BOOK REVIEW

Creating Modern Neuroscience: The Revolutionary 1950s

By Gordon M. Shepherd
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'If I have seen further than other men, it is because I stood on the shoulders of giants.' – Sir Isaac Newton

Like many of my esteemed colleagues, the first lecture of my introductory neuroscience course is a historical tour that begins with Descartes' 17th century dualistic view of the mind-body problem and ends somewhere near the formalization of the field of neuroeconomics at the turn of the 21st century. During this rapid tour of neuroscience history I allude to the seeds of modern neuroscience that were planted by the anatomists Ramon y Cajal and Emillio Golgi, the electrophysiological explorations made by Alan Hodgkin and Andrew Huxley, and the discovery of DNA by James Watson and Francis Crick which lead to the many molecular and cellular techniques in our laboratory toolboxes. Many more scientific discoveries and societal events of the early and mid- 20th century helped shape the field of neuroscience we know today, which means that a single lecture is simply not enough time to do justice to the successes and failures of the "giants of neuroscience" whose shoulders we stand on. *Creating Modern Neuroscience* by Gordon Shepherd is a well written, thorough, and captivating account of the people, places, and classic experiments leading up to the mid-20th century explosion in neuroscience research that may be used as a supplement to both undergraduate and graduate level textbooks.

Gordon Shepherd, Professor Neurobiology at Yale University, has spent the better part of the 20th century and early 21st making significant contributions to the neuroanatomical, neurochemical, and neurophysiological study of the olfactory system in vertebrates. He became a household name to many neuroscientists when he began writing detailed textbooks on these subjects (e.g., Shepherd, 1994, 2004). Dr. Shepherd's scientific career began at a time in our history that afforded him the opportunity to interact with, professionally and socially, many of the "scientific giants" he profiles in *Creating Modern Neuroscience*. Throughout the text, the author places landmark scientific results in context by sprinkling in these personal anecdotes and bibliographic information.

The primary reason that I believe this text would complement introductory neuroscience coursework is that the topical progression of *Creating Modern Neuroscience* mimics that of most introductory textbooks. The first chapter of the text warns that "the opportunities for developing and applying the new [research] methods have been so exciting, so absorbing, that it has led to an increasing tendency for today's neuroscientists to focus on the present and reject the past as irrelevant" (pg. 4). Shepherd continues in this chapter to argue that it is only through the interdisciplinary study of a scientific discipline's history that a scientist gains an appreciation of the fundamental theoretical principles and assumptions of the field allowing them to participate in paradigm-shifting scholarly science. These are wise words that all academics should heed.

The remaining chapters integrate descriptions of key discoveries in disciplinary fields of biology (e.g., Chapter 2 - Watson and Crick's discovery of DNA structure), chemistry (Chapter 15 – the discovery of psychopharmaceuticals), physics (Chapters 6 & 7 - the development of high quality amplification equipment) and computer science (Chapter 16 – the development of the first digital computer) with classic experiments in molecular, cellular, behavioral, and theoretical neuroscience. Each chapter has clear subtitles which allow the reader to quickly jump to topics of interest and boldface type that allows the reader to locate biographical descriptions of scientists and the experiments which led to the coining of a common term used by modern neuroscientists. Lastly, Shepherd has chosen several representative figures from classic papers that allow students to see the original data from which graphic artists have used to generate textbook figures. Students may be amazed at the way that data was presented and the time it took to generate figures during the early years of modern neuroscience.

Another useful feature of the text is Dr. Shepherd's comprehensive list of classic primary and secondary literature. These sources represent many of the first steps taken on the path towards the ultimate goal of understanding how a nervous system produces the myriad of behaviors we observe in the animal kingdom. Educators can use this list to engage students in the skill of reading primary literature through in class discussions, program wide journal clubs, and short writing activities. Furthermore, many of these readings can act as the platform for faculty or student designed laboratory activities.

In conclusion, Dr. Shepherd covers this immense number of topics in a voice that is not overly scientific allowing the reader to maintain sustained attention regardless of previous experience with the subject matter and yet does justice to the detailed experiments and thoughts of the scientific community of the time. Regardless of whether you're a naïve undergraduate student or the most seasoned researcher, you are bound to gain something from Dr. Shepherd's insight into the arduous, yet rewarding, process of scientific discovery.

REFERENCES

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