

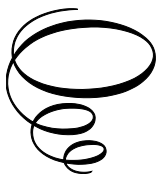
Dr Rudolph Virchow, the Father of Pathology

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By

Robert A. Norman

**Cambridge
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VIRCHOW TIMELINE AND NOTABLE FACTS

Timeline

- Virchow was the first Chair of Pathological Anatomy at the University of Würzburg in 1849.
- His scientific writings alone exceed 2,000 in number. Among his books, Cellular Pathology, published in 1858, is regarded as the root of modern pathology.
- He was the first to develop a systematic method of autopsy based on his knowledge of cellular pathology.
- Virchow was the first to describe and name diseases such as leukemia, embolism, thrombosis, chordoma, and ochronosis.
- He coined biological terms including chromatin, parenchyma, neuroglia, agenesis, osteoid, amyloid degeneration, and spina bifida.
- In June 1859, Virchow was elected to the Berlin Chamber of Representatives.
- In 1860, he was elected official member of the Königliche Wissenschaftliche Deputation für das Medizinalwesen (Royal Scientific Board for Medical Affairs).
- In 1861, he was elected as a foreign member of the Royal Swedish Academy of Sciences.
- He was elected to the Prussian House of Representatives in March 1862.
- In 1869, Virchow co-founded the German Anthropological Association.
- He was elected to the Prussian Academy of Sciences in 1873. He declined to be ennobled as “von Virchow,” but he was nonetheless designated Geheimrat (“privy councilor”) in 1894.
- In 1880, he was elected member of the Reichstag of the German Empire.
- In 1881, the Rudolf Virchow Foundation was established on the occasion of his 60th birthday.
- In 1885, he launched a study of craniometry, which gave surprising results contradictory to contemporary scientific racist theories on the “Aryan race”.
- In 1892, he was appointed Rector of Berlin University.
- In 1892, he was awarded the Copley Medal of the British Royal Society.

More on Virchow

- The Rudolf Virchow Center, a biomedical research center in the University of Würzburg, was established in January 2002.
- The Rudolf Virchow Award is given by the Society for Medical Anthropology for research achievements in medical anthropology.
- The Rudolf Virchow lecture, an annual public lecture, is organized by the Römisch-Germanisches Zentralmuseum Mainz, for eminent scientists in the field of paleolithic archeology.
- The Rudolf Virchow Medical Society is based in New York and offers the Rudolf Virchow Medal.
- There is a hospital named after him—Campus Virchow Klinikum, Cardiology Center.
- Campus Virchow Klinikum (CVK) is the name of a campus of the Charité hospital in Berlin.
- The Rudolf Virchow Monument, a muscular limestone statue, was erected in 1910 at the Karlsplatz in Berlin. The monument was created by Fritz Klimsch from 1906 to 1910, and is located on Karlsplatz in Berlin-Mitte, Germany.
- The Langenbeck-Virchow Haus was built in 1915 in Berlin, jointly honoring Virchow and Bernhard von Langenbeck. Although originally a medical center, the building is now used as a conference center of the German Surgical Association (Deutsche Gesellschaft für Chirurgie) and the Berlin Medical Association (BMG-Berliner Medizinische Gesellschaft).
- The Rudolf Virchow Study Center was founded by the European University Viadrina to compile the complete works of Virchow.
- Virchow Hill in Antarctica is named after Rudolf Virchow.

Eponymous Medical Terms

- Virchow's angle: the angle between the nasobasilar line and the nasosubnasal line.
- Virchow's cell: a macrophage in Hansen's disease.
- Virchow's cell theory: *omnis cellula e cellula*: every living cell comes from another living cell.
- Virchow's concept of pathology: comparison of diseases common to humans and animals.
- Virchow's disease: leontiasis ossea, now recognized as a symptom rather than a disease.
- Virchow's gland; Virchow's node.

