VII

The Curious Case of the Grace Darling Coble: its appraisal and context

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SUMMARY

The coble Grace Darling, *reputedly the boat in which William and Grace Darling rescued survivors from the wreck of the paddle steamer* Forfarshire, *7 September 1838, has been exhibited as an item of public curiosity for nearly one hundred and thirty years. Much less attention has been paid to its further claim to renown, that of being the oldest surviving workboat on England's north east coast. This study seeks to redress the imbalance, focussing its field research on consideration of the artefact as a watercraft whilst, at the same time, objectively evaluating the archival and iconographic evidence relating to the coble's career and provenance. Survey and recording practices are outlined.*

INTRODUCTION

Customarily and publicly, the coble now known as *Grace Darling* has been accepted as the boat employed in the rescue of nine survivors from the wreck of the paddle steamer *Forfarshire*, 7 September, 1838.[1] Although quite properly celebrated for its humanitarian and personal associations, it also deserves appreciation in its own right. Given acceptance of its commonly cited build date, *c*. 1830, it is the oldest surviving vernacular workboat on England's north east coast, pre-dated only by a single highly specialised vessel, the North Country-type lifeboat *Zetland* of 1802.[2] Indeed, *Grace Darling* (*GD*) figures among the very select group of British open boats that survive from the early decades of the nineteenth century. Furthermore, *GD* represents a quite distinct British boat type, the coble, one which came to dominate the open boat populations of some 150 miles (240 km) of coastline: the entire region between, and including, the rivers Tweed and Humber. Since the national pattern for vernacular boats was characterised by great diversity, this typological dominance was unusual — a cultural singularity. Elsewhere, individual forms of boat rarely spread beyond their own closely defined localities, let alone did they become 'maids of all work' for an entire region.[3, 4]

Recent maritime historians have highlighted the coble's regional range, indicating that it implies an uncommon level of cultural coherence.[5, 6] And earlier than this, in the late 19th century, a variety of published descriptions and (often incidental) archival records show that cobles became very varied in size and form, occupying a wide spread of functional roles, especially in fisheries and maritime services. Similarly, despite the dearth of early documentary descriptions, all serious commentators — past and present — suggest that these distinctive boats have a continuity of form and purpose that can be traced to the sixteenth century at least.[7] Most writers on the topic have also believed that a case can be made for this unique boat's extension back to unspecified 'Viking' times, or, as more closely defined by

recent contributors (and this author), to the Anglian/Viking period.[8] On grounds of boat structure, building practices and linguistic survival, this last seems a perfectly tenable position. Speculatively however, the possibility also exists that cobles derive (in part at least) from watercraft that existed in the western North Sea before the Anglian migrations; that is, they exhibit features that may link them to the pre-Anglian archaeological record.[9]

Dated to *c*. 1830, GD lies at the earliest limit of our artefact-based knowledge of the coble, for even authenticated models extend back no earlier than the 1850s.[10] Consequently, only the prospective finds that may be made through archaeological excavation or dedicated underwater survey are likely to reveal more, and any such boat-related recoveries will almost certainly require an element of serendipity. With one notable exception GD also pre-dates most textual and iconographic accounts of cobles,[11] since reliable depictions by book plate or discrete illustration date largely from the 1840s, and useful technical publications, i.e. those containing quantifiable data, do not appear until the 1870s–80s. In a wider context, GD dates from a pivotal era in the evolution of the north east's coastal economies and communities. Its presumed active career spans the period during which the centuries-old, small-scale fisheries were increasingly being supplanted by larger scale, cash-oriented, proto-industrial activities which demanded increased levels of capital investment and crew effort.[12]

Taking account of the several factors outlined above, when opportunity unexpectedly occurred (2005) for the author to access the coble GD, he determined to carry out as comprehensive an examination and appraisal as circumstances would allow. In the context of the region's coastal culture it was considered that this would yield useful new knowledge, in particular: by more objectively establishing the form and structure of the region's dominant boat type, the coble, in the early 19th century; through the extension of the current, qualitative understanding of that type's characteristics, capabilities and limitations; by providing validation, or otherwise, of this nationally renowned historic object's provenance; and, finally, via the stimulation of informed argument about the nature and development of the pre-nineteenth century coble and related vernacular craft.

Conventionally, a paper of this kind would commence with confirmation of the subject's provenance through archival and printed evidences. Quite deliberately though, the author's chosen route lies through survey and description of the artefact itself, using methodologies consonant with those of the maritime archaeologist and ethnologist.[13, 14] But, as a preliminary, we require concise definition of 'the coble' (note — for this and subsequent sections, non-specialist readers may find it useful to consult the nautical explanations provided by the glossary appendix and fig.1).

THE COBLE: STRUCTURE AND FORM

Although the coble's peculiarities of structure and form have been rehearsed by a variety of authors, it is still helpful to summarise and emphasise those aspects pertinent to the study of *GD* (fig. 1).

The element central to the coble's building process and structural integrity is the 'ram', or, more descriptively, 'ram plank'. This is flat in cross section (i.e. with depth markedly less than width), has a plan-form that tapers towards each end, and is sinuous in profile. Thus it differs radically from its counterpart in common boats elsewhere, the 'keel', which is vertical in section (i.e. with depth markedly greater than width), has a parallel-sided plan-form, and a relatively straight upper profile.

