CHAPTER 6

CONCLUSIONS

The conclusion from this experimental study using steel and brass surfaces may be summarized as follows.

Referring to Figs. 4-1., 4-3., 4-5., as soon as the slider in contact with the rotating ring begins to move the coefficient of friction between the slider surfaces begins to decrease from the static coefficient. This decrease continues with the increase in speed, till a constant value of kinetic friction is reached at high speed. The decreasing rate is smaller when the sliding speed is high. When vibration is applied to the slider the coefficient of friction is reduced, the reduction being smaller when the sliding speed is high.

The biggest reduction of the coefficient of friction by vibration is at zero speed and at very slow sliding speed. The reduction is smaller at high speed. Probably this is due to the fact that high speed the coefficient of friction is already reduced by a self-induced vibration of the apparatus.

Referring to Figs. 4-2., 4-6., the coefficient of friction increases with frequency of vibration, at a constant speed. Since the coefficient of friction also depends on the amplitude of vibration, the results may be the case where the vibrator gives a large amplitude at lower frequencies.

In Fig. 4-8., the photograph was taken while a heavy vibration was applied to the slider, causing intermittent contact between the sliding surfaces.

Thus during the interval of the slider leaving the ring surface, there is a smaller true contact area and so less friction. Hence the coefficient of friction is reduced by the corresponding change of true contact area.