their responses to physical examination, could all shape and disrupt practice at the same time that they informed contemporary theories of mental disease. Hallucinations were a reason for rescheduling the physical examination of Benjamin U. in "Skin", who was judged by the doctor to be experiencing too much emotional pain (as a result of his hallucinations) to continue. For William Julius Mickle, his patients'hallucinations told him, he believed, a great deal about the connections between the body and the brain, and he went so far as to use these to question localisation theory ("Brain"). In physical examination, but also in the process of admission to the asylum, many patients collaborated with doctors to some degree: writing or drawing in the casebook to supplement their record, and evaluating the reasons for committal as set out in their reception order. In this book, then, I have found myself considering patients' experiences in much more detail than I ever did when attempting to construct a social history of asylum life that was not explicitly focused on the body.

The Spaces of the Asylum

Taking a practice-oriented approach in this book has highlighted the need to more fully investigate the asylum as a scientific space. The investigation of the body, especially the dead body and its constituent parts, often

required new and specialised spaces. The practices employed at the West Riding Asylum suggest the centrality of the mortuary and pathological laboratory in this endeavour, but other spaces as well. Physiological examinations took place in offices and wards as well as in recognisably 'scientific' spaces, shifting the methods of the physiological laboratory into new arenas. Eric Engstrom's study of imperial German psychiatry pays particular attention to this issue of multiple spaces, considering the ward and lecture hall as well as the laboratory.[2] Likewise, in the West Riding Asylum, ways of knowing disease were dependent upon certain spaces, with the structure and organisation of the asylum itself part of the process of knowledge production. The staff library was attached to the pathological laboratory, for example, allowing staff to compare their findings with those recorded in contemporary literature (although it was noted in 1895 that the stock of this library hardly compared with that of a German asylum that one staff member had recently visited).[3] Rather than a single regime and a unified site, the asylum was an institution where medical knowledge was spread across multiple sites, each of which had a different way of seeing: the photographer's studio, the ward, the laboratory bench, and the mortuary. The work of the West Riding Asylum especially complicates the notion of a simple laboratory/clinic split, with the findings of postmortems informing clinical interventions in wards just a few metres away from the mortuary table.

The different spaces of the asylum were increasingly necessary as doctors there took part in more and varied research. There was a strong desire amongst the West Riding staff to draw upon the work of other fields: dermatology, physiology, osteology, and so on. Although it is difficult to draw clear boundaries between the various concerns of the Victorian medical profession at this time, and the work of asylum doctors was not necessarily easily accepted by others, this integration of methods and practices from elsewhere is important. It complicates the notion of the late nineteenth-century asylum as an isolated 'backwater,' bereft of innovation or drive for change. As an institution housing a large number of patients, often for extended periods of time—many of whom were seriously physically as well as mentally ill—the West Riding staff were compelled to look beyond the psychological in their day-to-day work. This investigative enterprise led to various forms of practical innovation. The pathological laboratory and other sites, including the mortuary, were "toolshops" as well as places of discovery.[4] They were the places where Herbert Major perfected his tephrylometer, where William Lloyd Andriezen broke ribs

using the breaking-strain instrument, and where Edwin Goodall mixed his glue and treacle to make casts of the brain. They were spaces that allowed for "new configurations for research, for the understanding of disease, and for the formation of new disciplines."[5]

In considering the spaces of the asylum, it is also necessary to consider the various roles and duties of the staff working within it. This is particularly pertinent when it is the late nineteenth century that is under discussion, with medical men both inside and outside the asylum often dipping their toes into several research areas and carrying out multiple roles at once. For some in this period, specialisation could prove inhibiting; we may discern a divide, for example, between pathologists and those primarily engaged in clinical medicine. In L. Stephen Jacyna's study of the Glasgow Western Infirmary, pathologists had a fairly limited role. They might be asked for their opinion in an unusual or contested case, but in general their judgement was assumed to be subordinate to that of the doctor or surgeon. At Glasgow pathological work was a "postscript" to a broader enterprise, and the pathologist "incidental to the clinical process."[6] The West Riding Asylum fostered a much closer working relationship between pathology and clinical medicine: the suggestion of weak bones at postmortem directly informed patient care, and the discovery of large amounts of CSF in the skull led to at least one instance of trepanation. The tendency for asylum doctors to perform multiple roles—for an individual to simultaneously hold the position of medical officer and pathologist, for example—was likely one factor that had an impact upon the way in which pathological findings informed clinical practice at the West Riding.