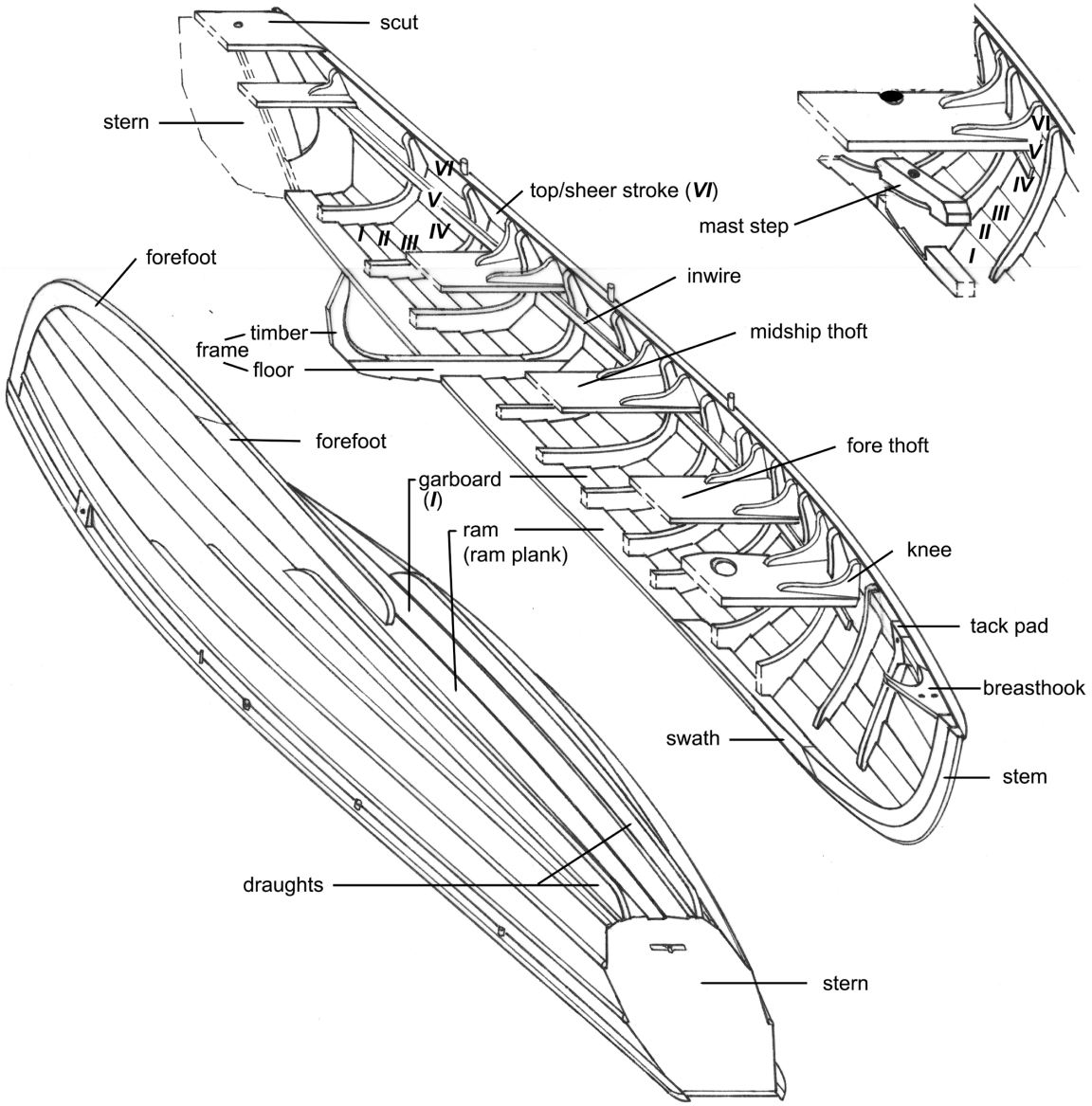

Fig. 1 The structure, and select terminology, of a '3-stroke' Northumbrian coble similar to *Grace Darling*. (Note: this cutaway view derived from plan of coble *Peggy* by Duncan L. Towns, *c*. 1973. Copyright 2008 Adrian G, Osler.)

Congruence is achieved in the next phase of construction with the erection of similar fore-stem assemblies, these being variously fashioned to receive the strake (i.e. plank) ends forward. Divergence between common boats and cobles then re-occurs again, for each type's 'square stern' is achieved (and conceived) quite differently. In a common boat the entire stern assembly is erected next, completing the boat's backbone and readying it for 'planking up'.

The coble builder though, eschews this particular phase, for as soon as his ram and stem are in place he starts planking up, leaving the nascent hull's aftermost end quite open — sans stern.

In planking up, the procedures generally converge once more. The coble builder invariably proceeds within the technical and philosophic bounds of the Nordic 'plank first' building tradition,[15, 16] and although he has a choice (for example, by employing 'semi-skeleton' construction) we shall let the builder of common boats do the same. This long-established tradition predicates that the hull's final form and integrity are achieved through building 'by eye', a complex process involving learned behaviour, manual expertise, acute spatial memory, the use of 'memory aids', adherence to accepted norms, constrained innovation, and much, much more. A series of boats will, indeed must, be extremely similar, but none are precisely the same. Hull shape and boat strength are achieved through an intimate knowledge of which flat, edge-shaped forms (planks) can be mated together to produce desired three dimensional constructs. Moreover, to achieve watertight integrity and strength in shear, these edge-shaped forms must be overlapped one-by-one and securely locked together with 'fastenings' (rivets): a construction technique variously known as clencher, clinker, or lapstrake.[17]

Characteristically, no transverse moulds or patterns are employed in developing the shape of the 'plank first' hull, although subtle (pre-acquired) dimensional checks are always made. Arguably, coble builders were the most freeform of all British boatbuilders for — having no stern as a reference point — they relied entirely upon their individual skills and talent to make their boat's after hull 'shape itself'. Only when the shell planking was fully (or partly) complete was consideration given to inserting the coble's transverse, fashioned-from-solid, frames; these were composed of 'floors' at intervals across the bottom planking, and matching extensions, the 'timbers', up its sides. Finally, the coble's heavily-built, horseshoe-shaped stern frame was inserted and tightly cross-planked. This closure completed the main hull.

