

THE IDENTITY OF THE CHOCOLATE ALBATROSS *Diomedea spadicea* OF GMELIN, 1789 AND OF THE WANDERING ALBATROSS *Diomedea exulans* OF LINNAEUS, 1758

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ABSTRACT

The Chocolate Albatross of Latham (which was the foundation of *Diomedea spadicea* of Gmelin, 1789) was based for all relevant taxonomic purposes on the painting by Sydney Parkinson of a Wandering Albatross taken in 1768 in the South Atlantic Ocean off the Rio de la Plata. Daniel Solander's manuscript description of the specimen indicates it was probably an example of the population breeding at the Tristan da Cunha group and Gough Island, in which case *dabbenena* of Mathews, 1929 as the name of the subspecies would be pre-dated by 140 years by *spadicea* of Gmelin, 1789. Continuing confusion over the identity of the population to which the Wandering Albatross described by Linnaeus belonged has prompted a full examination of the sources on which he based his *Diomedea exulans*. As a result of this examination it is concluded that *exulans* as the name of the nominate subspecies of the Wandering Albatross is properly applicable to the larger southern populations which breed at South Georgia, Marion and Prince Edward, Crozet, Kerguelen and Macquarie Islands.

CHOCOLATE ALBATROSS *DIOMEDEA SPADICEA* OF GMELIN, 1789

Joseph Banks noted the difference in size of the great albatrosses which he saw and shot during the passage of the *Endeavour* down the Atlantic coast of South America and into the Pacific in the course of James Cook's first circumnavigation (1768-71). On 3 February 1769, shortly after they had entered the Pacific Ocean, Banks recorded that he shot "*Diomedaea Exulans* Albatross or Alcatrace, differing from those seen to the Northward of the Streights of La Maire in being much larger and often quite white on the back between the wings, tho certainly the same species" (Banks in Beaglehole 1963:I:232). Solander recorded this bird as having a length of 4 feet 4 inches and a wingspan of 10 feet 1 inch. Westerskov (1961:155) thought that the Banks entry suggests that the specimen taken on 3 February 1769 may have been a Royal Albatross *Diomedea epomophora* Lesson, 1825. However, it is quite clear from Solander's description of this bird, published by Mathews (1910-28:II:254) but not considered by Westerskov, that it was a specimen of the Wandering Albatross in plumage between stages 2 and 3 of Harrison (1989:223) and Marchant & Higgins (1990:276).

One of the smaller albatrosses to which Banks referred had been shot by him on 23 December 1768, when the *Endeavour* was at 37° 11' S, 50° 32' W in the south-west Atlantic Ocean off the Rio de la Plata. He "killed an albatross *Diomedaea exulans* who measured 9 ft 1 inch between the tips of his wings" (Banks in Beaglehole 1963:I:207). This specimen formed the

basis of Solander's description of *Diomedea exulans*. His original manuscript is in Sol. Z8 (Solander Slips, Aves at ff.151-2) with a fair copy in Sol. Z4 at f.3. Both are in The Natural History Museum, London (Diment & Wheeler 1984:475-7). Although Mathews (1910-28:II:254) published Solander's descriptions of his so-called *Diomedea exulans* varieties, he did not publish Solander's description of the *Diomedea exulans* specimen taken on 23 December 1768. That description is published here in its original Latin with an English translation kindly provided by R.B. Sibson:

exulans. DIOMEDEA (Linn.Syst.nat.214.1) (alis pennatis, pedibus aequilibribus tridactylis,) rostro albido, lateribus mandibulae inferioris integris, facie alisque subtus albis.

Fig. Pict.

Habitat prope Americam australem ubi Latit. XXXVII circiter 100 Leucas nauticas a Litore captus (Dec.23. 1768) in Oceano australi vulgo Pacifico appellato Lat. austr. XXXVI.49. Long. occid. CXI.30 (March 3, 1769.) Rostrum album apice albido-corneum: Mandibula superior superne basi calva ibique late convexa, deinde per medium parum carinata, apice rotundato-adunca, a naribus ad sinum utrinque sulco tristriato exarata. Nares laterales prope basin, oblique tubulosae, prominentes, patulae, ovales. Mandibula inferior paulo brevior, recta, subtus antice carina tereti aucta, apice truncata, ac si lima esset abrasa, lateribus integris. Oculi nigri: iride cana. Caput superne cinereum, circum oculos et subtus album. Gula alba. Collum, Dorsum, Pectus & Latera cinerea. Abdomen, Crissus & Femora alba. Alae angustae, longissimae, supra e fusco-nigricantes, subtus niveae. Cauda brevissima, rotundata, supra nigricans, subtus e fusco-cinerea. Cristi pennae basi albae, apice cinereae. Pedes e glauco-albi; Digiti tres antichi, nullo postico; Ungues albi lanceolati.

Longitudo ab apice rostri ad finem caudae 3 ped. 3 unc. Longitudo inter apices alarum expansarum 9 pedes. Longitudo Brachii 10 unc. Longitudo Cubiti 15. Longitudo Metacarpi cum ala 24 unc. Longitudo caudae 9 unc. Longitudo Digiti intermedii 6 unc. Longitudo Rostri 5 unc. Pondus 12 Libr. (Aver du pois).

exulans DIOMEDEA (Linn.Syst.Nat.214) (with feathered wings, horizontal feet, three-toed), bill whitish, the sides of the lower mandible entire, the face and wings beneath white.

Fig. Pict.

It lives near South America where it was taken Lat.37 about 100 sea miles (leagues) offshore (23 Dec. 1768) in the southern ocean commonly called the Pacific Lat. south 36.49 Longitude west 111.30 (March 3, 1769). Bill white with whitish-horny tip. Upper mandible above with a bare (smooth) base and there broadly convex; then through the centre slightly keeled, with the tip rounded and hooked, grooved from nostrils to curve on both sides with a triple furrow. Nostrils on the side near the base slanting, tubular, conspicuous, spreading, oval. Lower mandible slightly shorter, straight, at the front underneath, enlarged by a smooth keel, with tip ending abruptly, as if it had been scraped (abraded) with a file, with sides entire. Eyes black, iris white. Head above ashy, white around the eyes and below. Throat white. Neck, back, breast and sides ashy. Abdomen, vent and thighs white. Wings narrow, very long; above dusky black, below snow white. Tail very short, rounded, blackish above, dusky-ashy below. Feathers of the vent white at the base, ashy at the tip. Feet grayish-white. Toes three forward; none back. Claws white, lanceolate.

