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Jean-Martin Charcot - Neurologist by Avocation, Nephrologist by Yearning

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Houston History of Medicine Society
Dr. Garabed Eknayan
December 7, 2011

I: **(00:05)** Good afternoon and welcome to our December Houston History of Medicine Society presentation. Our speaker today is a nephrologist at Baylor College of Medicine—Dr. Garabed Eknayan. He is past president of the National Kidney Foundation and has been on a number of international groups—has been the founder and the past president of the International Association for the History of Nephrology. When he talked about speaking on Jean-Martin Charcot, I really didn't realize the nephrology connection with Charcot. We all know him in other areas. Anyway, we are delighted to have Dr. Eknayan present today on Jean-Martin Charcot—Dr. Eknayan.

GE: Thank you very much, Dr. Rakel. I'm delighted to be here. As Dr. Rakel mentioned, I am a nephrologist. I never knew anything about neurology—never understood it. When I took my board in medicine, I was ready to leave if they gave me a case of neurology.

This is a talk that I have given previously at the International Association of the History of Nephrology meeting in Toruń, in Poland last year, and it has already been published. What I will be adding to the talk that I previously presented is a condition that Dr. Rakel gave, if I was going to talk about Charcot as a nephrologist.

Now, beginning with Charcot's medical career, his medical career spanned a period of 50 years from 1843 to 1893 when he died. For the first 10 years, he was a medical student. For the subsequent 10 years, he suffered trying to make a living in Paris, and then ultimately in the last 30 years of his medical career is when he blossomed, particularly when he became the chief of medicine at Salpêtrière and then professor of pathologic anatomy at Paris Medical School. Of course, he became famous as the founder of the nervous diseases and he was appointed the first professor of neurology in France or anywhere in the world. Then ultimately, he got the Academy of Science, but his lifespan was really the second half of the nineteenth century, which is a period where modern medicine really began to blossom.

As far as his days in medical school, his medical thesis that he presented in 1853, upon his graduation, was on the differential diagnosis of gouty arthritis from the neurology defects causing arthritis, so the primary form is the gouty arthritis that he talked about in his book—in his thesis—that he defended. The names listed—the people to whom the book is dedicated—to his professors—the one that I will come back and spend some time on is Rayer.

(04:31) What I want to highlight is that in his thesis he also has drawings on the side that he had made. As a child, the story has it, that he wanted to be an artist or a physician, and that his family preferred him to be a physician because there was more advancement that

he could achieve as a physician. Nevertheless, he was an artist, and he was a man of the visual effect, as I'll show as we go along in his career.

Now, his attributes listed on his thesis are two of the dominating schools of thought of Paris at the time. The Société Anatomique was a clinical discipline, and the names listed there are all of the famous names in clinical medicine. He did very little work with the Société Anatomique, but his principle informant was with the Société de Biologie, which still exists to this day—and I'll come to that. It was founded at the time that he was a medical student by the three individuals listed there. The founding father was Pierre Rayer—that I mentioned earlier—and he was the president until he died, and then after him Claude Bernard took over. Claude Bernard needs no introduction to this audience.

Here he is as an intern. This is his—they didn't have these pictures and kardex on everything at the time, but that is his appointment as an intern working for Rayer. This is the entrance to the Société de Biologie which was where he was the secretary. The Société de Biologie entrance now is one of the entrances of the Sorbonne to the medical school. It is on Rue de l'École. It's right next at the end of that street for those of you who have been there and explored the area.

Now, Rayer was the dominant figure in his life. Rayer was a morbid anatomist and he started as a dermatologist. The first book he wrote was about dermatology, but at the time that Charcot was coming under his influence, he wrote what is now a classic—in three volumes—*Diseases of the Kidney*. This is 10 or 15 years after Richard Bright had described the disease—and I'll come to that. This was three massive volumes in which he used the microscope for the first time to really study the kidney. It is a jewel of a book.

Pierre Rayer was very influential in the life of several physicians, including Claude Bernard. He really set him up in a lot of ways. He was the private physician of Louis Philippe and then became the private physician of Napoleon III when he became emperor. Napoleon III as you know had calculi—kidney stones and bladder stones. He was highly connected, but he happened to be a Catholic who married a Protestant, and so he was shunned by the medical powers to be, but he was powerful enough that sometime in 1862, he was made Dean of the medical school in Paris, but they kept chewing at him until he was fired or he left in 1864, but it is in 1862 when was Dean, that he appointed Charcot as the chief of medicine.

