wind end of the tank about 500 times greater than at the upwind end. In addition the relative shallowness of the interface and smaller density jump across it at the upwind end would increase the entrainment coefficient of Kato and Phillips. From this it is hypothesized that the majority of mixing takes place very near the upwind end of the tank. The evidence is by no means conclusive, but the Richardson numbers calculated from the velocity data taken in the second phase of experimentation support this hypothesis.

The overall Richardson number 16 meters from the upwind end of the tank was 200 with the interface at a depth of 33 cm, 4 hours later it was 267 with the interface at 36 cm. The shear velocity term in the overall Richardson number was determined from Figure 37 and

$$u_{*w} = (\rho_a \, u_{*a}^2/\rho_w)^{\frac{1}{2}} .$$

The interface receeded 3 cm in the 4 hours between the recording of velocity profiles giving an experimental $\bar{u}_e$ of 2.1×10^{-4} cm/sec. The relationship found by Kato and Phillips predicts $\bar{u}_e = 1.1 \times 10^{-2}$ cm/sec.

Some differences between the results of Kato and Phillips are to be expected due to the differences in the scale of the experiments but the same parameters are used in defining the Richardson number so this great difference indicates that some other mechanism may be responsible. There are several possibilities which will be discussed but first a word about the quality of the data is in order.

In the first phase of the experiments an attempt was made to reproduce the starting density profile as consistently as possible so that comparisons could be made between the different runs. For a given wind velocity the position of the interface at the end of three, four, and five hours should give an estimate of the average rate of entrainment over two periods of