

Vasco da Gama and the naming of Natal

Introduction

Five hundred years ago — probably on 8 July 1497— four ships set sail from Lisbon on a voyage that would prove to be of profound importance. The fleet was under the command of Vasco da Gama, and the objective set for him by the King, D. Manuel I, was to complete a long saga of exploration along the African coast undertaken by Portuguese mariners in search of a sea route to India. Bartolomeu Dias had arrived at the southern end of Africa and ascertained its latitude during his voyage of 1487–1488. He also had seen that the coastline beyond Algoa Bay extended away to the north-east. The long-sought entry into the Indian Ocean had at last been discovered — a spectacular feat by the small nation of Portugal.

By the time of Vasco da Gama's voyage, Portuguese investigations had greatly improved knowledge of the wind and current systems in the Atlantic, and he was able to take a route not previously tried¹. He sailed to the western side of the South Atlantic, thereby avoiding difficulties always faced by ships trying to go against the south-east trade winds along the West African coast. Cautiously seeking the Cape of Good Hope from the west, the fleet finally sighted land on 4 November, and anchored three days later in what is today called St Helena Bay.

There a meeting of contrasting cultures occurred. The local community appeared and barter was attempted by the Portuguese, but spices and gold were unknown to those hunter-gatherers. On 16 November, the fleet departed and rounded the Cape Peninsula on the 22nd, only after several attempts frustrated by contrary winds. They reached the bay of *São Bras* (Mossel Bay) on the 25th, and anchored there for 13 days. Bartolomeu Dias had been there before them, and it was a known source of fresh water. The local people had cattle and sheep, and Vasco da Gama's men succeeded in bartering for an ox. Unfortunately, both visits to Mossel Bay ended badly, marred each time by misunderstandings and mutual hostility between Africans and Europeans. The ships left on 8 December, heading eastwards towards Algoa Bay and the furthest point reached by Dias.

It is the next part of the voyage, during the remainder of December, that is the topic of this study. The celebration of Christmas Day in 1497 by Vasco da Gama and his crews as they sailed up the south-eastern coast led to the land known today as Natal acquiring that name in commemoration of the Nativity. This is a very familiar story, now part of folklore. It has been told in numerous popular histories,

repeated in formal academic works, and even been an inspiration to poets². But no less distinguished an authority on the history of Portuguese exploration in Southern Africa than Professor Eric Axelson has stated, in several of his major writings, that this attribution of the name was a mistake. He declared that the fleet was much further south on 25 December, actually near Port St Johns. How did he arrive at this conclusion, and was he correct?

The voyage during December 1497

Only one first-hand account exists today of the voyage of Vasco da Gama during 1497–1499. Although anonymous, its author has been identified as Álvaro Velho, who was aboard the *São Rafael*.³ The first English translation of this was by E. G. Ravenstein in 1898.⁴ Another translation was published by Axelson in 1954, in his book *South African Explorers*.⁵ He republished it with extensive commentary in *Dias and his successors*,⁶ a book issued in 1988 to commemorate the voyage of Bartolomeu Dias.

The following record of progress by the fleet during December, and quotations from Velho's account, are taken from Axelson's translation.

- 25 November (Saturday): arrived in Mossel Bay.
- 7 December (Thursday): attempted departure from Mossel Bay thwarted by lack of wind.
- 8 December (Friday): departed from Mossel Bay.
- 15 December (Friday): passed *Ilheus Chãos* (Bird Islands) in Algoa Bay.
- 16 December (Saturday): passed Kwaaihoek where Bartolomeu Dias had erected his last *padrão*, reached *Rio de Infante* (Keiskamma River) and lay to during the night.
- 17 December (Sunday): continued along the coast, wind astern, until evening, when the wind changed to the east and the fleet had to tack out to sea.
- 18 December (Monday): at sea in unfavourable conditions.
- 19 December (Tuesday): near sunset the wind changed to the west; the fleet lay to overnight so that the land could be reconnoitred the next day to establish their whereabouts.
- 20 December (Wednesday): went landwards, and found themselves off *Ilheu da Cruz* (St Croix Islands) in Algoa Bay; the ships resumed their original course '... with a very strong stern wind which lasted three or four days ... From that day onwards it pleased God in his mercy for us to make progress and not regress.'
- 25 December (Monday): 'On Christmas Day ... we had discovered 70 leagues of coast.'