During the 10 years here, Charcot was trying to make a living and had trouble. He became Chef de Clinique, which means chief resident, and he worked for Rayer. Then he got an appointment as a physician in hospitals in Paris, but he was having trouble making a living, and it was Pierre Rayer who supported him and ultimately in 1862, when he was Dean, appointed him chief of service or the chief of medicine at the Salpêtrière Hospital. During those first 10 years, is really one of the prime productivity of Charcot's career.

(09:54) In his thesis—which I mentioned earlier—he has the following statement that I am not going to spend time talking about. You can read it while the slide is up there—but he showed a love affair and the wish to come back to the Salpêtrière and spend more time there. That was one of his wishes which Pierre Rayer realized for him. Now the Salpêtrière as you know is called the Salpêtrière, because in 1634, it was established as a gunpowder factory, and the word Salpêtrière is the French word for gunpowder and then that stuck.

Then, shortly thereafter, it became a prison for prostitutes and the criminally insane. During the reign of Louis XIV, it was changed into a hospice for the infirm and the old people and the poor people who were out in the streets. It is at the Salpêtrière that the famous Philippe Pinel freed from the chains of the insane and freed them. That is the classic painting again that goes around. By the nineteenth century, it became a hospital, and so it is then, in 1862, that Charcot became the chief of medicine there, and that is how the hospital looked then. This is an emblem that appears in all of his publications, which is the dome here. These are some of the things that he told the friend who coached him as having said that it is “a sort of living pathology museum of almost inexhaustible resources. One has to come back here and spend the rest of the time—all of the time—to insure we are meeting all of the time and studying the patients.”

Today that is part of the building that was in the previous picture. It is a huge hospital that is on the left bank of the Seine. All of the good hospitals—all of the famous hospitals where either he or Philippe Pinel was here, so this was like somewhere where all of the poor and the female patients were sent, and that is how it looked at the time when it was first made into a hospice. After Charcot died, they put a bronze statue of him at the entrance of the main building which is the Mezzanine building, but that is no more there, because during the Nazi occupation of Paris, it was melted and used for metal when things got tough for the Germans and they were trying to scrap all of the stuff they could.

(13:13) The day he walked into the Salpêtrière, he began organizing the place, and that is the organization that has kept growing to its present state. During the first 4 years, he began to organize and change the place. He took one of the kitchens and made it into a laboratory. He took the dining room and made it into a classroom. That is where he started his Tuesday lectures. Every Tuesday he would give a lecture, and it was initially just his interns, and then over time students from the various schools had an option where they could go to attend lectures. That was part of the educational system, and he started attracting more and more students coming to his lectures which spanned several topics.

Because of the hospital population, the three areas in which he talked and in which he wrote were chronic diseases, especially the gout and the arthropathies, diseases of old age, because there were several—the majority of the patients, in fact, were elderly—and then the patients who had nervous diseases—epileptics, hysterics, whatever—and as his third major contribution of topics, which is on diseases of the nervous system.

He was a very effective educator, and these are some of the pictures that have survived—he with his interns later on in life. This is the classroom that he used. He always had a podium and he would lecture, and these are all of the interns who, instead of wearing white lab coats, wore the aprons, just like the waiters in Paris do now. He insisted during his case presentations to examine the patients totally naked and to highlight the deformities or the problems that existed. Here he is lecturing at the bedside. The patient is again naked, but covered, but he was a very effective visual projector, as I'll keep coming back to it.

The painting and the topic—he was already well known in the 1860s and 1870s throughout the world, but what made him really more famous was his involvement in hysteria sometime in the 1880s. Now, he began to be interested in hysteria in 1870, at the time that he was the chief of medicine at the Salpêtrière when one of the wards that was under another physician was closed and the 30 patients who were hysterics and epileptics were transferred to his service. That is when he started his interest in hysteria, but he didn't come to it until he became appointed the chief of diseases of the nervous system. This is a classic painting that everybody has seen some time or another that was painted in 1887, that is about 5 years before he died. It has almost assumed iconic value, in terms of hysteria is concerned. This is a hysteric patient that he was presenting—one of his famous patients, in fact, Blanche. These are all his famous students all in the audience. I'm going to be using this figure as I go along—which is a little bit clearer than the previous—to refer to the various people and their contributions to the topic that I'll be addressing.