At the same time, though, I am cautious about portraying the asylum as some kind of scientific utopia where doctors effortlessly worked together across the pathological and clinical realms, their observations in one arena easily and usefully informing the other. In "Bone" I discussed how some asylum doctors frustrated collaborative research, by keeping data to themselves or using private symbols in their notes that rendered their work useless to colleagues in the same institution. Episodes like this make it rather difficult to credit Michel Foucault's notion of the asylum as a "panoptic utopia" where doctors were united in a lesion-oriented investigative enterprise.[7] Mental science was a constantly evolving field, and one in which—like the rest of the medical profession—we can discern differences of opinion. As Thomas Smith Clouston's address to the Medico-Psychological Association suggested in "Fluid, he saw himself standing apart from a younger generation who were too preoccupied with

pathology, and who neglected older methods of investigation. Asylum doctors varied, then, in their precise preoccupations and approaches to their work, even if most found themselves in agreement with the idea that there was a physical basis to mental disease.

An Old Disease Resurfaces

Investigating the Body in the Victorian Asylum has focused on a nineteenth-century institution, but the disease it has discussed—general paralysis—continues to have relevance in light of the re-emergence of syphilis and neurosyphilis in the present day. Although my concern has not been to prove that general paralysis and neurosyphilis are one and the same, a significant proportion of general paralytic cases were likely neurosyphilis as we understand it in current medical terminology. However, neurosyphilis still tends to be thought of as an old disease that was wiped out for good with the advent of penicillin in the mid-twentieth century. Our perception of syphilis as a long-gone condition owes something, too, to the rising concern for HIV and AIDS from the 1980s. As more men and women fell victim to AIDS, syphilis was no longer, in comparison, the dreaded disease it had been only a few years previously. Yet cases of neurosyphilis have recently been reported both in the UK and elsewhere.

Reading clinical accounts of these recent neurosyphilis cases—and even more so watching film footage of these patients—has an uncanny quality for me. The West Riding casebooks were immensely detailed in their accounts of patients' physical and mental symptoms, and as many patient records contained photographs I could just about conjure up a picture of the disease as it looked to the asylum doctor. But to see those same symptoms that were set down in a 150-year-old casebook described in a modern research paper (albeit in rather different language), or captured on camera, is particularly jarring. Relating the case of a man in his forties who had undergone personality change and developed an obsession with money, medics in Japan in 2015 described their process of investigation: the man was examined for scars and skin rashes and a "tap test" (lumbar puncture) was performed.[8] Here we see symptoms very similar to those set down by late-Victorian asylum doctors and the same basic forms of investigation being carried out: checking the skin and assessing CSF.

Just as late nineteenth-century methods and technologies shaped approaches to and understandings of disease, in the present day our understandings of neurosyphilis continue to evolve. Whereas for the West

Riding Asylum doctors the degree of brain atrophy could only be revealed via postmortem examination, today MRI scans can do this during the patient's lifetime. Although new technologies like MRI may have expanded the range of tests that can be carried out to detect neurosyphilis, today's medical professionals still find themselves grappling with similar questions to those that dogged Victorian asylum doctors. Technical advances may have got around many of the physical obstacles to the study of the brain that we saw in "Brain", but neurosyphilis continues to pose significant challenges. The efficacy of the Wassermann test, for example—widely used to detect syphilis via the blood or CSF—has long been a point of contention due to its ability to produce false positives and false negatives, as well as relying on the technical prowess of the person carrying it out.[9] In modern as well as Victorian medicine, then, medical technologies and tests are not static, nor are they end points; they evolve, they are contested, and they are not perfect routes to bodily truth.

