

Deconstructing Santiago Ramón y Cajal

I left my hometown of Barcelona at the age of seventeen to devote my life to biomedical research. After four years at the University of Chicago, my biology degree in hand, I moved to Baltimore to join the MD-PhD program at Johns Hopkins. Deeply committed to my transatlantic adventure, I gradually became a stranger in my own hometown. Everything comes with a price, I suppose. It is for this reason that, during my yearly visits to my family, I exult in losing and finding myself in the winding streets of Barcelona, hoping to reconnect with this timeless and vibrant city as I search for wisdom and guidance in the spaces that have witnessed so much and embraced countless other wandering souls.

On one such day, in a narrow, dark, alley-like street off of las Ramblas, I stumbled upon an inconspicuous plaque. It informed me that Santiago Ramón y Cajal had roamed those same streets, carrying a basket full of brains, then going on to lay the foundations of neuroscience, for which he received a Nobel Prize in 1906. Searching for my own path, I found Cajal instead. It felt slightly unreal—like when one turns toward the sound of a footfall but finds nobody there. What was Cajal doing here, in the kind of street that most people would only enter on their way somewhere else? Here is our greatest scientific icon, I said to myself - someone with institutes, schools and streets named after him, someone whose image graces medals, books, and the entrances of official buildings. Someone whose mere existence is supposed to prove that Spaniards are capable of greatness. Yet it is here, of all places, that he stops me in my tracks. It is here that I become aware of Cajal the person who walked the streets that I am walking now, of Cajal the person that I can relate to.

What was Barcelona like in Cajal's day, and what role did it play in his life and work? How did this real man—who played chess, bought bread around the corner, and never missed coffee with his circle of friends—become a historical figure? What determines whether someone is remembered, and how? What is gained, lost, and perhaps invented along the way? I realized that, although myself a Spaniard and an aspiring scientist, I knew next to nothing about Cajal. I left that dark alley off of las Ramblas wanting to know more.

Fast-forward a few months (which can feel more like dog-years in medical school) and I find myself at the Institute for the History of Medicine at Hopkins. It's an informal meet-and-greet for faculty from the Institute and a handful of us medical students that had chosen to focus on history of medicine for our scholarly summer project, a new part of our revamped medical school curriculum. Fortunately, the Institute faculty doesn't push cookie-cutter projects, and the room quickly filled up with bold ideas that would draw upon the diversity of our backgrounds and interests, and challenge us to develop as readers, thinkers and writers. I saw myself again in that little alley in Barcelona and realized that now was the time to really learn something about Cajal.

My initial plan was to explore Cajal's crucial five years in Barcelona, from 1887 to 1892—years that he considered his most creative and productive. During what he termed his "*peak year*", 1888, he had the insight that shaped the rest of his scientific life - his conception of the neuron theory. I wanted to learn how Barcelona's vibrant and particular culture—

including Cajal's circle of poets, scientists and philosophers - might have influenced his thinking. So I started reading. Cajal was a talented writer and a dynamic story teller. In his autobiography *Recuerdos de Mi Vida* [Recollections of my life], he delights the reader with countless stories of the exceedingly curious child (he was quite the trouble maker!), the rebel student and inventor, the artist eventually tamed into a medical student, his military service and his time in Cuba... He then describes his scientific work and trajectory in great detail. While thrilling and fascinating, this is only one perspective, of course—and a fascinating autobiography hardly substitutes for a scholarly biography. Once I started working with the two major existing biographies, by Durán y Muñoz and Laín Entralgo, I was disappointed to find that these so-called authoritative texts followed exactly the same outline as Cajal's memoirs and mostly paraphrased *ad libitum*. Even more striking, curious, and off-putting was that their deviations from Cajal's autobiography expressed a transparently Francoist / fascist spirit.

For example, during Cajal's time in Barcelona we learn about a most tragic event, the death of his daughter Enriqueta, who succumbed to meningitis. In his memoir, Cajal talks about getting into "*the bad habit of intoxicating myself, late at night, with the light of the microscope, attempting to appease my cruel torture*" and shares the awkward timing of his new scientific insight: "*One fateful night, as darkness was closing in on an innocent being, the gleam of a new truth suddenly shone on my spirit...*". In Durán y Muñoz's text, this becomes: "*He loved his children very much; but infinitely more, without possible comparison, he loved Spain, and if placing one's country ahead of the family means being selfish, then Cajal was selfish, and we can only be left to bless such a defect, thanks to which humanity as a whole can now benefit from the deprivation imposed to his family*". So, without offering any documentation, Muñoz converts Cajal's restrained account of personal tragedy into an ode to the primacy of Spanish patriotism over family - in other words, into a morality play worthy of an iconic Francoist hero.

