120,000 r both solutions showed considerably less birefringence, and again the loss was much greater for the nucleate than for the nucleohistone.

Since the magnitude of relative viscosity and the intensity of flow birefringence are both indicative of the degree of molecular asymmetry, the above changes in these properties probably represent a degradation or partial depolymerization of high molecular weight particles initially present into shorter, more symmetrical chains or segments. Experiments are under way to determine the nature and extent of the breakdown and the size and weight of the degraded particles.

Similar X-ray-induced changes in the molecular configurations of the nucleic acid components of living cells can be expected. Such changes may very probably (1) represent the initial step in the production of gene mutations and chromosomal breaks and (2) be instrumental in causing a breakdown of the normal nucleic acid metabolism of the cell.

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Effect of Long Ultraviolet Radiation on the Human Eye

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The results of an investigation (*2*) which has received widespread attention (*1, 3*) indicate that visual function is deleteriously affected by radiant energy of wave lengths from 300 to 365 mμ. The investigation showed that the absolute light threshold of baby chicks was raised by prior exposure to radiant energy of wave lengths as long as 360 mμ, and it has been inferred that these results apply to human beings.

It is important, therefore, to determine whether or not ultraviolet radiation of wave lengths such as abound in sunlight penetrating the earth's atmosphere—that is, longer than 320 mμ—is harmful to the human eye. If such radiation is harmful, the almost universal wearing of sunglasses outdoors would be indicated.

The radiations from a 1,000-watt mercury arc operating at about 30 atmospheres pressure were filtered so as to remove most of the visible and almost all of the ultraviolet radiation shorter than 320 mμ. The transmission characteristics of the filter combination as determined by measurements with a Beckman spectrophotometer are shown in Fig. 1. Seven individuals, ranging in age from 22 to 38 years, fixated this filtered source at a distance of 30 cm. for five minutes with the left eye while the right was covered. The foveal light-difference sensitivity and critical flicker frequency of both eyes of these individuals had been previously determined. The testing methods employed were sufficiently sensitive to detect characteristic individual differences.

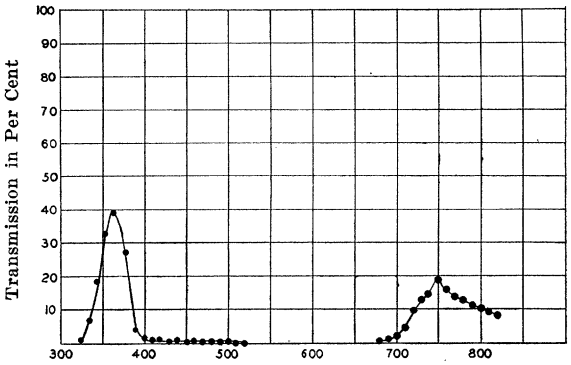

FIG. 1

The observers were tested five minutes and one hour after exposure to the arc. There was no statistically significant difference in the results between the two eyes of six observers or between the measurements of any one eye before and after irradiation. The seventh observer showed a higher light-difference sensitivity threshold in the left eye (exposed) both before and after irradiation. In this individual the irradiation produced a statistically nonsignificant improvement in the light-difference sensitivity of the left eye.

The ultraviolet energy above 320 mμ which was concentrated on the fovea in these experiments was greatly in excess of what could ordinarily be obtained in nature except, for example, by fixation of the sun, in which case eclipse blindness would result from absorption of visible and infrared radiation by the pigment epithelium.

The discrepancy between the results of the previously reported experiments on chicks and ours on human beings might be considered to be attributable, among other factors, to the use of the opticokinetic response in the dark-adapted eye as a test on chicks and the light-difference threshold on human beings. In civilian life it may be doubted whether the average individual ever reaches a comparable state of dark adaptation except possibly when asleep. The most likely cause for the discrepancy between results is, however, the marked difference in absorption and gen-

eral physiological characteristics between the eyes of baby chicks and those of adult human beings.

