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# Columbus and his Sailings, According to the 'Diary' of the First Voyage: Observations of a Geographer

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## ABSTRACT

The vicissitudes through which the manuscript of the Ship's Log of Columbus's first voyage passed are well known. A critical examination of the text shows that many problems still remain to be resolved regarding the route followed during the first crossing.

The author has examined the text from the geographic point of view, arriving at the following conclusions:

1 — The crossing was conducted depending primarily upon the naked eye, with approximate estimate of the distances which were reported on one or more nautical charts;

2 — Since all the distances traveled were over-estimated, through an error of Columbus and of the other pilots, the distances which the Admiral indicated to the crew — intentionally understated — turned out, in reality, to be fairly close to the true distances traveled;

3 — The use of instruments was very limited; the author rules out the possibility that Columbus used a certain table, the "taoleta de martelolo". His errors in latitude were intentional, determined by political reasons, in order to conceal from the Portuguese the true position of lands discovered;

4 — It is fairly certain, even notably reliable, that Columbus landed in the Bahamas and, in particular, at San Salvador;

5 — The use of nautical and geographic terms depends largely on the Portuguese and on the *lingua franca* in use in the ports of Europe, especially of Mediterranean Europe.

On the whole, Columbus's geographic and naturalistic knowledge doesn't turn out to be very deep or nearly complete.

For any consideration of Columbus's capacities as a sailor and for any reconstruction of the techniques of navigation which he applied, the *Ship's Diary* of the first voyage remains the essential — almost the sole — document. In fact, for his other oceanic crossings we have only fragments of

reports and news received either indirectly or after having passed through many hands. And about the sailings undertaken before the transatlantic enterprises we know even less. For these we have only rough and sometimes questionable indications.

All these facts have provoked a renewed interest in a critical re-examination of this indispensable source, which has already been the subject of in-depth studies by Morison and Taviani.<sup>1</sup> For your speaker, as a geographer, such a re-examination is concerned with only certain geographical aspects regarding the ocean and the routes, with some reference to the maps and instruments employed.<sup>2</sup>

First of all, however, I want to recall some well-known circumstances: to wit, that which we have in our possession and upon which we are constrained to base ourselves is only a transcription — summary of the original itself by Columbus. This original was jealously kept in the archives of Ferdinand and Isabella. But, it can't even be ruled out that the original contained some intentionally falsified fact or even that it omitted news communicated only by word of mouth or at a later time.<sup>3</sup> Certainly, elaborations of that kind and, errors in part unintentional, in part intentional — existed in the copies that the various court scribes made of the original.<sup>4</sup>

We arrived, thus, at the summary-transcription of Father Bartolomé de las Casas, more summary than transcription, made in his own hand, as today I am inclined to believe, and as, it seems to me, is today generally accepted.<sup>5</sup>

To complete this work of selection, transcription and summary he added some glosses and notes which some unwary editor has mixed into the text of the *Diary*. The Dominican bishop was driven by the desire to prepare materials useful for his *Historia de las Indias*.<sup>6</sup> Besides, he had very precise ideas about the final purpose for which said work was intended: a substantial defense of the "Indians" against their Iberian conquistadors. To all this must be added, lastly, the fact that Las Casas, of Humanist formation, had not much familiarity with the natural sciences, geography, astronomy and nautical technique.

Therefore, our Author reports, copying long excerpts about the populations of the Antilles, their habits and their good natures, in their entirety, or nearly so, while, on the other hand, he summarizes in notations of a few dry and concise lines, the stages of the voyage during the return trip, except for the detailed account of the storm near the Azores. (Also, for the period from 11 October to 24 October the transcription is faithful and complete, at least as far as we can know, but with limited references to the navigation and with few geographical observations; while yet, at the same time, the period from the seventh to the eleventh of November [inclusive] is completely omitted.)