My search for Cajal was now leading me to face my own history. I grew up in the relatively democratic Spain of the 1990s. Like many others in my generation, I heard tales from friends and family about Spain during the Civil War and Franco's Dictatorship, about people lost to bombings, political assassination, arrest and exile (internal exile, too). Post-Franco Spain was a great improvement, but Spain never dealt openly with the history and legacy of the dictatorship. Its criminals were never prosecuted and there seems to have been a tacit pact to simply not talk about it, to trust that things had been rectified by the 'transition to democracy'. Like many others in my generation, I knew little of this history and was too concerned with the future to consider how deeply rooted and haunting our shared past could be.

The language in the Durán y Muñoz biography, then, forced me to confront how Spanish history had shaped, not only our knowledge of Cajal, but also my own intellectual and emotional development—including my feelings about being Spanish. I realized that Cajal had passed away in 1934, right before the Spanish Civil War, and that the commemoration of the 100th anniversary of his birth, which served as a delayed celebration of his life and work, came in 1952, midway through Franco's Dictatorship. So, the celebration of Cajal's life had been shaped by the values of a coercive political and military

regime. I also learned that Durán y Muñoz had married into the pro-Franco side of the Cajal family, thus gaining unique access to documents and false legitimacy as a Cajal expert. I learned that, after the Civil War, high-ranking Francoists were appointed to the administration of the Cajal Institute in Madrid (the guardians of his legacy) along with the administration of the entire Spanish scientific enterprise (CSIC). The same people who had purged the Spanish intelligentsia of democratic elements had, then, written and maintained the “authoritative” version of Cajal’s life... My project was no longer just about Cajal and his intellectual circle in Barcelona. I now thought of my project as attempting to deconstruct the historical Santiago Ramón y Cajal. Or, more informally, trying to free Cajal from Franco and his legacy.

Every year, when I visit Barcelona, I go on book hunting expeditions around old parts of town. I look for books written before or after certain historical events, I pay attention to who wrote them and what their personal agendas might have been. I try to identify who might hold the official version and who might be swimming against the current. I learn that there are many official versions and counter-currents (after all, Franco’s regime was not the only one trying to gain from Cajal’s widespread fame). These books, then, are “footsteps” in my search for Cajal—and they are part of a journey that has brought me into a remarkable community of fellow seekers.

Among them is Cajal’s great-granddaughter, Teresa Ramón y Cajal, a physician in Barcelona. When I approached her and shared my vision for the project, she was most supportive, inviting me to come to Madrid and meet her aunt, Cajal’s granddaughter, María Ángeles Ramón y Cajal, who still lives at Cajal’s residence near Atocha. We talked for hours and made plans for future collaboration. I saw Cajal’s desk and visited his personal library. While in Madrid hunting for books, I met scientists currently working at the Instituto Cajal and saw some of Cajal’s original drawings and slides. Back in Baltimore, I met one of their former students, Pablo García, a neuroscientist-artist who is now translating Cajal’s view of the brain into painting and sculpture. And, of course, I found fellow Cajal enthusiasts in the fields of Neuroanatomy and Neurosurgery, including the kind and indefatigable Dr. Quiñones-Hinojosa and Dr. Jordina Rincón-Torroella, a fellow Catalanian and future neurosurgeon who has become a partner in the Cajal project.

Can one ever discover the real Cajal? Perhaps, and perhaps not. In any case, this journey—and my book collection—has acquired a much larger and more profound meaning for me. It is about collecting the pieces of shattered kaleidoscopes - Cajal’s, Spain’s, and my own—and about the inescapable, tendentious, but ultimately uplifting human experience of storytelling as a means of sorting through our own lives.

Footsteps in my Search for Cajal

36 books, 2 DVD sets

Primary literature

By Cajal:

1) Ramón y Cajal, Santiago. *Reglas y consejos sobre investigación científica. Los tónicos de la voluntad*. Madrid: Consejo Superior de Investigaciones Científicas (CSIC), 1999.

A personal gift from Cajal's granddaughter, María Ángeles Ramón y Cajal, with her dedication and signature, a kind gesture after my meeting with her in Madrid. Here Cajal offers guidance to young investigators on how to conduct themselves in and out of the laboratory and about the pursuit of an intellectual life.

