

Answering Sidney Smith's Questions

A Review by

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A LIFE OF GEORGE WESTINGHOUSE. By Henry G. Prout. New York. Charles Scribner's Sons. 1922. 375 pp. \$2.50.

EVERY schoolboy knows "that almost exactly a century ago Sidney Smith asked, "Who reads an American book?"—an unfortunate question which yet echoes down the corridors of time. But every schoolboy does not know that Sidney Smith did not stop there, and that he asked other questions for which it was not easy for the most self-satisfied American of 1820 to find a satisfactory answer. "In all the four quarters of the globe, who reads an American book?" That was his first question; and he followed it by half a dozen more—"or goes to an American play? or looks at an American picture or statue?" Then he diverged from the field of art and letters to the field of science. "What does the world yet owe to American physicians and surgeons? What new substances have their chemists discovered? or what old ones have they analyzed? What new constellations have been discovered by the telescopes of Americans? What have they done in the mathematics?"

In the hundred and two years which have elapsed since we were thus put to the question, our poets and our playwrights, our painters and our sculptors have made themselves known to our kin across the sea. Our physicians and our surgeons, our chemists and our astronomers have given a good account of themselves. Were a new Sidney Smith now to prepare a similar interrogatory, we should not be troubled to answer it; we should simply shrug our shoulders, certain that the rest of the world would

laugh at the absurdity of the questions. And we could await the universal eacination with even more confidence if one of the new questions happened to be, "Who uses an American invention?" That query Sidney Smith overlooked, although it is unlikely that he was aware of the invention of the torpedo and the submarine by Bushnell and of their improvement by Fulton. Perhaps he did not ask it because he had heard of the success of Franklin's lightning rod and of Fulton's steamboat. He may even have had knowledge of Whitney's cotton gin. Sidney Smith was really our friend; and he knew a good deal about us.

Of course, it is in the century since the Edinburgh Review published Sidney Smith's article that American ingenuity has most abundantly manifested itself. When we call the roll of the outstanding inventions of the past five-score years—the railroad, the electric telegraph, electric lighting, the photograph, the phonograph, the telephone, wireless telegraphy and telephony, anesthetics, the sewing machine, the typewriter, the typesetter, vulcanized rubber, the reaper and binder, the trolley car, the automobile and the airplane—we can take a just pride in our share in the marvels of this catalogue. That share is at least as large as the share of any one other nation. In fact, we have been leaders in applied science, if we have not been equally successful in pure science. Even if we can claim credit for very few of the fundamental discoveries, we have made a host of inventions which are practical application of discovery. The career of George Westinghouse was typically American, and in this volume it is appreciatively set forth by Colonel Prout, who was an intimate friend and who has been aided by the family and by the associates of Westing-

house. The task undertaken by Colonel Prout was not easy, partly because Westinghouse's essential energy led him into a wide variety of endeavors, and partly because Westinghouse's masterful personality involved him in a series of acrimonious disputes. Difficult as the task is, Colonel Prout has been skillful in accomplishing it. Especially to be praised is his moderation of statement and his obvious desire not to overestimate Westinghouse and not to underestimate those with whom Westinghouse came into conflict. He admires Westinghouse so cordially that he has no hesitation in admitting Westinghouse's occasional mistakes. He is no thick-and-thin eulogist and, therefore, his discreet record of what Westinghouse actually achieved is all the more impressive. Furthermore, the book is well planned and well written; its English is clean and clear, and its style is vivid and vivacious.

George Westinghouse was born in 1846. He "had an inheritance of good blood and sound tradition; he was born and reared in an environment of work, thrift and responsibility; he did not happen; he was a logical product." When he was 10 years old his father established at Schenectady a shop for making agricultural and mill machinery and small engines; and in this shop the boy went to work when he was 14. When he was only 16 he entered the Union Army as an enlisted man, and before he was 19 he was mustered out, having won a commission as Engineer Officer in the navy. Late in life he said:

My early greatest capital was the experience and skill acquired from the opportunity given me, when I was young, to work with all kinds of machinery, coupled later with lessons in that discipline to which a soldier is required to submit, and the acquirement of a spirit of readiness to

carry out the instructions of superiors. (P. 5.)

