group. Three had some delay but at the end of six hours were excreting "free water." Two subjects responded immediately to the water loads. When a period of antidiuresis occurred in the hydrated infants, it could not be attributed to significant depression of glomerular filtration rates nor to the type of anesthesia administered. In all subjects, regardless of their response patterns, normal renal excretion of water seemed to be present by six hours postoperatively. Hence, even during and after relatively short surface surgical procedures, varying responses are noted in respect to the renal excretion of water in infants. Nonhydrated infants exhibited a severe delay in renal water excretion. Hydrated infants exhibited responses that varied from delayed to prompt. In all cases studied, when a period of antidiuresis existed, it appeared to end six hours postoperatively.

**Effect of Inhalation Anesthetics on Cardiac Cell Membrane Potentials.** Evan L. Frederickson, M.D., Joseph V. Levy, Ph.D., and K. Ichiyanagi, M.D. *University of Washington, School of Medicine, Seattle 5, Washington.* There is ample evidence that inhalation anesthetic agents pass through cell membranes; this is easily demonstrated in red blood cells when separated from plasma. Changes in the cell membrane as recorded by transmembrane action potentials have not been demonstrated, and no references are known to us referring to the action of inhalation anesthetics. Transmembrane potentials from single cells of isolated rabbit atrial tissue were recorded *in vitro* during perfusion with modified Tyrode's solution containing various concentrations of cyclopropane, oxygen and carbon dioxide. These were recorded by means of a glass capillary microelectrode adapted for moving tissue (*Woodbury, J. W., and Brady, A. J., Science 123: 100, 1956*). Samples of the perfusate were analyzed for these 3 gases, at various times. Controls were run by replacing the cyclopropane with nitrogen to see if the effects noted were due to hypoxia. Contractile tension was recorded by utilizing a transducer attached to one end of the isolated atrium while the other end was supported by stimulated electrodes. Rate was controlled by driving at a constant rate. Results demonstrate that cyclopropane does effect the transmembrane action potential (MAP) by shortening the duration mainly by decreasing repolarization time. This change is most marked in phase I. However, this effect is blocked by atropine. There is no significant change in membrane resting potential even at high concentrations of cyclopropane—in contrast to the change occurring with hypoxia. The negative ionotropic change that occurs is directly related to concentration and is not changed by blocking the MAP changes with atropine. This is the first evidence of the effect of inhalation anesthetics on cardiac cell membrane we have seen wherein the dissociation of electrical and contractile events has been recorded.

**Blood Gas Exchange During Endobronchial Anesthesia.** Mitsugu Fujimori, M.D., W. Curtis Pearcy, M.D., and Robert W. Virtue, M.D., Ph.D. *Division of Anesthesiology, National Jewish Hospital, University of Colorado Medical Center, Denver, Colorado.* The value of endobronchial intubation in certain instances, as compared to endotracheal intubation, has been recognized for some well-defined reasons. Among these are that purulent material, blood, or secretions do not flow from the diseased lung to the good lung (*Bonica, J. J., and Hall, W. M.: Anesthesiology 12: 344, 1951; Bjork, V. O., Carlens, E., and Friberg, O.: Anesthesiology 14: 60, 1953; Oech, S. R.: Anesthesiology 16: 468, 1955, and Ruth, H. S., Grove, D., and Keown, K. K.: Anesthesiology 9: 422, 1948*), and that the surgeon has a nearly motionless operative field. Since Bonica and Hall gave no measurement of blood gas concentrations using this technique, it seemed worth while to measure blood gas exchange during administration of anesthesia through one lung and through both lungs. Measurements of end-expiratory (alveolar) carbon dioxide, arterial blood carbon dioxide content, and arterial oxygen saturation were made in 25 patients undergoing thoracic surgery, chiefly for lobectomies, with cyclopropane anesthesia. Premedication was 100 mg. pentobarbital and 0.4 mg. scopolamine per 70 kg. body weight. Anesthesia was induced in about half the patients with 75 to 150 mg. of thiopental before administering the cyclo-