2) Ramón y Cajal, Santiago. "Recuerdos de mi vida." http://cvc.cervantes.es/ciencia/cajal/cajal_recuerdos/recuerdos/default.htm

Cajal's complete memoirs are available through the Centro Virtual Cervantes, with photographs and recent annotations. There are two parts to his memoirs. The first, "Mi infancia y juventud," reads like a book of adventures and relates his childhood and youth, talks about his family, his life and his aspirations. The second part, "Historia de mi labor científica," is dedicated to his work (see next entry). This has been a great resource to get to know Cajal, a very personal account. I gave away my hard copy as a gift and am seeking the numerous editions.

3) Ramón y Cajal, Santiago. *Historia de mi labor científica*. Prologue by López Piñero, José María. Barcelona: Círculo de Lectores, 1997.

This volume includes the second half of Cajal's memoirs, which describes his work, along with another essay by Cajal, "¿Neuronismo o Reticularismo?," where he compiles evidence supporting his neuronal theory and defends himself against the opposing reticularist theories of the time, especially as espoused by Camillo Golgi.

4) Ramón y Cajal, Santiago. *El mundo visto a los ochenta años. Impresiones de un arteriosclerótico*. Madrid: Espasa-Calpe, S.A., Colección Austral, 1960. Seventh edition.

Towards the end of his life, Cajal wrote a new, shorter set of memoirs, from the perspective of someone struggling with the effects of aging (and, in his case, from severe migraines). As he notes, it reflects a generally more bitter take on life; and offers

an interesting comparison to his earlier memoir and a perspective on the evolution of his thought and opinions on different subjects.

5) Ramón y Cajal, Santiago. *Cuentos de Vacaciones. Narraciones pseudocientíficas.* Madrid: Espasa-Calpe S.A., Colección Austral, 1941.

A gifted, vibrant story teller, Cajal offers here a series of fictional stories in which he explores scientific ideas and human motivations. Meant to be both light-hearted and educational, they explore imaginatively the social repercussions of scientific concepts.

6) Ramón y Cajal, Santiago. *La mujer. Conversaciones e ideario recogidos por Margarita Nelken.* Madrid: M. Aguilar Editor, 1938. Second edition.

This volume is a collection of fragments extracted from Cajal's texts on the topic of women. It includes a preface by Cajal himself from 1931, where he urges the reader to take everything with a grain of salt, as there are many things that he would say differently if he were to write again on this subject (but is already too tired and ill to do so). He also observes that there are all kinds of women and one shouldn't oversimplify. This book appears to have been compiled as a way to deploy Cajal's wisdom to make sense of events surrounding the suffrage movement. Given its Francoist context, the editor's selectivity deserves close attention.

By others (chronologically):

7) Maria Roca, Joseph. *Tribut al mestre.* Barcelona: 1923.

Bibliographical note read at the Catalan Academy of Medical Sciences to commemorate the hanging of a portrait of Cajal in one of the main meeting rooms. In Catalan.

8) Gimeno, Amalio. *Santiago Ramón y Cajal.* Madrid: Boletín de la Academia Española, 1934. Tome XXI (CIV, October).

Short commemorative fascicle announcing Cajal's death in a publication by the Spanish Academy.

9) Paulís, Juan. *Cajal. Reportaje anecdótico de su vida y su obra.* Barcelona: Publicaciones Andrómaco, 1935.

A short collection of anecdotes written in response to Cajal's death by someone who knew him personally. The author mentions that the political climate in Spain makes it difficult to honor Cajal's memory in a more sophisticated fashion. The book includes copies of some handwritten Cajal manuscripts, including a letter to the author thanking him for his congratulatory message regarding the Nobel prize. An interesting, idiosyncratic, and personal account of Cajal as a man.

10) Juarros, César. *Ramón y Cajal. Vida y milagros de un sabio*. Madrid: Ediciones Nuestra Raza, 1935.

An unusual perspective. The author claims that one should view Cajal as an areligious mystic, a pure scientist, and an extraordinary and generous man who was ultimately unhappy.

11) Suñer Ordóñez, Enrique. *Notas para el estudio de la personalidad de Ramón y Cajal*. Madrid: Imp. Cosano, 1941.