Now, Althoff was a pathologist. He was a clinician who followed the patients, did the autopsies himself—did some microscopy—and this is one of the drawings by one of his past students at the time already a practicing physician that drew this diagram or this cartoon of Charcot examining the brain and there is emphasis on diseases on the nervous system.

(18:11) Now, the second brightness in his productivity came in 1872, when he was on his own merits. By then Pierre Rayer had died. Appointed professor of pathology and anatomy at the University of Paris, at which time he shifted his effort in giving the lectures at the University of Paris. This is him in his academic uniform. The picture in the back is the entrance to the Salpêtrière and the background, again, shows Pinel freeing the patients from their chains.

Now, with this introduction then, it is when he became professor of pathologic anatomy that he made his contributions to kidney disease and how I got interested in him. This is a diagram that I have developed over the years that I use to examine any disease that I'm talking about, which is a standard outline of how diseases were discovered, essentially as external manifestations of symptoms and signs, which over the years became internalized and that is about the time that anatomy and the renaissance and the scientific revolution came about. Ultimately the cause of the diseases were discovered and, of course, the

therapy. That corresponds to some other classifications that people use when they talk about diseases.

This was the time when they talked of symptoms, organs, tissues, and ultimately of cells. In some other versions of the talking about the history of diseases, people talk of priestly or folk medicine during this period, bedside medicine that started in Greece, and then hospital medicine that really flourished in France and in Paris, and then the laboratory medicine, and finally, experimental medicine—which is where we are now and what we practice.

This is the lifespan of Charcot, which is most of the nineteenth century, essentially at the time that hospital medicine was beginning to involve pathology, chemistry, and bacteriology. Laboratory medicine and experimental medicine were coming into being. Of course, Claude Bernard is the founding father of experimental medicine and he was a contemporary of Claude Bernard, who was also a friend of Pierre Rayer and he remained secretary of the Société de Biologie of which Claude Bernard ultimately became the president. He wrote one paper with Claude Bernard when he was a student. It is an autopsy of a patient who died from cirrhosis of the liver. It is a page-and-a-half article.

(21:36) They split ways, and the split was because Charcot was a lover of animals. He did not believe in doing experiments on animals. He thought that Claude Bernard was a vivisectionist and so they never were able to get together again. Before Claude Bernard died—when Claude Bernard was still alive—his wife, who was an anti-vivisectionist, split after they divorced and became the first outspoken anti-vivisectionist in Paris. One of her primary supporters was Charcot, so they worked together professionally for a short period of time, but then split from each other because he became a real clinical morphologist.

Now, then, with that background, looking at the kidney, Richard Bright had just described, in 1827, the Bright's disease, and his classic monogram that was just about a 50-page book. Pierre Rayer shortly thereafter had published his 3-volume massive *Diseases of the Kidney* and was one of the first to apply the microscope, but at the time there was really no tissue fixation, and real kidney disease began sometime in the 1920s. There was no nephrology at the time, and so the work that Charcot did was really important, in terms of the history of nephrology, as I'll show as we go along.

Now, diseases of the kidney were shortly classified, once the microscope began to be used by Rudolphe Virchow, no less, and where he classified diseases of the kidney into diseases of the tubule, that were called Parenchymatous Nephritis—diseases of the inner stratum that were called Interstitial Nephritis and the diseases of the vessel as involvement by amyloidosis. As you might imagine, in those days of infections and syphilis, amyloid was very common and involved the vessels, so that was the vascular disease that you saw in the kidney.

The parenchymatous nephritis was a large white kidney that now we associate with the nephritic syndrome, whereas his interstitial nephritis or the disease of their stratum was the small red granular kidney that now we attribute, among others, to glomerular nephritis. Virchow did not talk about the glomerulus. It is one of his students, shortly after he published this cellular pathology, who described the glomerulus as having cells inside it. Until then, people did not know or talk about cellular structures in the glomerulus. Axel Key—as some of you, I'm sure know—is the one who convinced Nobel to give his money and establish the Nobel prizes that now we talk about.

