pattern was presented in each modality) show less than 15 percent reorganization of the pattern when patterns began at nonpreferred start points. Therefore, sequences of either left-right or modality elements were perceived as structured patterns, but sequences in which the left-right elements were 'embedded' in an irrelevant alternation of modalities (every two, four, or eight elements) were organized by modality, not by pattern structure.

Differences in the rate of identification of patterns are determined by the modality or pair of modalities used to present the pattern. The rate of identification of patterns presented in pairs of modalities is not necessarily slower than identification of patterns presented in one modality. Only the A-T combination produced poorer performance than its component modalities, and for this combination, performance was poorer whether the elements of the stimulus were organized by modality (method two) or by pattern structure (method three). The physiological similarity of the A and T modalities (*7*) may cause confusion when the pattern elements presented in these modalities must be integrated. Alternating between the T and V modalities, and especially between the A and V modalities, seems to produce a sensation of "snapping back and forth" between modalities which is absent when alternating between the A and T modalities.

STEPHEN HANDEL
LOUIS BUFFARDI
Department of Psychology, Kansas State University, Manhattan 66502

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Effect of Mass on Frequency

Sadeh, Knowles, and Au have postulated (*1*) an effect of mass upon frequency. This effect, a lowering of the frequency of an electromagnetic wave in the presence of mass, reconciles the data of two experiments with theory. They mention a round-trip experiment wherein signals were reflected from Venus and Mercury which showed no frequency shift as the line of sight approached Sun. They also mention the need for additional data.

A similar experiment was performed by the Jet Propulsion Laboratory with the Mariner IV spacecraft when its path approached the sun in March 1966. This, also, was a round-trip experiment. Pure monochromatic waves were beamed toward Mariner IV, which, after frequency translation to 2295 Mhz, were rebroadcast toward Earth. The frequency spectrum of the received signals was measured.

Altogether, 17 spectrograms were taken as the Mariner IV–Earth–Sun angle varied from 0.9° to 2°. Although the spectra were considerably broadened by the double passage through the solar corona, the central frequency could be estimated easily to better than 2 hz.

Within that accuracy, no anomolous frequency shift was detected, hence our data do not present confirming evidence for the mass-frequency effect.

RICHARD M. GOLDSTEIN
Jet Propulsion Laboratory, California Institute of Technology, Pasadena

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Rotating Membrane Cell

The technique of Litt and Smith (*1*) which depends on the use of an unsupported rotating membrane as a more accurate means of assessing permeability of dialysis membranes of the artificial kidney has been used in this laboratory (*2*).

Some objections to the technique raised by Litt and Smith, such as complexity, thermal control, and limiting speed of 55 rev/min are not encountered in our cell (Fig. 1). Our cell consists of two 65-ml chambers on either side of a vertically mounted membrane. The chambers are filled with 50 ml of fluid, and a 15-ml air space is left. The entire cell is clamped to a rotating shaft and allowed to spin. Because the chambers are not filled, the fluid remains stationary with respect to the angular direction while the membrane and cell rotate. We have operated at speeds up to 300 rev/min with no problems of leaks, heating, or "carry-over" of the fluid. Calculations showed that above 75 rev/min the permeability did not change with increased rotational speed.

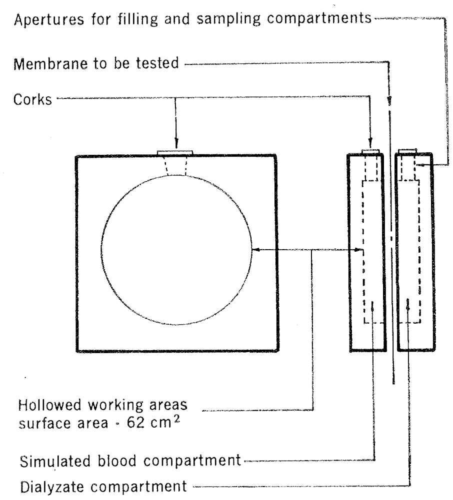

Fig. 1. Schematic diagram of rotating membrane test cell.

Outstanding features of the cell (Fig. 1) are its simplicity, low cost (under $10), and ease of operation (1 hour per membrane determination). We use this cell routinely to test the permeability of new lots of membrane received from the manufacturer.

T. M. REGAN
Department of Chemical Engineering University of Maryland, College Park
W. G. ESMOND, C. STRECKFUS
A. M. WOLBARSHT
Department of Thoracic and Cardiovascular Surgery, University of Maryland School of Medicine, Baltimore

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