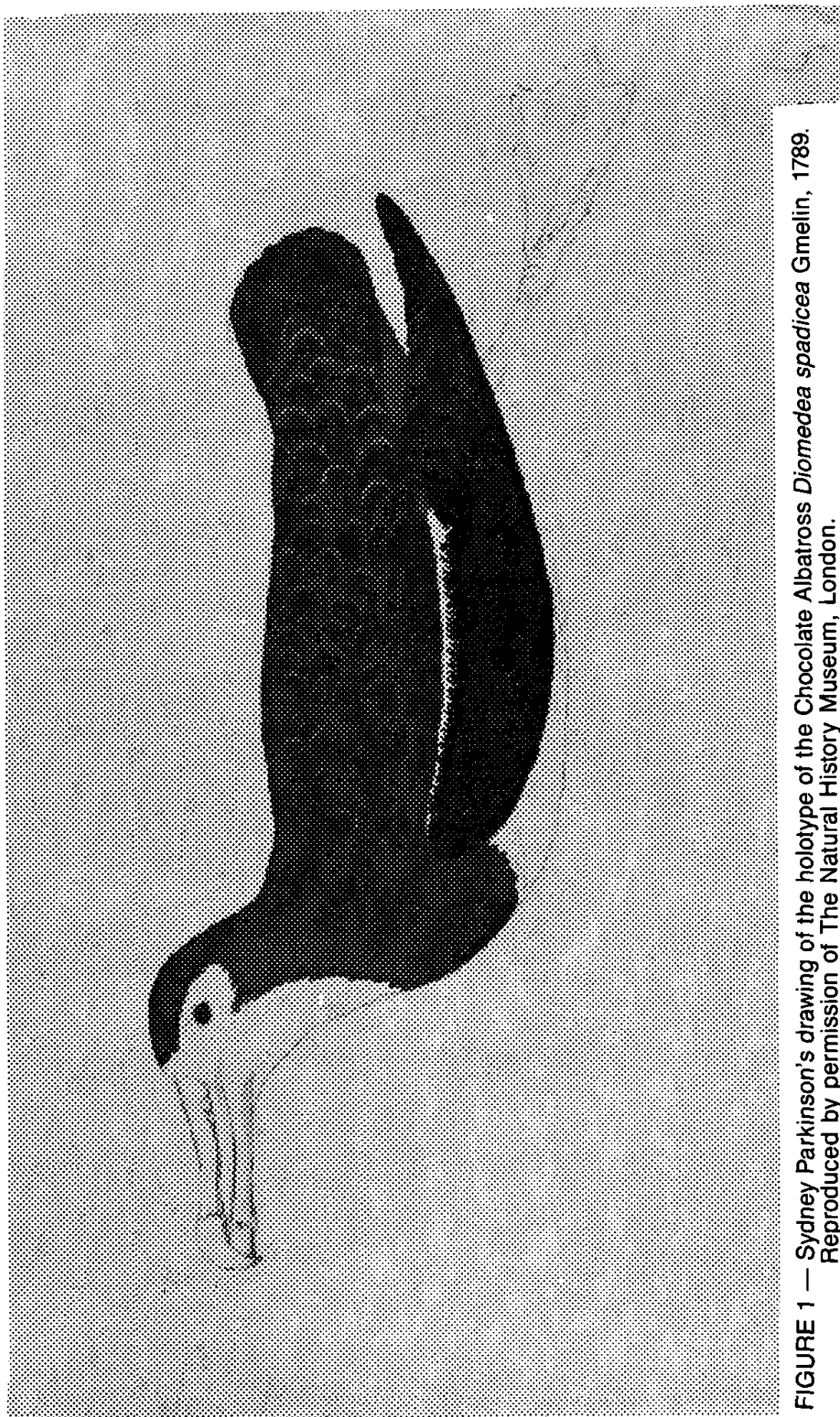


FIGURE 1 — Sydney Parkinson's drawing of the holotype of the Chocolate Albatross *Diomedea spadicea* Gmelin, 1789. Reproduced by permission of The Natural History Museum, London.

Length from tip of bill to end of tail 3 feet 3 inches	(= 99.06 cm)
Length between tips of spread wings 9 feet	(= 274.32 cm)
Length of brachium 10 inches	(= 254 mm)
Length of cubitum 15 inches	(= 393.7 mm)
Length of metacarpus with feather 24 inches	(= 609.6 mm)
Length of tail 9 inches	(= 241.3 mm)
Length of middle toe 6 inches	(= 152.4 mm)
Length of bill 5 inches	(= 127 mm)
Weight 12 lbs.	

The specimen of *Diomedea exulans* which Solander referred to as being taken in the Pacific Ocean at 36°49' S, 111°30' W on 3 March 1769 was collected by Banks among 69 specimens of at least seven species of Procellariiformes which he recorded as being taken on that date. Banks noted that the albatross collected was "very brown exactly the same as the first I killed, which if I mistake not was nearly in the same latitude on the other side of the continent" (Banks in Beaglehole 1963:I:236). The identity of this specimen is indeterminable. When Banks referred to it being 'exactly the same' he may have meant it was exactly the same only as to colour or he may have meant it was exactly the same in all respects. The specimen could have been an immature of either of the recently described (Robertson & Warham 1992) *D.e. antipodensis* or *D.e. gibsoni*, or an adult female of the former, or an immature *D.e. exulans*.

The specimen taken on 23 December 1768 was drawn by Sydney Parkinson, natural history draughtsman on Cook's first voyage. It is folio 25 of Volume I of Parkinson's zoological drawings done on the voyage, formerly in the ownership of Banks and now in The Natural History Museum, London (Sharpe 1906:176; Lysaght 1959:277; Wheeler 1986:43). It is an unsigned, not quite finished, watercolour painting which bears the following notations:

The face & throat white as mark'd of one the figure [sic] the whole body above fusca palido. the belly the feet whitish wt a cast of blue the nails white. Decr. 23d.1768:Lat.37 South:No. 9 *Diomedea exulans*.

The painting has been reproduced in monochrome by Carr (1983:239, Pl.220) and is reproduced again here (Figure 1). It clearly depicts a Wandering Albatross in Stage 2 plumage of Harrison (1989:223) and Marchant & Higgins (1990:276).

In 1785, John Latham (1781-85:III:308) described four supposed species of albatross, including one which he named the Chocolate Albatross:

Lev. Mus.

Description	Size larger than the <i>Sooty Albatross</i> . The bill in this bird of a yellowish white: irides brown: fore part of the head, round the eye, chin, and throat, white: the plumage in general of a fine deep chocolate-colour; the neck and under parts palest: the inner ridge of the wing, and under wing coverts, white; and the belly inclines much to white: the tail is short, rounded in shape; that and the wings equal in length: the legs blueish white: claws white.
Place	This bird varies in having more or less white about the head, and in a greater or less degree of purity. Seen in the <i>South Seas</i> , in lat. 37, the end of <i>December</i> .