Another one of his students who was chairman—Axel went back to Sweden—Edwin Klebs is the one who is said the cells can be inflamed and came up with the term glomerular nephritis that, to this day, in the international classification of diseases, is known as Klebs' disease. That is where I began to develop my interest in Charcot and his work, because somebody asked me, “What is Klebs' disease?” and I had no earthly idea. I have gone around and asked a number of nephrologists much more prominent than me, and none of them had heard of it. It is classified to this day as Klebs' disease.

(25:49) Now, Charcot's contributions to nephrology are shown on this slide. I'm going to go through all of them, beginning with the kidney in gout, which is one of his earliest works that he did. He did that with this gentleman, Victor Cornil, who is shown up here in the picture, who had actually written his thesis on the changes in the kidney in albuminuria. This is one of the earliest studies, and it was a popular thesis that people used to study. Victor Cornil—this is one of his illustrations. It is also the glomerulus, but as you see, there is no structure really. These are the days before photography, where it was all hand drawn. He was good drawer, and presented that thesis, and he dedicated it to—one, two, three—the founders of the Société de Biologie and to Rudolphe Virchow.

Then inside he recognizes his teachers in the hospitals and when he was an intern from 1861 to 1864, and one of them is Charcot. He worked with Charcot as an intern at the Salpêtrière and indeed ended up going and doing his internship and became chief resident of Charcot. One of the first publications that he did together with Charcot that was published in the publication of the Société de Biologie was about the gouty kidney. This is his drawing showing the gouty deposits and then the possibility of dissolving them, which is shown in this figure—that after you try to dissolve them what you are left with was destroyed tubules. Charcot had an interest in gout, not only as in a joint disease and as some of the neurology, but he also wrote about it—how it affects the kidney.

Now, Victor Cornil really is more famous because he became a pathologist who specialized in diseases of kidney and wrote the text about it, but when John Paul Jones' body was discovered in 1905, he was the pathologist who examined his kidney. This is the slide drawing that he made of the kidney and describes the case as one of fibrous degeneration of the glomeruli. It had small, shrunken granular kidneys that involved the tubules and the glomeruli. That is why he is better known—at least in some of the texts that I have read.

Charcot also studied the kidney in paraplegics, being in a neurological institution. This is one of the texts that he ended up publishing that was translated into English. Way back in 1870, he talks about several of the abnormalities of the kidney disease that occurred to them. I've underlined them in red. I'm not going to spend time there, but I want to highlight his acknowledgement and further on in the text, about Brown-Séguard —about whom I'll comment later on. That is somebody who also influenced him as he was practicing.

(29:53) Then he wrote about hysterical ischuria. Now, this is the manuscript that was written by Bourneville who was his chief resident then, and then an intern—Bourneville and Regnard. Bourneville is shown here and Regnard as the other man—was an intern. It shows—and if you've read the text—essentially, this is a female patient who is having a hysterical episode, and they measured the urine volume and showed that during the hysterical attack there is no urine production. They called that hysteria ischuria. Now, that is what we have come—today we call it acute renal failure, but that is only since 1951. For a period before that, the term ischuria—which was introduced really by Malpighi—is what was used. Then hysterical ischuria, which is what Charcot described, and then the various names that it has assumed over the years and then finally it became clarified and called acute renal failure by Homer Smith.

Now, hysterical ischuria—again, this is one of the areas where I got interested in Charcot—is described as a physiology. The description is attributed to Charcot—“as a symptom, probably due to spasm of the renal vessels. It is comparable to the arrest of the secretion the kidney was thought to secrete, which occurs in an animal when the abdomen is opened.” They go on to talk not only of ischuria or no urine output, but also some of the patients who end up making too much urine or polyuria. In fact, one of the students that I'll come to—Paul Richer—says that the urines are more abundant, clearer, and essentially they developed a polyuria, as well as ischuria, and it varies from one patient to the other.

This is a notion that permeated medicine throughout the world and Osler talks about it in his textbook. I've got the part about diabetes sinusitis, which he calls—it is a disease that is not known. It is doubtless of nervous origin. The most reasonable view is that it results from vasomotor disturbance of the renal vessels, giving rise to the continuous renal congestion. Essentially he was paraphrasing what Charcot had said, and he calls it also, and his book talks of neurogenic polyuria and hysteria causing it, but of course, he had the benefit of working with Harvey Cushing, and over the years he helped, at least, Harvey Cushing put pituitary gland as the cause of the diabetes and syphilis.