- Virchow's Law: during craniostyostosis, skull growth is restricted to a plane perpendicular to the affected, prematurely fused suture and is enhanced in a plane parallel to it.
- Virchow's line: a line from the root of the nose to the lambda.
- Virchow's metamorphosis: lipomatosis in the heart and salivary glands.
- Virchow's method of autopsy: a method of autopsy where each organ is taken out one by one.
- Virchow's node: the presence of metastatic cancer in a lymph node in the supraclavicular fossa (the root of the neck left of the midline), also known as Troisier's sign.
- Virchow's psammoma: psammoma bodies in meningiomas.
- Virchow-Robin spaces: enlarged perivascular spaces (EPVS), often only potential, that surround blood vessels for a short distance as they enter the brain.
- Virchow-Seckel syndrome: a very rare disease also known as "bird-headed dwarfism."
- Virchow skull breaker: a chisel-like device used to separate the calvaria from the rest of the skull to expose the brain in autopsies.
- Virchow's triad: the classic factors which precipitate venous thrombus formation—endothelial dysfunction or injury, hemodynamic changes, and hypercoagulability.

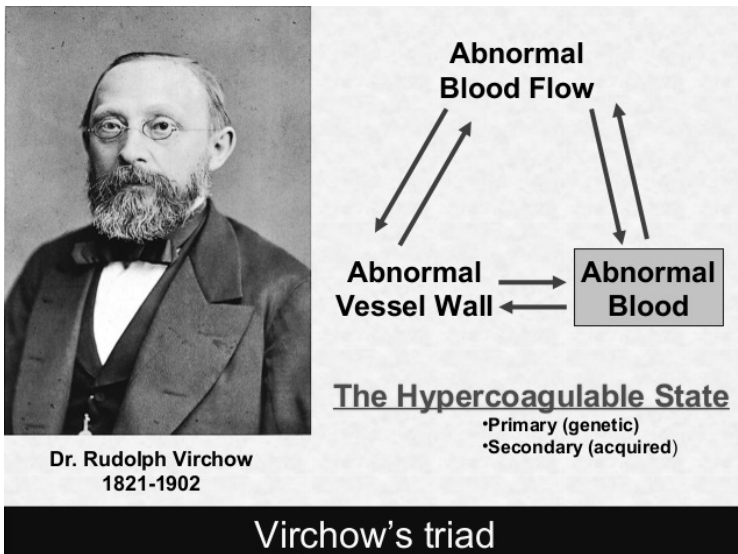


Figure 1: Virchow's triad. www.slideshare.net

PROLOGUE

On a cool spring day in April 1858, more than 100 well-dressed men of science and medicine sat with rapt attention in a lecture hall in the new Pathological Institute of the University of Berlin. Although filled to capacity, the hall was mostly silent, except for the clear and calm voice of the speaker as he offered insights into the latest advances in the field of pathology. At the podium was Dr. Rudolf Virchow, tasked with providing easy-to-understand talks to capture the interest of every level of practitioner. The lessons from the esteemed Professor Virchow had begun two months earlier and were condensed into twenty consecutive lectures and delivered biweekly.

In the front row sat Herr Langenhaun, who Virchow had hired to take down detailed lecture notes in shorthand. Virchow, after what he called “but slight alterations,” published the lectures in a book titled *Cellular Pathology* in the late summer of the same year. In the preface, he wrote that his intention was “to give a concise view of a comprehensive subject.”

Given the enormous interest in his groundbreaking book, he published another edition in less than a year. The first paragraph in the second edition reads,

“The present attempt to bring the results of my experience, which are at variance with what is ordinarily taught, before the notice of the medical public at large, in a connected form, has produced unexpected results; it has found many friends and vigorous opponents. Both of these results are certainly very desirable; for my friends will find in this book no arbitrary settlement of questions, nothing systematical or dogmatical, and my opponents will be compelled at length to abandon their fine phrases and to set to work and examine the matters for themselves. Both can only contribute to the impulsion and advancement of medical science.”

Almost a century later, Edward Krumbhaar, Professor of Pathology at the University of Pennsylvania and a distinguished historian in his field, wrote, “This book deserves to be placed with Vesalius’ *Fabrica*, Harvey’s *De Motu*, and Morgagni’s *De Sedibus* as the greatest tetrad of medical books since Hippocrates.”