Transcript of a speech given by Dr. Enrique Suñer Ordóñez, President of the Spanish Royal Academy of Medicine, to inaugurate the academic year of 1941. Suñer was a pathologist and pediatric surgeon who was very politically active. He was removed from his academic position by the political leaders of Spain's Second Republic and returned to that post after Franco won the Civil War. He was named Director of the Cajal Institute in 1936 and was a leading figure in the 'Depuration Process', a political purge through which the Franco Regime laid off and often exiled numerous scientists, doctors and other academics that were judged unfriendly to the regime. This speech reflects the process of the construction of an iconic Cajal by powerful people within the Franco regime.

12) Durán Muñoz, García. *Del Sentimiento e Idea Política en Don Santiago Ramón y Cajal*. Madrid: Editora Nacional, 1948.

An essay delineating Cajal's (alleged) political beliefs. The author, who was friendly to the Franco regime, is one of Cajal's foremost biographers and enjoyed unusual access to—indeed, a monopoly over—large swathes of Cajal's archival legacy due to his marriage into the family. Many believe this provided his perspective with more legitimacy than he would have otherwise received. His work has exerted great (one might say undue) influence on the work of subsequent biographers.

13) Laín Entralgo, Pedro. *Dos biólogos: Claudio Bernard y Ramón y Cajal*. Buenos Aires - Mexico: Colección Austral. Espasa-Calpe Argentina, S.A., 1949. Second edition.

Another biography by Laín Entralgo, this time in the same volume as an equivalent biography about Claude Bernard. He again discusses Cajal the scientist as well as Cajal the patriot.

14) Marañón, Gregorio. *Cajal. Su tiempo y el nuestro*. Santander - Madrid: 1950. Second edition.

Written by one of the most prominent Spanish doctors who is also a historian. Brief set of short chapters attempting to assess Cajal's legacy and identify important historical frames of reference.

15) Cannon, Dorothy F. *Vida de Santiago Ramón y Cajal. Explorador del cerebro humano.* Translation by Floch y Pi, A. Prologue by Sir Charles Sherrington. Introduction by Tello, J.F. México, D.F.: Biografías Ganesa, 1951.

Biography by an international author who worked from sources for internal and external to Spain, as well as family members and students of Cajal. This perspective will provide interesting contrast to works developed solely within Spain.

16) Lorén, Santiago. *Cajal. Historia de un Hombre.* Prologues by Laín Entralgo, Pedro and Sanz Ibáñez, Julián. Barcelona: Editorial Aedos, 1954. First edition.

A historical novel about Cajal.

17) Laín Entralgo, Pedro. *Cajal y el problema del saber.* Madrid: Ateneo, 1956. Two copies, a first and a second edition.

Short philosophical primer attempting to extract from Cajal's persona the characteristics of an ideal scientist.

18) Ballester Escalas, Rafael. *Santiago Ramón y Cajal.* Barcelona: Ediciones Toray, 1967. First edition.

Yet another biography following the anecdotes from Cajal's memoir.

19) Verdejo, Carmiña. *Biblioteca Hispania Ilustrada. Celebridades. Miguel Ángel, Simón Bolívar, Francisco Javier, Juana de Arco, Ramón y Cajal.* Barcelona: Editorial Ramón Sopena, S.A., 1968.

Cajal's biography as part of an Encyclopedia of important historical figures.

20) *Caminos abiertos por Santiago Ramón y Cajal.* Caja de Ahorros y Monte de Piedad de Madrid. Madrid. 1977

Illustrated version of the text by Waldo Leirós.

21) Albarracín, Agustín. *Santiago Ramón y Cajal o la pasión de España.* Introduction by Laín Entralgo, Pedro. Barcelona: Editorial Labor, S.A., 1978.

Biography of Cajal as the ultimate Spaniard. Large book with a multitude of photographs and reproductions of correspondence and documents.

22) Leirós, Waldo. *Biblioteca Histórica Grandes Personajes: Santiago Ramón y Cajal.* Barcelona: Ediciones Urbiión, S.A., 1983. First edition.

Cajal as an exemplary citizen and scientist -- hard-working and modest, generous. Develops the theme that science and education are the foundations of a successful society.

23) Durán Muñoz, García and Alonso Burón, Francisco. *Cajal. Vida y Obra*. Prologue by Laín Entralgo, Pedro. Epilogue by Ochoa, Severo. Barcelona: Editorial científico-médica, 1983. Second edition. Two volumes. Vol I: Vida y Obra. Vol II: Escritos inéditos.