When the narration contained in the *Diary* coincides with that reported by Las Casas in his *Historia*, by their same facts and places, we have a further proof of the authenticity of the text, together with evidence that it appeared exhaustive and convincing enough for the Dominican bishop. On the other

hand, in those places in the *Historia* where he adds greater detail or other particulars or his own digressions, with respect to the account of the *Diary*, one can only think (this isn't to say it must always or necessarily be so) that the text by Columbus did not turn out to be sufficiently exhaustive or satisfying to suit his purposes.

The above offers me an opportunity to wish for an expansion of the critical re-examination of the *Diary* even to the other sources, with synoptic (comparative) editions of the *Diary*, the *Historia* of Las Casas and of the *Historias* of King Ferdinand. My colleague, Professor Alessandro Martingano, of the University of Pisa, has offered a sample — not yet complete — of this edition and it leads to very interesting results, above all from linguistic and literary points of view. But I don't want to venture, here, into an area which lies outside my own field of expertise.

In any case, it is by now certain (at least it seems certain to me) that what has come down to us of the *Diary* in its form as a text in part (the lesser part) transmitted intact and in part summarized by Las Casas, is authentic. The reservations put forward in the past, in this context, by polemical hypercritics have all, or almost all, fallen by the wayside. I believe that our colleague, Consuelo Varela, author of valuable studies on the Columbian sources and present here today, can confirm my opinion.<sup>7</sup> Even more certainly, it seems to me that if Las Casas could have been author of interventions and, on some occasions, of deformations with respect to the manuscript which he had before him, these ought not to have pertained to those passages concerning the nautical art, geography, astronomy and the natural sciences, disciplines with which he lacked sufficient knowledge, as has been seen. If anything, he couldn't understand these passages; for that reason in some cases he himself put forward reservations.

More than one error in the transcription of the cardinal points for the orientation followed on the various legs of the journey and confusion between "northwest" and "northeast," "southwest" and "southeast" can be found.<sup>8</sup> Thus even some errors are found in the transcription of the indications of distances, which the Admiral expresses almost always in leagues, after the Spanish manner; but, evidently because he has not entirely forgotten the custom of the Italians — used to expressing themselves in miles — sometimes those values are reported,<sup>9</sup> the case being rare, however, of an indication given only in miles.<sup>10</sup> However, when such a unit of measure is used it is always preceded by the indication of the average hourly velocity, this latter indication being always expressed in miles per hour,<sup>11</sup> as if Columbus's estimate of the distance traveled came more easily and more familiarly to him by making reference first to the mile and taking it as his point of departure for later calculating the number of leagues. Nor are errors lacking, evidently of transcription, even among these calculations.<sup>12</sup>

The proofs of the authenticity of this document and of its, albeit partial but substantial, adherence to the original text are diverse. Among them are the many ingenuous statements and the many repetitions of the enthusiastic



description full of wonderment which Columbus gives of the new landscapes, revealing, among other things, a limited imagination and a capacity for comparisons conditioned by a not very broad geographic culture.<sup>13</sup>

Even the fairly frequent contradictions into which the Admiral falls, such as, for example, praising Martín Alonso Pinzón at the start, then later frequently condemning his behavior and his person, or stating in the preamble that his (Columbus's) boats were "very apt" for the undertaking of discovery, only to lament, later, after the shipwreck of the *Santa María*, that she wasn't fit "for the task of discovery"<sup>14</sup> — these contradictions, I repeat, are well explained by considering the *Diary* as a collection of entries, written day by day, under the influence of the emotion of the moment, while the preamble must have been drawn up and added later, written as it is in a much more careful way in an almost courtly and elevated style.

Certainly the Columbian document is the first and the prototype of this genre, before the 1524 order of Philip II imposed upon the Spanish ships the keeping of regular journals of the more important sailings completed. In fact, even the *roteiros* of the Portuguese and those of the Arab ships' pilots which aided them in their voyages through the Indian Ocean are another thing, sometimes — as is the case with the Arab ones — written in verse, sometimes — the Portuguese ones — more similar to the medieval pilot-books of the Mediterranean. (The oldest *roteiros* that are known are in manuscripts of the sixteenth century, but it is known that some existed in the fifteenth century and perhaps even before, the texts probably being reproduced and brought up to date, from draft to draft and generation to generation.) One could say that, while for the "routine" sailing, on the internal seas or along stretches of coast already well-known, like those of Western Africa, sailors continued to use the nautical "guides," centuries old and limited to indications which could facilitate the practice of navigation, the new experiences of the transatlantic expeditions were entrusted to diaries and journals which could give an account — as much as possible — of the various and rich details of the discovered lands.

