

EXPERIMENTAL OBSERVATIONS

A study of the seiches in a lake calls, ideally, for simultaneous observations to be made, at a number of places, of the rise and fall of the water level. However, this requires either self-recording apparatus, or a team of observers. On the other hand, it is possible to investigate the seiche at any one particular place, with simple apparatus.

Bottomley (1955 and 1956b) showed that the fundamental oscillation (called a uninodal seiche) has a period of 52 minutes, and the first overtone (or binodal seiche) a period of 27 minutes, though superimposed on some of the recordings taken at Bob's Cove, was a much faster oscillation of period 4.28 minutes. He suggested that this could be interpreted as a transverse, rather than a longitudinal seiche.

Very rough observations by the author at Wilson's Bay with even simpler apparatus (based on the method described by Chrystal (1906; pp. 393-396)) confirm the period of the binodal seiche at about 27 minutes, the trace obtained being shown in Fig. 1. As the measurements were taken at a point which is very

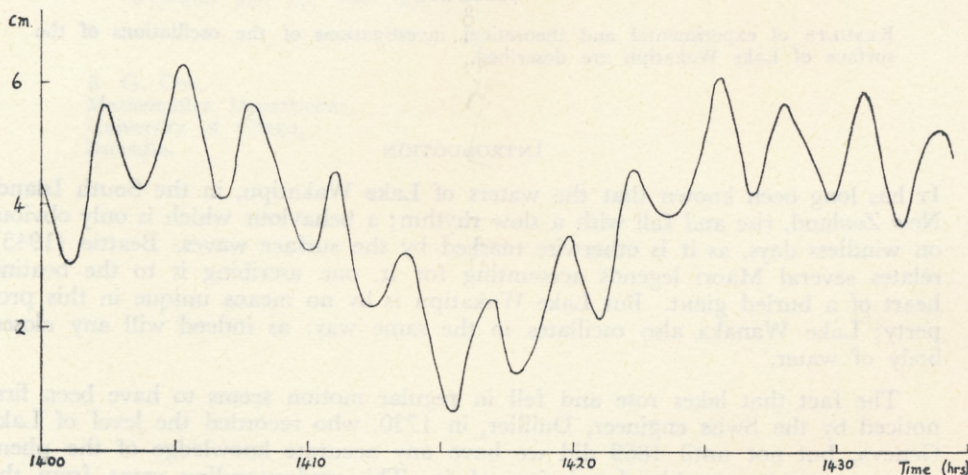


FIGURE 1.—Record of lake surface level taken at Wilson's Bay, Lake Wakatipu, on the afternoon of 27 October 1963, showing two distinct oscillations, one of period 27 minutes and range 6 cm, the other of period 2.9 minutes and range 2 cm.

near the position of the nodal line of the fundamental oscillation, no information could be expected about the latter. However, this time there was an oscillation of period 2.86 minutes superimposed on the record, and this is thought to be significantly different from the 4.28 minutes measured by Bottomley.

Residents at Walter Peak Station have frequently observed an oscillation with a period of about 5 minutes, but as it is not known whether these are accurately made recordings or merely estimates of the passage of time, little significance can be attached to them, except that they are unlikely to be connected with longitudinal oscillations of the whole lake. This is because the higher "harmonics" of a longitudinal seiche are damped out quickly, and so most unlikely to be observed by the naked eye. Chrystal (1908) found that a complex oscillation quickly damps to a composition of uninodal and binodal oscillations, called a dicrete seiche.