Considered the authoritative biography. Durán Muñoz had privileged access to information because he married into the family. He was loyal to the Franco regime. The first volume is a narrative biography and the second contains reproductions of many selected documents.

24) Lewy Rodríguez, Enriqueta. *El Madrid de Cajal*. Aula de Cultura, Ciclo de conferencias sobre Madrid en el primer tercio del siglo XX. Ayuntamiento de Madrid. Delegación de Cultura. Instituto de Estudios Madrileños del Consejo Superior de Investigaciones Científicas. Madrid: 1985.

Transcript of a lecture by Cajal's former secretary about the city of Madrid during Cajal's time.

25) Álvarez Leefmans, Francisco Javier. *Las neuronas de don Santiago Ramón y Cajal*. México, D.F.: Pangea editores, 1994. First edition.

Text attempting to popularize among a lay audience the science contained in Cajal's *Textura del sistema nervioso del hombre y de los vertebrados*. Also discusses Cajal as a person.

26) Berbell, Carlos. *Grandes Biografías: Santiago Ramón y Cajal*. Rueda: Ediciones Rueda, 1999.

Extract from an encyclopedic collection of biographies of salient people.

27) "Cartapacio: Santiago Ramón y Cajal." *Turia. Revista cultural*. March 2000, No. 51-52. Various authors.

Collection of articles by Spanish intellectuals pointing to the need to revisit Cajal as a historical figure. Introduced by Pedro Laín Entralgo, one of Cajal's foremost biographers.

28) Aguirre de Viani, César. *Cajal y su Escuela*. Salamanca: Junta de Castilla y León. Consejería de Educación y Cultura, 2002.

Focuses on Cajal as a teacher and traces the fate of some of his most prominent students, whom the author met; also attempts to contextualize Cajal's own academic background. Emphasizes the devastating effect of the larger historical context in Spain on the scientific and personal trajectories of these people, in particular the tragedy of the Civil War and Franco's dictatorship.

29) Ubieta Auseré, Emilio, de Uña y Villamediana, José and de la Uña Jaime, Sergio. *Santiago Felipe Ramón y Cajal: Altoaragonés universal*. Ayerbe: Ayuntamiento de Ayerbe, 2004. First edition.

Gift from Elvira Rocha Barral. Collection of some old and mostly modern photographs of important geographical locations in Cajal's life.

30) Gamundí, Antoni and Ferrús, Alberto. *Santiago Ramón y Cajal, cien años después*. Madrid: Universitat de les Illes Balears, Ediciones Pirámide, 2006.

Edition in honor of the 100th anniversary of Cajal's Nobel Prize. Collection of texts by many authors. Some are historical, others fictional; some explore the fruits of his scientific legacy. Of particular interest is a CD with extensive references and resources.

31) Muñoz Puelles, Vicente. *El pintor de las neuronas. Ramón y Cajal, científico*. Madrid: Anaya, 2006. First edition.

A fictional story for children that narrates Cajal's life through the eyes of a friend; includes reproductions of watercolor illustrations.

32) Rocha Barral, Elvira. *La aventura de Ramón y Cajal*. Huesca: Instituto de Estudios Altoaragoneses, 2007.

Autographed copy dedicated to me. Text and audiovisual support meant to make Cajal's life and work accessible. The author is a science teacher with a Masters in history and is exploring Cajal's historical legacy. We hope to collaborate in the future.

33) Colección Grandes Pensadores: Ramón y Cajal. *Vida, pensamiento y obra*. Planeta de Agostini, S.A. 2008

Integrates texts from Cajal's memoirs, his *Advice to a young scientist*, his Nobel lecture, and writings by Laín Entralgo. Clearly Laín Entralgo still exerts great influence in Cajal's legacy.

Secondary literature:

34) Molinero, Carme and Ysàs, Pere. *El règim franquista. Feixisme, modernització i consens*. Vic: Eumo editorial, 2003. Second edition.

Basic historical text on Franco's regime. In Catalan.

35) Gracia, Jordi and Ruiz Carnicer, Miguel Ángel. *Historia de España 3er milenio. La España de Franco (1939-1975). Cultura y Vida Cotidiana*. Madrid: Editorial Síntesis, 2004.

Basic historical text on Franco's regime, more focused on cultural and social life during the dictatorship.

36) Sánchez Ron, José Manuel. *Cinzel, martillo y piedra. Historia de la ciencia en España (siglos XIX y XX)*. Madrid: Taurus pensamiento, 2000. Second edition.