There has been cited as proof of the unreliability (or of the scant reliability) of the *Diary* the circumstance that, to a crew at least a little expert in matters of the sea or — at the least — to the ship's pilots and to the other officials of the expedition, the artifice invented by Columbus of the double calculation of the distances could not remain hidden. Now, it is the *Diary* itself which shows how that was possible by attesting to how the ship's pilots disagreed among themselves about the assessment of the distances: an example of this occurs on the date of the twentieth of September when, while the fleet was relatively near the Canary Islands, there is a discrepancy of 20 leagues between the estimate of the lead ship and that of the *Pinta* and of another 20 leagues between the *Pinta's* and that of the *Niña* — on the whole a difference of approximately 10 percent, with respect to the course traveled to that date. And during the return trip, on the tenth of February, Victor Yañez and another three pilots believed they were sailing "much

beyond the Azores to the east,” while “the Admiral finds himself considerably off course, finding himself very much behind them . . .” (believing himself to have scarcely arrived at the longitude of the island of Flores, in the Western Azores).<sup>15</sup>

For the rest, the summation of the distances indicated as traveled from day to day (such data isn't supplied for the Saltes-Canaries leg nor for the Lisbon-Saltes leg, evidently because they were already known as it has already been noted) doesn't always correspond to the total distances traveled which Columbus sometimes indicated. Still, on September 19 the total distance indicated by the Admiral is 400 leagues, but the one that one arrives at by adding all the partial journal data is 436 leagues; similarly, on the first of October, the *Diary* gives as a total figure 707 leagues; the sum of the partial data is 675 leagues or slightly more, if one adds the fractions (Don Fernando in the *Historie* says that instead, according to the pilot of the Niña, 540 leagues had been traveled while, according to the pilot of the Pinta, 634.) And other computational errors are found during the return voyage, for example, on the twenty-first and twenty-second of January.<sup>16</sup>

Taken together, therefore, the estimated data of distances traveled inferable from the *Diary* must be considered as approximate and must be used with great prudence. In one of my papers at the Fourth International Congress of Columbian Studies, in Genoa, October of last year, I repeated<sup>17</sup> that Columbus's navigation was always carried out based on an estimate of the longitude, and in turn was based on the estimate of the distances covered, according to data that, as has been seen, were not agreed upon by the various ship's pilots; the uncertainties of these data are reflected in the fact that the verb which in the *Diary* conveys the indication of the leagues traveled is very often in the conditional, the “hypothetical” form: “andaría” or “andarían”.

During the voyage out (and even during the return home) it seems that no determination of latitude was made and that the pilots were limited to controlling the heading through the use of the compass, the observation of the North Star, and the map. It seems strange, without a doubt, that the *Diary* does not even inform us of operations completed after the landfall on San Salvador, when the quadrant and the astrolabe could have been used — on land — with a certain good approximation, in order to attempt to determine, through the latitude, the position of the island reached. It is therefore reasonable to believe or suppose that such a determination was in fact effected; but, once it was determined that Guanahani fell, according to the Luso-Spanish accords of 1479-80 (the Treaty of Alcacoa and the Peace of Toledo), in the zone of exclusive authority of the Portuguese, or simply even after some well-founded suspicion in this regard had arisen, the result must have been accurately hidden so that there is not even mention of it in the *Diary*. In fact, the *Diary* on the thirteenth of October says only that San Salvador is found at the latitude of the Canaries; this affirmation could have been deduced from the total value, on the nautical charts, of the course