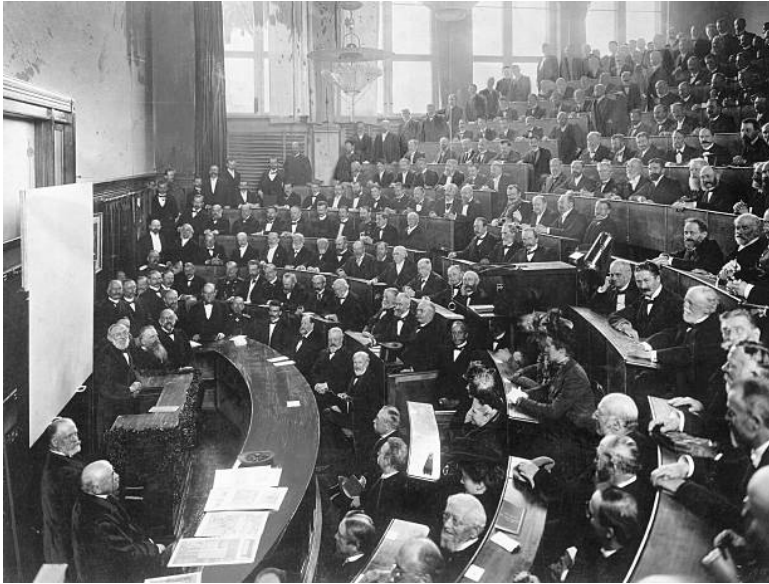


Figure 2: Virchow lecturing. [gettyimages.com](https://www.gettyimages.com)

William Welch, who was often called the dean of American medicine and had traveled to Germany to train under Virchow, wrote in 1902 that Virchow's doctrine of cellular pathology was the "greatest advance which scientific medicine had made since its beginning."

Welch wrote, "What Virchow accomplished in *Cellular Pathology* was nothing less than to enunciate the principles upon which medical research would be based for the next hundred years and more. In one sweeping declaration, he cleared the medical air of all residue of humors and humbug."

Many of the attendees of Virchow's twenty lectures certainly had their own opinions on the pathology of disease. But I believe that Virchow's talks were the springboard for not only a fascinating and powerful book on the role of the cell in disease, but also allowed every attendee to access a wealth of knowledge that would forever dictate how they did their research and practiced medicine.

A 19th-century Renaissance man, physician, academic, writer, biologist, scientist, anthropologist, politician, and public health advocate, Rudolf Virchow (1821–1902) was perhaps best known for his significant achievements in pathology and social medicine. Virchow was a leading figure in the medical, political and intellectual life of Germany in the second

half of the 19th century. Virchow wrote numerous books and edited several prestigious journals, including “Virchow’s Archive,” and was a member of numerous professional societies.

The words and research of Rudolf Virchow have been used not only to describe disease but to save countless lives throughout the world. In his most famous textbook, *Cellular Pathology*, he argued that the study of disease should focus on cellular abnormalities and that cells arise only from other cells, disagreeing with the predominant theory of spontaneous generation. Virchow discovered the nematode that caused trichinosis (all pork eaters please now applaud) on his journey to revolutionizing pathology.

This biography explores the historical interaction between Virchow and his patients, and disease and health care officials. It also gives details of his personal letters, his many innovations and discoveries, and his life in politics, all set in the context of his extraordinary time. Between his birth in Poland and his death in Berlin, Germany, Virchow’s accomplishments could readily fill a 10,000-page volume. The only child born to a poor family in the town of Schivelbein, which is today in Poland but then was part of Prussia, he was later trained in the Prussian Military Academy. An excellent, highly driven student, Virchow gained entrance to the prestigious Friedrich-Wilhelms Institut medical school.

What is perhaps most characteristic of Virchow is that he looked at life in the most microscopic detail (he was called the “Father of Pathology”) and simultaneously from a much larger cultural and public health perspective. One of the most celebrated statements spoken by the 19th-century German physician, Rudolf Virchow, was: “Medicine is a social science, and politics is nothing more than medicine on a grand scale.”

He saw medicine as a metaphor for understanding all of society and looked at it as an ailing patient that needed fixing. Virchow treated society as a whole with a disease model and later in life added insights from anthropology and social science.

Virchow’s life was fascinating for many reasons and I will try to explore each one. A particular fascination is the role Virchow played in studying morphology and race during the time of an emergent socialist movement, rising anti-Semitism, and cultural superiority in Germany. Virchow supervised a study of seven million German schoolchildren and disproved the existence of a predominantly blond-haired, blue-eyed Aryan racial type. He was a teacher of Franz Boas who used his new insight to promote new ideas within anthropology, including an expansion of Virchow’s research on cranial measurement and race, for which he won international acclaim.