The major contribution of Charcot was when he became professor of pathology at the University of Paris and gave a series of lectures that were all taken down and recorded and published as books. One of those was a book on the diseases of the liver and of the kidneys, which was translated within a year by a New York physician by the name of

Henry Millard who really must have enjoyed life in Paris. He ended up spending the whole year in Paris working with Charcot and ended up dying in Paris, which is one dream I had at one time that I'll never be able to realize. I go Paris, but I can't afford to stay there.

(34:10) Millard translated this book, and this book is highly quoted. I'm not going to go into all of the quotations. In the textbooks of nephrology that followed way until the 1950s, including Homer Smith, who keeps referring to it. When Charcot entered into the picture, Richard Bright had described polyuria as a diagnosis of kidney disease and shown the pictures of kidney disease. Rayer had written about it. Just the same year that he gave his lectures, William Bowman—who became an ophthalmologist—had described the first time the connection of the glomerulus to the tubule. The tubules were not considered connected to the glomerulus until the micro dissections in a classic paper of Bowman showing its connection.

That is when—the same year that Charcot gave his lectures, and it shows how avid a reader he was. He read German, French, and English, and these are the notes that he kept in preparation for his lectures on diseases of the kidney. You can see the diagram here that I'll come to and show how he did it in the book. The connection he has of the glomerulus with the tubule is essentially the same year that Bowman was publishing his paper. He was already incorporating that into his lectures, and these are his various notes in which he also talks of the loop of Henle that had again recently been described.

The book itself has seven lectures dedicated to various topics, but essentially, after the anatomy, he talks about the urinalysis and then concentrates off of Interstitial Nephritis—the small, shrunken kidney and the big parenchymatous kidney of the nephritic disease, and then its connection with infections—Scarlet Fever—as a common cause of acute glomerulus nephritis at the time.

This is a table that I constructed from his lectures, which really gives the clearest differential at the time between what we now call nephritic syndrome and the small, shrunken kidney of glomerulus nephritis. I'm not going to go through it, but his discussion is actually terrific, in terms of the symptoms, the urinary findings, urea content in the urine, the complications, the symptoms, the kidney size, and then the microscopic appearance. This is at the time that people were really confused and trying to differentiate between nephritic syndrome and the small shrunken kidney of glomerulus nephritis.

He, in his book, has this figure in which he copied. He used his chief resident, Van Gombault. This is the kidney of the nephritic syndrome—the large kidney that Richard Bright had drawn. It is plate 4 in Richard Bright's book. This is the small, shrunken kidney showing the difference in size between the two. I think this is one of the biggest attributes that he applied to everything else.

(38:01) Richard Bright had his figures in separate plates, and Richard Bright really became famous. His book was never translated into another other language, but he made two big points. One, he showed pictures that everybody could see, and they were vivid pictures. Two—he said if you had protein in the urine and you had sweating of your body, you had kidney disease. Albuminuria became the diagnosis of kidney disease, and it was a common cause of disease at the time—much more common. The only disease that was more common was tuberculosis and cardiac disease, but it was a leading cause because any time you saw protein in the urine, you assumed the patient had kidney disease, and he was right on that.

The other thing is that he drew these pictures that people could look without reading and understand the pathology that people were talking about. The mistake that he did is that he did them in separate plates, so if you turn this page to this page, which is plate 5, the kidneys appear the same size, and you have go back to the wording that it is a smaller kidney. What Charcot did—and this is his ability—his visual ability that he used in all of his lectures—at least, to me, as a nephrologist I think it—sort of—hit home quickly. He put the big kidney right next to the small kidney, so he didn't have to flip pages or read anybody. You looked at the picture, and you knew the difference so clearly evident.

Then he goes and describes the contracted kidney. I'm not going to say anything about it. This is how his hand-drawn pictures were ultimately reproduced in the book. As you recalled, I showed this picture earlier of his hand drawing from his notes. He talks a little bit about the glomerulus, but he does make—to his credit—reference to Klebs and to Klebs' kidney disease, and he makes reference again to scarlet fever being a cause of the disease. These are from his subsequent notes. After that book was published, he gave the lecture for several years, and these are from the notes that he kept, the journals that he taught, the notes that landed on the side, and it is fascinating for me to go through them and read about them, but I'll not say anything more about it.