Though not without its specific skills, the rest of a coble's outfitting — the 'thofts' (thwarts) with their supporting 'inwires' and knees, the external 'forefoot' forward, and paired 'draughts' aft — required comparatively undemanding joinery work. Nevertheless, even these mundane components demonstrated that, in aesthetics and engineering, a well-built coble was a masterpiece of empirical design. That design's end form may be conveyed through just two descriptions, one contemporary with *GD* and the other recent. The first, 1867, is marked by a Victorian seaman's pithiness:

> Coble. A low flat floored boat with a square stern, used in the cod and turbot fishery, 20 feet long and 5 feet broad; of about one ton burden, rowed with three pairs of oars, and furnished with a lugsail; it is admirably constructed for encountering a heavy swell . . .[18]

The other, 1978, is exemplary in its concision and insight:

> The sailing coble is a relatively narrow boat, being four beams long overall. She has a few wide clinker strokes [strakes], which results in bolder angles between some of them than is usual with lapped [clinker] planking. The profile is also unique with the height of the stem being twice that of the stern. The sheer line follows a nearly straight path sloping down from the stem to just short of amidships, from where it curves vigorously aft . . .[the] external part of the stem ends amidships, where it cuts up abruptly into the central keel plank or ram, to which it is jointed. The square stern is set at about 45° to the ram, and is about half the overall beam. Because the top stroke is wide and is given a generous tumblehome [inward slant] for most of its length, the

> beam at the sheerline is appreciably less than the maximum beam at all stations except those very far forward.
> The entry is fine for a working boat, with hollow level lines and a full flare above the waterline. The section of maximum beam lies abaft of amidships and from here aft the coble has a flat floor with sharply turned bilges and nearly vertical sides up to the tumblehome . . .[19]

How, it is appropriate to ask, does the *GD* coble measure up in respect of the foregoing?

GRACE DARLING: STRUCTURAL SURVEY

No wooden boat that survives for over 170 years, and whose working career spanned at least 30 of those, can hope to do so intact. Furthermore, few such boats can have suffered the vicissitudes of nearly 50 years of publicity-related long distance travel (*c.* 1880–1930). Conversely, outside an archaeological context, old wooden boats rarely achieve the iconic status that ensures sustained preservation effort.

Using non-intrusive methods throughout, the author sought to investigate: the integrity of the coble's structure; its level of completeness in respect of anticipated original form, fabric and outfit; and, any material evidences confirming, or refuting, cited provenance. These lines of inquiry were necessarily interlinked, and quantitative rather than subjective outcomes were the aim. Prioritisation was essential for — despite much goodwill — the availability both of subject and surveyor(s) was limited. And, since external access was constrained by the old exhibition cradle, *c.* 1930, the investigative process concentrated on the coble's internal, rather than external, features. Fortunately an inside-out approach accords with the boatbuilder's original conception, and the drafting conventions of the open boat historian (fig. 2).

Two recent conservation-oriented studies of the vessel assisted survey preparations: Elsey (2001), and Kearon (2004).[20] Importantly, Kearon had identified the fact that the 'Original build fastenings have square or diamond shaped cut roves [i.e. flat rivet washers]. In consequence, the presence of round cone shaped roves (a later product) must be seen as indicating a repair or the replacement of a component'. This was a distinction already familiar to the author and, it should be added, whereas conical roves and their fastening nails were characteristically — though not inevitably — made of copper, square or diamond cut roves and their nails were always of iron. Regrettably, there is no definite cut-off date for the use of iron fastenings in Northumberland, although oral and material evidence suggests a turn-of-century (C19th/20th) transition period. Clearly, wooden components held together entirely by iron through-fastenings might be considered part of *GD*'s original fabric, whilst the employment of copper gave presumption of replacement or repair (fig. 3). In areas involving copper fastenings though, a clear distinction had to be made between the date of the fastening process itself — necessarily post-dating the original build — and the relative age of the components secured.

Recording of the boat's form was based on the author's earlier field techniques, using a longitudinal centreline and select transverse intersects in order to acquire enough internal coordinates (offsets) to produce accurate sections and profiles.[21, 22] More complex recording procedures such as EDM (electronic distance measurement) were considered, but were foregone on grounds of cost and procurement.[23] Admittedly, the system employed was relatively unsophisticated, but it possessed the virtues of being quick, cheap, sparing of personnel and field proven, whilst promising results comparable to those of previous, accredited

