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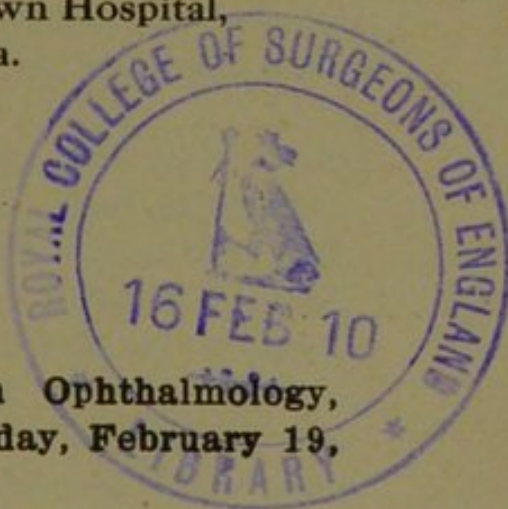
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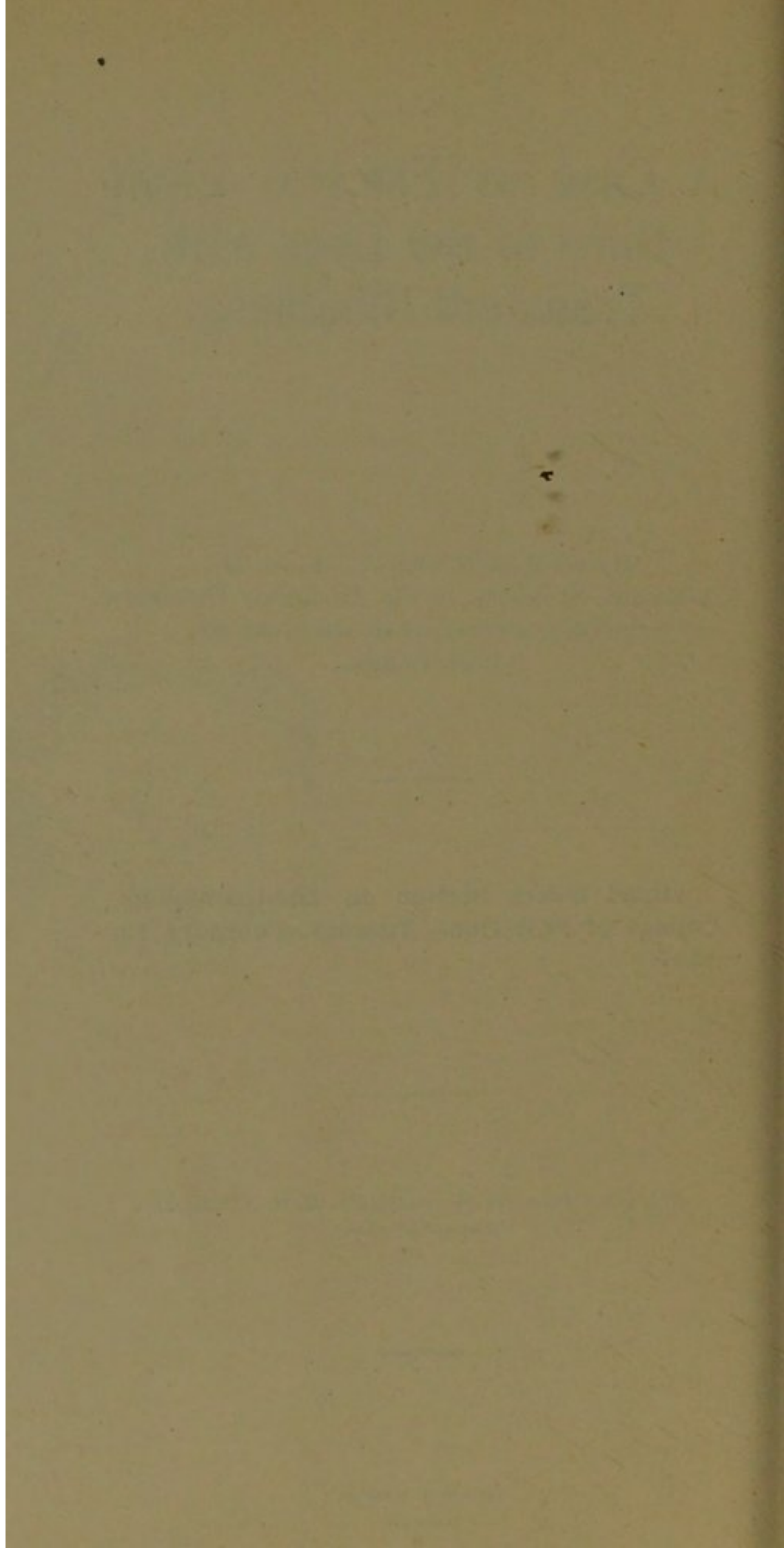
A Case of Electric Light Burn of the Eyes with Transient Blindness.

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mologist to Germantown Hospital,
Philadelphia.

(Read before Section in Ophthalmology,
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A CASE OF ELECTRIC LIGHT BURN OF THE EYES WITH TRANSIENT BLINDNESS.

BY BURTON CHANCE, M. D.,
Assistant Surgeon, Wills Hospital; Ophthal-
mologist to Germantown Hospital,
Philadelphia.

At one o'clock on the morning of January 4, 1907, I was called to attend a young man, a scientific experimenter in an electric light laboratory. He complained that he had been aroused about three hours before by sudden and violent pains in his eyes with loss of sight. He had been working for several hours during the day over an arc-lamp composed chiefly of ultraviolet rays.