It is concluded that ultraviolet radiations longer than 320 mμ encountered in nature are without deleterious effect on these two important functions of the normal eye.

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Maintenance of Respiratory Activity in Stored Peripheral Nerve

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Two-centimeter sections of the proximal portion of the sciatic nerve of the adult white rat were used in these experiments. Respiratory activity was measured in a Warburg-Barcroft apparatus, using a Krebs-Ringer suspension medium buffered at pH 3.38. In most experiments the suspension fluids contained 0.2 per cent glucose; in a few, 0.2 per cent sodium

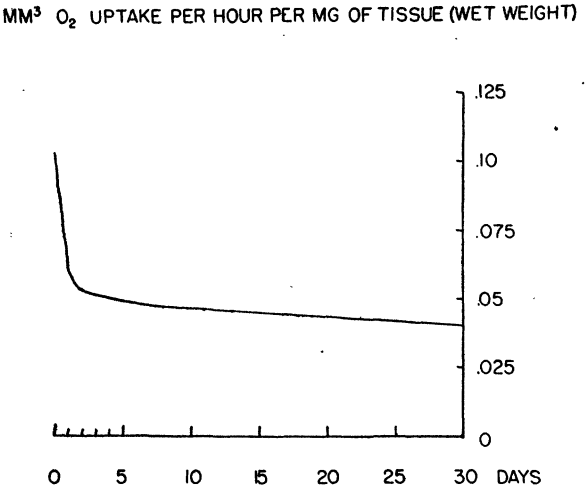

FIG. 1. Oxygen uptake of rat peripheral nerve preserved for various periods of time as described in text.

lactate was used; and in a few, plain solution was employed. Preserved specimens were kept aseptically in cotton-stoppered Erlenmeyer flasks in plain Krebs-Ringer solution at 5.5° C. Each experiment involved duplicate specimens run simultaneously; calculations were based on wet weight. In a series of preliminary runs simultaneous determinations of oxygen uptake of minced rat brain were used as checks in addition to the three thermobarometers used as controls. Altogether, 44 determinations were made.

The results with the use of 0.2 per cent glucose medium are plotted in Fig. 1. All significant points on the curve represent an average of at least three experiments. Similar results were obtained in a lactate or plain medium, although these experiments were not continued beyond seven days. The oxygen uptake of fresh adult rat sciatic nerve in a glucose medium was 0.104 mm.³ O_2/hour/mg. of tissue, wet weight, or approximately one-tenth that of whole minced brain. After preservation for 2 days this value dropped to 0.055; after 30 days, to 0.044. The actual decline in oxidative activity is probably less than that indicated by the curve inasmuch as the wet weight of the nerve increases by at least 20 per cent after immersion in a protein-free solution of the Krebs-Ringer type (*1*). A correction for this factor still needs to be made and will demonstrate an even better preservation of oxidative activity than is indicated by the curve.

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A High Rate of Natural Plasmodium Infection in *Anopheles crucians* [1]

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The principal vector of human malaria in eastern and southeastern United States is accepted to be the common and abundant ***Anopheles quadrimaculatus*** Say, and research and control programs for years have been based upon this hypothesis. For various reasons, such as differences in feeding habits or abundance, or failure to demonstrate infection in nature, the other species of Anopheles are not regarded as important factors in the transmission of Plasmodium.

During the summer of 1945, an extensive anopheline dissection program was carried out in an endemic malaria area along the Santee Swamp in coastal plain South Carolina. *A. quadrimaculatus* showed a gland infection rate of .175 per cent (33 infected mosquitoes in 18,826 dissected). By early November that species had disappeared from the usual resting places, although a number of *crucians* (= *crucians crucians*)

[1] The work upon which this note is based is part of a comprehensive Field Research Study of Malaria being conducted jointly by the South Carolina State Board of Health and the U. S. Public Health Service, Office of Malaria Control in War Areas. Detailed papers on various phases of the program are in preparation.