This description formed the basis of *Diomedea spadicea* of both Gmelin (1788-93:I:568) and Latham (1790:II:790). They clearly regarded it as a different species from *Diomedea exulans* – a view still held years later by Latham (1821-8:X:52) – no doubt primarily because of its different coloured plumage.

G.R. Gray (1844:166) identified *D. spadicea* of Gmelin and Parkinson folio 25 as possibly representing the 'young' of *D. exulans*, which he considered (Gray 1845:18) to be dark chocolate brown with face and throat white, probably on the basis of the immature specimens, said to be from New Zealand and the coast of South Australia, which had been presented to the British Museum by the New Zealand Company and Sir George Grey (Gray 1844:166; Salvin 1896:442). About the same time (Gray 1844-9:III:650 but letterpress dated June 1844) he identified *D. spadicea* with Parkinson folio 25 but then regarded them as representing a species different from *D. exulans*. Later still (Gray 1869-71:III:109), he identified *spadicea* of Latham with *D. exulans*.

Coues (1866:175), purportedly on the authority of Gray, identified *D. spadicea* and Parkinson folio 25 with the young of *D. exulans*. He considered that "the *D. spadicea* of Gmelin and Latham is now universally conceded to be based upon the young" of that species.

Salvin (1876:237) identified Parkinson folio 25 as representing a young *D. exulans* and (Salvin 1896:441-2) the *D. spadicea* of Gmelin and Latham as being synonymous with *D. exulans*. Sharpe (1879:145) identified *D. spadicea* of Gmelin with *D. exulans*, later (Sharpe 1906:176) considering that Parkinson folio 25 "probably" represented the young of that species.

Although Parkinson folio 25 has been identified with *D. spadicea* of Gmelin and Latham, no-one seems to have recognised that Latham's description of the Chocolate Albatross (on which *D. spadicea* was founded) was based mainly on the Parkinson drawing and some of the notations thereon. It is true that Latham, when describing his Chocolate Albatross, indicated the presence of a specimen in the Leverian Museum in London. This was possibly the specimen sold 21 years later as Lot 37 – "Albatross, *Diomedea exulans*" – on the last day but two (11 July 1806) of the sale of that collection (Donovan 1806). It was purchased by Leopold von Fichtel of Vienna for £4. Pelzeln (1873:51) considered that this specimen, apparently now in the Naturhistorisches Museum in Vienna under No. 13648, agreed well with Latham's description of the Chocolate Albatross, of which he thought it was perhaps the type. However, there is no conclusive evidence that the Vienna specimen is the same bird as that in the Leverian Museum to which Latham referred. The true identity of Latham's Leverian bird remains unknown. Given that it was a Wandering Albatross, it could have been an individual of any one of the populations of the species.

Latham clearly had freedom of access to and made use of Parkinson's drawings, then in the ownership and possession of Joseph Banks. Latham's description of the plumage of his Chocolate Albatross closely matches that of the bird depicted in Parkinson folio 25, even to "the inner ridge of the wingwhite". However, Latham did not mention the white feather tips appearing on saddle, back and rump which are shown in the painting, but

then neither did Solander in his original description of the same bird. Latham said that the tail and the wings of his bird were equal in length. In the bird as depicted by Parkinson the folded wing hardly extends beyond its tail. Latham must have obtained his information on the colour of the irides from the drawing and not from Solander's description (to which he did not have access), where that feature is described as being white. Latham described the legs of his bird as being bluish-white and the claws white. These features are uncoloured in Parkinson's folio but the notations thereon give "the feet whitish wt a cast of blue the nails white". Furthermore, his "seen in the South Seas, in lat.37, the end of December" was no doubt taken from the notation "Decr.23d. 1768:Lat.37 South". Possibly the only part the Leverian Museum specimen played in Latham's description lay in his comments that "this bird varies in having more or less white about the head, and in a greater or less degree of purity"; that its underwing coverts were white and that it was larger than the Sooty Albatross.

In the circumstances Latham's description can be regarded, for all relevant taxonomic purposes, as having been based on the bird depicted in the Parkinson drawing. That bird can therefore be accepted as the type of Gmelin's *D. spadicea* and Solander's description is in turn the original description of the type specimen.

Previous writers have considered Parkinson's drawing to represent the young of *D. exulans*. Now, having recognised the taxonomic importance of Parkinson's drawing and Solander's description, we also have some measurements from the latter which may enable us to determine the population of Wandering Albatross to which their bird belonged. It clearly was not a specimen of *D.e. amsterdamensis* Roux *et al.*, 1983 because it did not have the dark-tipped bill of that form. Nor is it likely to have been of *D.e. gibsoni* or *D.e. antipodensis* if the describers of those forms are correct in their belief that they seem restricted to the Pacific Ocean. It seems then that it was an immature specimen either of the larger southern populations or of the smaller population breeding at the Tristan group and Gough Island. It is appropriate to remember that, when Banks and Solander collected and described their specimen two and a quarter centuries ago, the Tristan group and Gough Island had not been settled by humans (e.g. Williams 1984), and the race of the Wandering Albatross breeding there may have been much more numerous than it is today.

As Murphy (1936:573) related, Dabbene was at one time very puzzled by adult Wandering Albatrosses of strikingly small size, taken in the same parts of the ocean along the southerly coasts of South America as large birds like those of the Antarctic breeding grounds. Dabbene (1926:338-9) described two such small specimens as *Diomedea chionopectera alexanderi*, which Mathews (1929:11) shortly afterwards renamed *dabbenena* because the name *alexanderi* was preoccupied. It is of some interest to note that Dabbene's type specimens were taken on 6 March 1914 at 38° 30' S, 56° W, 160 km off the east coast of Argentina, very close to where Solander's bird had been captured.

The true identity of Solander's bird may never be known in the absence of the specimen itself. However, in its body length and wingspan and particularly short bill, Solander's bird most closely fits the dimensions given

by Murphy (1936:571-3, Fig.55) for specimens of *dabbenena*. It therefore seems probable, on the basis of available evidence, that it was an individual of the population of smaller Wandering Albatross known to breed at the Tristan group and Gough Island.

If Solander's bird was a specimen of the Tristan/Gough population, then *spadicea* Gmelin, 1789 predates *dabbenena* Mathews, 1929 by 140 years. The implications of this for nomenclature become obvious. However, *spadicea* does not appear to have been used as the name of a supposedly separate albatross taxon since G.R. Gray did so in 1849. On the other hand, *dabbenena* has not been consistently used since its inception in 1929 for the Tristan/Gough population because of continuing confusion over the true identity of the population to which the Wandering Albatross described by Linnaeus belonged.