The point at issue concerns the distance of 70 leagues attained by Christmas Day. In determining where they might have been, two questions of critical importance need to be answered: what distance was represented by the measurement of 70 leagues, and from what starting point had it been measured? Concerning the second question, Axelson⁷ was surely correct in interpreting the phrase '... we had discovered' to mean that the fleet had passed a length of coast new to Portuguese exploration, i.e. beyond the furthest point reached by Bartolomeu Dias, namely the Keiskamma River.

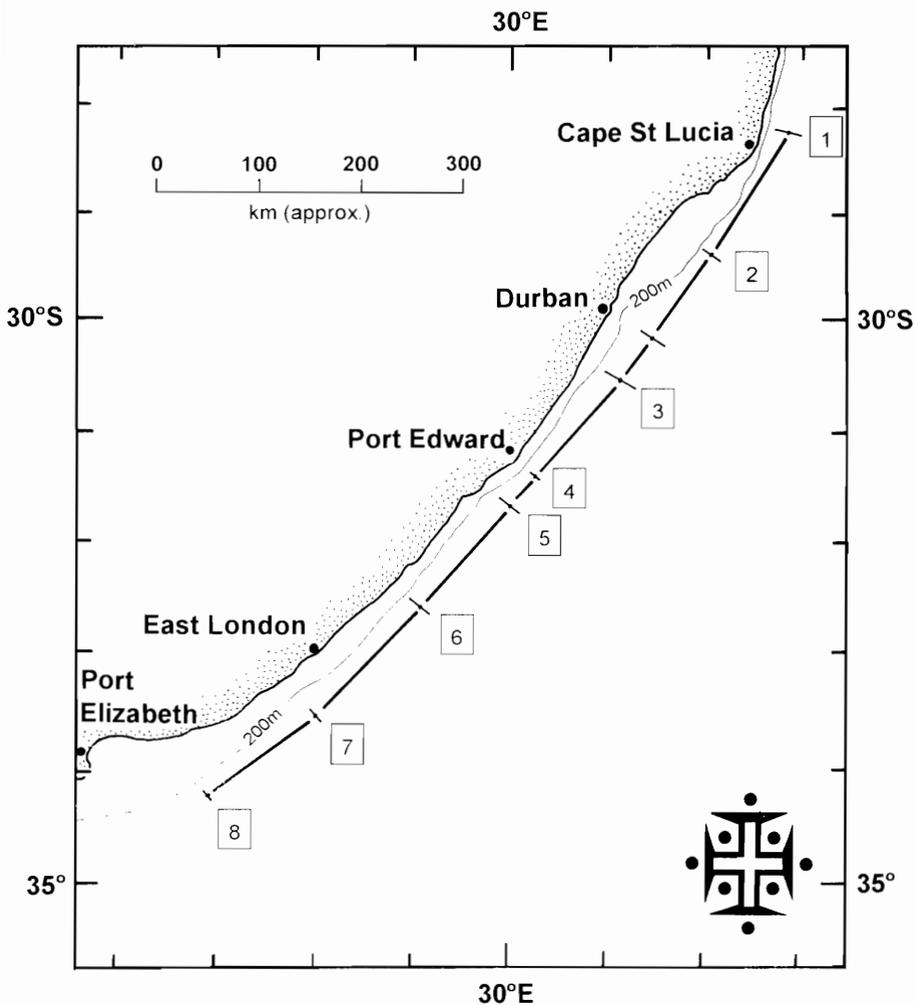


Fig. 1. The average course of the Agulhas Current, shown by the heavy line, with bars denoting standard deviations at eight sites listed in Table 1. (After Gründlingh, 1983.)

The distance of '70 leagues'

Axelson first took up the question of the distance sailed during 20–25 December in his book *South-East Africa 1488–1530*.⁸ He made the following statement:

Assuming Dias's farthest to have been the Keiskamma, da Gama had on December 25 reached the Umtwalumi River. Seventy leagues from the Kowie, however, would have taken him to the Umtamvuna. Seventy leagues from the site of the last *padrão* of Dias would have taken him to a few miles north of Port Grosvenor. Apart from the consideration that 70 is a round figure, it is impossible to resist the conclusion that it was an exaggeration. The daily run from Mossel Bay to the Infante averaged only 32 or 33 miles a day, whilst if the four or five days wasted in the vicinity of Bird Islands be included, the run drops to the region of 23. It is unreasonable to suppose that the 240 miles from the Infante northwards, along a coast where the Agulhas current runs if anything more strongly, could be covered at an average of 55 miles a day; except with the assistance of a stronger wind lasting longer than was described in the *Roteiro*.