In contrast to the discussion about general paralysis in the early twentieth century—within which over-rather than under-diagnosis tended to be a key concern, as we saw in "Fluid"—the perception of neurosyphilis as an 'extinct' disease has led many current clinicians to view any cases passing under their notice as anomalies. In consequence there is a relative lack of information about the condition in recent clinical literature. Like their nineteenth-century counterparts, many present-day patients may not seek help until the disease is far advanced, having assumed that the disappearance of the initial sores means the condition (not necessarily recognised by them as syphilis) has cleared up of its own accord. And with neurosyphilis no longer in the forefront of many doctors' minds, a number of these patients may indeed find themselves admitted, in the late nineteenth-century tradition, to psychiatric wards rather than receiving the intensive antibiotic treatment that can arrest the progress of the disease. As one recent article cautions: "Missing the diagnosis of syphilis is a serious medical mistake that may affect a long-term outcome."[10] A 2016 survey of the medical literature also suggests that the latency period between initial syphilitic infection and the development of neurological symptoms is now much shorter than in previous periods, averaging just 11 years.[11] Some research indicates that neurological complications may develop even more quickly than this, possibly due to the coexistence of syphilis and HIV.[12]

Neurosyphilis is a condition that continues to present serious diagnostic difficulties. It requires several ways of seeing for its definitive diagnosis: clinical observation of psychiatric disturbance, lumbar punctures, and brain

scans. Like the body of the late-Victorian general paralytic patient, the body of the twenty-first century neurosyphilitic patient is a multiple one, dependent on many different practices and ways of seeing. It is also a condition that requires to be looked at, like general paralysis, both socially and scientifically. The shame or embarrassment of seeking out treatment for the early signs of syphilis today, for example, has serious implications for exactly what science will be able to do for the sufferer in the event of the development of neurological complications. Just as in the nineteenth century, when general paralytic patients were regarded as dissolute individuals responsible for their own disease, or when men tried to hide their condition from doctors and go on working to provide for their families, social attitudes determine how a disease is detected, perceived, and treated. In closing, I hope that *Investigating the Body in the Victorian Asylum* has demonstrated the value of 'surfacing' scientific practices alongside social histories, that the two are intertwined, and that we should not be afraid of bringing them together.

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Appendix: Demographic Characteristics of West Riding Lunatic Asylum Admissions

Table I Demographic characteristics of West Riding Lunatic Asylum admissions for the year 1880 (percentages in brackets)

	All patients	*Female*	*Male*
	N = 444	*N* = 220	*N* = 224
Age at admission			
Average	39.6	39.3	39.9
Range	8–80	13–70	8–80
N =			
Under 21	30 (6.8)	15 (6.8)	15 (6.7)
21–35	159 (35.8)	79 (35.9)	80 (35.7
36–50	151 (34.0)	77 (35.0)	74 (33.0)
51–65	86 (19.4)	42 (19.1)	44 (19.6)
Over 65	17 (3.8)	7 (3.2)	10 (4.5)
Unknown	1 (0.2)	0 (0)	1 (0.4)
Marital status			
Single	162 (36.5)	82 (37.3)	80 (35.7)
Married	232 (52.3)	108 (49.1)	124 (55.4)
Widowed	45 (10.1)	28 (12.7)	17 (7.6)
Unknown	5 (1.1)	2 (0.9)	3 (1.3)

Sources WYAS C85/3/1 Reception orders Jan.–Dec. 1880; C85/602 Register of admissions (1879–1880); C85/603 Register of admissions (1880–1881)

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Table II Demographic characteristics of West Riding Lunatic Asylum admissions for the year 1885 (percentages in brackets)

	All patients	*Female*	*Male*
	N = 415	*N* = 213	*N* = 202
Age at admission			
Average	39.5	38.7	40.3
Range	7–84	9–75	7–84
Age group			
Under 21	32 (7.7)	14 (6.6)	18 (8.9)
21–35	142 (34.2)	85 (39.9)	57 (28.2)
36–50	144 (34.7)	66 (31.0)	78 (38.6)
51–65	64 (15.4)	35 (16.4)	29 (14.4)
Over 65	24 (5.8)	9 (4.2)	15 (7.4)
Unknown	9 (2.2)	4 (1.9)	5 (2.5)
Marital status			
Single	143 (34.5)	73 (34.3)	70 (34.7)
Married	205 (49.4)	104 (48.8)	101 (50.0)
Widowed	54 (13.0)	32 (15.0)	22 (10.9)
Unknown	13 (3.1)	4 (1.9)	9 (4.5)