As examples of this continuing confusion, Bourne has restricted nominate *exulans* at one time (Bourne 1977:7; Bourne in Cramp 1977:117) to the Tristan/Gough population and at another (Bourne 1989:112) to the larger southern populations. Warham has at one time (in Serventy *et al.* 1971:65-6) been party to restricting nominate *exulans* to the *antipodensis/gibsoni* populations; at another (Warham 1990:424) has restricted it to the Tristan/Gough population; and at yet another (Robertson & Warham 1992:74) has been party to considering nominate *exulans* to be indeterminable as to population, in this last case purportedly following Robertson (1986), who did not in fact state that view.

This century, most authors who have considered the species to be polytypic (beginning with Mathews 1910-28:II:252; 1934a:152; 1934b:815) have restricted nominate *exulans* to the Tristan/Gough population, sometimes together with the populations recently described as *antipodensis* and *gibsoni*. In this case *spadicea* Gmelin, 1789 (if indeed of the Tristan/Gough population) and *dabbenena* Mathews, 1929 would be synonyms of *exulans*. On the other hand, only a few authors (e.g. Murphy 1936:547-8; Watson 1975:86; Clancey 1978; Howard & Moore 1991:6-7) have restricted nominate *exulans* to the larger southern populations of the Wandering Albatross. In this case the Tristan/Gough population would be *Diomedea exulans dabbenena* Mathews, 1929, unless *spadicea* Gmelin, 1789 is to take precedence over *dabbenena*.

It therefore seems opportune, in the interests of historical and scientific accuracy and the stability of the nomenclature of the species, to revisit the problem of the true identity of the population of Wandering Albatross to which *Diomedea exulans* of Linnaeus, 1758 belongs. To solve this problem it is essential that full and proper consideration be given to *all* of the sources from which the species was formed.

WANDERING ALBATROSS *DIOMEDEA EXULANS* OF LINNAEUS, 1758

Carl Linnaeus (1758:132) included two supposed species in the new genus *Diomedea* which he formed in the tenth edition of his *Systema Naturae*. Those species, *Diomedea exulans* and *Diomedea demersa*, were in fact birds of distinctly different genera, the latter being a member of the Spheniscidae or Penguins, to which it was subsequently removed. Linnaeus did not give any derivation of his *Diomedea*, but he did identify *Diomedea exulans* with

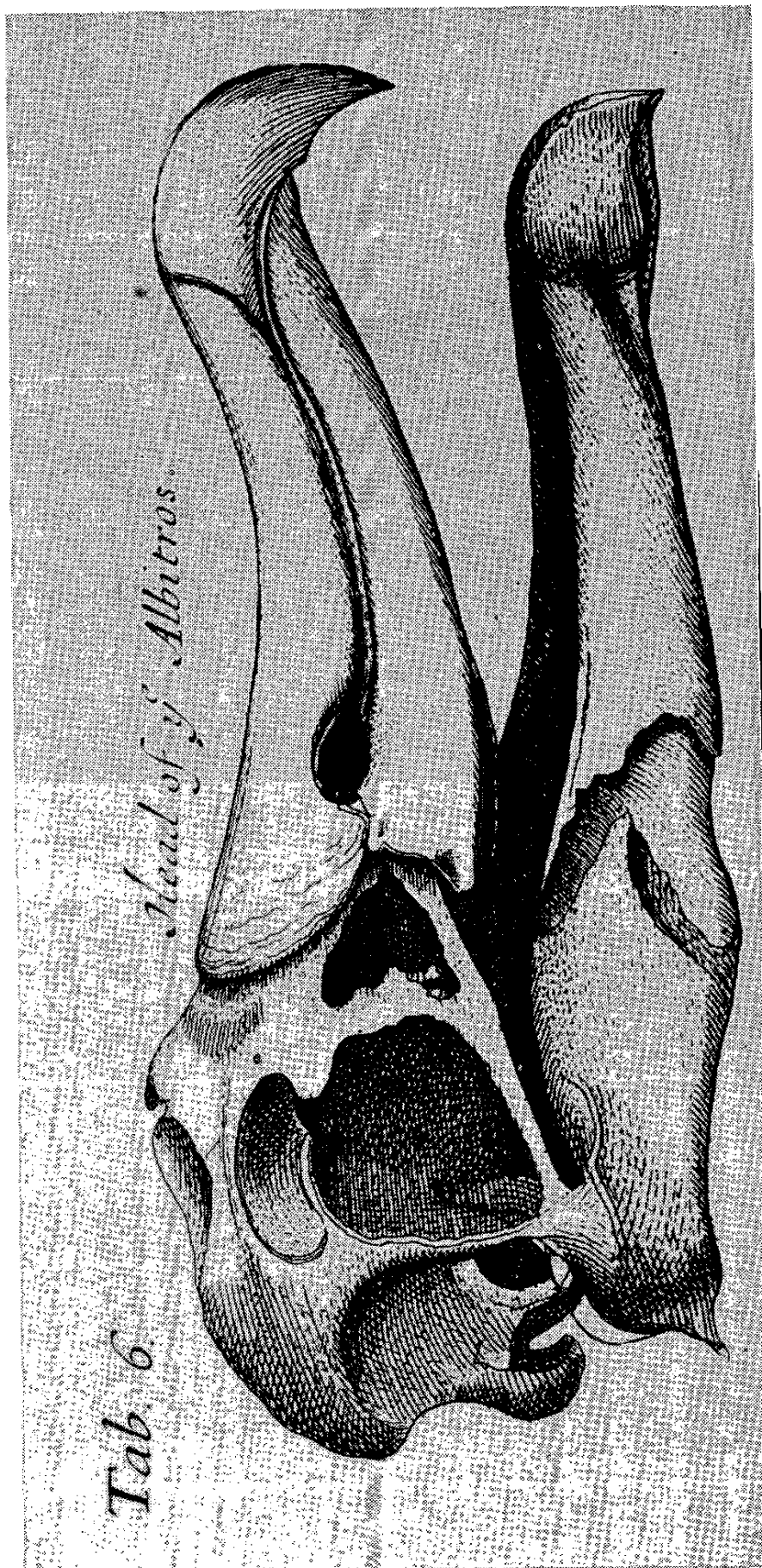


FIGURE 2 — Nehemiah Grew's illustration (1681) of "Head of ye Albitros".

