

end rested on a spring by means of a similar axial rod having a conical point which turned with very little friction in a conical hole in a brass plug attached to the spring. The purpose of the spring was to keep the cylinder pressed tightly against the clock. A long springy piece of brass was soldered by its lower end to the side of the float and its upper end carried a pencil which pressed lightly against the cylinder. It is easily seen that surface waves might move the float and so obscure the tidal record; hence the whole instrument was enclosed in a long, narrow, vertical box which leaked slightly at the bottom. Thus the water level in the box changed with the slow rise and fall of the tide but surface waves had no effect. The machine was held at the proper level in the water by being solidly clamped to an iron stake driven in the ground.

In preparing for an observation, a sheet of white paper was wrapped around the cylinder. The cylinder was then put in place and the pencil arranged so as to press against it. The exact time of beginning and ending the record being noted, the time corresponding to any particular point on the curve could be deduced after the paper was removed.

#### VI. CURVES OBTAINED AT SPRINGHILL.

The first point at which this instrument was used was immediately above the rapids above Springhill on July 21st and 22nd. The line traced in twenty-four hours indicated a fall of thirteen-sixteenths of an inch, but differed by less than one-sixteenth of an inch from a straight line, indicating that absolutely no tides are propagated above these rapids, at least along the right bank. The next point chosen was just below the rapids, about a quarter of a mile above the Springhill hotel. A twenty-seven hour record was taken on July 23rd and 24th. This showed in a remarkable way an effect frequently afterwards noticed, the great influence of wind. From 6.30 p. m. to 9 p. m. of the 23rd, a strong wind blew down stream, and during this time the pencil traced almost a straight line. At 10.30 it rose about a quarter of an inch, and then fell smoothly to low water at 3 a. m., and rose to