directions followed in the various legs of the journey; it is erroneous because the latitude of the Canaries is of about 28 degrees and that of San Salvador 22 degrees (but, a difference of 6 degrees can't be called relevant in those times, especially if derived from a determination of latitude effected through the measurement of the height of the stars); in any case it is confirmed by a note of Father Las Casas ("The islet . . . is at the height of that of the island of Fierro"). This supposition fits well in the question of the supposed errors that Columbus would have made in the successive determinations of the latitude of which the *Diary* speaks from the end of October to the thirteenth of December; in these cases, the notes of Las Casas warn that the datum is mistaken or unclear, that the position indicated could not correspond to the truth, but, the correct information isn't supplied or remains in blank on the manuscript. Comparing all that with meteorological observations about the temperature indicated as hot or cold and with the indications reported in the *Diary* concerning the duration of the day and night (these latter indications, three out of four times, are so grossly mistaken as to make one suspect an intentional error), I have come to the conclusion that Columbus did everything possible to hide the true position — in latitude — of the places at which he landed; the scribes that copied the *Diary* aided him in that effort and Las Casas, even though he was making his summary of such a source when new accords had already been reached between the Spain and Portugal, does nothing to supply exact data about the errors regarding the length of the day and night (and with relation to the meteorological and, above all, temperature conditions and other contradictory information he does not even take notice).

That precise data on latitude were absolutely lacking in the original of the *Diary* delivered, probably in Barcelona, by Columbus to Ferdinand and Isabella, is confirmed by the fact already noted that they — in view of the following expeditions — had to ask him to narrow down more precisely "the degrees" relative to the new lands. I must complete this scenario by saying that, as far as pertains to the alleged errors of latitude, my thesis follows the affirmations of Magnaghi and Taviani,<sup>18</sup> while the originality of my contribution consists of the observations about the meteorological and climatic conditions in general and the indications relative to the length of the day and night.

. . . . .

For other considerations, it is necessary for us to go back over the estimation of the distances traveled and therefore of the velocity of Columbus's ship. Las Casas already had expressed some doubt about the data reported in the *Diary* at the date of 8 October, in fact, he transcribes and summarizes in following way: at times, it appears they traveled fifteen miles per hour at night, if the letter does not deceive." Morison, in reconstructing Columbus's routes, has estimated that Columbus overestimated the distances covered on the average of 9 percent and, although more conservatively so,



the same would be true even for the short crossings, like those of Crooked Island Strait and the Windward Canal.<sup>19</sup> For my part, I will limit myself to pointing out the evident exaggeration, speculating that the maximum speed one can hypothesize for ships like those of Columbus should vary from between 6 and 8 to 10 miles per hour.<sup>20</sup>

It turns out from this, at any rate, that the computation of the course traveled, believed true by the Admiral, in reality was not. If one accepts Morison's percentage, then, from the Canaries to Guanahani 982 leagues were covered, not the 1079 (or a little more, taking into account the fractions and approximations) which result from adding the journal data indicated in the *Diary*. If, instead, one keeps in mind the data of, what we might call the minor computation, that is, the one shown to the crews, one arrives at 900 leagues or a little more (for a few days, in fact, the *Diary* does not give news about the "discount" made to the crew).<sup>21</sup> So the false data was closer to reality than the true one.

I have already indicated, in other sessions<sup>22</sup> — and moreover it is known to all those who deal with nautical technique in the times prior to the discovery of methods and instruments for determining the longitude — what had to be the causes of such errors in the calculation of the distances traveled: the speed of the ship was estimated by observing how the vessel "slipped" (through the water), how the waves rippled and, above all, how the sails filled with the wind. In fact, Columbus wasn't able to use the depth gauge, which came into use in the first half of the sixteenth century; every leg traveled in a certain direction, during the sailing, which was exclusively and logically "by sight," was accounted by computing the elapsed time. In turn, this was measured by the sand-filled hour glass (the *ampolleta* recorded many times in the *Diary*), whose use could give rise to error, given the frequency with which the instrument had to be turned over, every half-hour; the Admiral himself attests to it, on the date of 13 December: ". . . there can be error, either because they don't turn it over quickly or something fails to occur."