Sources WYAS SRH C85/3/1 Reception orders Jan.–Dec. 1885; C85/606 Register of admissions (1884–1885); C85/607 Register of admissions (1885–1886)

Table III Demographic characteristics of West Riding Lunatic Asylum admissions for the year 1890 (percentages in brackets)

	All patients	*Female*	*Male*
	N = 386	*N* = 189	*N* = 197
Age at admission			
Average	39.5	40.4	38.7
Range	7–77	10–74	7–77
Age group			
Under 21	28 (7.3)	11 (5.8)	17 (8.6)
21–35	136 (35.2)	68 (36.0)	68 (34.5)
36–50	128 (33.2)	64 (33.9)	64 (32.5)
51–65	66 (17.1)	32 (16.9)	34 (17.3)
Over 65	21 (5.4)	12 (6.3)	9 (4.6)
Unknown	7 (1.8)	2 (1.1)	5 (2.5)
Marital status			
Single	135 (35.0)	55 (29.1)	80 (40.6)
Married	180 (46.6)	87 (46.0)	93 (47.2)
Widowed	50 (13.0)	33 (17.5)	17 (8.6)
Unknown	21 (5.4)	14 (7.4)	7 (3.6)

Sources WYAS SRH C85/3/1 Reception orders Jan.–Dec. 1890; C85/610 Register of admissions (1889–1890); C85/611 Register of admissions (1890–1892)

Table IV Demographic characteristics of West Riding Lunatic Asylum admissions for the year 1895 (percentages in brackets)

	All patients	***Female***	***Male***
	N = 407	*N* = 168	*N* = 239
Age at admission			
Average	39.7	40	39.5
Range	13–83	15–83	13–78
Age group			
Under 21	43 (10.6)	16 (9.5)	27 (11.3)
21–35	148 (36.4)	56 (33.3)	92 (38.5)
36–50	106 (26.0)	55 (32.7)	51 (21.3)
51–65	75 (18.4)	25 (14.9)	50 (20.9)
Over 65	34 (8.4)	16 (9.5)	18 (7.5)
Unknown	1 (0.2)	0 (0)	1 (0.4)
Marital status			
Single	175 (43.0)	62 (36.9)	113 (47.3)
Married	178 (43.7)	81 (48.2)	97 (40.6)
Widowed	43 (10.6)	24 (14.3)	19 (7.9)
Unknown	11 (2.7)	1 (0.6)	10 (4.2)

Sources WYAS SRH C85/3/1 Reception orders Jan.–Dec. 1895; C85/614 Register of admissions (1895)

Table V Demographic characteristics of West Riding Lunatic Asylum admissions for the year 1900 (percentages in brackets)

	All patients	***Female***	***Male***
	N = 386	*N* = 213	*N* = 173
Age at admission			
Average	39.8	39.3	40.6
Range	7–84	7–83	11–84
Age group			
Under 21	31 (8.0)	17 (8.0)	14 (8.1)
21–35	142 (36.8)	84 (39.4)	58 (33.5)
36–50	115 (29.8)	58 (27.2)	57 (32.9)
51–65	65 (16.8)	35 (16.4)	30 (17.3)
Over 65	31 (8.0)	18 (8.5)	13 (7.5)
Unknown	2 (0.5)	1 (0.5)	1 (0.6)
Marital status			
Single	147 (38.1)	74 (34.7)	73 (42.2)
Married	177 (45.9)	103 (48.4)	74 (42.8)
Widowed	53 (13.7)	30 (14.1)	23 (13.3)
Unknown	9 (2.3)	6 (2.8)	3 (1.7)

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C85/1404 Photograph of a group of medical officers, including Dr. Bevan Lewis, director (n.d.).

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