

throughout the state. The general custom is to allow a change in the direction of the magnetic meridian of about  $1^\circ$  in 20 years, or  $3'$  per year. Again it is often assumed that everywhere in Maryland the needle pointed truly north shortly after the year 1800. The appended tables will give the means of judging as to the amount of error made by these assumptions. It will readily be seen that over a large part of Maryland the direction of the needle seemingly never pointed to the true north during the eighteenth and nineteenth centuries, but bore west throughout this interval.

The tables are based on the researches of the Coast and Geodetic Survey and represent the very best information at present to be had. They have been arranged especially for Maryland. The endeavor was to put the matter in such a shape so that the surveyor could readily make use of the information the tables contain.

Before passing to our special subject, let us recount briefly the main fluctuations to which the earth's magnetism is subject. Some of these fluctuations are periodic in their nature, that is, the fluctuation takes place during a definite interval of time, at the lapse of which the needle returns approximately to the position it occupied at the beginning of the interval. Others have no definite period and are more or less spasmodic in their occurrence.

#### PERIODIC VARIATIONS.

Of the regularly recurring variations of the magnetic declination, the most pronounced and striking is the *solar-diurnal* variation. An idea as to how the needle varies in the course of the solar day by reason of this variation can best be obtained from an actual example. Below we have the mean hourly values of the westerly declination as obtained at the Washington Magnetic Observatory during the year 1890. The hours refer to the 75th Meridian or Eastern time.