In 1973, he returned to this topic in *Portuguese in South-East Africa 1488–1600*,⁹ with these words: 'On Christmas Day the pilots calculated that the expedition had discovered 70 leagues, so a section of the Transkei coast received the name Natal. Three days later the mariners caught fish off what was probably the Durban bluff.' To this statement he attached the following footnote:¹⁰ '70 leagues, 168 miles, from the Keiskamma river would have taken the squadron to the vicinity of Waterfall Bluff, 18 miles north of Port St Johns.' For this calculation, a league was taken to be 6.66 km. There seems to be an error of arithmetic here, or perhaps a *lapsus calami*: 70 leagues would in fact be about 466 km (289 miles, or 252 nautical miles); the distance from the Keiskamma River to Port St Johns is much less — about 280 km (174 miles). If about 466 km had been 'discovered', the fleet would have been somewhere between present-day Scottburgh and Umkomaas.

In *Dias and his successors*,¹¹ Axelson recalculated 70 leagues at 5.92 km per league,¹² and he stated that the ships would have got to 20 miles beyond Port St Johns if indeed they had covered 70 leagues. He wrote: '... it is difficult to believe that in five days, even with a strong stern wind the ships could have made good 266 miles against the Agulhas current, and it is probable that they were in the vicinity of Brazen Head [18 km south of Port St Johns] on Christmas Day.' Here there appears to be another inconsistency: 70 leagues at 5.92 km per league equals 414 km (257 miles, 223 nautical miles), a distance that would have placed the ships far beyond Port St Johns — in fact, north of the Mtamvuna River (which is about 360 km from the Keiskamma) and off the Natal South Coast.

In these discussions of the progress of the fleet, an important point must not be overlooked. There is no information on when the Keiskamma River was passed for the second time, so we cannot be sure of the time when the distance of 70 leagues would have been commenced. All we are told is that the ships left the St Croix Islands on 20 December and had an uninterrupted journey up the coast. An assumption has to be made at this point as a basis for further discussion, and it is this: that the fleet left the St Croix Islands at midday, and that the 70 leagues

'discovered' had been attained by midday on Christmas Day (it could be relevant that latitude would have been determined by readings taken at midday). The distance between the St Croix Islands and the Keiskamma River (c. 175 km) must therefore be added to the 414 km represented by 70 leagues (total 589 km) in all calculations.

Axelson's arguments thus revolve around two issues: first, he considers that the ships would not have been able to maintain a rate of progress adequate to cover such a distance in five days; and, second, that their progress would have been greatly impeded by the Agulhas Current. Concerning the question of the speed of the ships, an assessment depends considerably on whether the fleet sailed throughout that period without interruption. Axelson¹³ asserted that after passing the furthest point reached by Dias and entering unexplored territory, '... it became customary when possible to lie to during the nights.' But there is no clear evidence for this; Velho records only that the fleet lay to on two occasions: on the night of 16 December when they reached the Keiskamma River, and 19 December, after two days of easterly wind when the ships had to tack out to sea and lost sight of land.

If sailing continued day and night without interruption, during five 24-hour periods from midday on 20 December to midday on 25 December, then the fleet would have covered 589 km in 120 hours; thus they would have sailed at 4.9 kph or 2.65 knots. That would have been an extremely slow average speed, certainly within the capacity of caravels, and unlikely in view of '... the very strong stern wind which lasted for three or four days.' Such slowness would require an explanation. If, however, the ships lay to at night, they would have still had at least 14 hours of light daily in which to sail, and thus a hypothetical total of 56 hours over the five days. Average speed would then have been 8.4 kph or 4.5 knots, probably within the capacity of caravels.¹⁴ Assistance from counter-currents going up the coast could also have been in their favour, which is discussed below. Perhaps sailing continued at night when there was a moon or enough light to make it safe.

Axelson¹⁵ compared the run beyond Algoa Bay to the journey from Mossel Bay to the Keiskamma River, for which he estimated a daily average of 32 or 33 miles. If sailing continued throughout the night, the fleet would have averaged 2.21 kph or 1.19 knots. Certainly that would have been extraordinarily slow, but there was '... a great tempest' on 12 December, and the ships had to run with the wind astern under '... greatly lowered foresail' in an unspecified direction. Velho does not tell us how long the gale lasted. Their progress may also have been slowed by westward meanders from the Agulhas Current moving across the Agulhas Bank. The comparison thus has dubious validity.