Virchow’s passion for knowledge and discovery took in all aspects of human beings and included archeology and physical anthropology. While

excavating with the noted archeologist Heinrich Schliemann, he arranged for ancient treasures to be located in museums in Berlin. He was the editor of Germany's most important scholarly journal of ethnology and in 1869, he founded the Society for Anthropology, Ethnology and Prehistory. What is perhaps most characteristic of Virchow is that he looked at life in the most microscopic detail and simultaneously from the much larger cultural and public health perspective.

Among his amazing works that boosted his universal fame were his contributions to humanity that were fueled by his social crusades. He always searched for the truth and at times ran into roadblocks, both personal and scientific, that would frustrate his efforts. His political ambitions and attempts to disprove contemporary scientific racist theories were often met with fierce resistance. He was never satisfied with the status quo and believed in observation confirmed by clinical experimentation. "Experiment," he wrote, "is the ultimate court of the science of pathologic physiology."

Another crucial chapter began when Virchow left Germany and found a new life in New York and began to gain global acclaim. All of these wonderful events, original and compelling, are included between the covers of this book.

The book will also highlight ways in which Virchow was unable to see early on what he later recognized. Despite the oratory of Louis Pasteur and Robert Koch, he did not believe in the gospel of the germ theory of disease and instead pointed to abnormal internal cell activities instead of outside pathogens. Virchow espoused that the cell was the fundamental unit of life, only recently refuted by gene theory. Dr. James Byers, in his book, *From Hippocrates to Virchow: Reflections on Human Disease*, wrote "(Virchow's) concept of the cell as the center of all pathological changes was critical in reorganizing our thinking on the mechanisms of disease." Virchow opened the door to our understanding of all the physiological changes that took place when a person contracted a disease.

Virchow's life as a physician and academic continues to inspire. My task is to provide insight into his complex life and present the story as a cohesive and organic whole. I believe that Virchow was a man who lived five interweaving lives—as a physician, scientist, anthropologist, pathologist, and politician. None of these five were fully distinct or sequential, but each one formed enough to constitute a fully developed life. Included in these lives was work as a researcher, professor, public health expert, and a medical historian/writer/biographer. He had many other lives, as a student, a husband, a father, a son, a traveler, among others. The complexity and persistence of his character, set in one of the most amazing times in our history, will be highlighted on each page.

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CHAPTER ONE

A CHILD OF PRUSSIA

The Beginnings of a Physician Scientist

Rudolf Ludwig Carl Virchow was born on October 13, 1821, in the small Pomeranian town of Schivelbein, located in the German kingdom of Prussia, about thirty-five miles south and a little west of Köslin (Koszalin) where he attended a gymnasium from 1835-1839. As with so many other European towns and cities that were swept up in political and geographic upheaval, names changed, and now the town is in Poland and called Świdwin.



Figure 3: Schivelbein [Świdwin] (Virchow's birthplace).



Figure 4: Koszalin (where Virchow attended a gymnasium).

Pomerania was a Prussian province located on the northern Baltic Sea coastline of what is now Poland and partly Germany, a geographic area roughly contained between the Oder and Vistula rivers. During Virchow's lifetime, the Prussian provinces bordering Pomerania would have been as follows: Mecklenburg on the west, West Prussia on the east, and the provinces of Posen and Brandenburg to the south. The land was alternately ruled and controlled by German nobles, Polish nobles and even Sweden, briefly. Prussia acquired Pomerania in 1815. The unified German Empire was the last to control the region before it was given to Poland after World War II.