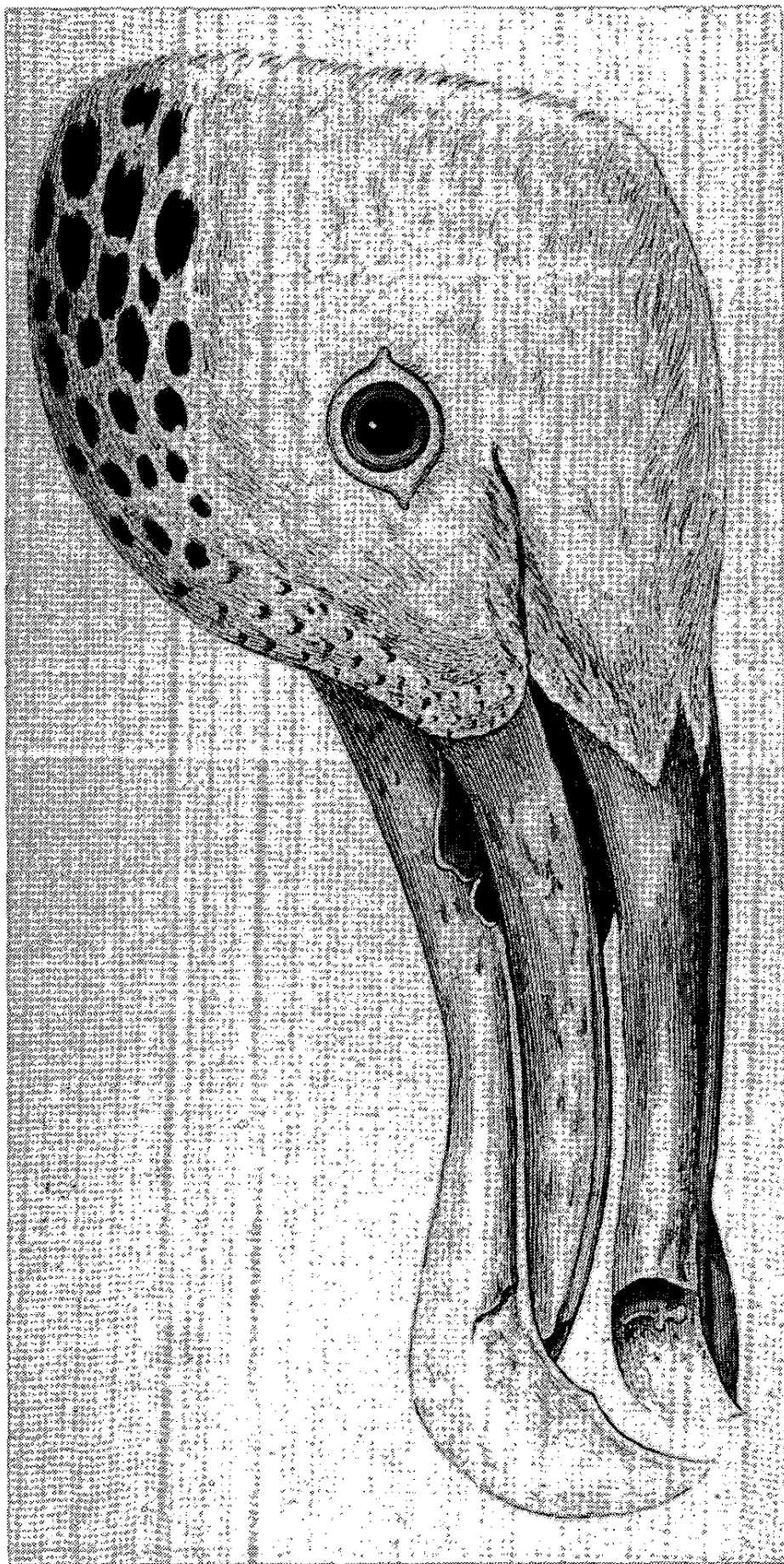


FIGURE 3 — Eleazar Albin's illustration (1737) of "The Head and Bill of the Man of War Bird".

the "Albatros" of the three authors he quoted. J.R. Forster, official naturalist on Cook's second circumnavigation, pointed out (1785:563) that 'it is most likely that the first navigators, since Amerigo Vespucci, gave the name of Albatros or Alcatros to this species of birds for it does not seem that the ancients had any knowledge of it'. The ancients did, however, have knowledge of a bird known as the *Diomedea avis* which inhabited the Diomedean Islands (now the Tremiti Islands) in the Adriatic Sea. It seems clear that this bird was in reality the shearwater which we today know as *Calonectris diomedea* (Scopoli, 1769). Linnaeus himself (1766-8:I:213) included the *Diomedea avis* under his *Procellaria Puffinus*, which indicates that he regarded it as different from birds of the genus he had called *Diomedea* in 1758. He therefore probably did name the genus after the mythical Greek warrior Diomedes, whose companions after his death were turned into birds.

Linnaeus had no personal knowledge of the habits or habitat of the bird he described as *Diomedea exulans*. It seems likely that he formed the specific name *exulans* for what he considered to be the wandering or wide-ranging habits of his bird as indicated by the habitats given for the 'Albatros' in the writings of the authors he quoted. These Linnaeus summarised as "Habitat intra tropicos Pelagi & ad Cap. b. Spei".

Be that as it may, *Diomedea exulans* was described by Linnaeus (1758:132) as follows:

exulans. 1. D. alis pennatis, pedibus tridactylis.

Albatros. *Edw.av.* 88.t.88. *Alb.av.* 3.p.76.t.81. *Grew.mus.* t.6.f.1. *Habitat intra tropicos Pelagi & ad Cap.b.Spei, aethera altissime scandens; victitans e Triglis volitantibus a Coryphaena exagitatis. Statura Pelecani Aquili, naribus ovatis prominulis, non vero linearibus; cauda rotundata brevi nec forficata. Rostrum in hac quadruplo majus.*

There is no evidence that Linnaeus ever saw a specimen of the bird which he so inadequately described without even, for instance, the slightest attempt at a plumage description. His information on *Diomedea exulans* was obtained solely from the three literature references which he quoted – Grew (1681), Edwards (1743-51) and Albin (1731-8). Without them it would obviously be impossible to even attempt to guess the true identity of the species to which he referred.

Taking these references chronologically, we find that Nehemiah Grew (1681:73-4, t.6.f.1) described "The Head of the Man of War; called also *Albitrosse*" based on the skull only of a bird of unstated origin then in the Museum of the Royal Society of London. There clearly was confusion over the identity of the bird to which the skull belonged. "Supposed by some to be the Head of a *Dodo*. But it seems doubtful. That there is a Bird called *The Man of War*, is commonly known to our Sea-men; and several of them who have seen the Head here preserved, do affirm it to be the Head of that Bird; which they describe to be a very great one, the Wings whereof are eight feet over".