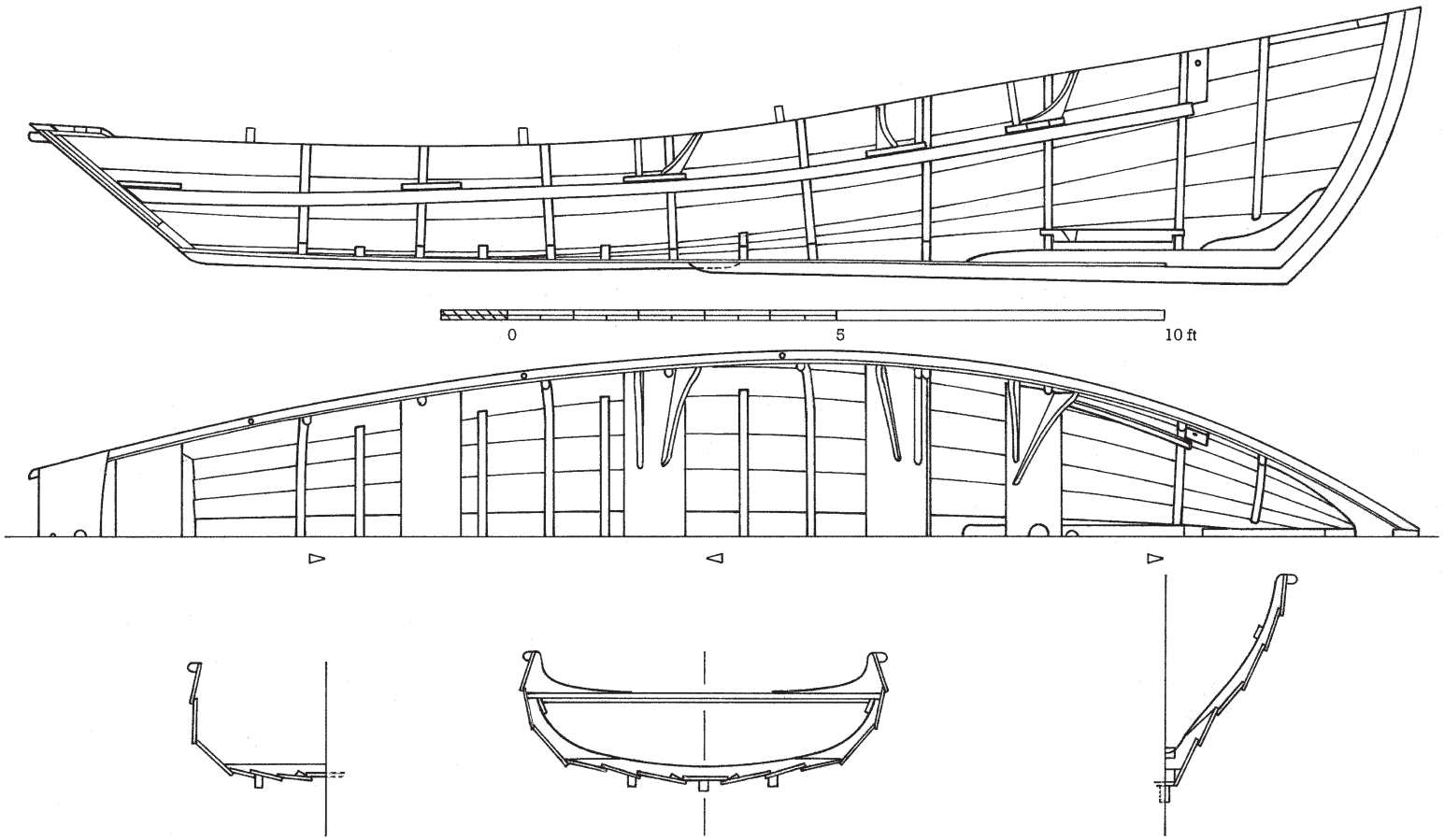

Fig. 2 Coble *Grace Darling*: structural plan (ram-to-stem assembly conjectural). (Copyright 2008, Adrian G. Osler for RNLI Heritage Trust.)

	Port Strake Lands					Starboard Strake Lands				
	V/VI	*IV/V*	*III/IV*	*II/III*	*I/II*	*I/II*	*II/III*	*III/IV*	*IV/V*	*V/VI*
Stem to Fr.1	 □ □ □	 □ □ □	® ® ® ® ® ^^^^^	® ® ® ®	 ® ®	 # 	# # 	□ □ 	□ □ □ 	# □ □
Fr.1 To Fr.2	 □ □	 □ □	 □ □	® ® ® ® ^^^^^ ®®®®	® ® ® ® ® ^^^^^	□ □ 	□ □ 	□ □ 	□ □ 	□ □
Fr.2 To Fr.3	 □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	 □ □ □	□ □ □ □	□ □ □ □ □	□ □ □ □ □□□	□ □ □ □	# □ □ □
Fr.3 to Fr.4	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ □	□ □ □ #	□ □ □
Fr.4 to Fr.5	□ # □ #	□ □ □ □	□ □ □ □	□ ^^^^^ □□□□ □	□ □ □ □	□ □ 	□ □ ® 	□ □ □ □	□ □ # Ø Ø	□ □ # ^^^^^ ®®®

KEY:

□ Iron fastening with 'square' rove
Remains/indication of iron fastening
® Standard copper fastening with conical rove
Ø Light copper fastening with conical rove
^^^^^ Plank scarph

Fig. 3 Coble *Grace Darling*: part-map (bow area only) of fastenings.

practitioners in the field.[24] On-site mapping of the vessel's fabric was carried out on a grid-based method based on the vessel's longitudinal and transverse elements, i.e. its strakes and frames. This fabric survey was effectually an exercise in reverse engineering, shadowing the

builder's and repairers' construction sequences to establish a series of super-positions which were supplemented, where necessary, by consensus judgement (fig. 4). And, since a complete record of the results obtained is lodged elsewhere,[25] this paper deals with select areas only.

The ram proved to be original throughout its observable length, although — in consideration of the boat's earlier indifferent support and age — some slight distortions cannot be ruled out. Aft, the ram exhibits superficial accretions in the form of claddings, whilst forward it disappears under the tail end of a 'swath piece', the component which bridges the ram and stem of a coble. Unfortunately, the after end of this ram/swath junction is confused by pitch infill whilst, forward, the original swath/inner stem assembly is hidden by clumsy reinforcing chocks of relatively late date; these additions mark an earlier (justifiable) concern over the bow's structural integrity. Externally, the plank ends and outer stem are all but obscured by the once commonplace application of a 'grinnel': a thin, wrap-around, sheath of protective metal (usually, and likely here, of copper). At the stem head however, the sheer-strakes' plank ends are just visible as plain chamfers mated to the stem's tapered faces — a diagnostic of early build practice.[26, 27]

The hull's shell is best considered as individual strakes, identified for convenience on this six strake-a-side boat as: I (adjoining ram) through to *VI* (topmost), and pre-fixed *P* for port, and *S* for starboard, respectively. Originally, each strake appears to have comprised two boards (planks) joined by a plain scarph held by 3 or 4 through-fastenings, and, although the original scarphs in adjoining strakes are staggered — to decrease chance of structural failure — they all lie in the boat's midsection. Of the two 'garboards', *SI* is entirely original but a section of replacement plank occupies the very forward end of *PI*, and this feature is effectively repeated in the other 'bottom' strakes: *SII, PII*; and, *SIII, PIII*. Externally, and confusingly, all these bottom strakes (*I, II, III*) have been 'doubled', that is, clad with a second layer of planking, the garboards (*I*) in their entirety and the others (*II, III*) throughout much of their length. In the boat's after end, the upper 'lands' of strakes *III* and *IV* are obscured by substantial triangular-sectioned 'chine battens' (*vide* Kearon, 2004) of later addition. These reinforce the acute, hard to fasten, chine-like angle that occurs between planks *III* and *IV* aft, a recognised line of weakness in a coble's structure. There is a considerable amount of replacement material in the coble's 'topside' strakes too (*IV, V, VI*), especially towards the stern where some of them now include short, structurally unsound, runs of plank.