Another matter needs to be considered: how was the distance of 70 leagues measured? During the eastward voyage from the Cape of Good Hope, only dead reckoning by the use of compass, log-line and sand-glass was possible. Once the fleet was past Algoa Bay and proceeding north-eastwards, measurements of latitude by the cross-staff or the mariner's astrolabe¹⁶ would also have been possible. Velho records no latitudes, but they must have been measured as the journey progressed.

Velho did, however, give estimates of distances of various legs of the journey. Axelson¹⁷ compared these with his own measurements, as follows:

	<u>Velho</u>	<u>Axelson</u> (footnote)
St Croix — Bird Islands	5 leagues	7.8 leagues (no. 27)
Mossel Bay — St Croix	60 leagues	68 leagues (no. 28)
Cape Good Hope — Mossel Bay	60 leagues	67 leagues (no. 29)
Bird Islands — Kwaaihoek	5 leagues	5.7 leagues (no. 30)
Kwaaihoek — Keiskamma River	15 leagues	15 leagues (no. 31)

In no case was there an overestimation by the Portuguese; all distances except the last are underestimates, possibly due to technical imperfections in their method of dead reckoning. The last estimate was almost correct according to Axelson (he found it to be only 2 miles short of the Keiskamma River); it was the only one that could have been made through readings of latitude. Axelson's opinion that 70 leagues '... was an exaggeration' thus seems unjustified. There is, however, a questionable tendency to record distances in round figures or in multiples of five. We can conclude only that the distance of 70 leagues was measured in some way, and that it may have been an underestimate.

The Agulhas Current

There is no evidence that the average speed of Da Gama's ships was such that a voyage of 70 leagues (say 223 nautical miles) could not have been accomplished in five days, even if the distance from the St Croix Islands is added. The discussion shifts therefore to the question of whether the Agulhas Current would so have impeded the ships that such a distance could not have been achieved. Axelson cited this as a conclusive factor in each of his discussions of the topic.

A brief description of the Agulhas Current was given by Axelson.¹⁸ In the following account, I have taken information and quote freely from excellent publications by Dr Marten Gründlingh¹⁹ and Dr E. H. Schumann.²⁰

In the southern hemisphere, currents are intense on the western side of the ocean basins as a result of anticlockwise gyres driven by the major wind belts, which are reinforced by the Coriolis Force created by the rotation of the earth. In the South Indian Ocean, these forces combine to produce the Agulhas Current (Fig. 1) along the east coast of South Africa, '... one of the strongest currents of the world's oceans.'²¹ It forms off northern KwaZulu-Natal, through the confluence of waters from the western side of the Moçambique Channel and from the South Equatorial Current going westwards around the southern end of Madagascar. The current takes the form of a well-defined, intense central core or jet. For most of the time it flows offshore of the 200m isobath, following the continental slope all the way in a smooth, quasi-linear fashion, with a sideways meandering displacement of 10–15 km on either side.²² The core has a width of some tens of kilometres, and with current velocities on either side being considerable in parallel to the core, the overall width can be up to 100 km (off Durban, for instance).

Fig. 1, modified from a map by Dr Gründlingh,²³ shows clearly the average course of the core, together with bars expressing standard deviations of averages at eight sites. Data relating to this map are given in Table 1 (from Gründlingh²⁴).

Table 1

	1	2	3	4	5	6	7	8
Latitude	28°15'	29°15'	30°20'	31°03'	31°30'	32°30'	33°15'	33°45'
Core distance offshore (km)	29	58	43	30	43	35	50	69
Standard deviation	14	9	19	6	16	15	9	6
Bottom depth at intersection (m)	1100	500	2400	2300	2200	1300	2200	1900

The map and table show that the core, and hence the full strength of the current, during 77% of the time would be found offshore of the 200m isobath, with current force diminishing landwards as the seabed rises. The map also makes it clear that the largest standard deviation (where the current wanders most) is in the vicinity of Durban. The smallest standard deviations occur off Port Edward and off Port Elizabeth where the rise of the Agulhas Bank deflects the current offshore. In coastal waters the current normally has little or no effect. It would have been possible for the fleet to avoid its effects by sailing along the 25m isobath all the way from Algoa Bay to Durban, a course with no obstacles in the way.²⁵

Coastal or shelf currents occur in the inshore waters, and may constitute northward flows referred to as counter-currents. They are often apparent in the summer when discoloured water entering the sea from rivers is visibly moved northwards along the coast. When westerly winds blow, the Agulhas Current moves further offshore, and the counter-currents then increase and speed up.