Grew's illustration of the "Head of ye Albitros" (Fig. 2) is clearly that of a member of the Diomedidae. The measurement of seven inches for the bill, which he gave in his description of the skull, was considered by Bourne

(1989:113) to be applicable only to one of the larger southern populations of great albatross, and since few ships reached the range of the Royal Albatross at that time, doubtless the southern race of the Wandering Albatross. However, Grew's description of a skull only is clearly insufficient by itself for a specific identity to be properly attributed to it and thence to Linnaeus's *Diomedea exulans*. Grew's skull, given that it was of a large southern albatross of unknown origin, could equally have been that of a Royal Albatross.

Then, in 1738, Eleazar Albin (1731-8:III:76,t.81) described "The Bill of the Man of War Bird" which he said "is also called the *Albitross*". He had the following to say about the feeding habits of the Man of War Bird to which he thought his bill belonged:

..the Shape of its Bill shews it to be a Bird of Prey living mostly on Fish, which it takes from the Bird called the *Booby*, which is very dextrous in catching the *Flying Fish*, when hunted or chased by the *Dolphins*; as soon as the *Booby* has taken some of them, the *Man of War* comes down with great Swiftness upon him, the other Bird immediately disgorges the Fish, which the *Man of War* catches before it falls into the Water: This I have seen them do often when I was in the *Indian Seas*.

Albin said that his illustration dated 1737 of "The Head and Bill of the Man of War Bird" (Fig. 3) was based on a bill he received from Dr Douglas. Like that of Grew, the hand coloured illustration clearly depicts the bill of a member of the Diomedidae. However, the accompanying description of the skull was copied from Grew, whose bill was said to be of seven inches, whereas Albin depicted the bill of a different bird the length of which he did not give but which measures some 5 inches in his illustration. Albin's composite account is of no assistance in enabling a specific identity to be safely attributed to Linnaeus's *Diomedea exulans*.

In 1747, George Edwards (1743-51:II:88, t.88), in describing his "Albatross", pointed out that

Albin confounds this bird with one called in the West-Indies the Man-of-War Bird, wherein he is wrong; for, on examining voyagers on that head, I find they make the Man-of-War a much smaller bird; and they who have mentioned the Albatross make it of the first magnitude of water-fowl: so that I can by no means agree that they are the same birds.

Edwards went on to transcribe

Sir Hans Sloane's description of the Man-of-War Bird out of his History of Jamaica, to shew it is not the Albatross, which is as follows, vol.i p.30. "This bird seems very large, bigger than a Kite, and black; they fly, like Kites, very high, and often appear immoveable over the water, to wait for and catch small fish appearing on its surface; they are sharp-winged, and their tail is forked". I take Mr Albin's Frigate Bird to be the same with the Man-of-War Bird.

Linnaeus (1758:133) himself referred to the Man-of-War Bird of Sloane (1707-25:I:30) under his description of *Pelecanus Aquilus*. Although he had Edwards's work before him, Linnaeus ignored all that Edwards had said about the way in which Albin had confounded the Albatross with the quite

different Man-of-War Bird. Linnaeus uncritically attributed features to his *Diomedea exulans* which Edwards clearly recognised did not belong to his "Albatross". Linnaeus repeated all of his errors in the substantially similar account of *Diomedea exulans* which appeared in the twelfth edition of his *Systema Naturae* (1766-8:I:214), but on this occasion he added Brisson (1760:VI:126-8) to the literature references he had given in 1758.

J.R. Forster was the first field naturalist to recognise the mistakes of Linnaeus. Forster collected what he regarded as two different species of *Diomedea* before the *Resolution* on Cook's second voyage made landfall at Cape Town at the end of October 1772. One of them was a specimen of the bird Edwards had described as the "Albatross", which Forster identified with the *Diomedea exulans* of Linnaeus. Forster recorded his views on the matter in his Journal entry for 23 October 1772 in the following manner (Hoare 1982:I:179):

They never soar high but continually skim over the Waves. Linnaeus is therefore certainly mistaken, when he affirms the contrary (*altissime aethera scandens*). These birds are found no where, but beyond the Tropics in the Southern hemisphere (*habitat intra Tropicos*). They are infinitely larger than the Man of war bird, & I heard that in the Endeavour they shot some of 12 & others of 14 foot wings, (*Magnitudo Pelecani Aquili*). I believe, I can trace this mistake to Albin, who calls a Man of war bird, an Albatross & there Linnaeus took all these Notions: but they only are applicable to the Man of warbird (*Pelecanus Aquila*) & to no birds of the Albatross kind.

Forster (1772) shortly afterwards communicated these views directly to Linnaeus in a letter written from the Cape.

The *Diomedea exulans* of Linnaeus would be completely worthless as an acceptable name for a specific albatross taxon had he not included the "Albatross" of Edwards among his literature references for the species he was attempting to describe. Unlike Grew and Albin, Edwards not only gave a place of origin for his birds from which a type locality can be fixed; he also gave a description and illustration of them sufficient to enable both their specific and subspecific identity to be determined.

Edwards in his description mentioned that he had "examined two birds of this kind stuffed, which agreed in magnitude, and all other respects, from which I made sketches; the one was shewn to me by George Holmes, Esq. Keeper of the Records in the Tower of London; the other is in the possession of Mr. Benjamin Cowell, surgeon, in Lombard-street." The subsequent fate of these specimens is unknown. Contrary to Bourne (1989:106), there is no evidence that either of them, or the smaller skeleton which Edwards said he had by him, ever found their way to the British Museum or to the Royal College of Surgeons of England.

There does not seem to have been any real difficulty over the type locality of *Diomedea exulans* except on the part of Mathews who, on one occasion within the space of three pages of the same work (1910-28:II:250-2), gave it variously as the Cape Seas, the South Atlantic Ocean and Tristan da Cunha! Edwards recorded of the origin of his specimens that "these birds are brought from the Cape of Good Hope, where they are seen in considerable numbers: I have not heard of their being frequent in any other part of the world." It should be noted in this context that Edwards (1743-51:II:89) mentioned

that his Great Black Petrel (the type of *Procellaria aequinoctialis* Linnaeus, 1758) "came with the Albatross by an India ship." Ships travelling to and from the East Indies would no doubt have passed through seas other than those about the Cape of Good Hope in which the "Albatross" described by Edwards occurred. However, in view of Edwards's comments about the locality, and at this distance in time in the absence of other evidence, the seas in the vicinity of the Cape of Good Hope may be accepted as the place of origin of his birds.

