The rutter of 1606

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[f. 81 r]

2nd voyage [i.e. second sea journey, this time across the Atlantic, to get to Spain from the Philippines]

In the name of the Holy Trinity we began the second voyage and we set sail from San [Juan] de Lua [San Ulúa just off Veracruz] in the galleon named *Nuestra Senñora de los Remedios* [with] capitán and Master Martin Monte, Saturday 17 June 1606. The sun being above the horizon at 55° when sail was set, the capitana having already left two hours. The fleet not having assembled to leave that day, we stayed near the Villa Rica until Sunday at 2 [o'clock] all had arrived.

I marked the needle before leaving Vera ✠ [Veracruz] on 10 June and the sun being high before mid-day a .10. de Junio y estando el sol elevado antes de medio día $7\frac{3}{4}^{\circ}$, the shadow of the gnomon cut the west line at 22° to the south and later in the afternoon the sun in the same elevation cut another 22° on the east line to the south, so there was no [In r. margin: Fixed.] variation. Vera ✠ [Veracruz] and San Juan de [U]Lua are in 19° minus a quarter.

On Sunday and Monday we navigated with a reasonable wind to the north-east but we changed the route somewhat on Tuesday tot south-east and -east.

On Wednesday we took the latitude and we used the point of fantasy [method] in $19\frac{1}{2}^{\circ}$ and 20 leagues from the port.[1] 21 of the month.

We had calm until two o'clock when we got a fresh wind and we went norh-north-east until Thursday. 25. leagues.

I marked the needle on Wednesday at sunset and it set [f.81v] at 27° from the horizon {from the west to the north [inserted]}. It was well marked that day in the tropic which was 21 June and the sun had an amplitude of 28° so that I north-easted one degree. [In l. margin: This is false. North 1° the amplitude was25°2[′] and according to this the needle north-wested 1°58[′].] Thursday

[1] For the point of fantasy method, see Alves Gaspar 2007, p. 67 or Barreda 1786, pp. 220ff.

and Friday until Saturday at mid-day we navigated north-east a quarter to the north. On Saturday I took the altitude and it went to 24° with my astrolabe.[2]

Sunday 25. We navigated to the east and a quarter to the north-east some 12 leagues. We had calm.

Monday 26, to the north-east a quarter to the north. This day I marked the needle, and the sun being up at $43°\frac{1}{6}$ above the horizon the shadow of the gnomon cut at 11° on the line from west to south.

Tuesday, Wednesday and Thursday 29, to the north-east and a quarter to the north and sometimes to the north-east with violent north-west winds. Without the sea being visible we went perhaps 20 leagues because it was calm for 6 hours and altogether we made or way north-east. The night of Wednesday I observed the sun at sunset and it set on the horizon of the astrolabe at 29° from west to north. I did not have chance in the morning to look at the variation of my instrument to confirm the amplitude of the sun.

Inserting what Licenciado de los Ríosleft out: On Wednesday which we reckoned was 28 June according to the past rutters it was in $25°45'$ from the pole and there was [f. 82r] $23°22[']$ of declination according to which the sun that day was of amplitude $26°6[']$. It set at 29° therefore I north-wested $2°54[']$.

Thursday 29, in the morning, [the sun] being up $18°\frac{1}{6}$ the gnomon cut on the west to the south $18°\frac{1}{2}$. All the following week until Thursday mid-day which was reckoned 6 July, we navigated through various parts for the most part calm. We got to 27° and we turned to decrease the way to the south-east until 25°. Some times to the east, others to the south-east or south-south-east. Mostly calm, and still violent north-west winds.

Wednesday, in the morning of 5 July, I observed the needle at sunrise and it rose in 20° from the east to the north and in the evening it set at $24\frac{1}{2}°$. The observation in the evening was very precise, that of the morning not able to be so in 27° of altitude, the amplitude [In r. margin: The amplitude was $25°52[']$ of the sun de sol quales leaving $24\frac{1}{2°}$ leaving $1°22[']$ from the north-east.] The difference was 1°.

Thursday, the sun being up $17\frac{1}{6}°$ the gnomon cut at 20° from the west to the south.

7 July I marked the needle at the rising of the sun and it rose in 20° from the horizon in the east to the north. [In r. margin: Northwested. $2°30[']$.] We arrived at Havana [Cuba] on 13 July I marked the needle on shore. It north-wested $2°30[']$.

We left Havana on 4 August. [f.82v] and afterwards at sea at times we made way with fresh breezy weather that day and the next which was the 5. And in the evening we came at sunset on Matanzas, and from there we went taking the open way north-north-east until 6 July.[3]

On 17 August being in 33° latitude, I marked the needle ar sunset and it set in 26° of the line from west to north. the distance was $16°10[']$, the variation $9°50'$ I north-wested.

[2]This strongly suggests that this was the astrolabe invented by de los Ríos, see p. 90, n. 51. It is the only direct reference I have found to 'my astrolabe' in use.

[3]Should be 'August'. There follows a gap in this rutter for the next two weeks.

On 21 August in latitude 35° being[4], I estimated we were 40 leagues or more to the east of Bermuda. I marked the needle and with all the precision I could, it north-wested 6°.

On 27 August [I marked] the needle before mid-day. The shadow [repetition crossed out: before mid-day] 27° on the edge from the west, the sun being at 44° of elevation and afterwards at the same elevation it cut 13° on the edge from the east to the north. It was 200 leagues from the islands. I north-wested 7°.

On 28 August I went at sunset to observe the sun and it set in 19° from the west to the north. Its amplitude was 11°20[′]. Later I north-wested 7°40[′].

31 August I marked the needle at leisure and the sun rose in 8° frim the east to the north [f. 83r] and it set in22°. the difference was 14° and the variation [In r. margin: North-wested.] 7°. We were 150 leagues from the islands. [In r. margin:÷]

13 October the sun rose in 7° from the east to the north and set in 12° in the same part. It was done with precision. 2°30[′] North-wested.

On 29 October in latitude of $37\frac{1}{3}^{\circ}$ there the variation, taken well, $4\frac{1}{2}^{\circ}$ which I north-easted. We were by mental estimate 110 leagues from Cabo de San Vicente. [Middle of f. 83r]

References

Alves Gaspar, J. (2007). The Myth of the Square Chart. *Perimetron 2*(2), 66–79.

Barreda, F. (1786). *El Marinero instruido en el Arte de Navegar especulativo y practico que para la Enseñanza de los Colegiales del Real Seminario de Santo Telmo*. Oficina de Vazquez, Hidalgo, y Compañía, Impresores de dicho Real Seminario [de Santo Tomel]. Second impression.

[4] *estando* is repeated.