The only encounter with a current recorded by Velho along the south-eastern coast started on 17 December, after the ships had passed the Keiskamma River. The wind changed to the east, and the fleet tacked out to sea to avoid the dangers of a lee shore, until close to sunset on the 19th, when the wind turned again to the west. They lay to that night, adrift, and the next day went landwards to find out where they were; '... to their amazement'²⁶ they found themselves back in Algoa Bay near the St Croix Islands. A strong westerly wind then '... enabled us to overcome the currents.' In tacking out to sea, Da Gama's ships probably encountered the inshore flank of the Agulhas Current in the region where the core normally lies about 50 km offshore (Locality 7 in Fig. 1). A strong easterly wind of the sort they experienced often moves the current shorewards. This encounter clearly created a great impression. Camoens conveyed it well:

For many days our gallant vessels ride
 Through calm and stormy waves alternately,
 With fluctuating hope our only guide
 We opened up new paths across the sea.
 And then, it seemed all progress was denied.
 The ocean, changing mood inconstantly,
 Despatched a current of such weight and force
 We made no headway in our northern course.

From this same retardation you may guess
 How powerful that current, how extreme.
 The force of wind which favoured us was less
 Than the head-on opposition of that stream.
 Then Nodus, the old south-wester, in distress
 At this deep challenge Neptune flung at him
 Unleashed a furious rage that blew us free
 In airy triumph o'er the stubborn sea.²⁷

The Agulhas Current certainly had the potential to be a serious impediment, but Axelson's view that Da Gama's fleet tried to sail against it all the way along the south-eastern coast is surely improbable. Having experienced the current so dramatically, the mariners would have been alerted to its existence. The Portuguese pilots in the Age of Discoveries attached great importance to 'nature's signs'²⁸ as aids to navigation. The *roteiros* they compiled contain information on what should be looked for at various stages in the *carreira da India*. Clues such as the colour of the sea, direction of the waves, the species of birds and direction of their flight,²⁹ presence of drifting seaweeds and of debris from large rivers, were important, especially as no means existed then of measuring longitude. Experienced pilots would quickly detect changes in the maritime environment.

It is pertinent to appreciate that the Agulhas Current is a very visible phenomenon, presenting many signs of its presence. Its core water is a superb, intense ink-blue colour, remarkably pellucid and quite unmistakable. In summer, the core has a temperature of up to 28°C., and so is perceptibly warmer than coastal waters. For this reason the current shows conspicuously in images assembled by heat receptors on the NOAA satellite (Fig. 2). Carried in the water are many different organisms that proclaim its tropical origin: spectacular jellyfish pulsate on their way; siphonophores, such as the violet-blue 'Portuguese man-o'-war' (*Physalia*) buoyed by its float and *Vellela* with its vertical 'sail', populate the surface; flying-fish scatter over the waves, and oceanic birds are about. The current is also often marked by a line of towering clouds which can be seen from afar, for example off Algoa Bay even though the current is well off shore there (Fig. 1 and Table 1).³⁰

With so much evidence of a powerful current, the fleet would prudently have kept inshore. This would also have enabled them to monitor their progress better. That they were at times close enough to see the land in considerable detail is proven by the following passage by Velho,³¹ referring to their journey north of the Keiskamma River:

As we coasted along two men began to run along the beach opposite us. This land is very attractive and well situated; and we saw many cattle wandering about on the land here; and the further we advanced the better did the land become and the higher the groves of trees.