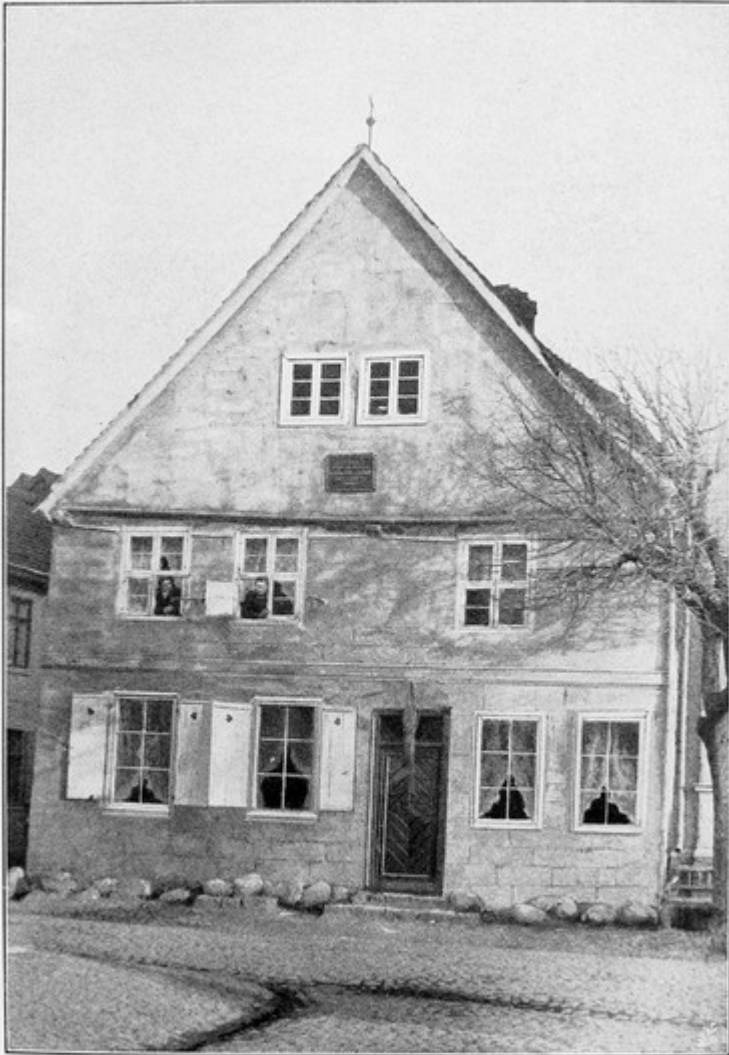


Figure 5: Map of Pomerania (late 1800s).

Rudolf was an only child, born to Carl Christian Siegfried Virchow and Johanna Maria Hesse. Carl was a farmer and butcher and the town treasurer of Schivelbein. According to historic records, the family was often short of funds. His parents were noted to have instilled a love of the natural world in Rudolf, taking him on bird watching trips and other adventures in the countryside.

Virchow-Briefe

Zu Seite 10



Rudolf Virchow's Geburtshaus in Schivelbein

Figure 6: Virchow's house in Schivelbein.

All records indicate that the young Rudolf was a brilliant student. If you had walked into his classroom, I imagine he would have been the one asking challenging questions and pushing his curiosity to his youthful limits. In 1835, he enrolled at the Friedrich-Wilhelms Institut, a unit of the University of Berlin that offered free tuition. The school's primary purpose was to train medical officers for the Prussian army. By the time he came to Köslin (Koszalin) at the age of thirteen, he had already mastered Latin in addition to his native German. Later, he would add Greek, Hebrew, English, Arabic, French, Italian, and Dutch, skills that would help him achieve a stellar place on the international stage.

The school, although tough and rigid with little time or funds for frivolous pursuits, offered an outstanding education and an essentially pre-medical curriculum.

Among the notable teachers in the institute's faculty was Europe's most renowned physiologist, Johannes Peter Müller. Although only thirty-eight years old at the time of Virchow's entrance, Müller had already produced many fine works that would propel him to the heights of German scientific medical research. In addition to his noted teaching skills, he was a biochemist, pathologist, biologist, comparative anatomist, and psychologist. Many of the greatest scientists of nineteenth-century European medicine were pupils of Johannes Müller. Müller offered Virchow a rare opportunity to observe how someone with high ambition, intelligence, and drive could produce great accomplishments in a wide variety of disciplines.

The young Virchow embarked on an outstanding secondary school career that saw him graduate at the head of his class in 1839. He wrote a thesis titled, "A Life Full of Work and Toil is not a Burden but a Benediction" (see Appendix A). As Sherwin Nuland wrote, "In the title of his graduation thesis, there is a portent of things to come—it seems to foretell not only his attitude about his own career, but the emergence as well of a social conscience that exalted the labor of one's hands."