Bourne (1977:7; 1989:106, followed by Robertson & Warham 1992:74) said that Linnaeus gave the habitat of *exulans* as between the tropics and the Cape of Good Hope which meant, according to Bourne, that his birds could have come from almost anywhere. However, the habitat given by Linnaeus for his *Diomedea exulans* was actually "intra tropicos Pelagi & ad Cap.b.Spei", a habitat clearly based by him on the localities he obtained from the works of Albin and Edwards. The latter said that "these birds are brought from the Cape of Good Hope". The habitat given by Linnaeus may therefore be interpreted as "open seas within the tropics and at the Cape of Good Hope". As "intra tropicos Pelagi" is more properly a reference to the habitat of the Man of War Bird, the correct type locality of *Diomedea exulans* may be accepted as the seas in the vicinity of the Cape of Good Hope. Forster (1785:569), based on his own observations in 1772-5, said that *exulans* was found in large numbers in the seas to the south and to the west of the Cape of Good Hope.

Edwards said that his bird was "big bodied, and very long winged; I take it to be one of the largest, if not the very biggest, water-bird in the world; by measuring him crossways, from tip to tip of the wings, he measured near ten feet". He went on to describe his "Albatross" in the following terms:

The bill is of a dirty yellowish colour, such as we see in old Boan: the bottom figure in the annexed plate shews it of its natural bigness, with its grooves and furrows; the nostrils are very remarkable, having rising coverings over them, with the openings forward, as expressed in the figures: the bill is a little compressed sideways toward the head, and gradually becomes more so toward the point, which is remarkably hooked; the crown of the head is of a lightish ash-coloured brown; the remainder of the head, all the neck, breast, belly, thighs, covert feathers under the tail, and coverts within-side of the wings, are white; the hind part of the neck, sides under the wings, and sides of the breast, have some small transverse dusky lines mixed with the white; the back is of a dirty brown, with small transverse lines of black, and some greater spots of black or lead-colour; the rump is of a lightish brown-colour; the tail is of a bluish lead-colour, inclining to black; the wing of the same colour with the tail, the quills being darker, or altogether black; the ridge of that part of the wing next the back is white; the legs and feet are of a flesh-colour; it hath only three toes, all standing forward, and webbed together; it hath also a fin or web running along the outer sides of the outer and inner toes of each foot, which I have not observed in any other water-birds, except on the inner toes of some.

This very good description by Edwards enables us to specifically identify his specimens as being of the bird we know as the Wandering Albatross, in plumage near stage 3 of Harrison (1989:223) and Marchant & Higgins (1990:276-7).

There has never been any difference of opinion about their specific identity. But to which population of the Wandering Albatross did the birds of Edwards belong? Clearly not to that of *amsterdamsis* because the plumage characteristics are different and there is no suggestion that the birds of Edwards had the diagnostic dark-tipped bill of that form. Presumably his birds could not be representative of either *antipodensis* or *gibsoni* if there is no evidence that those forms have ever occurred outside the Pacific Ocean. Robertson & Warham (1992:74) stated that the Wandering Albatrosses

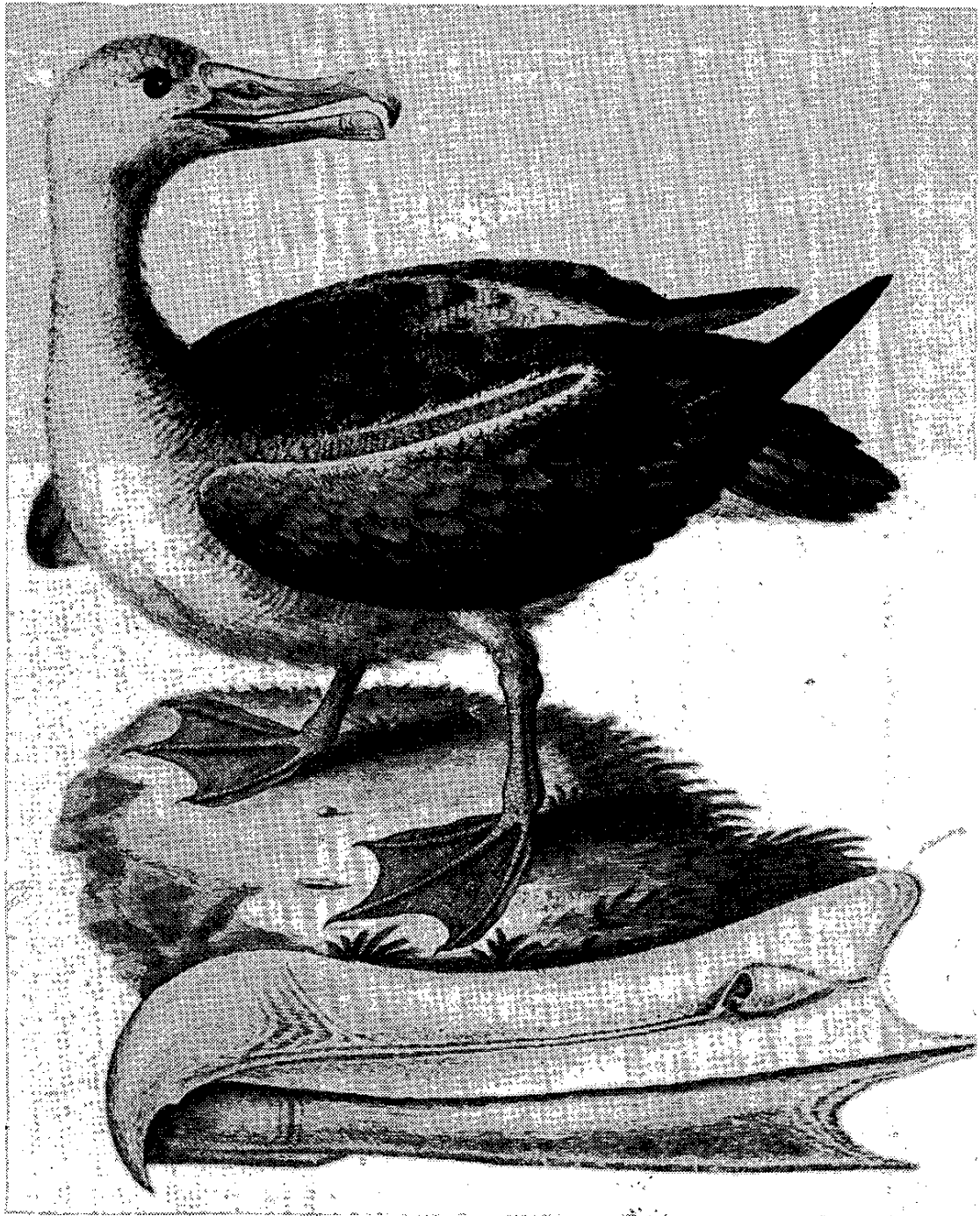


FIGURE 4 — George Edwards's illustration (1745) of "The Albatross" and its bill

breeding in the New Zealand subregion have customarily been classified as of the typical race *exulans*, evidently because Salvin (1896) believed that the hand-coloured plate (Plate 88 dated 1745) accompanying the description of Edwards best fitted a New Zealand bird. However, Salvin said nothing about any such belief. As it happens the Edwards illustration (Figure 4) does not accurately depict the plumage as described by him, the undersurface for instance being shown brownish instead of white as in the description. The plate by itself cannot be relied upon to determine the population to which the Wandering Albatrosses described by Edwards belonged.