At any rate, these errors in the measurement of the time mustn't have had great weight, given that a little bit of attention on the part of the sailor in charge was sufficient so that the operation was precise and the system worked. And, if there were a great "error," the total calculation of the distance traveled by Columbus would have been inferior to the one he himself held accurate (and not superior, as in reality his is). In my opinion, the major errors derive from the movements of drift which the marine currents imposed on the ships; it must have been a matter of errors all the greater, inasmuch as the system of currents in the open Atlantic were then unknown or little known, especially by one whose formation as a sailor took place in the Mediterranean.

There are signs, both direct and indirect, of such deviations many times in the *Diary*. For example, already on the ninth of September, "the sailors were steering badly, drifting over the compass point of Northwest, and even

moving toward the next compass point”; and on the thirteenth “the currents were against him”; on the twenty-second “He sailed to the west northwest more or less, deviating to one side and then to the other.” And, on the twenty-fifth of September, Columbus tells Martín Alonso that, if islands haven’t been encountered, “the currents, which had always thrown the ship toward the northeast, must have caused it and they hadn’t gone as far as the pilots were saying.” During the return voyage, on the tenth of February, “the Admiral finds himself very much off his course,” and, in the face of the contradictions and divergences between his computations and estimates and those of the other pilots, he says “by the grace of God, after they all see land it will be known who was traveling more true.”

Having thus appraised the distances traveled and taken into consideration the headings followed, the estimate of the point reached was translated and registered on the chart. It is this operation that the pilots of the three ships make, for example, on September 19: “Here the pilots discovered their points,” indicating after this the data of distances covered, divergent among the three vessels, as has been said.<sup>23</sup> It’s evident that one can’t think that these data revealed the height of the stars, the operation by which latitude is determined, in order to then calculate a distance traveled in longitude; rather, determining latitude meant different determinations and operations.

The experiences of the Portuguese, contemporary (or almost) to those of Columbus, demonstrate that it can’t be strange that Columbus — during his voyage out — had crossed the Atlantic without completing one single determination of latitude. It isn’t even certain, in fact, that the measurements effected in 1485 along the west coasts of Africa had been carried out at sea, but rather the opposite seems probable. Even if the astrolabe were already known to the Arabs and most assuredly to the astronomers of classical antiquity, and even if certain information about its use at sea was known to the Lusitanian navigators, not prior to 1485, it is not said anywhere, however, that satisfactory data were gathered from its use. This instrument, created for calculating, on *terra firma*, the passage of time, was complicated to use. Rather, its reduction to a relatively manageable apparatus — such that it could be used even on board ship — would be to the Portuguese’s credit (or to those who worked for them). And, the Jews in the service of the Portuguese probably contributed to the dissemination of precise systems for determining the latitude by the measurement of the height of the sun and of the other stars, developing tables and guides that simplified the calculations for discovering the position of such stars in the course of the year.

True, the determinations of latitude made by Bartolomeo Díaz, in Southern Africa, in 1487, seem computed from solid ground or under the coast, with the resulting data in error by 10 degrees (at least this was the news Columbus possessed). It is true, also, that Vasco da Gama, in 1498, after having used the astrolabe on board ship, made control measurements from solid ground and with a larger apparatus.<sup>24</sup>

Finally, to return to Columbus, a reference to what must have been an attempt, during the return voyage, to determine latitude, with reference especially to the North Star, is contained in the *Diary* on the date of February 3: "The North Star seemed to him to be very high, as at the Cape of St. Vincent. He couldn't take the altitude with the astrolabe nor the quadrant, because the waves wouldn't allow it." But, the observation about the North Star is later contradicted on the Tenth of February — that is, a few days later — when the Admiral believes he finds himself on a route that would have carried him to Nafe (perhaps Safi, in Africa), to the north of Madeira, at a longitude very much lower.