After the war he entered Union College, remaining only three months. Perhaps if he had filled out his four years he might have attained to that mastery of the higher mathematics which has been so helpful to Sprague and to Papin. It is true, of course, that the lack of this useful equipment did not hinder him, as it did not hinder Edison, from attaining brilliant results; but if Westinghouse and Edison had possessed this most useful tool they would have been saved from not a little fruitless labor. As it was, Westinghouse started with a practical training in mechanical engineering, and he kept himself abreast of the state of the art. He took out his first patent in 1865, before he was 20; it was for a rotary steam engine. He took out other patents for other devices in the next three or four years. Soon he devoted the major part of his energy to the inventing and to the perfecting of the airbrake. His first airbrake patent was issued in 1869. In the course of forty-eight years he took out 100 patents of many different kinds. But it is primarily as the inventor and improver of the airbrake that he made himself famous, first in the United States, next in Great Britain, and finally all over the world. "It is by this," Colonel Prout assures us, "that the people know him, and this is always first mentioned in his recognitions and honors from Governments and societies."

The chapter in which the biographer gives us the history of this invention is the most important in the book, and it is the most interesting. Westinghouse had had predecessors in the effort to give the control of all the brakes in a train of cars to the engineer in the cab; but he was

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the man who triumphantly accomplished what others had ineffectually sought to do. "As mere invention," so Colonel Prout declares, "Westinghouse's subsequent contributions to the airbrake art were far more novel and brilliant than his original conception, and likewise of much greater importance, both mechanically and commercially." (P. 28.)

These subsequent contributions were made after Westinghouse had become a captain of industry, an organizer of companies to manufacture and to apply his inventions. His organizing ability was as obvious as his inventive faculty; and he founded company after company in America and in Europe, for all sorts of purposes, sometimes independent and sometimes ancillary to the three or four parent organizations. From time to time they were amalgamated with one another; and no pages of this volume are more eloquent than the two which list the names of the hundred different companies due to Westinghouse's manifold activities. To create these organizations called for imagination and energy. To keep them going demanded also the power of attracting the capital necessary to finance them. This faculty Westinghouse possessed in a high degree. He was a towering personality, forceful, inspiring and persuasive—aggressive, dominating and, on occasion, domineering. He believed in himself and he made others believe in him. He was always ready to put his own money into his own schemes, to back up his projects, to harness himself to them. His self-confidence was sometimes excessive; his caution was not as obvious as his courage; and the time came when the control of the great company which bore his name passed out of his hands.

He was a stalwart fighter, and, like the gow-chrom in Scott's tale, "he fought for his own hand." He stood to his colors to the end, and more often than not victory rallied to his standard. He was an early advocate of alternating current (although he was not so solitary in this advocacy as Colonel Prout seems to suggest), and he had the courage of his convictions. Colonel Prout records that in 1889, in an article in the *North American Review*, "the most popular electrician in the world" declared that "there is no plea which will justify the use of high alternating currents," adding that it was his "personal desire" to prohibit entirely their use. I had the curiosity to look up this article, and, as I expected, I found that it was signed by Edison. The Latins were wise in their generation when they asserted that "anger is a brief madness."

While Colonel Prout is frank in his desire not to conceal the occasional errors of the friend whom he long served, he is a little overinclined to tell certain parts of his story from the Westinghouse point of view. In setting forth the deeds of his former chief he does not always pay adequate attention to the work of other men. The index reveals only two mentions of Frank J. Sprague, who was as plainly the "father of electric traction" as Stephenson was the "father of the steam railroad" and as Westinghouse was the "father of the airbrake." The index contains only one mention of Nikola Tesla, without whose inventions the electric installation at Niagara would not have been possible. And—strangest of all—this index does not contain a single mention of Elihu Thomson, whose contributions to the utilization of the alternating current were at least as important as those of Westinghouse.

The chapter on the turbo-generator conveys the impression that this "greatest contrivance for the manufacture of power" is mainly to be credited to Westinghouse. This was Westinghouse's own opinion—or at least it was the opinion he strove to have accepted. I am informed by those who speak with authority that the facts do not justify this claim. The turbo-generator existed before Westinghouse turned his attention to it; he helped to introduce it; but he took up the Parsons turbine only when the General Electric took up the Curtis turbine. In other words, he came too late into this field to contribute anything of major importance. I may note that the index fails to contain the name of Charles G. Curtis.

Nor was Westinghouse the originator of the "regenerator"—for which a patent had been issued to Sprague in 1885. Furthermore, I think that the uninformed reader of Colonel Prout's pages would get the impression that it was a successful system which Westinghouse persuaded the Directors of the New Haven Road to adopt when they electrified their lines out of New York. This is not the belief of the unfortunate stockholders, and it is not the belief of the managers of the many other railroads which have since had to electrify sections of their track. No other road, East or West, has seen fit to follow the lead of the New Haven.

Despite these occasional deductions, easily understandable and easily pardonable, Colonel Prout has given us a brilliant portrait of a brilliant man. He has written a book which an American must read with pride. He has added valuable chapters to the history of American achievement in engineering.

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