During his last year at the gymnasium, Rudolf also wrote an essay that included his reasons for choosing medicine as a career: "First, it must be a pleasure to study the human body, the most miraculous masterpiece of nature, and to learn about the smallest vessel and the smallest fiber. But second and most important, the medical profession gives the opportunity to alleviate the troubles of the body, to ease the pain, to console a person who is in distress, and to lighten the hour of death of many a sufferer." Virchow knew that German medicine was creating a big wave worldwide and he appeared to have a prescient sense that someday, he would be riding the crest of that glorious wave.

In His Time

Take yourself back in time with Virchow. All around you are political, medical and other dramatic societal changes, including the founding of the German Empire and Bismarck's Prussia rising to the top of the hierarchy of power in Continental Europe. Robert Koch, Nobel Prize recipient in Physiology or Medicine, postulated a bacteriological theory of disease, locating the bacilli for cholera and tuberculosis. In his textbook, *Cellular Pathology*, Virchow famously argued that the study of disease should focus on cellular abnormalities and that cells arise only from other cells, disagreeing with the predominant theory of spontaneous generation.

Who were some of the other scientific luminaries who shared this time with Virchow?

Charles Robert Darwin was born on February 12, 1809. The famous English naturalist, geologist and biologist was best known for his contributions to the science of evolution. Darwin did not publish his theory of evolution until his 1859 book, *On the Origin of Species*. Virchow had strong sentiments about Darwin's theories and often disagreed.

Louis Pasteur was born a little more than a year after Virchow, on December 27, 1822, in the eastern part of France. His work in microbiology and bacteriology and his contribution to the germ theory of diseases helped lead to the invention of antibiotics and new vaccines. Virchow disagreed with Pasteur's germ theory of disease and instead emphasized cellular abnormalities.

In the middle of the 19th century, Michael Faraday, Hans Christian Ørsted, and André-Marie Ampère were rocking the views of electromagnetic theory and physics. The Crimean War exploded European politics and shifted the expansion of colonization toward the Far East, igniting conflicts such as the Second Opium War. John Snow investigated and found the source of an outbreak of cholera in London in a contaminated water pump and epidemiology burst onto the scene. In Neanderthal, Germany, the discovery of fossils led to a new branch of man's descent. In the United States, railroads replaced canals to transport goods and fueled mass migration in the direction of the American West.

All in all, it was an amazing time to live in such a robust scientific era and Virchow's plentiful intellectual energy and ambition propelled him into the center of the action. I believe the time of Virchow was at least as inventive and intoxicating as our own. And in certain cases, such as with Pasteur, Darwin, and Faraday, and later in life for Virchow and others, these scientific heroes were clearly recognized on a larger scale. The scientific entrepreneurs who accomplished amazing achievements, such as Virchow

and his contemporaries, would change the world forever in positive, lasting and world-revolutionizing ways. The political revolutions of the time would fade into the dust of collective memory.

Virchow was unique, given his multiple, and at times conflicting, exuberances of his drives and passions. Many who wrote about his life were saddened when he died and announced that they had lost four great men, not just one. He was a physician, public health advocate, anthropologist, and politician, all living as one radiant character—Rudolf Virchow. Although often seen as reductionist in his views on cell biology, he appeared to see the micro and macro pictures simultaneously, as if he had eyes in the back of his head as he stared down the barrel of his microscope. Out in the world, I picture him shifting his eyes to focus on what was important to capture in the scene in front of him, but also keeping an open mind to ideas and possibilities where he could provide assistance and find a way to improve on what he was seeing. As he cast his net ever wider, he paid particular attention to the social sciences as important ways of accomplishing change in the world. Although we now know much of the tragic potential of science, in his time, Virchow was a dreamy visionary who promoted science as the vehicle to world peace.

In his talk on “Anthropology in the last Twenty Years” (Anthropological Papers of 1891), Rudolf Virchow wrote, “If different races would recognize one another as independent co-laborers in the great field of humanity, if all possessed a modesty which would allow them to see merits in neighboring people, much of the strife now agitating the world would disappear” (see Appendix).