In conclusion, therefore, there were astrolabes and quadrants on Columbus's ships; however, the data relating to the reckoning of latitude are omitted or altered and murky, almost certainly intentionally so, for political reasons; the results of the measurements carried out on board ship often lead to erroneous conclusions or conclusions which are very open to discussion, thus confirming, through the *Diary*, all that has been seen to be verified by the Portuguese.

The pages of the *Diary* relating to both the voyage out and, especially, to the return home, show how the results arrived at through such estimated navigation were approximate. On September 25, Columbus and Martín Alonso Pinzón discuss the position of the ships with respect to the Atlantic islands indicated on the map: on the seventh and the tenth of February, very divergent opinions are recorded about the position in which the *Pinta* and *Niña* find themselves; on February 15, when the *Niña* sights the island of Santa Maria, in the Azores, some believe that it is Madeira, and others believe they are seeing the Roca di Sintra, near Lisbon. Another erroneous reckoning of the distances, with respect to Madeira, is reported on February 27.

Probably, in order to explain such errors, it's necessary to recall the uncertainties and inexactness of the nautical charts then in use. Columbus, who was also, it seems, a map-maker, could not but know well the prototypes for the Mediterranean. But, in Lisbon and Seville he could not but compare them with the models in use in the Atlantic: all that he might have learned from his seamanship of the Ocean confirms his use in every other arena — a use which is constant in the *Diary* — of terms taken from the cardinal points in order to indicate the directions and the winds (and not of the corresponding terms *Tramontana*, *Scirocco*, etc., typically on the compass charts of the Mediterranean).

And on these charts, recopied from father to son, from teacher to pupil, from school to school, in which were mixed together ideas of various origins, the Atlantic islands were often or almost always in an incorrect position; some were even invented and placed there where tradition had it or where it pleased the map-maker. It is logical that the sailors, who traced the routes they had traveled, on such maps, would stumble into easy errors. Paradoxically, one can say that perhaps one of the less debatable facts of

Columbus's *Diary*, even if it has been more frequently discussed recently,<sup>25</sup> is the identification of Guanahani with the present-day Watling Island or San Salvador, thanks especially to the geographical fact of the existence of a lagoon at its center.

A last point which I believe worth treating, concerns the possibility that Columbus had used the "Taoletta de Martelagio" in order to avoid the course errors caused by the deviations and driftings of the ship. It was, in essence, as is known, a table (or set of tables) used in the Mediterranean to calculate the necessary route corrections. It probably had already been developed in the thirteenth century; a Genoese document of 1390 speaks of something similar to it; four editions of it are known to exist, of which the most important is the Atlas of Andrea Bianco of Venice, of the year 1436; all the copies known to us are in the Venetian dialect.

My colleague from the University of Rome, Osvaldo Baldacci, has recently and quite positively argued that Columbus made use of the *Martelagio* and asserts that a design attributable to Columbus, kept in the Columbian Library of Seville (it is an annotation to the *Imago Mundi* of Pierre d' Ailly) would be the first example known to date of a *Taoletta* simultaneously graphic and numeric.<sup>26</sup> I don't wish to discuss this second point, although in my opinion, this drawing simply refers to a quadrant.

I want only to dwell on the point of the use of the *Martelagio* by Columbus, which, in another place<sup>27</sup> I had judged possible, even if it is to be noted that the *Diary* never speaks about it. A rereading of the *Diary*, however, has convinced me that such a possibility doesn't exist or is very remote, so great are the errors in the reckoning of the distances covered and the headings followed, as has been seen. Furthermore, it was a question of a system in use, even later on, in the Mediterranean; but, about its use in the Atlantic we know nothing. And it seems strange to me that only Columbus, among the pilots and officials of the expedition, would use the *Martelagio*.

. . . . .

I wish to conclude by indicating that the *Diary* — as it seems to me and as these considerations show — if read and reread with attention, can still teach us much. Perhaps there will result from it an image of Columbus less hagiographic and charismatic, but more concrete and equally interesting. Also, unveiling him as a more realistic figure is a way of honoring him, which assumes particular significance in this land of San Salvador, which took its name from him and to which I have had the honor of being invited.