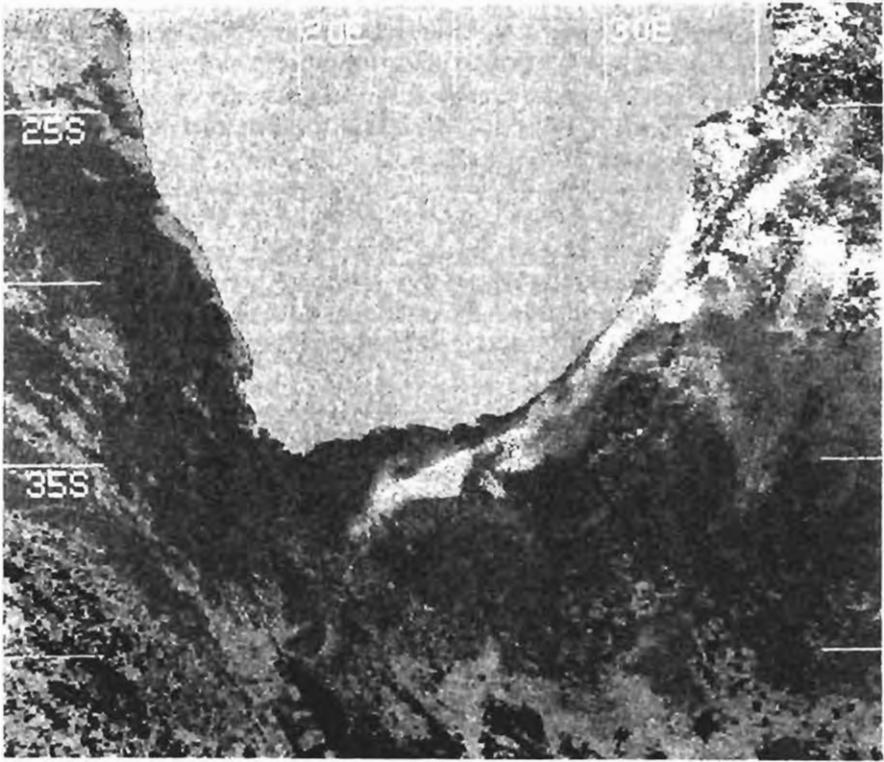


Fig. 2. *An image of Southern Africa recorded by the NOAA Satellite on the night of 10 October 1997. It was compiled through measurements of surface temperatures. The warm sea off Mozambique can be seen extending into the Agulhas Current whose course is clearly apparent along the south-eastern coast of South Africa. Recorded by RSMAS, University of Miami, and publicly available on the Internet.*

Conclusions

An indeterminate uncertainty surrounds all the calculations made above, and assumptions had to be made. The validity of the results depends particularly on the accuracy of Velho's record of 70 leagues: its correctness will never be known, but it is inconceivable that incompetent or inexperienced pilots and captains would have been chosen for such an important voyage. For the ships to have been south of the Mtamvuna River at midday on Christmas Day, an unlikely overestimate — about 11% of the distance sailed — would be required, or a misreading of latitude of at least $\frac{1}{2}^{\circ}$. It is more probable that the fleet was north of the Mtamvuna, even by 60 km or more, and thus off or past present-day Hibberdene.

In their *History of Natal*,³² Brookes and Webb take a light-hearted view of the possibility that Vasco da Gama gave the name Natal to a part of the Pondoland coast. They wrote: 'Since no one in Pondoland desires to be thought a Natalian, and since after all the present Port Natal was discovered "within the Octave"³³ there would seem to be no great harm in accepting Vasco da Gama's name as applying to the present Province. It is doubtful how far Julius Caesar was right in using the name "Britannia", but correct or incorrect, Britain and Natal are alike accepted

terms of History and Geography, time having consecrated the errors made long ago.'

Fortunately, no evidence exists of any error in attributing the name Natal to our Province. There are, instead, good reasons to accept that this was indeed the land along which Vasco da Gama and his companions coasted on Christmas Day 1497, far from their Lusitanian homeland and *en route* to their first encounter with the fabulous Indies.