When first examined there was an intense dread of light, even for the dull rays from the street lamps which shone into his dark bed chamber; and, when I lighted a small pocket candle, lacrymation became profuse. The lids were puffed and brownish, their pigmentation being denser than that of the surrounding skin. In addition to the edema of the lids, there was chemosis of the bulbar conjunctiva. The corneas were singularly dry and, about the peripheries, upon their surfaces, were several small blisters. In spite of the intense photophobia the pupils were not sharply contracted.

A few drops of cocain and of scopolamin quieted the eyes sufficiently for me to examine them. A rapid view of the fundus disclosed no exudations, but the tint was grayish like that seen in black men, and the retinas appeared to be edematous. In all respects the right eye was more affected than the left. After repeating the cocain and scopolamin solutions, and ordering that hot compresses should be applied instead of cold ones which had been used for the past two

hours, I left the patient in a completely darkened room. At half past eight there was marked regression of all the symptoms, but the sight had not been restored. Hot lead-water and laudanum lotions were then ordered. At five o'clock, when I again visited the man, he was out of bed, for his sight had begun to return and all of the symptoms had abated.

On the next day there was neither edema nor chemosis, but on the right upper lid there was an erythematous patch, crossed by fine vessels looking like a flat nevus, and there was another patch over the lacrymal bone on the left side of the face. These patches, the young man said, had been produced by the exposure to the lamp's rays. Superficially in the lamina at the periphery of the cornea of each eye, were fine pellucid dots, or masses, of colloid material; the epithelium over them was not raised. In the center of the right cornea was an old macule. There were no signs of vascularity and the corneal surfaces were glossy; it was not possible to judge of their sensitiveness because of the anesthetizing solutions. The pupils were now widely dilated; along the upper nasal border of the right were clumps of uveal pigment, while across the corresponding quadrant of the left were stretched fine filaments of retained membrane. The temporal halves of each fundus had become of a pale orange hue, and the retinal edema had subsided. The patient had passed a comfortable night; his sight had returned, and he was now able to read 5/10, and 5/7.5, Snellen. Three days later, at midday, the visual acuity equaled 5/5:5/3. There were fewer spots in the corneas; the man moved about freely, with his eyes shaded by dark glasses, and the next day he returned to his laboratory.

This young man was engaged in the analy-

sis of electric-lamp lights, and he had been studying a lamp consisting of flaming arc-carbons, composed of a mixture of chemical salts and carbon, which were of six-hundred candle-power for a three ampere lamp, though he had used one of two-thousand candle-power. The arc itself gave the light, that is, the light was produced by the efflorescence of gas generated by the approximation of the two carbons rather than in the ordinary way by their conjunction. He had used no screens nor shades except the large glass globe over the lamp. His usual work consists in the study of the best composition and the manufacture of these special carbons and in trying to obtain the greatest light for the least electric power employed. He usually worked ten feet distant from the lamp, but, on the day in question, he had been working from a few minutes to an hour or more at a time, at only two or three feet away.

The first signs noted by the subject of this paper were fleeting blind-spots about his work bench, and a dimness of all other lights, together with distinct redness of flames which he knows to have contained red elements, though white and other colored lights were not so affected. True images were not distorted; neither were after-images unusually destroyed. Then he had a sensation as though his eyes and lids had been sunburned, and on opening and closing his lids the membranes seemed parched. Six hours after leaving the laboratory the violent symptoms set in.

In the three weeks succeeding he complained neither of blind spots nor of distortions. Yellow gas flames appeared red for a short time after lighting; and he continued to be sensitive to arc-lights in the laboratory in spite of his careful use of eyeglasses, and shades over the lamps.

On February 7, again at midnight, the patient came to my house complaining of discomfort of his eyes and lids, of "darkness," with halos about lights and intenseness and deepness of red flames. The eyes were sensitive without any external symptoms except injection of the scleral conjunctiva. The irises reacted well and the pupils remained at about 5mm. The retinas were distinctly more granular than at the previous examinations and they appeared to be of a veiled orange color.

For this attack atropin was instilled, and I insisted upon the young man's abandonment of his work, and for him to rest for at least two weeks.

The next day no distinct scotomata could be mapped out, although the form-fields were contracted somewhat and colors were faint until at about 15 degrees, within which radius all were quite distinct and were promptly recognized; so also were they seen at a distance, yet red cards, equivalent to the perimeter colors, appeared black in the shaded angles of the room. He declared he had neither distortions nor annoying after-images.

It is my belief that the effects here described were produced not by any specific element in the rays composing the light, but from the closeness and duration of the observation as well as by the intensity of the flame and the light rays flowing from it. I do not know to what temperatures such powerful lamps as those this man worked at are capable of developing. I have thought it possible for concentrated solar rays to produce the same effects as prolonged exposure to electric rays would; and I do not believe, though the man does, that the ultra-violet rays caused the burns in this instance.

This story is rather lengthy, and no doubt such details are familiar to you all, yet I

believe it is well for us to recall them by a study of this case. Laboratories are being erected and experiments in photodynamics are being pursued as never before. It is for us to warn all persons engaged in such investigations of the dangers attending the careless exposure of their eyes to the rays from powerful lamps.

Instances of light blindness have occurred in my public services but I have had no opportunity to study them. Cases of electric-light blindness and burns are not really rare. Although they have been but little written about, there is sufficient literature upon the subject for their characteristics to be generally understood. Their likeness to the symptoms produced by incautious gazing at the sun, as at an eclipse (some of the effects of which were marked in my own person several years ago), as well as to those of snow-blindness has also been noticed. It has not seemed necessary to me, therefore, in this paper, to do more than to describe a single instance which has come under my observation.

