

“ Having made many and diverse compasses, and using alwaies to finish and end them before I touched the needle, I found continuallie that after I had touched the yrons with the stone, that presentlie the North point thereof woulde bend or decline downwards under the horizon in some quantitie; insomuch that to the flie of the compass, which was before levell, I was still constrained to put some small piece of ware on the South point and make it equall againe. Which effect having many times passed my handes without anie great regard thereunto, as ignorant of anie such propertie in the stone, and not before having heard nor read of anie such matter, it chaunced at length that there came to my hands an instrument to be made with a needle of sixe inches long, which needle after I had polished, cut of a just length, and made it stand levell upon the pin, so that nothing rested but onlie the touching it with the stone, when I had touched the same, presentlie the North part thereof declined down in such sort that being constrained to cut awaie some of that part to make it equall againe, in the end I cut it too short, and so spoiled the needle wherein I had taken so much paines. Hereby being stroken into some cholar, I applied myself to seeke further into this effect, and making certaine learned and expert men, my friends, acquainted in this matter, they advised me to frame some instrument to make some exact triall how much the needle touched with the stone would decline, or what greater angle it would make with the plaine of the horizon.

“ Whereupon I made diligent proofes, the manner whereof is shewed in the chapter following.”

Norman then proceeds to describe the instrument with which he determined the “ declining ” or dipping of the north end of the needle below the horizon. He found a dip of $71^{\circ} 50'$.

George Hartmann, of whom we have already spoken, had observed this dipping of the needle previous to Norman, in 1544 at Nuremberg, but he failed to make a precise determination, the value which he gave being about one-sixth of the true value at that time.

discovered by Robert Norman. London, 1576. Reprinted and attached to William Whiston's *The Longitude and the Latitude found by the Inclinatorie or Dipping Needle*. London, 1721. We trust that this book will likewise form one of Hellmann's reprints.