in three experiments; in each experiment a different set of lizards was used. Tests conducted on 97 days have yielded records of over 107,000 movements.

The locomotor movements of the initially less mobile groups have been plotted in percentage relative to the initially more active matched groups for periods of 24 hours (Fig. 1). Indications of an increase in activity of the experimental group appear in 2 to 3 days after the first operative procedure. A shift in favor of the experimental group, reversing the preceding baseline relationship, tends to appear within 6 days. Under the limitations of the experiment the shift in relative activity may persist, with temporary setbacks, for 8 to 11 days.

A satisfactory statistical model for the data is not available. Use of the chi-square test seems to indicate that the first shielding resulted in activity differing from the baseline performance at a level of high significance ($P = < 0.001$) in each of the three experiments; the control operation during the establishment of the baseline in May, experiment 3 (Fig. 1) did not appear to induce a significant difference in activity ($p = > 0.10$). But the lack of independence of the successive scores renders the chi-square test inappropriate.

Although increase in activity following the first shielding of the "eye" seems to be clearly evident, the attempts at reversal in the terminal phases of the experiment were not uniformly successful. A diminished response would not be unusual in animals approaching a state of starvation. To avoid deaths in the last testing phase, the number of individuals had to be reduced, in experiments 2 and 3, from 18 to 14 and from 12 to 8 per set, respectively. A set of 20 lizards was carried through experiment 1 in fairly good condition, but the activity reversal was only slight and did not seem to persist. The positive response in experiment 2 is opposed by the failure in experiment 3. The latter can be attributed perhaps to the small number of animals—four per group—and to the somewhat greater duration of the experiment.

A pulsation in the relative scores in cycles of 3 to 5 days is noteworthy. Examination of the raw data indicates that this is related to bursts in activity, primarily in the experimental groups; such bursts of activity appear to be periodic escapes from the decline in activity that tends to occur with time. This finding is in accord with the contention that the parietal eye, acting as a photothermal radiation dosimeter, may play a role in a homeostatic mechanism that modulates activity (*1, 4*).

An increase in metabolic rate following ablation of the parietal eye has been reported for *Anolis* (*5*). Hypertrophy and hyperplasia of the thyroid may follow parietalectomy in iguanid lizards (*1*) and pineal ablation in the guppy, *Lebistes* (*6*). An increase in locomotor activity following a shielding of the parietal eye, a part of the pineal complex, is consistent with these other findings (*7*).

ROBERT GLASER
Museum of Vertebrate Zoology, University of California, Berkeley

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2. J. S. Szymansky, *Arch ges. Physiol. Pflüger's* 158, 343 (1914). The apparatus used was modified from one constructed and contributed for this work by Dr. R. C. Stebbins.
3. The exposure meter used in this study was a Weston–Universal Master, model 715.
4. A report on the role of the parietal eye in 24-hour endogenous locomotor rhythms is in preparation.
5. H. J. Clausen and B. Mofshin, *J. Cellular Comp. Physiol.* 14, 29 (1939).
6. O. Pflugfelder, *Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 148, 463 (1956).
7. I am indebted to Dr. R. C. Stebbins for providing the impetus for this study and for helpful advice throughout its conduct. I also wish to thank Drs. R. M. Eakin, F. Evans, and W. B. Quay for comments on the manuscript, Dr. E. L. Scott for advice on statistical matters, and Gene Christman for aid on the preparation of the graph.

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Use of Borosilicate Glass in Ozonizer Tubes

Abstract. The surfaces of borosilicate glass deteriorate in the presence of ozone. The formation and accretion of silica particles in the glass ozone generating tube of a laboratory ozonizer, of the silent discharge type, are responsible for electric breakdown at high secondary voltages on the transformer.

Numerous publications describing the conditions requisite for constant-output ozone production by means of the silent discharge method have appeared. Although a "soft" soda-lime glass is recommended for construction of discharge tubes, through which oxygen or air to be ozonized is passed (*1*), use of Pyrex borosilicate glass has become popular for ozone generators of both homemade and commercial origin.

The ozone generator employed in this laboratory was constructed with a discharge tube of Pyrex glass concentric about an inner tube containing a water-cooled electrode, connected to the secondary high voltage of a variable transformer. The outside of the discharge tube was wrapped with aluminum foil, connected to the transformer ground. Dried air was passed through the discharge tube and circulated through an ozone chamber.

This apparatus was employed successfully in the determination of ozone resistance of elastomeric materials for a period of about 10 years. Recently, electric breakdown at secondary voltages above 7500 volts was observed. Lowering the secondary voltage below this value resulted in resumption of normal silent discharge.

Examination of the glass discharge tube revealed the formation of a powdery scale on the surfaces exposed to the air stream. In some cases, particle accretion had built a bridge partially or entirely across the tube. Replacement of the discharge tube led, of course, to normal operation of the ozone generator.

It was suspected that this powdery substance was an organic material, perhaps derived from the Tygon connections in the air line of the apparatus. It proved, however, to be insoluble in, and unaffected by, organic solvents or hot nitric or chromic acid. Spectroscopic analysis determined the presence of silicon and trace quantities of iron and sodium and the absence of magnesium, calcium, potassium, aluminum, or boron. A routine silica determination showed that the material contained 98 percent of silica. Microscopic examination disclosed microcrystalline particles and aggregates. That the observed silica deposits and growths were responsible for breakdown at high applied potential is evident, as is their origin from the glass of the discharge tube. It is the reason for such deposits occurring that is mysterious.

Examination of fragments of the glass surface revealed a powdery crust of silica, unevenly distributed in thickness. The material, in some spots, had formed stalactites extending into the air gap in the discharge tube. The effect of these stalactites, aside from reducing the distance of the air gap, thereby lowering the threshold voltage at which an arc would form, is to provide focal points at which charged particles will collect. Hence, point discharges may be expected to occur at these stalactites at very much lower voltages than those customarily needed for formation of an arc across the air gap.

The mechanism of the formation of silica scale under these conditions, and the particle build-up of this scale, should prove of interest for further study. We are, at present, unable to suggest any explanation for this phenomenon. It is felt, however, that these observations may be of interest, considering the widespread use of the ozone generator as an analytical tool (*2*).

RICHARD F. GROSSMAN
ALLEN C. BLUESTEIN
Research and Development Laboratory, Anaconda Wire and Cable Company, Marion, Indiana

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2. We wish to thank Dr. John Young of this laboratory for the spectroscopic analysis that he kindly provided.

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