Morton suggested that x-rays were the cause of their eye trouble. During the same period, Alan Archibald Campbell-Swinton recorded that he and his associates had not experienced ill effects to their eyes after working with Crookes tubes (part of the apparatus used to generate x-rays) for many hours. Nonetheless, as more powerful x-ray equipment was introduced, additional accounts of complications began to appear. Several reports described skin reactions similar to sunburn.

The American physicist Elihu Thomson was the first to prove a direct relation between exposure to x-rays and some of the reported effects. He deliberately exposed his left index finger to an x-ray tube for half an hour a day for several days. The resulting erythema, swelling and pain confirmed the suspected relation. Unequivocal proof of the damaging effects of x-rays came with the reports of William Rollins, who described the fatal results of prolonged x-ray exposure on guinea pigs. On the basis of his observations, Rollins suggested that x-ray users wear radio-opaque glasses, that the x-ray tubes be enclosed in leaded housing and that only areas of interest be irradiated and adjacent areas covered with radio-opaque materials. From 1887 to 1904, Rollins, a true pioneer in radiation protection, made many scientific contributions to the field and developed numerous devices to protect both patients and x-ray operators. Unfortunately, his warnings...