On presentation of the Proctor Medal of the Association for Research in Vision and Ophthalmology to Ruth van Heyningen

Annually, the Association for Research in Vision and Ophthalmology honors outstanding contributions to ophthalmic research with the Proctor Medal and the Friedenwald Award. The Proctor is usually considered the senior award. However, when I observe the vigor with which this year's Proctor Medalist pursues life, I am not certain that such a description is appropriate. This award was established in 1947 in memory of Dr. Francis I. Proctor, a Boston ophthalmologist who strongly believed in the eventual control of disease processes through the information obtained from basic and clinical research. Upon retirement, Dr. Proctor moved to New Mexico where he initiated a trachoma research program that brought attention to this disease and stimulated experimentation that led to the isolation of the causative viral agent.

The prior recipients of the Proctor Medal are among the most distinguished members of the ophthalmology and vision community. Occasionally the award has been bestowed upon illustrious scientists of other lands such as Norman Ashton, Hans Goldmann, Sir William Duke-Elder, Antoinette Pirie, William Rushton, and Tsuneo Tomita. Today, we honor the distinguished English biochemist, Ruth van Heyningen.

Actually, Ruth is Welsh, growing up in Wales but attending school and university in England. I have been told by reliable authorities that the three most prominent characteristics of the Welsh are a warm heart, a quick mind, and, of course, the ability to sing. Alas, after extensive research I can say with certainty that Ruth has only two of these attributes.

Ruth van Heyningen has had two highly successful careers: innovative scientist and co-director of a brilliant family. She has astutely guided her children to maturity in collaboration with her husband, Kits van Heyningen, a prominent scientist and Master of St. Cross College at Oxford University. Until fairly recently, there were four biochemical Drs. van Heyningen at Oxford. Besides herself, there was her son, Simon; his wife, Veronica; and Ruth's husband. Simon van Heyningen is now a protein chemist at Edinburgh University Medical School and his wife is a biochemical geneticist. Her daughter, Joanne, is the only nonscientist in the family; she is an architect in London.

Ruth attended Cambridge University, earning three degrees at this august institution. During the war years she worked in Dr. Malcolm Dixon's group, studying the
effect of poison gases on enzyme systems. Unfortunately, this work was classified and could not be presented for the Ph.D. degree. After a brief interlude studying blood group substances, Ruth turned to physiology, studying adaption to hot climates with reference to sweat gland activity and sweat composition. For this work she received the Ph.D. degree.

In 1951, Toni Pirie invited Ruth to come to Nuffield Laboratory of Ophthalmology at Oxford University. Fortunately, she accepted and began her brilliant work on the biochemistry of the eye.

I am not certain if Ruth felt that Oxford was a more prestigious university than Cambridge, or if a degree based on sweat gland activity did not contain sufficient dignity, or whether she simply could not break the habit of collecting degrees. In any case, in 1952 she received an M.A. and in 1973 a D.Sc. from Oxford University.

Ruth van Heyningen has made numerous important contributions to our understanding of the lens and cataract. Her work is characterized by the use of ingenious techniques for identifying new components which have frequently been found to be involved in cataract formation. Several of her observations have stimulated the development of new concepts by herself and other investigators. She discovered sugar alcohols in the lens, suggesting the presence of the sorbitol pathway. This observation has led others to elucidate the mechanism of sugar cataracts and to develop techniques for arresting the onset of the disease process. Currently, investigation of the general effect of this cycle upon the diabetic is also being pursued. She has shown that in naphthalene cataracts the active component that probably causes the development of the opacity is naphthoquinone, raising the question of the role of oxidation and free radical mechanisms in the formation of other types of cataract. Ruth's discovery of the fluorescent kynurenine glycosides in the lens has brought attention to the role of fluorescent compounds in this tissue. It has stimulated a broad investigation of such compounds and their relationship to cataract formation.

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Toni Pirie has told me that Ruth frequently states, "I do research because I enjoy it. When I stop enjoying it I shall stop research." This healthy philosophy has enabled her to keep her work in perspective and follow any research lead no matter where it takes her.

Abraham Spector