

disappointed by the transfer to the University of Cambridge of the Solar Physics Observatory of which he had been director for so many years. Although he was then seventy-five years old, he went energetically to work and with the help of friends founded a new observatory at Sidmouth, which he directed until his death seven years later. It is now known as the Norman Lockyer Observatory.

Lockyer seems to have been always ready to add one more to his list of activities. It is easy to believe the remark quoted from him: "The more one has to do, the more one does." The enumeration of the great number of lectures he gave and of the numerous gatherings he attended becomes rather overwhelming, especially in the chapters dealing with the later part of his life. The reader would be more impressed by the really important events if fewer details of the lesser happenings had been included.

The second part of the books consists of thirteen chapters dealing with various phases of Lockyer's scientific work. With the exception of one chapter, containing an address given by Lockyer, these chapters were written by well-known scientific men who are qualified to judge of the importance of Lockyer's contributions to science. They give the reader a very clear idea of the relation of his work to modern investigations. It is impressive to see "how much the recent progress in astrophysics runs on the lines initiated by Lockyer."

The chapter in which is reprinted one of Lockyer's addresses tells the story of helium. It is most interesting to read in Lockyer's own words this story from the time in 1868 when he observed in the solar spectrum "the yellow line near D" until the time twenty-six years later when the line was produced in the laboratory. During all those years, Lockyer persevered in his belief that this line was due to a new element, although he was almost alone in this opinion. In the end his theory was vindicated, as happened in other cases where he felt that the observed facts required explanations opposed to the ideas then generally accepted. Another such example is his theory about the evolution of the stars. He held that in the course of a star's evolution the temperature first rose and then fell, instead of decreasing from the very beginning of the star's life as other astronomers thought at that time. The theories of to-day agree in general with Lockyer's idea.

The last chapter gives some personal recollections of Lockyer by Professor A. Fowler, who was Lockyer's assistant in the laboratory for many years and who succeeded him when he retired from his post as professor at the Royal College of Science. In this chapter, better than anywhere else in the book, there is presented a real picture of the forceful and versatile personality of this most enthusiastic scientific worker.

All who read these pages will surely hope with Professor Fowler "that means may be found to perpetuate his memory by the provision of funds to place the observatory (at Sidmouth) on a permanent basis."

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*Lebenslinien. Eine Selbstbiographie.* Von WILHELM OSTWALD, Berlin: Klassing & Co. 3 volumes.

OSTWALD has written his autobiography, and every chemist will want to read it because in it we find the reactions and the reflections of a man who took an active part in building up a branch of the science. His early struggles in Riga and in Dorpat as an unwilling subject of the Russian empire; his Leipzig tenure and the subsequent development of a great school of physical chemistry under his leadership; his championship of Arrhenius and van't Hoff; his writings, and to a less extent, his researches; his disputes with colleagues in and out of the university, and his final retirement to private life to devote his remaining energies to art and to philosophy are all vividly described, as one would expect from the pen of one of the foremost writers on science.

Ostwald is refreshingly frank in expressing his thoughts. One feels that no restraining hand was at work when he sat down to say what he had to say about the men with whom he came in contact. And yet, one would be apt to close the book with more liking for the man if there were some self-criticism interspersed between the pages of his three volumes. One is left with the general impression that many men wronged him; one nevertheless carries away the impression that he was not always in the right, if only because of his repeated assurances that the others were the wrong-doers. One also carries away a very distinct impression that everything was measured with a mental meter-rule planned and perfected by Germans who, in turn, were impregnated with the germ "Deutschland über alles." His somewhat caustic comments on American universities and university men and on America itself seem not so much the result of objective criticism as of nationalistic self-conceit. Even his bitter comments on the attitude of Ramsay and others towards German science—an attitude resulting from the late war and, as we realize to-day, a highly unjustified one—awaken but little sympathy, because he himself has such little sympathy for things other than German.

I may be somewhat unjust to Professor Ostwald, but such is the general impression the book leaves me with. Nevertheless, as a scientist, and, more particularly, as an "organizer" of science, Ostwald will go down in chemical history with the group of immortals.

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