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For an aspiring scientist, the achievements of modern science can be both inspiring and intimidating. Advice and mentorship from an accomplished investigator is valuable for many reasons, not the least of which is that it renders the idea of establishing oneself as a scientist more tangible. This important effect of mentorship has also been captured in several books written by prominent scientists for students considering careers in science. Two of these books have been particularly well received: *Letters to a Young Scientist* by Edward O. Wilson and *Advice for a Young Investigator* by Santiago Ramón y Cajal. Wilson is a highly accomplished author and professor emeritus of biology at Harvard, and is widely regarded as one of the most influential scientists of our time. Ramón y Cajal is something of a legend in science, and his prolific body of work is often seen as the foundation of modern neuroscience. Although the two scientists wrote with a common goal, their books differ in a number of ways that affect the nuances and efficacy of their messages.

The most noticeable difference between the two books is the lapse of over 100 years between the first 1897 publication of *Advice* and the 2013 release of *Letters*. Although *Advice for a Young Investigator* is necessarily somewhat anachronistic, one of the book's most remarkable features is the degree of modern-day relevance it manages to retain. Although the practice of science and the institutional structure underlying it have changed drastically since the time when Ramón y Cajal was conducting his groundbreaking investigations on the structure of the nervous system, the insights offered in his book often reach to the more constant, foundational principles of science. Wilson's and Ramón y Cajal's discussions on the philosophical underpinnings of science are complementary and reinforcing: both highlight the necessity of rational, empirical inquiry for understanding the world, and both disavow unaided intuition as a method for seeking answers to deep mysteries.

The two authors also concur on the useful personal qualities of a good investigator, although their differing presentations of this material highlight the second major difference between the two books. Ramón y Cajal goes through a much more explicit deliberation on the qualities of a person who will make a good investigator, emphasizing the necessity of independent judgment, personal curiosity, and perseverance. He offers a list of archetypal ways of thinking and traits to be avoided, and readers may even identify some of these traits in themselves. Wilson presents similar information in a very different way. He invokes common mythological themes (the journey to an unexplored land, the search for the grail, etc.) as metaphors for the archetypal motivations of scientific minds. This difference in describing the same material is illustrative of both the stylistic differences and substantive similarities between the books.

Edward O. Wilson, a native of Alabama, in repose at his Harvard University office.

Santiago Ramón y Cajal, the "Father of Neuroscience," at the microscope.

Because of these stylistic differences, each author is most effective at conveying a different set of messages, which is

one reason why the books complement each other so well. The epistolary form of *Letters to a Young Scientist*, being written as a series of letters, does not always lend itself well to including generalizable, practical advice. This is not to say that Wilson does not effectively offer his unique insight on the progression of a scientific career. However, the more formal, expository format of *Advice for a Young Investigator* enables Ramón y Cajal to cover a broader range of topics in more overt terms. For example, he includes a section devoted to "beginner's traps". One particularly salient counsel from Ramón y Cajal for students in science is to resist the tendency for superficial, encyclopedic learning, which poses even more of a concern today due to the ever-expanding body of scientific knowledge.

A central theme for both books is the notion that success in science does not require innate genius, nor automatically follow from it. Ramón y Cajal includes an anecdote on Marie Curie and the discovery of radium that is particularly effective at demonstrating the interplay of dedication, serendipity, passion, and calculated perseverance in scientific discovery. Ramón y Cajal's intended effect of this message was to humanize great scientists, as shown when he writes that "the discoverer, along with being an illustrious person of great talent and resolve, was in the final analysis a human being like everyone else." As an undergraduate hoping to contribute to scientific progress, it is very encouraging to read these humanizing accounts of great scientific achievements. This is also a central theme in *Letters to a Young Scientist*, and Wilson conveys a similar message by arguing that "ambition and entrepreneurial drive, in combination, beat brilliance." The effect of this message is magnified by the stature of the authors, which is one reason why Wilson's and Ramón y Cajal's writings on the subject are so effective.

In addition to making the possibility of personal scientific achievements more tangible for young scientists, the authors go on to describe the fulfillment gained from a research career and the worthiness of science as a lifelong devotion. To emphasize this point, Wilson opens his book with a prologue titled "You Made the Right Choice." Although both authors are eloquent and persuasive when describing the satisfaction gained from a career in science, Wilson's epistolary format excels on this topic. His personal account of the process by which he developed his foundational theories of island biogeography, and of the satisfaction earned from his diligence, are especially compelling on this point.

Overall, both of these books are quick and worthwhile reads for undergraduate students pursuing careers as scientists. While each stands on its own, the strengths and weaknesses of each book establish a synergy between them. In *Advice for a Young Investigator*, Ramón y Cajal offers a more formal exposition of his beliefs about how science should be practiced, which is lacking by comparison in *Letters to a Young Scientist*. However, Wilson's epistolary narrative approach is better suited to conveying the humanizing and inspirational messages of the book. The two books differ in many ways, but they are both successful in their common intent: to inform and inspire the next generation of scientists.

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