NOTES

1. See, however, Armando Cortesão, *The mystery of Vasco da Gama*. Agrupamento de Estudos de Cartografica Antiga 12. Junta de Investigações do Itramar – Lisbon. Coimbra. 1973. He presents evidence that Vasco da Gama may have made a secret voyage in the years immediately following the return of Bartholomeu Dias in December 1488.
2. For example: J. Forsyth Ingram, 'The Discovery of Natal' in *Poems of a Pioneer*, 1893, and Guy Butler, 'Natal, 1497' in *Songs and Ballads*. David Phillips. 1978.
3. Peres, Damião (ed.), *Diário da viagem de Vasco da Gama facsimile do codice original*, 1. Oporto, 1838.
4. Ravenstein, E. G., *A journal of the first voyage of Vasco da Gama 1497–1499*. Hakluyt Society, London. 1898.
5. Axelson, E., *South African Explorers*. Oxford University Press (The World's Classics 538), 1954, pp. 9–10.
6. Axelson, E., 'Vasco da Gama in South African waters 1497' in *Dias and his successors*, ed. E. Axelson, Saayman & Weber, Cape Town, 1988, pp. 5–9.
7. *Ibid.*, p. 9, footnote 34.
8. Axelson, E., *South-East Africa 1488–1530*. Longmans, Green & Co., 1940, p. 37, footnote 1.
9. Axelson, E., *Portuguese in South-East Africa 1488–1600*. Struik, 1973, p. 23.
10. *Ibid.*, p. 23, footnote 36.
11. *Dias and his successors*, p. 9, footnotes 33, 34.
12. This length of a league is confirmed by A. M. Espateiro, *Dictionary of Naval Terms. English–Portuguese*. Edição do Centros de Estudos de Marinha, Lisbon, 1974.
13. *South-East Africa 1488–1530*, p. 37.
14. An experienced Durban yachtsman, Mr W. C. Vanderverre, informs me that in good conditions an ordinary cruising yacht can cover 120 nautical miles in 24 hours (= 5 knots), and can complete the voyage from Algoa Bay to Durban in under three days. I am grateful to him for information about sailing along the south-east coast.
15. *South-East Africa 1488–1530*, p. 37, footnote 1.
16. Astrolabes became available for shipboard use around 1470. See Colin Martin, 'Portuguese marine cartography in the fifteenth to seventeenth centuries' in *Dias and his successors*, p. 87.
17. *Dias and his successors*, p. 9.
18. *Ibid.*, p. 9, footnote 33.
19. Gründlingh, Marten, L., 'On the course of the Agulhas Current', *South African Geographical Journal* 65 (1), pp. 53–57, 1983.
20. Schumann, E. H., 'The oceanic environment around Southern Africa' in *South African Sailing Directions*. Vol. 1, Chapter 3, pp. 34–42. The Hydrographer, SA Navy, 1994.
21. *Ibid.*, p. 34.
22. Gründlingh, *op. cit.*, pp. 53, 55.
23. *Ibid.*, p. 54, fig. 3.
24. *Ibid.*, p. 54, table 1.
25. On the Natal South Coast, residents are accustomed to the sight of ships of substantial size passing *en route* to Durban so close to the shore that on calm nights the sound of their engines can be heard. A way of fixing the position of a ship, used by the captains of coastal steamers in the 1930s, was to keep inshore close enough to read the names of the railway stations on the South Coast Line through a telescope.
26. Axelson, *Portuguese in South-East Africa*, p. 23; not a comment by Velho, but doubtless they were much surprised.

27. Luis de Camoens, 'The Lusiads', Canto 5, translated by Guy Butler, 1987, in M. van Wyk Smith, 'Shades of Adamastor', pp. 58–59. Institute for the Study of English in Africa, Rhodes University, Grahamstown; and National English Literary Museum, Grahamstown, 1988. Verses 66 and 67 are quoted with permission from the publishers.
28. '... pilots relied on a combination of latitude-sailing, dead reckoning, and, above all, how to interpret nature's signs.' C. R. Boxer, *The Tragic History of the Sea, 1589–1622. Narratives of the shipwrecks of the Portuguese East Indiamen São Thomé (1589), Santo Alberto (1593), São João Baptista (1622) and the journeys of the survivors in South East Africa*, Hakluyt Society, 2nd ser., vol. cxii, Cambridge, 1959, pp. vi–vii.
29. The importance of sightings of birds as indicators of proximity to the hazardous reefs and islands of the Moçambique Channel was often mentioned in *roteiros*. See B. R. Stuckenberg, *The location and identity of the Baixos da Judia: an issue in the Portuguese and British historical cartography of the Mozambique Channel*. Academia da Marinha, Lisbon (in press).
30. A line of clouds over the current can sometimes be seen clearly on satellite images broadcast in the weather forecasts on South African television. In the first week of July 1997, clouds covered the entire length of the current core from northern Zululand to Algoa Bay on three consecutive days.
31. *Dias and his successors*, p. 8.
32. Brookes, Edgar H. & Webb, Colin de B.. *A History of Natal*. University of Natal Press, 1965, p.3.
33. Here 'Octave' means the seventh day after a festival.

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