Then, finally, with Gombault, who is again, was his chief resident. He did one of the few experimental studies on lead nephritis by feeding lead to the animals and then looking at the kidney and showing that there is tubule degeneration and what happens in death nephropathy, which is a problem also that clinically was occurring at the time. I'm not going to go into the reasons for that, but it was common. He wrote about several other—if you go through his lectures, he always dedicates a major section to diseases of the kidney, as in people who are old.

(41:34) To summarize Charcot as a nephrologist, I called it by yearning, because, after all—and I don't know where I found this quotation. That's why I can't attribute it, but I have written it down, and I thought it is appropriate—that “history is not an absolute science. Primary sources, secondary sources, are just names. It is rather a subjective recounting of a story based on the available data, which is best interpreted on the background of the spirit of the age.” When one looks at Charcot, was he a neurologist by a vocation? Maybe. I think it was chance. He just happened to be in—he was a

pathologist and an anatomist who happened to be in a hospital where there were people with neurological diseases, and that is what he studied.

Was he a nephrologist by avocation? I think he had been inspired by Rayer, and he would have made a terrific nephrologist. It is just that he didn't have enough patience with kidney disease to study them, so in my mind he made a major contribution to nephrology and indeed, if you look at the period, that book on kidney disease was significant, but ultimately he was a neurologist. There is no question about that. He was appointed professor of neurology—the first one.

These are the journals which he kept—helped found or was advisor of. If you go just by the numbers, four were on general medicine, so he had a broad interest. Two were on laboratory medicine. By the numbers, five—it doesn't show here—I don't know why—were on neurology, so—I guess—by the journals that he also contributed to he was a neurologist and became professor of nervous diseases. It is wishful thinking on my part that I think he was a nephrologist, but he was also ultimately interested in hysteria, and this painting that I showed earlier, which is now in the museum in Paris down the street from the entrance to the Sorbonne—that is really iconic. In this recent book on hysteria, a biography, that is what they chose to put on the figure.

Now, to go back to this diagram, and for my own understanding, hysteria was a disease of the womb. It started with Plato in *Timaeus* and then Galen and Hippocrates put it in the womb. It began to be a disease of the central nervous system in some of the writings of Thomas Willis, but the neurologist who probably helped shape or stimulate Charcot was Brown-Séquard who had finished his studies in neurology, written extensively about it, mentioned hysteria, and then came to Paris where he replaced, ultimately, Claude Bernard as the professor of experimental medicine or, well, then called physiology.

(45:13) Now, then, Charcot himself never wrote about hysteria. There is not a single paper in which his name is writing the clinical manifestations of hysteria. It was all really taken down by his students. This is in the final years when he was beginning to get already advanced in age. There were two issues that came out—two books—*Lecons Du Mardi A La Salpêtrière*—the *Saturday Lectures at the Salpêtrière*, which is this painting in 1888, by which time he had become famous. The book is by three of his students. The second name is Charcot. Charcot is his son who is standing here next to this one. This is his son who studied medicine and worked for his father. As soon as his father died, he became an explorer that went all around and become just as famous as his father as an explorer.

The notes—if you've been reading them here—are what his students wrote, and I want to highlight the part where he says, “with the idea of the Master and expand their own ideas as did the Viennese doctor.” The Viennese doctor he is referring to is Freud. Freud came in 1885 to spend time—ultimately 4½ months with Charcot. He was outside the circle of the intimates until he offered to translate this book into German. Then he was literally

every night having dinner with Charcot, translating the book into German. This is the reference here in the introduction of the book. This is one of the sections.

There are various lessons and the dates they were keeping in 1887, and there are five patients who are presented. The patients were presented and we'll discuss them. I put an arrow here and this star here. One is that he is one of the first people to describe intermittent claudication. Most of the patients were old and diabetic, so the arthropathy—the Charcot arthropathy—is a diabetic arthropathy. The intermittent claudication is what he talked about. In one of the cases that is presented is hysteria in a man, so this is one of the first times he has been belittled and attacked by a lot of people—neurologists and psychiatrics for his involvement in hysteria. He is actually the first one who said this is a disease that should be studied, and he is one of the first people to say that the disease occurs in men, and it is not just a disease of the womb or a disease of woman. I think he deserves more credit than he has been given.