Over and over, while writing this book, I reflected on how prescient Virchow was about our current times, ones filled with highly charged political and medical turmoil. At the present time, we have concluded four years of political divisiveness in our presidency and our nation, and at the end of 2019, a nasty viral character arrived center stage—Covid 19. Virchow’s statement that “politics is nothing more than medicine on a grand scale” echoes across our world, and many are doing everything they can in terms of using public health techniques and developing vaccinations to prevent more deaths. Common sense has often lost out to political agendas and bizarre theories of disease origin. In the next chapter, I will explore the beginnings of Virchow’s career as a physician.

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CHAPTER TWO

EARLY DAYS AS A PHYSICIAN

“Medical education does not exist to provide a student with a way of making a living, but to ensure the health of the community.”

“Wealth, education and liberty depend on one another and thus, conversely, do hunger, ignorance and servitude.”

—Rudolf Virchow

Report on the Typhus Epidemic in Upper Silesia, 1848.

Following his rigorous medical school training, Virchow was now ready to launch himself into the heart of his medical apprenticeship, which would be his springboard for a long and highly successful career. Sherwin Nuland noted,

Upon receiving his M.D. degree in 1843, Virchow was appointed to the equivalent of today’s rotating internship at Berlin’s Charité Hospital. Although the short, thin, blond-haired physician enjoyed his work on the wards, he found himself increasingly drawn to the research of the autopsy pathologist, Robert Froriep, in whose laboratory he improved his ability to use the microscope. Because Froriep was the coeditor of a journal that published summaries of foreign medical studies, Virchow soon made himself familiar with the latest work that was being done in the more advanced medical environments of France and England.

Virchow often wrote to his father, and included here are sample letters to place Virchow in context:

Charité

Friday, May 9, 1845

Dear Father,

This time it is you who make me wait for a letter; it seems that you wish to pay me back in my own coin. Meanwhile, Friedrich-Wilhelm festivities were celebrated on May 3 and I delivered my speech. I believe I have already written to you that it contained a formal declaration of medical faith with not altogether ineffective attacks upon opponents of the modern school. Eck

had read through the speech beforehand with uncommon generosity, leaving untouched virtually everything that I would have struck out in the work of another had I been in his position. He was critical only of my overall stance and emphasis on certain points; it often sounded, he said, as if I were a member of the French Academy. You know this old fault. Nonetheless, the impression it made on the military physicians present – and the audience was entirely composed of such people – did not appear unfavorable. Many of them expressed their approval afterwards. Neither of the two Generalstabsärzte, Wiebel and Lohmayer, was present. Wiebel, who has been ill for some time, invited me two days later to read the speech to him. I met Lohmayer in his anteroom and he held out his hand to me and said: “I have read your excellent speech with the greatest pleasures.” Wiebel, who was very communicative and held me for more than two hours, asked about my relationship with your brother and then remarked that we were both making our family quite “famous!” – to which I remarked that our objective was service and not fame, etc. Things thus seem to be going well so far. Nothing has yet been decided about publishing the speech, but Eck seems disinclined to sponsor the publication of views which he otherwise supports. My next efforts will be directed toward obtaining private quarters in the Charité and permission from the medical staff to complete the teaching examination in the winter. As I wrote you recently, honorable efforts are underway to relieve me of my military obligations so that I may perform research and become an instructor. This affair has again a pecuniary side, which I regretfully must take up with you yet again. Among other things, there are two reasons for my wanting to take the state examinations as soon as possible. First, once I have successfully completed the examinations, there will be no further obstacle to my writing what and how I wish to write; second, I will be able to conduct private courses, which are in great demand and for which I have sufficient material. In either case, I can recover at least part of the money. Completing my examinations will, moreover, make my position more secure. The question thus boils down to whether you can place a sum of 80 thaler at my disposal around November, if I obtain permission to take the examinations. As things stand, I believe I could manage comfortably with this sum. I have considered the matter carefully, since I would gladly have wished to spare you such an expense; but all things taken into account, this course seems to me the best. With my fondest regards, dear Father, and a hearty farewell.

Your Rudolf

As Leslie Dunn notes in her book, *Now You Know His Name*, two months after his speech, it sat ill with Virchow that not a word had yet been published, a common practice of the time. It especially distressed him that Minister of Culture Eck commended the speech both before and after its

presentation. While Eck encouraged and supported Virchow's views, no doubt he was criticized for permitting the radical a public forum.