The history of the boat's transverse elements, its nine frames and the stern, can be summarised as follows. The foremost (discontinuous) frame, F1, is a late renewal, whilst the forebody frames, F2–3, are largely original. Although all the frames in the mid-section, F4–6, retain some original elements, they are now composite in age and material, and (as with the topside strakes) there is an increasing degree of renewal on the starboard-side aft, F7–9. Correspondingly, the composition of the stern may be descriptively — though not disparagingly — summed up in two words: a fabrication. Though built up coble-fashion it bears the hallmarks of a 'quick cheap job', a total replacement of a presumed decayed original, simply effected to tie the shell planking back together. Nevertheless, the well-worn 'scut' (stern platform) which surmounts the stern may well be original, and its severely corroded rudder-mounting strap further suggests authenticity.

Much the same authentication applies to the coble's four main 'thofts' (thwarts). In scantling and finish these form a well matched suite, each bearing traces of the moulding grooves that once enlivened their margins. Correspondingly, these thofts' badly-worn after-edges are consistent with originality. Not so the 'inwires' below, which are clumsily executed

	Port Strakes						*Ram*	*Starboard Strakes*					
	VI	*V*	*IV*	*III*	*II*	*I*		*I*	*II*	*III*	*IV*	*V*	*VI*
Str.	*O*	*O*	*R*	*R*	*R*	*?*		*?*	*?*	*?*	*O*	*O*	*O*
Fr.1	R	R	R	R	R	R		R	R	R	R	R	R
Str.	*O*	*O*	*O*	*R*	*R*	*?*		*?*	*O*	*O*	*O*	*O*	*O*
Fr.2	aO	aO	aO	aO	R	R		R	R	aO	aO	aO	aO
Str.	*O*	*O*	*O*	*O*	*O*	*aO*	*?*	*aO*	*O*	*O*	*O*	*O*	*O*
Fr.3	O	O	O	O+A	O/A	O	O	O	O+A	O+A	O	O	O
Str.	*O*	*O*	*O*	*O*	*O*	*aO*	*O*	*aO*	*O*	*O*	*O*	*O*	*O*
Fr.4	R	R	R	R	R/O	O	O	O	O	O	O	O/M	M
Str.	*O*	*O*	*O*	*O*	*O*	*aO*	*O*	*aO*	*O*	*O*	*O*	*O*	*0/R*
Fr.5	O	O	O	O	O	O	O	O	O	O/R	R	R/O	O
Str.	*aO*	*O*	*O*	*O*	*O*	*aO*	*O*	*aO*	*O*	*O*	*O*	*R*	*R*
Fr.6	aO	aO	aO	O	aO	O	O	O	O/R	R	R	O	O
Str.	*aO*	*O*	*aO*	*O*	*aO*	*aO*	*O*	*aO*	*O*	*O*	*?*	*R*	*R*
Fr.7	aO	aO	aO	O	O	O	O	O	O	R	R	R	R
Str.	*O*	*O*	*aO*	*O*	*O*	*aO*	*O*	*aO*	*O*	*O*		*R*	*R*
Fr.8	R	R	R	R/O	O	O	O	O	O	O/R	R	R	R
Str.	*?*	*O*	*aO*	*O*	*O*	*aO*	*O*	*aO*	*O*	*O*	*?*	*R*	*R*
Fr.9	aO	aO	aO	aO	aO	aO	aO	aO	aO	aO/R	R	R	R
Str.	?	?	aO	O	O	aO	?	aO	O	?	?	R	R
Stern	R	R	R	R	R	R		R	R	R	R	R	R
	VI	*V*	*IV*	*III*	*II*	*I*		*I*	*II*	*III*	*IV*	*V*	*VI*

KEY:
Frames, e.g. Fr.5 – rows in regular type
Intervening strake runs, *Str.* – rows in *italics*
O Original
aO Assumed Original
R Replacement
M Missing
A Accretion (significant)
? Unknown since obscured

Fig. 4 Coble *Grace Darling*: map indicating degree of originality of major components.

renewals, as are at least half the thofts' supporting knees. The breasthook (horizontal stem knee) and paired 'tack pads' are also plain replacements, but the mast-step is probably original, although strangely — maybe incorrectly — positioned. Both the mast itself and the four oars are recorded replacements. The former, of late 19th century pattern, is appropriately dimensioned as a short heavy weather spar. But although of fine vintage character, the accompanying two-piece oars (colloquially, 'paddles') appear rather oversize for the boat.[28]

Finally, there remains the vexed question of weight. Since the coble could not be weighed reliably on site, the problem was approached by the rigorous application of methods commonly employed in yacht and boat design.[29] Firstly, by subtraction of crew and gear weights from the calculated displacement at the inferred load waterline; and, secondly, through aggregating all fixed component weights (planking, frames, fastenings etc.) to produce a 'bare hull' total. Considering the variables involved, the two results were well in accord: 490 lb. (222 kg); and, 535 lb. (243 kg) respectively. Confidence can thus be placed in the fact that the boat's weight 'as built' (i.e. excluding floorboards and gear) was in the region of 4½ cwt (230 kg). This result is reinforced by two practical reports 150 years apart: in 1853, it took four fit men to drag the coble some 100 metres across Longstone's rocks;[30] and in 2007, it required a direct eight-man lift to place it (safely) on its new display cradle.

