angle through which the mirror is turned is the supplement of the angle of contact of the mercury and glass or the value of the angle measured in the air or the other liquid.

Measurements on mercury and glass with air as the third substance yielded somewhat discordant results, as such results usually are. The following taken at different times gives the results for freshly prepared surfaces:

147° 36′ 144° 5′ 146° 19′ 143° 29′ 144° 10′ 142° 59′

These readings represent angles in the mercury.

Next readings with pure distilled water on the mercury were taken. Here a small weight was placed on the cover glass to prevent its floating off. With pure distilled water and clean glass, there is an angle of contact. The following are results for glass, mercury and water:

4° 7′ 5° 45′ 5° 13′ 5° 11′ 4° 46′

with occasionally other results rising as high as 11° which are evidently due to traces of dirt. These angles are measured in the water.

With a strong sulphuric acid solution, the observations are easy and always yield an angle O. Starting with a 25 per cent solution, observations were taken with constantly diminishing concentration with the following results:

Above 2 per cent	0			
2 per cent	5° 59′	6°	very small	0

With the 2 per cent solution the observations are very difficult. There is not the easy decision as in the higher concentration. Somewhere between a 2 per cent concentration and pure water, the angle passes from 0° to about 5°. The exact point of change from zero angle has not been determined but is probably for a concentration of less than ½ per cent.

In the case of three pure liquids in contact along a line, it has been shown that the Neumann triangle is impossible, but, with a solid and two liquids, equilibrium is possible and there may be an angle of contact. In the case of a mercury-water surface in contact with glass, for example, there is an angle as shown above. If T_1 is the surface tension of the water-mercury surface, T_2 of the glass-mercury surface and T_3 of the glass-water surface, the equation of equilibrium is

$$T_3 + T_1 \cos\theta = T_2, \text{ so } \cos\theta = \frac{T_2 - T_3.}{T_1}$$

If $T_3 - T_2 > T_1$, equilibrium is impossible and the angle of contact has become zero. This, in general, represents a condition of instability. For the water and mercury on glass we have stability With the acid-mercury surface, at least for all but the smallest concentrations, the condition is one of instability. In this case, the acid