increases in the probability that this object occurs as part of the stimulus field in the subject's overall repertoire of responses. Although this seems a reasonable approach, the present data present some difficulties for this view. During rearing, the monkeys in group A did not have the same opportunity to learn the characteristics of other monkeys as did the monkeys in groups B and C. Yet, the monkeys in group A did prefer each other to the alternative choices available. Thus, it is possible that the preference shown by group A monkeys was not based on the conditioning of approach behavior to specific social cues, as is suggested by the stimulus-sampling theory of attachment. It is possible that the behavior of group A was motivated by avoidance of cues contained in the social behavior or countenance of the other two types of monkeys. Thus, there may be at least two distinct kinds of processes in the choice of a social stimulus. The conditioning of specific social cues to the response systems of an animal may be one factor, and the avoidance of nonconditioned cues may be a second important factor in the formation of social attachments.

The specific cues used by the monkeys studied here are not known. Neither do we yet know how our animals differentiated between the stimuli. The discrimination may be based solely on differences in the gross activity of the stimulus animals, or on more subtle and specific social cues. Analysis of the specific stimulus components operating in this situation may clarify the nature of the social cues involved. The important question to be answered is whether the types of cues used in selecting a partner are qualitatively different for different rearing conditions, or whether the same aspects of stimulation are simply weighted differently as a function of an animal's rearing history.

CHARLES L. PRATT
GENE P. SACKETT
Primate Laboratory, University of Wisconsin, Madison 53706

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Mercury: New Observations of the Infrared Bands of Carbon Dioxide

Considerable interest has attached to reports by Moroz (*1*) that the absorption bands of CO_2 at 1.57 to 1.61 μ are enhanced over those in the spectra of the sun and moon. Spinrad *et al.* (*2*) observed the spectrum of Mercury at high dispersion in the region of the weak $5\nu_3$ CO_2 bands in order to determine an abundance value independent of pressure broadening which affects the bands at 1.57 to 1.61 μ. The weak bands were not detected, but an upper limit of 57 meter-atm of CO_2 was established. Then, in order to account for the enhancement found by Moroz, Spinrad *et al.* noted that a surface pressure greater than 3.3 mb is required. The observations of Spinrad *et al.* require that the partial pressure of CO_2 be less than 4.2 mb.

We traced the 1.6-μ bands of CO_2 in the Mercury spectrum on 26 August 1966, using the 61-inch (1.5 m) reflector of the Lunar and Planetary Laboratory of Catalina Observatory and the infrared spectrometer described by Kuiper *et al.* (*3*). Our spectra have a resolution ($\lambda/\Delta\lambda$) of about 500, which is three times that of the Moroz spectra. Mercury was observed at relatively small zenith angles (22° to 43°), and solar comparisons were made at similar zenith distances on the same day. Care was taken to fill the optics in the same way for both Mercury and solar observations, and the same slit dimensions were used. Sunlight was diffusely reflected from a smoked MgO screen.

From our observations the equivalent widths of the 1.57- and 1.61-μ bands are 12.5 ± 1.9 Å and 10.0 ± 2.3 Å, respectively; while for the solar comparisons the equivalent widths are or 12.4 ± 0.7 Å and 10.5 ± 0.8 Å. Thus, within the error of the observations, there is no evidence here of a carbon dioxide atmosphere on Mercury.

We would emphasize that these observations are difficult and that we have far fewer individual tracings than Moroz does, though ours have higher resolution. Our results are to be regarded as preliminary, as many more tracings of these bands are needed (*4*).

ALAN B. BINDER
DALE P. CRUIKSHANK
Lunar and Planetary Laboratory and Department of Geology, University of Arizona, Tucson

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Homing in Pigeons

From data gathered by following individual pigeons during flight, Michener and Walcott [*Science* **154**, 410 (1966)] reason that their pigeons could not have been homing by use of landmarks alone and that their results "strengthen the conclusion that pigeons do not pilot most of their courses by familiar landmarks, even over landscape that they cross frequently." I think their data support the opposite conclusions.

The circuitous tracks flown by their pigeons and the frequent correspondence between consecutive tracks indicate use of landmarks. No highways are shown on their maps, but, when I compared them with my roadmap, 9 of the 11 tracks reported follow major highways, often quite closely; half of another follows the Merrimack River. Only one seems not to follow prominent landmarks; half of this curving track was repeated by the same bird on its next flight. Ten tracks refer to one pigeon; this bird's 21 earlier training flights were not followed, and during these it could have accumulated a knowledge of many landmarks, including "unfamiliar" Worcester. Minor variations in tracks from flight to flight can occur when the same landmarks are used; major variations suggest use of different sequences of landmarks.

During overcast the birds observed by Michener and Walcott did not fly when released more than 10 miles (16 km) from the loft (six releases of unknown individuals were reported), but they cite flocks homing "routinely" from greater distances under overcast. Why should one think that pigeons in flocks use navigational cues different from those used by lone pigeons?

All of Michener and Walcott's data suggest that their pigeons were using landmarks at all times when homing. No evidence is presented to show that the sun had any effect other than what they observed—that is, of stimulating