It seems, then, that the Wandering Albatrosses of Edwards must have belonged to either the form described as *dabbenena* breeding now (and formerly) at the Tristan group and Gough Island or to the larger southern populations of the species. It is irrelevant to a determination of the population to which his birds belonged that the bulk of Wandering Albatrosses visiting the Cape seas this century are of the larger southern populations (Murphy 1936:547; Clancey 1978). Admittedly it seems that only one definite specimen of *dabbenena* has ever been taken off the coast of South Africa (Clancey 1968; Bourne 1977:7). However, the position may well have been different two and a half centuries ago, when *dabbenena* and *amsterdamensis* may have been much more numerous than they are today. Forster, after examining nine specimens of *exulans* taken at 35° 25' S, 17° 54' E just south of Cape Town on 24 November 1772, recorded that he "now plainly saw that the brown ones were young & small & that they grew whiter so as they increased in size & age" (Hoare 1982:II:184), which suggests that individuals of the smaller populations may have occurred among them. Furthermore, it is not reasonable to assume as did Mathews (1934b:814) that, just because the Tristan group and Gough Island are an *exulans* breeding ground close to the type locality, it is more probable that the birds described by Edwards came from there rather than from a breeding ground further away. Such an assumption is hardly any more in accord with what Falla (1937:115) called "safe taxonomic practice" than was that of Murphy (1936:547), who considered the birds of Edwards to have been of the larger southern race of *exulans* because in Cape Seas "the antarctic bird would be likely to outnumber it (the smaller south temperate race) a hundred to one".

Assumptions have no place in sound taxonomic inquiry. In the present case the only proper consideration in determining the population to which the birds of Edwards belonged is the *identity of the specimens actually described by him*. In this regard it is of paramount importance that Edwards gave some measurements for the birds he described. He said that their wing span was 'near ten feet' which is larger than the 9 feet 3 inches given by Murphy (1936:572) for two specimens of *dabbenena*. Also, that "The wing, from the joint to the end of the quills, when the wing is closed, measures two feet; the leg, from the knee downwards, measures four inches and a half; the middle toe was seven inches long". One other relevant measurement, that of the culmen, can be ascertained from Edwards's plate which, he said, "shews it of its natural bigness". Mathews (1934b:813) and Clancey (1978:311) gave it as 155 mm, while more recently Bourne (1989:113) considered the 'most precise measurement' of the exposed culmen to be about 158 mm.

The measurements given by Edwards were therefore for the wing 610 mm (although the wing was measured when closed); for the tarsus 114 mm; for the middle toe 178 mm; and for the culmen about 158 mm as ascertained by Bourne from the figure of the bill. While it is readily conceded that the measurements of Edwards are probably not very accurate by today's standards, they appear to be no less accurate for instance than those given by Solander in his previously quoted description of *Diomedea exulans*. In any event, the measurements given by Edwards are the best we will ever have as an aid to determining the population of the Wandering Albatross to which the birds described by him belonged.

All of Edwards's measurements fall within the combined range given by Murphy (1936:539) and Bourne (1989:108) for skin specimens which they considered represented the larger southern populations of the Wandering Albatross – 585 - 700 mm for the wing; 111 - 128 mm for the tarsus; 148 - 190 mm for the middle toe; and 156 - 177 mm for the culmen. It is of interest to note that the measurements of Edwards's specimens for the tarsus, middle toe and culmen also fall wholly within the range of measurements given for those parts by Tickell (1968:14) for live or freshly killed adult specimens at Bird Island, South Georgia – 106 - 127 mm; 165 - 193 mm; and 155 - 180 mm respectively. In this context it is immaterial that the culmen length of the bird illustrated by Edwards falls between the average of the culmen lengths of certain populations of *exulans* (Bourne 1989:113). What is material is that it falls within the *range* of one of them. The same may be said for his measurements of the tarsus and middle toe. On the other hand, the measurements given by Edwards for the tarsus, middle toe and culmen of his birds are all larger than the range of measurements given by Dabbene (1926:339), Murphy (1936:571-2), Clancey (1968:237) and Bourne (1989:108) for specimens of *dabbenena*, with the exception of the tarsus length of some of the skins measured by Bourne. The combined range of measurements given by those authors is tarsus 100 - 122 mm; middle toe 144 - 169.5 mm and culmen 136 - 152 mm. Consequently, all the measurements given by Edwards for his birds clearly fit the larger southern populations of *exulans* but not smaller *dabbenena*.

It so happens therefore that, rather than being of *dabbenena*, or the recently described *antipodensis* or *gibsoni*, or being indeterminable as to population (Bourne 1989:113), the albatrosses described by Edwards can be safely identified on the basis of the only available and acceptable evidence as being of the larger southern populations of the Wandering Albatross. While not of course conclusive of the issue, it is of some interest to note that the Wandering Albatross taken by Forster south-west of the Cape on 23 October 1772 at 36° 39' S, 11° 6' E, which he described as *Diomedea Albatrus* and his son drew (see e.g. Hoare 1982:I:178-9), was unquestionably of the larger southern race.

CONCLUSION

It is concluded that the albatrosses described by Edwards (which can be accepted as the *Diomedea exulans* of Linnaeus) were representative of the larger southern populations of *Diomedea exulans*. They should therefore be the nominate subspecies. Even if *spadicea* of Gmelin were a specimen of the

Tristan/Gough population, to attempt now to reintroduce this long-unused senior synonym would only cause confusion. It is therefore preferable to retain the name *dabbenena* for that population. Jouventin *et al.* (1989:181) considered it debatable whether *amsterdamensis* should be considered as more than a distinct subspecies of the Wandering Albatross (see also Vuilleumier *et al.* 1992:269-270). On this basis the correct allocation of the currently recognized races of the Wandering Albatross is as follows:

Diomedea exulans exulans Linnaeus, 1758 – South Georgia; Marion and Prince Edward; Crozet; Kerguelen and Macquarie Islands.

Diomedea exulans dabbenena Mathews, 1929 – Tristan da Cunha group; Gough Island.

Diomedea exulans amsterdamensis Roux *et al.*, 1983 – Amsterdam Island.

Diomedea exulans antipodensis Robertson & Warham, 1992 – Antipodes and Campbell Islands.

Diomedea exulans gibsoni Robertson & Warham, 1992 – Auckland Islands.

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