#### NOTES

1. Well known and classic is Samuel E. Morison's volume, *Journal and Other Documents on the Life and Voyage of Christopher Columbus* (New York, 1963); from the same author see also, *Admiral of the Ocean Sea* (Boston, 1942) and *Christopher Columbus Mariner* (Boston, 1955 and

London, 1956), *passim*. More recent are the works of Paolo E. Taviani, *Cristoforo Colombo. La genesi della grande scoperta [Christopher Columbus. The Origin of the Great Discovery]* (Novara, 1974), *passim*, and *I viaggi di Colombo. La grande scoperta [The Voyages of Columbus. The Great Discovery]* (Novara, 1984), vol. I, pp. 9-91; vol. II, pp. 10-179.

2. Cristoforo Colombo, *Diario di bordo*, ed. Gaetano Ferro (Milan, 1985), *passim*; I have also consulted Cristóbal Colón, *Textos y documentos completos*, ed. Consuelo Varela (Madrid, 1982), pp. 15-138.

3. It is not without reason that Ferdinand and Isabella, in light of the second voyage (and also of the others), request from Columbus, on September 15, 1493, clarifications regarding the position of the lands discovered and the route to follow to reach them: “. . . we have need to know the degrees within which the islands and land you discovered fall and the degrees of the path you traveled.” The observation is derived from a manuscript of colleague Ilaria Luzzana Caraci, in the process of being published.

4. The scribes who made the copies were more than one; the examples of errors, due perhaps also in part to a misunderstanding of the original, are fairly numerous. Las Casas (*Historia de las indias*, p. 328) himself says he has before him not the original but a copy; he lets it be understood also in the *Diario*, on the date 30 October, where he speaks generally of “the writing from which I transcribed this.”

5. In the “Introduction” to the *Diario*, translated and edited by me (p. 10), I supported the hypothesis that Las Casas in this task made use of some collaborator or scribe. Today, however, I believe the definitive word is that of Consuelo Varela, *op. cit.*, p. xi and p. 15, which deems the text to be an “autograph copy” of the Dominican bishop.

6. Las Casas was often and for long periods in Seville after 1540 and was able to have direct access to the archive and to the books of the Columbus family; Don Fernando’s large library passed, after his death (1539), to the Convent of San Pablo and there Las Casas was able to study, transcribe and summarize the *Diario*, for example between February and July of 1544 (so alleges Consuelo Varela, *op. cit.*, p. x-xi). Naturally it is impossible to distinguish between the errors of transcription made by him and those already present in the copy of the *Diario* which he was using.

7. Besides the *op. cit.* note 2, see *Cartas de particulares a Colón y Relaciones coetáneas*, ed. Juan Gil and Consuelo Varela (Madrid, 1984), *passim*.

8. A representative example taken from the *Diario* on the date of October 16, concerning a stretch of the coast of Fernandina (Long Island): “it runs north-northwest and south-southwest,” doesn’t make sense and is obviously to be corrected to “from north-northwest to south-southeast”; and besides, on October 15, it is written that “all this part of the island runs northwest southeast” and that is reaffirmed on October 17. It is curious that Consuelo Varela, *op. cit.*, p. 36, rather than “north-northwest” transcribed

“northwest” which — from a geographical point of view — can be counterposed neither to “south-southwest,” nor to “south-southeast.”

9. The first indication of distances in miles is on the eleventh of October, but it is preceded by the indication of the hourly average: “he probably traveled twelve miles each hour; and by two hours after midnight they probably traveled 90 miles, which are 22-and-a-half leagues.”

10. The first indication of the hourly average is on the seventh of October: “they traveled 23 miles per hour for two hours, and afterward 8 miles per hour; and he probably traveled 23 leagues by one hour after sunrise.” An example of a complete transfer from the appraisal of hourly velocity to the estimation, first in miles then in leagues, of the distance traveled, is had on the fifth of February: “he traveled 10 miles per hour, and thus in eleven hours they went 110 miles, which are 27 and-a-half leagues.”