GRACE DARLING: HULL FORM AND CHARACTER

Present day motor-coble users would regard the *GD* as a very small coble, and even in the late 19th century she would have been towards the lower end of the sail- and oar-powered range. Her dimensions as measured are: 15 ft (4.57 m) 'of (visible) ram'; length overall, 21 ft 2 in. (6.45 m); maximum beam at sheer, external, 5 ft 3 in. (1.60 m); maximum moulded beam, external, 5ft 6½ in. (1.69 m); height at stemhead, external, 4 ft 2 in. (1.27 m); height at stern, inside to sheer, 1 ft 10 in. (0.56 m); width of stern, at sheer, 1 ft 10 in. (0.56 m); and, minimum depth inside at waist, 1 ft 7 in. (0.48 m).

If she was a dedicated fishing coble these dimensions would have placed her in the very lowest contemporary category, at '1[register] ton'. Indeed, Berwick District's earliest registry year, 1869, records only one 15 foot (4.57 m) 'of ram' coble: *Mary*, BK89, and just seven in all, mostly Berwick-based, of 15–17½ foot (4.57–5.35 m) of ram.[31] Meantime, craft of 19–21 feet of ram (5.79–6.40 m), measuring 25–27 feet overall (7.62–8.23 m), provided three-quarters of the cobles employed in the region's coastal fisheries.[32]

In this context, the analysis of *GD*'s recorded hull form is revealing (fig. 5). She certainly rates at the 'four beams long overall' posited by McKee (4.03), but the height of her stern lies slightly under his ratio of half stem height (0.45), whilst the width of stern is significantly less than 'about half the overall beam'(0.38). Neither, as is accepted coble form, does her 'section of maximum beam lie abaft of amidships'; it is positioned quite markedly forward of amidships. Nevertheless, in plan view the *GD*'s sheer plan, and line of maximum beam, still come 'close to the arcs of circles with radii the same or a little more than the length of the boat', and the tumble-home (inward slant) of her wide top-strokes (strakes *VI*) ensures that, in proper coble fashion, 'the beam at the sheerline is appreciably less than the maximum beam at all stations except those very far forward'. Below load waterline level, the boat also exhibits the coble's typical hull form: 'the level lines are wedge shaped in the forebody and curve slightly inward aft . . . with the entry having little resistance to immersion and the after body displacing a lot of water for not much draft.' And she displays — almost exaggeratedly — that 'full flare above the waterline' right forward which determines that 'the reserve buoyancy of the bow . . . is considerable.'[33]

GD thus seems to be within the coble's recognised parameters, but might such descriptive analysis be carried further? Yes, albeit within limits, for the only realistic route is through like-for-like comparisons, matching this presumed early-nineteenth century coble against authenticated sail/oar-powered cobles of the late-19th and early 20th century. Although

