American contribution to gravity research (p. xxviii). Also of note is Peirce's ground-breaking efforts at developing a theory of efficient research in "Note on the Theory of the Economy of Research."

How does one offer a critique of such a Herculean effort? Yet the reader must be advised that this fourth volume in the series is highly technical, being primarily of interest to the historian of science, mathematics, and logic. Apart from the Introduction by Houser, most non-technical readers would find this particular volume rather tedious, covering as it does such topics as the axiom of numbers, the proposition, and on the construction of the reversible pendulum. That being said, there is one very remarkably vital article near the end of the volume that has, in my opinion, considerable philosophical import that might be of interest to a wide range of readers.

The penultimate article, "Design and Chance," a paper read before the Metaphysical Club is a brilliant working out of the Darwinian notion of random chance as applied to the laws of nature themselves. In advancing a brilliant and bold hypothesis, Peirce asks, "May not the laws of physics be habits gradually acquired by systems. Why, for instance, do the heavenly bodies tend to attract one another? Because in the long run bodies that repel or do not attract will get thrown out of the region of space leaving only the mutually attracting bodies." (p. 553) Here we see the grandeur of Peirce's mind, extending the Darwinian notion of the long run, utilizing it as a means of explaining what science takes for granted, vis., why are there laws of nature in the first instance? Is their existence a mere brute fact, or is it possible to give an account of their origin without the postulation of design. This one article contains in seed the great cosmological speculations developed by Peirce in the 1890's. It is intriguing to see that such ideas were developed during the period of his most rigorous formal work. Is there, perhaps, a closer connection between these two poles of his work than was once thought?

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This is a thoroughly researched, clearly written intellectual biography which is excellent in every respect. But it is also a long book about a non-philosopher, hence it will be the purpose of this review to indicate why philosophers should take an interest in it.

First, Aldo Leopold is perhaps the thinker who best exemplifies for us the conflicting tendencies which must be resolved in any attempt to re-think nature in light of the current ecological crisis. He was, as Meine demonstrates, appreciative of both the
aesthetic dimension of nature as well as utilitarian dimension; he was a "sportsman" and a preservationist, a scientist as well as an "outdoorsman," a manager of and an observer of nature. That is, Leopold struck a balance between a Gifford Pinchot-like (utilitarian) intent to use nature, albeit wisely, on the one hand, and a John Muir-like intent to aesthetically appreciate nature, on the other. Meine does a meticulous job of tracing Leopold's early career from his Iowa boyhood to his days at Yale's school of forestry to his work with the national forest service in the southwest. At this stage in his career he leaned decidedly toward the Pinchot end of the spectrum.

Leopold's later decades at the University of Wisconsin, however, saw him not only developing his skills as a scientist, but also as an aestheticist and as a philosopher of nature. He rethought his early opposition to predators ("varmints") and to forest fires, and began to emphasize that although the perception of quality in nature begins with the pretty, it culminates in the sublime. At times Leopold flirted with what today is called the Gaia hypothesis (due to the writings of Ouspensky), but this is not characteristic of the way in which he usually denigrated a utilitarian approach to nature in his later writings. His development of ecology (or better, conservation) as a science required a new way of thinking, not a new technology, a way of thinking wherein a stable ecosystem is measured by the diversity of fauna and flora within it. As Leopold put the point: "To change ideas about what land is for, is to change ideas about what anything is for."

Second, Leopold is instructive regarding the complexities of current debates between advocates of animal rights, on the one hand, and environmental ethicists, on the other, even if his position is not too comforting to the former. As his contemporary Hornaday put it, he wanted game refuges to protect game from hunters whereas Leopold wanted them to protect game for hunters. Hunting animals with a camera, for Leopold, showed a lack of Rooseveltian robustness. Yet wildlife was always his deepest interest (indeed he was the inventor of wildlife management as an academic discipline), such that throughout his life he showed certain reservations, even a bit of guilt, regarding violence inflicted on animals. This is noteworthy because there is no hint of sentimentalism anywhere else in his thought.

And third, Leopold's land ethic is a distinctively American approach to nature although (especially after his trip to Germany in the 1930's) he was anything but a nationalist. For example, his life's work consisted in a critique of abstractions. He was always skeptical of the remoteness of notebook symbols (however, as a scientist, he compiled these ad infinitum) in that truth was to be found in the immediacy of deer-fly bites. Although he read some William James, his pragmatism seems to have been due to his practical experience in the woods. He opposed the private hunting clubs of Europe because of their artificiality and their elitism. But his own progressivism was mixed with an individualism that made him skeptical of FDR's government sponsored nature
projects. The key to conservation, he thought, was to induce the private landowner to conserve his own land—the ecological version of democracy. (It is significant that Leopold eventually became a reluctant defender of public lands.) But his individualism, like Thoreau's, was not unreflective. And like Thoreau, Leopold loved his little shack in the sand country of Wisconsin in that a good scholar, he thought, is like good land in being part tame and part wild. Finally, like Thoreau and all naturalists he faced (and saved himself from) the hazard of misanthropy.

This book is a must for those who are interested in these three areas. And those who have only read Leopold's classic, *A Sand County Almanac*, should not assume that they know Leopold well if they have not read Meine's book.

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Intellectual historian James Hoopes traces the rise and eventual transformation of what he calls the "consciousness concept" from the 17th century to the 19th. He distinguishes among three models of the self operative within New England thought and experience. The first stage, referred to as that of "faculty psychology," was basic to Puritan experience and emphasized the conflict between the independent faculties of the will and the understanding. Central to this model was the concept of conversion that realigned the will so that it conformed to the will of God. The Puritan sense of the self required a period of profound humiliation, often brought on by the authorities in the community, so that mere self-will could be broken and allow for the entrance of saving grace.

The second model of the self derived directly from Locke and made central the "consciousness concept." Unlike the Puritan model, which stressed the importance of struggle and conflict within the sinful self, the consciousness concept related all experience to immediate ideas. The Lockean revolution undermined not only innate ideas but the concept of the will and its corollary, the conscience. Hoopes makes it clear that the older faculty psychology did not fully recognize that the consciousness concept was actually a Trojan horse designed to overthrow it.

The third model of the self, called the "modern model," emerged in the 19th century as a compromise with the consciousness concept. Ironically, the modern model was reactionary in that it went back to the pre-Lockean position in emphasizing conflict at the heart of the self. Instead of speaking of the self as a conflict between will and understanding, however, the modern view spoke of a conflict between the consciousness and unconscious minds, thereby reawakening some sense of conscience.