11. An example, among the many, occurs on October 27: “He traveled eight miles per hour.”

12. Some examples, relative to the return voyage — excepting those days around the Azores — that perhaps Las Casas has summarized more hastily, judging them of minor interest: on the thirteenth of February there is a difference of a quarter of a league between the distance in miles and that in leagues, and on the fourteenth of the same month a half a league. Furthermore, the number of miles and of leagues is sometimes in ciphers and sometimes in Roman numerals.

13. Examples of naiveté and repetition are in Julio F. Guillen Tato, *La parla marinera en el Diario del primer viaje de Cristóbal Colón* (Madrid, 1951), p. 13-14. The comparative geographical references are, almost always, to localities and regions of the Iberian peninsula, which can be explained by the fact that the diary was directed to the Catholic Monarchs and to their court. For the importance which the marvellous and the hyperbolic have in the *Diario* see Joaquin Arce, *Significado lingüístico-cultural del Diario de Colón*, in *Diario de a bordo de Cristóbal Colón* (Alpignano, 1971), pp. 16-18.

14. See again Julio F. Guillen Tato, *op. cit.*, pp. 15-16.

15. In the reading of this passage of the *Diario* and of a preceding passage, dated February 7, a distinction must be made between that which was the estimate of the position actually reached and the one which was foreseen as the next route (see the edition already cited of the *Diario di bordo* notes 235 and 236).

16. See the details of such errors and others discernible in the text relative to February 27 in my previously cited edition of the *Diario di bordo*, notes 230, 231 and 247. At times, it's a matter of small difference but on the twenty-second of January there is written 72 miles and 18 leagues rather than 32 miles and 8 leagues; shortly after, it speaks of 6 leagues per hour, an impossible velocity, which must be corrected with 6 miles (always per hour). And the twenty-seventh of February the estimate of the presumed distance from Madeira is grossly in error.



17. See Gaetano Ferro, *Chiose e note al Diario di bordo di Colombo. Latitudine e longitudine, dì e notte, caldo e freddo*, in press. I have just presented a paper on *Terminologia geografica e voci marinaresche* to the "Third Hispano-Italian Colloquium: The Italian Presence in Andalusia in The Early Middle Ages and Sixteenth Century" (October, 1986).

18. See Alberto Magnaghi, *I presunti errori che vengono attribuiti a Colombo nella determinazione delle latitudini* (Roma, 1928), *passim*; Paolo E. Taviani, *op. cit.*, *passim*. This thesis, as is known, contrasts with that of Samuel Morison who holds that Columbus had truly erred, sighting another star rather than the North Star.

19. Another question, which here — for reasons of time — it is not possible to address, concerns the possible and eventual use by Columbus here of another league, the dry land league (of obviously diverse measure from the maritime league) for the measurements near the coast; see Samuel E. Morison, *op. cit.*, *passim*.

20. See in my previously cited edition of the *Diario di bordo*, note 34.

21. The computation, for the crew, on the first of October, registered 584 leagues, but perhaps this too was over-estimated; I have added to it the data, always those given to the crews, of the following days (but, instead, for the eighth and the eleventh the data held to be true, which are the only ones reported in the *Diario*); we thus have a total of approximately 900 leagues.

22. See, for example, Gaetano Ferro, *Chiose e note . . .*, *op. cit.*

23. In other passages of the *Diario* the use of nautical maps is attested to: September 25 and February 10.

24. See Gaetano Ferro, *Le navigazioni lusitane nell'Atlantico e Cristoforo Colombo in Portogallo* (Milano, 1984), *passim*.

25. For the question of Columbus's landfall, still the subject of discussion, see the contributions of diverse authors in *Terrae incognitae*, XV (1983).

26. See Osvaldo Baldacci, *Una "taoleta de marteloio" fatta da Cristoforo Colombo* (Roma, 1985), *passim*.

27. See Gaetano Ferro, *Chiose e note . . .*, *op. cit.*

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