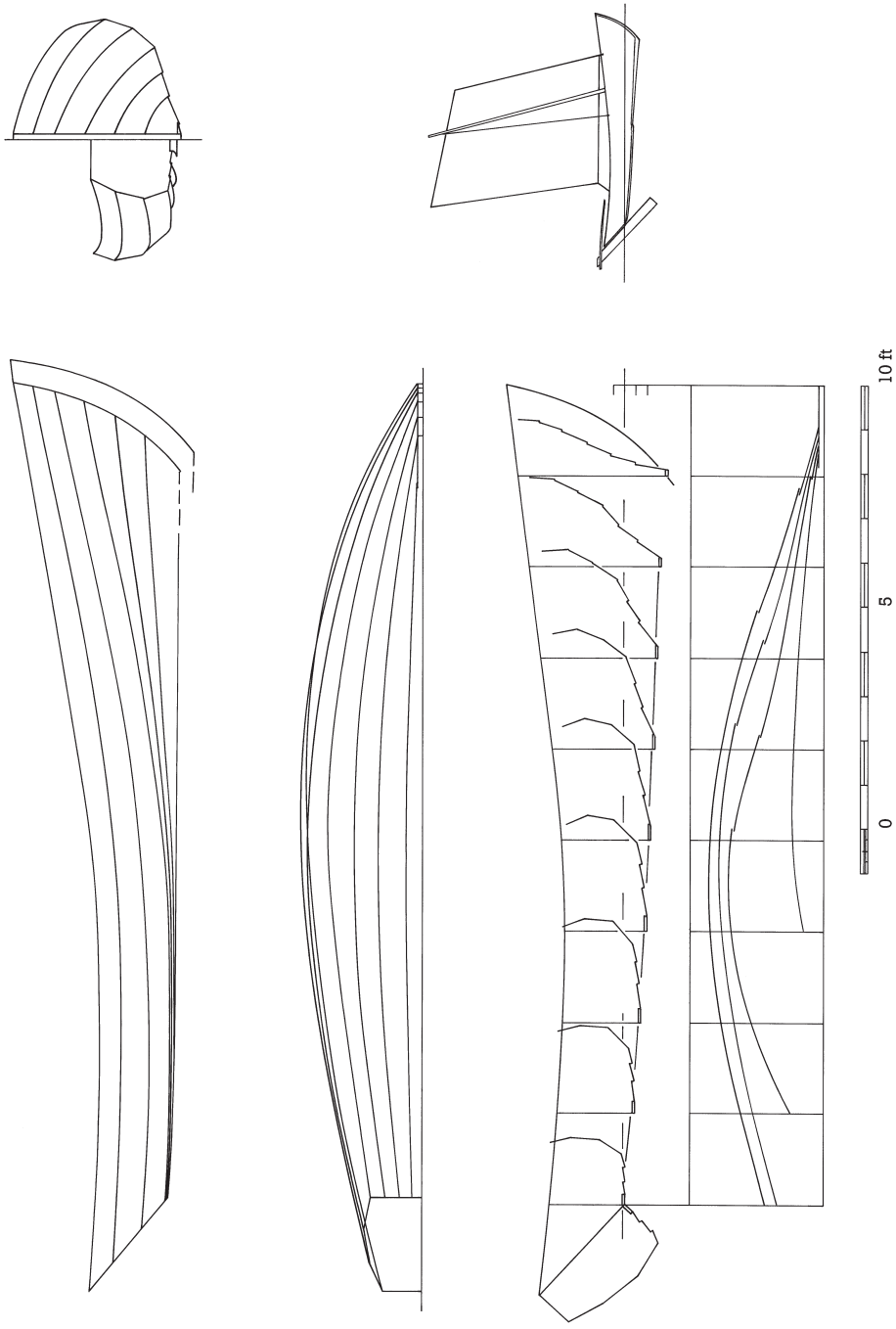

Fig. 5 Coble *Grace Darling*, hull form: strake layout (orthographic); sections and select waterlines; sailplan (conjectural)
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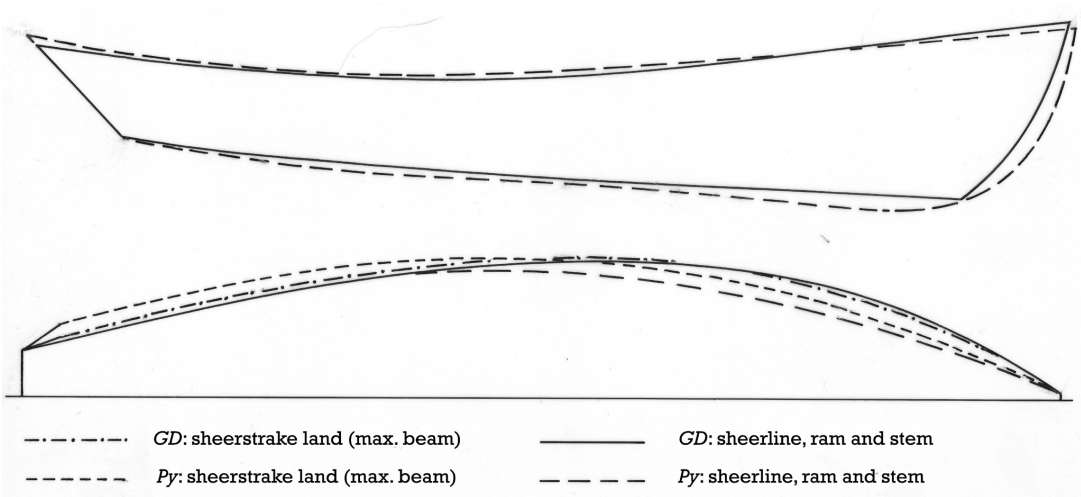

Fig. 6 Select comparisons of cobles *Grace Darling* (*GD*) and *Peggy* (*Py*).

many of these survivors are considerably larger in size, a handful of small Northumbrian 'harbour cobles' do remain. And, following expert field-recording, two of these are now figured specimens: *Peggy*; and *Leslie* (both Sunderland-built).[34, 35] On passing acquaintance, *GD* appears so close in size and form to this class of coble that sceptics have even entertained the thought that she might, covertly, have been acquired from their ranks.[36] Taking into account this possibility, comparisons were made between: *Grace Darling*, presumed *c*. 1830, 21 ft 2 in. (6.45 m); *Peggy*, c. 1890, 19 ft 11 in. (6.07 m); and, *Leslie*, *c*. 1912, 18 ft 9 in. (5.72 m).[37] The results are simply, and graphically, expressed in fig. 6.

By eye, there is the immediate impression that *GD*'s quarters and stern are slimmer than *Peggy*'s, and this view is quantitatively confirmed when plotted to the same nominal length, 21 feet (6.40 m). *GD*'s maximum beam aft, though not her sheerline, generally proves to be some 2½ in. (64 mm) less than *Peggy's*, for *GD*'s sheer-strakes are set with less tumblehome. *Leslie*'s quarters are more fulsome still, with both sheer and maximum beams 3–4 in. (76–102 mm) greater than *GD*'s. Forward of amidships the situation is reversed, for there the sheer and maximum beam lines of *GD* exceed those of *Peggy* by 6 in. and 4 in. respectively (152 mm and 102 mm), but again this divergence is less marked in *Leslie*. Such disparities are also found in their profiles. Externally, *GD*'s sheerline starts from a slightly higher stem-head level than *Peggy*'s, but then drops away some 2½ in. (64 mm) lower amidships and aft. Inside the boats the opposite applies. There, the ram profiles are closely matched aft but separate forward where, relatively speaking, *Peggy*'s drops away to produce 2–3 in. (51–76 mm) more depth towards the bow. Once more, the effect is not quite so noticeable in *Leslie*. *GD*'s bow profile is especially noteworthy, it exhibits more forward rake than the other two and has an arc-form that produces a distinctly angular — rather than rounded — junction between stem and forefoot.[38]

All three cobles have similar arrangements and disposition of shell planking, but there are significant differences in their interior stiffening. Whereas *GD* possesses only eight entire, i.e. sheer-to-sheer, transverse components (frames) and a pair of discontinuous ones, *Peggy*,

though shorter, has eleven and two respectively (*Leslie* even more). Besides which, in *Peggy* and *Leslie* these components display dedicated placement. For example, the frames next to the mast position are 'raked' (angled) in order to absorb stress under sail, the thoft knees are cunningly splayed, and load-bearing stanchions (pillars) are fitted under the rowing thofts. *GD* evidences none of these more sophisticated attributes. Her transverse components are positioned roughly perpendicular to the ram, or waterline, and only two pairs of knees are splayed.

