machined nylon fitting with a 6-mm, internally threaded orifice was positioned on the calvarium over the right lateral striate cortex and anchored in place with surgical grade methacrylate placed around several 000-120 (ca. 1 x 3 mm) stainless steel bolts fixed in clean, dry bone. The orifice was sealed with a threaded plug. Prior to placing this fitting, 0.2-mm (32 gauge) electrodes were placed over striate cortex to lie on either side of the orifice where the microelectrode would enter.

The chronically implanted electrodes were connected to a subminiature socket having coded jackscrew guides. The sockets were modified so that connection at time of surgery could be made simply by crimping the ends of the electrodes into 0.64-mm OD, fully annealed (soft) brass tubing.

On the day prior to the terminal experiment with microelectrode recording, 4–14 days after initial surgery, the optimal parameters for stimulation of OT and OR were determined for evoking potentials in OR or striate cortex in the awake, lightly restrained monkey. Careful observation revealed no behavioral effect whatever associated with these stimuli (up to 2.0 mA).

Preparation on the following morning required about 45 min of anesthesia with methohexital (Brevital, Lilly), given intrapleurally. A vein was catheterized, a contact lens placed on the right eye, and, using a laryngoscope, the trachea was intubated.

Since the monkey was subsequently to recover from the anesthesia and remain paralyzed for several hours, great care was taken that it be free of pain and discomfort. The head was firmly and painlessly held by the electrode socket cemented to the skull. The endotracheal tube was covered with 5% lidocaine ointment (Xylocaine, Astra). The area of venous cannulation was infiltrated with 4% lidocaine and the cornea was anesthetized with topical application of the same preparation. Possibly uncomfortable movement of the tracheal or venous cannulas was precluded by securely fixing them. The animal lay on a sponge-rubber mat and heating pad, thermostatically controlled to maintain rectal temperature at 37.5°C. Just prior to paralysis, when the animal had almost recovered from anesthesia, the respirator was set to approximate as closely as possible the depth and rate of spontaneous respiration and to maintain the $P_{CO_2}$ at its normal level. EKG, EEG of striate cortex, and $P_{CO_2}$ were continually monitored. Hydration was maintained by iv drip, 5 ml/h per kg of 2.5% dextrose in half-strength lactated Ringer solution (Abbott).

In preliminary experiments it was discovered that gallamine triethiodide (Flaxedil, American Cyanamid) or succinylcholine (Anectine, Burroughs Wellcome) given slowly in doses sufficient for paralysis are often lethal in squirrel monkeys. Decamethonium (Syncurine, Burroughs Wellcome), however, 0.75–2.5 mg/kg (administered to effect) was both safe and effective. As a precaution against histamine release, diphenhydramine (Benadryl, Parke Davis) was given intramuscularly, 5 mg/kg, about 20 min prior to the decamethonium. This dosage produces no sedation in otherwise untreated animals. Additional diphenhydramine was given if the experiment lasted beyond 8 h, and decamethonium was given as needed.

To be certain that paralysis of the eye muscles was complete, electrodes were implanted in the frontal eye field of two animals. Electrical stimulation here produced abrupt and vigorous saccades which, as observed with a 40× binocular dissecting microscope, completely disappeared long before respiratory paralysis was achieved by administration of decamethonium. Nor were there any signs of drifting of the eye as judged by retinal landmarks during prolonged paralysis. The same is not, however, true in macaques, where drifting movements of the eyes even after combined infusion of decamethonium and succinylcholine could sometimes be observed.

Mydriasis and cycloplegia were induced with phenylephrine (Neo-Synephrine, Winthrop) and homatropine prior to placing the contact lens on the right eye. The lids of this eye were held free of the pupillary margin by adhesive plaster, and the other eye was covered with an opaque patch. The animal was placed so that the open eye was 57 cm from a rear-projection screen, 1 cm on the screen thus subtending 1° of arc. The screen was 80 cm high, 56 cm wide. The projection of the optic disc on the screen was readily determined with an ophthalmoscope that rotated 180°. The fovea, however, could seldom be visualized adequately because of the dark pigmentation of the retina, relatively small pupil, and cramped working space.

The eye was refracted by streak retinoscopy and the proper lens placed before it to bring it to focus on the projection screen.

### *Stimuli*

While the microelectrode was being advanced through striate cortex in search of single units, the projection screen was covered with a kaleidoscopic pattern of continuously moving translucent colored bars from a special projector (Edmund Scientific) and stroboscopic flashes at 0.5 Hz, generated by a Grass photic stimulator (estimated from manufacturer's specifica-