Wednesday, August 27, 1845

Dear Father,

August 2 went very well. Mine was a difficult task, that of speaking in between two such experienced orators as Histiographer Preuss and Oberstabsarzt Eck. Nevertheless, I made my theme as provocative as possible, and the views I expressed on phlebitis were absolutely new so they had to be heard. In the evening, there was a great feast at Kroll's house, not to speak of an unlimited supply of beverages. Here I had the opportunity of speaking to members of the audience and receiving their judgments. The old military physicians were profoundly shocked at the new wisdom. That life was to be given such a mechanical interpretation seemed to them quite revolutionary – or at any rate quite un-Prussian. There must be a kind of halo roundabout, which affects our vision and prevents us from seeing things clearly. Privy Councilor Busch, director of the obstetrical clinic, remarked: "Well now, have you heard? It seems we know nothing at all!" In contrast, I had the pleasure of being defended by a very eminent scholar whose views are entirely free from prejudice – Privy Councilor and Regimental Surgeon Betschler, director of the obstetrical clinic, not of Charité, but of Breslau. He defended with great energy and biting eloquence my ideas against the followers of obscurantism, or those whose policy is to withhold knowledge from the general public. Ideler, the director of our lunatic asylum at the Charité who is always ridiculing me on account of my 'newfangled ideas,' conceded that my line of thought, followed strictly, must lead to significant results, even if it is not the only correct one. The ramifications of this discussion occupied us from 10 to 12 at night. The day was doubly fruitful for me; first, because of the recognition I received, which is always flattering and so difficult to achieve, especially at the beginning of a career; second, because it became clear to me on this occasion that people were duller than I had previously supposed. Not a single deductive leap is permitted; every conclusion must inexorably follow from fixed premises; the only way lies in defining one's own premises, not those of another. A day like this comes only once; I could never have made up for it if I had let it pass unused. Opportunity must be seized by the forelock. Would it not be possible for you to provide me with 40 thaler for the time being? The other half can wait until the new year. Please do not take this letter amiss because I have only talked about myself. I wish you good health and prosperity.

Your Rudolf

Leslie Dunn writes that in December of 1845,

Rudolf's superior, Medizinalrat Froriep, Director of the Morgue, confided in Rudolf the two reasons for his plans to retire from Charité: entering into the publishing field and accepting the position as Physician-in-Ordinary of the Grand Duke. Recognizing Virchow as a serious contender in the field of medicine, Froriep urged Rudolf to apply for the position as Director of the Morgue. If chosen, it would place Rudolf, only two years post-graduation, in charge of both the Chemistry/Microscopic Lab and Morgue with full access to the most advanced research equipment and no shortage of diseased bodies on which to perform investigations—a gruesome, yet serendipitous combination for the young researcher. It must be noted that Rudolf's apprenticeship at his father's knee as a butcher desensitized him to the presence of dead flesh, yet his mother's theological teachings endowed Virchow with a reverence for living things.

Virchow succeeded Froriep as Prosector in Pathology at the Charité in 1846. The following year, along with his friend Benno Reinhardt, the two published the first volume of their newly minted medical journal, *The Archive of Pathological Anatomy and Physiology and Clinical Medicine*.

What was Virchow's aim in his "Archive"? He clearly stated:

The standpoint we propose to adopt and which is already manifested in this first issue is simply that of natural science. Practical medicine as applied theoretical medicine, and theoretical medicine as an embodiment of pathological physiology, are the ideals toward which we shall strive so far as lies within the scope of our powers. Pathological anatomy and clinical work, although we fully recognize their justification and their independence, are both mainly regarded as the sources of new problems whose answers must be supplied by pathological physiology. Since, however, these problems must for the most part be formulated by means of a laborious and comprehensive study of detailed phenomena in the sick and upon the postmortem table, we maintain that a precise and purposive development of anatomical and clinical experiences is the first and most important requisite of the day. Through an empiricism of this sort, there will gradually be brought into being a genuine theory of medicine, a pathological physiology.

Nuland writes,

The very first article in the Archive created an uproar among the physicians of Germany. In it, Virchow outlined his perception that disease is not an aberration engrafted onto a healthy organism but is simply health disordered. The dominant theorists of his day viewed sickness as a condition quite foreign to the normal functioning of tissues, arising within the body or entering from without, living an enervating existence like some foreign parasite sucking out the strength of its unwilling host. To them, pathological