(48:34) This is the second volume that was printed. By then, between '87 and '88, is when he became famous and the social Paris was being attracted to hysteria, and people would come—writers, authors, artists and everybody—to watch hysteria. More and more of his cases—where there was only one case of hysteria, now there is a lesson where both cases are hysterias, so he began to talk more and more about hysteria, and it is his writings and his talking to the patients which were transcribed that lead to his being associated with hysteria. The people who really wrote about hysteria are highlighted here, and I am going to mention each one of them very briefly.

Richer, who was really an artist and became a professor of art at the Ecole des Beaux-Arts in Paris is the one who wrote about the main book about hysteria. He was also an artist, and did a lot of the drawings for Charcot. This is one of the major charts in the book of the four stages of hysteria that we share—Charcot had described and Richer transcribed. It is a classic chart. One of the figures here, shown in the higher resolution here, is the figure that appears back there and has influenced a lot of artists subsequently, including Bourgeois, and of course, Rodin has several—I couldn't find them at the last minute—that attack him. He also illustrated the so-called hysterogenic zones that he could draw and illicit or control a hysterical attack.

This is the diagram from the painting. This is Charcot. This is the patient Blanche. She is half-naked, as he always tried to illustrate things. I don't know where his hand is, but I want you to see where the hand of Babinski is—right here. He is rubbing her breasts, which is associated with inducing the hysteria. As for his look at her breasts and her face, whether you call it amorous or diagnostic, it's up to you. By then, photography had become available, and he started sometime in the 1870 and thereafter—he started taking pictures, and he established a lab for photography and was one of the first to use photography in medicine. He used one of his students, who was already a senior, and Regnard, who was the junior—the intern—was really the photographer. He set up a lab and they took pictures that became very popular and sought after.

The guy who really criticized him and convinced him that it is not an organic disease but an intellectual, psychological disease, is Babinski, who went on his own to write the dismemberment of hysteria, in which he presented the argument, but it is important that in the introduction, he gives all the credit to Charcot, appropriately. Then he went on after the First World War to describe hysteria or—what he called pithiatisme—in the soldiers due to shell shock.

Then finally, Debove, who was one of the junior students at the time who took down most of the history—so if you go to the patient charts records, a lot of them are by Debove. Debove is also famous because he developed gastric lavage, and this famous picture that you have hanging in the medical library—this is Debove. Of course, this is Cornil, who was the, actually, real pathologist, but he is shown with the lung—by mistake. I guess, because he did also write about tuberculosis. Debove is the one who last talked to Charcot. He was having heart failure, and so he went on a vacation at the insistence of his wife, with two physicians.

(53:37) They went and had, on one of those days, a big fancy meal with wine and everything and somewhere in Normandy. That night he woke up in pulmonary edema. The two physicians came in and there was nothing they could do at that time. They just sat there while Charcot sat there and died gradually, unable to breath from pulmonary edema. Of course, Sigmund Freud, who had translated the books at the time that Charcot was talking about hysteria, and went on and—I know nothing about neurology or psychiatry, so I'm trespassing and I apologize—and he took the patient of Breuer who had been one of his sponsors to go to Paris, and wrote this book on the study on hysteria, and, of course, began the speaking tour that—sort of—went on to become psychiatry and psychoanalysis. When he went to Paris, this is one of the pictures that he hung on the wall.

To conclude, I think he was a neurologist who had a vast knowledge and broad interest, including that he could have become a nephrologist if the discipline existed then, and the arts. With Richer, he wrote toward the end of his life two books on the medical deformities in art paintings. Those are, again, fairly well known books in the art circles. Ultimately, he was one of the greatest clinical scientists. He was one who would examine the patient, talk about it, meditate about it, read about it, and then come up with a clear description that people had not done before.

If one tries to judge him as a scientist—there was no PubMed at the time and what I did is I went through the Morton's medical bibliography and just counted the name of the various people that have contributed to medicine and how often their name appears in the book. This is Charcot. This is Virchow. This is Pasteur. This is Claude Bernard. He was ahead of Bernard and Koch, and so he published more and did more to medicine and just as a final slide—that's where Freud fits in Morton's medical bibliography. Thank you

very much for listening to my version of Charcot, and I really appreciate your attention to share my views with you.