History of Spanish science in the 19th and 20th centuries.

DVDs:

1) *Santiago Ramón y Cajal. Las Mariposas del Alma. Un viaje por la vida de un Científico, un Maestro, un Escritor... un Hombre*. Documental de Ana Martínez. TVE. Divisa.

Documentary including numerous interviews.

2) *Ramón y Cajal*. Dirigida por José Ma. Forqué. Adolfo Marsillach, Verónica Forqué, Fernando Fernán Gómez. RTVE. Divisa. 3 DVDs. 1980. 2006.

Dramatization of Cajal's life.

Footsteps in my search for Cajal: Suggested Additions

1) Ferrer, Diego. *Cajal y Barcelona*. Prologue by Valdecasas, Francisco G. Barcelona: Fundació Uriach, 1989.

Cajal and Barcelona. Need I say more?

2) López Piñero, J.M., Terrada, M-L. and Rodríguez Quiroga, A. *Bibliografía Cajaliana. Ediciones de los escritos de Santiago Ramón y Cajal y estudios sobre su vida y su obra*. Valencia: Albatros, 2000.

This is a thorough compendium of references to works by Cajal as well as works about Cajal by others. In this book are listed over 890 publications in several languages, dating from 1880 to 1999, making it an invaluable tool to keep expanding this collection wisely and offering a more general frame of reference.

3) Ramón y Cajal, Santiago. *Recuerdos de Mi Vida. Mi infancia y juventud. Historia de mi labor científica*.

First edition - Madrid: Fortanet, 1901 (only *Mi infancia y juventud*)

Second edition - Madrid: N. Moya, 1917 (now also including *Historia de mi labor científica*).

While working with the online version and with library copies has been very convenient, this collection really needs a first and second edition of Cajal's memoirs.

4) de Carlos Segovia, Juan Andrés. *Los Ramón y Cajal: una familia aragonesa*. Aragón: Diputación General de Aragón, 2001.

This book traces the history of the Ramón y Cajal family. It will be a great asset as we try to figure out relationships between different people in the story.

5) Ramón y Cajal, Santiago. *Ramón y Cajal y la guerra de Cuba. Apuntes autobiográficos*. Prologue and comments by Ramón y Cajal Junquera, Santiago (Ramón y Cajal's grandson). Zaragoza: Cremallo de Ediciones y Gobierno de Aragón, 1998.

Cajal's time in Cuba is believed to have considerably shaped his sense of patriotism as well as have invited him to examine critically the role of military interventions. It will be interesting to learn from him directly about the impact that this episode of his youth had on his life trajectory.

6) Ramón y Cajal, Santiago. *La psicología de los artistas*. Madrid: Espasa-Calpe, 1972.

An essay on the nature of creativity and the psychology of artists that might help illuminate how he conceives of his own work and scientific and creative process.

7) Ramón y Cajal, Santiago. "¡A patria chica, alma grande!". El Siglo Médico, 47. Madrid: 1945.

Transcript of Ramón y Cajal's speech during a commemorative act at the University of Madrid in 1900. Cajal describes his notion of patriotism as the daily commitment to the mastery of science and the idea that the size of a nation should not be judged by the extent of its land, but by how far its ideas and influence travel.

8) Ramón y Cajal, Santiago. *Charlas de café. Pensamientos, anécdotas y confidencias*. Madrid: Tipografía Artística, 1932.

This book contains numerous aphorisms, anecdotes, thoughts and comments on a variety of topics, from the quotidian and mundane to the profound and philosophical. This is a highly quoted book amongst those who write about Cajal and it is common to cherry-pick quotes. Having a general sense of what was used and what was left out, as well as a good picture of the variety will be quite interesting.

9) Ramón y Cajal, Santiago. *Después de la paz. ¿Qué corrientes políticas, sentimentales e ideológicas dominarán en Europa?* España, vol. 1, núm. 3. Madrid: N.M. Rivero, 1915.

In this magazine are collected answers by Cajal and other Spanish intellectuals to the question "What political, sentimental and ideological currents will dominate in Europe after the peace?". This essay will likely provide interesting insights into Cajal's take on current (WWI) politics and his sentiments about civilization more generally.

10) Williams, Harley. *Don Quixote of the microscope : an interpretation of the Spanish savant, Santiago Ramón y Cajal (1852-1934)*. London: Cape, 1954.

An international take on Cajal as a scientist-hero that will likely provide interesting contrast and perspective on books of a similar period from Spain.