Nevertheless, since all three cobles' everyday use was governed by common constraints — in particular, oar propulsion and the shape of the human frame — it is not surprising to find that their operational layouts are similar; each has two (potentially three) principle thofts to service rowers, and one (primarily) to support mast and sail. Differences in layout are thus a matter of detail rather than substance, although *GD*'s greater volume forward supports rowing stations that, in proportion, are slightly ahead of the others, by 3–6 in. (76–152 mm). Their mast placements are close too, at about one-third of the waterline length from the bow.

In summary, *GD* is slight of hull form, providing even less internal depth and volume than her comparators, with an above-waterline shape that is less symmetrically balanced fore and aft. The run of her quarters is proportionally narrow whilst, conversely, much emphasis is placed on maintaining beam, freeboard and flare forward. Fancifully, this might reflect the old shipbuilding empiricism of 'cod's head and mackerel tail'— a hull form once used for Berwick's famous smacks. Though *GD*'s internal spaces and layout conform to late nineteenth-century coble practice, they are marked by sparseness and simplicity. Below waterline the forefoot is relatively shallow and unpronounced whilst, despite the minor loss of waterline length occasioned by her well-raked stem, the underwater entry is characteristically coble-like in form, and likewise her broad, shallow, displacement pattern aft.

Taken all-in-all, the superficial similarity of *GD* to her chosen counterparts is demonstrated to be just that: superficial, rather than of substance. Quantitatively, by measurement and volumetric form, she is dissimilar enough to be regarded as a distinct sub-type, whilst more subjectively there is the clear impression that, upon close acquaintance, she really is 'different'.

Although expert hydrodynamic analysis is beyond the scope (and costs) of this paper, observations based on empiricism and experience can be ventured. Firstly, *GD* is a genuine seagoing coble intended primarily for use under oars, its human power-plant located to best effect in a balanced, low-waisted position. The power to weight ratio — with three active crew deployed — will be relatively high, and both the form resistance and drag-producing wetted surface are favourable for a coble. Much emphasis has been placed on providing reserve buoyancy forward so that, providing it is kept head to sea, the boat will remain fairly 'dry' and lift confidently to oncoming swell and waves. In contrast, the lean and unbalanced quarters mean that seas taken aft will make the boat's behaviour less predictable, and will be attended by broaching and swamping risks. Performance under sail will be adequate when reaching or — with vigilance — running in everyday conditions, but the boat's limited lateral plane (lack of forefoot) will provide only modest windward capability (fig. 5). Despite its characteristically narrow beam the transverse stability (i.e. its ability to resist overturning) will initially be high, and especially so when supplemented by internal ballast. But, as with all flat-bottomed, square-bilged open boats, if heeled to the stability curve's 'vanishing point' the capsize event will arrive catastrophically — with little warning.

Seen in the light of 1838's rescue attempt then, given understanding of local conditions, expert boat handling and a modicum of luck, confidence could be placed in this small coble's

ability to traverse the shoal- and reef-sheltered route involved, although crew strength would be of concern.[39, 40] However, outside the Longstone in the open sea, there would have been no realistic chance of survival in the conditions prevailing.[41, 42]

Nevertheless, none of the above answers the underlying question. Was *GD* actually the boat employed by William and Grace Darling, 7 September 1838? Corroboration, if not confirmation, for that must necessarily be sought in the scarce detail of documentary and pictorial sources.

GRACE DARLING: 20TH AND LATE 19TH CENTURY PROVENANCE

Writers past and present have unhesitatingly reiterated the 'fact' that the eponymous *Grace Darling* was the coble used during the famous rescue of 1838, but contrary (if less publicised) doubts as to its authenticity have remained. Whether positive or negative, such customary belief cannot satisfy the demands of curatorial inquiry. Only conclusions reached by evidence-based argument suffice.

Although sometimes convoluted, the 20th-century history of the coble *GD* is relatively transparent, and there is little to add to the published accounts of Smedley (1932) and Cunningham (2007).[43, 44] Briefly, it was moved to the present display site — though not building — in 1938, having suffered years of comparative neglect nearby. Prior to this its final private owner, Lady John Joicey-Cecil, gifted it to the RNLI who soon lodged it at the Dove Marine Laboratory (Cullercoats) where, from 1913 to 1929, it was kept undercover and under the caring eye of Prof. A. Meek.[45] Its housing prior to that time is less certain, but appears to have been in the grounds of Newton Hall, Stocksfield-on-Tyne (the Joicey's family estate). Nevertheless, the various transactions of the 20th century left a convincing if interrupted documentary trail, *c*. 1900 to 2007. The earliest formal accounts of its physical condition though, date only from 2001. Anecdotally, some repairs and reinstatement work were carried out by the boatbuilding Dawson brothers of Seahouses in the post-war period (*c*. 1960), and oral testimony suggests that the renowned coble builders Harrison's of Amble had attended its needs earlier still. If so, this may have been under the auspices of Wailes Dove Bitumastic Ltd. who, as exhibitors at the Great North East Coast Exhibition (1929), had noted the coble's parlous condition there.[46]

Exhibition appearances had certainly been the key to *GD*'s survival in the late 19th century, and none was more important than its transatlantic trip to the 'World's Columbian Exposition', Chicago (1893). The exposition's catalogue entry is revealing: 'a broad beamed, battered, old-fashioned craft, with but the faintest traces of paint', and the accompanying photographic illustration bears out this unintentional condition-description, clearly showing marked disturbance at the forward ends of strakes *SII* and *SIII* together with a protective 'grinnel' around the upper stem.[47] Despite the fact that the name *Grace Darling* has been rather crudely applied, and much detail is obscured by the exhibition barrier and cradle, this is definitely the *GD* as we know it today. It is a serendipitous photograph, providing a direct visual link between the 1890s and corresponding images of the 1920s–1930s.

Continuity can also be established with the decade preceding the Chicago Exposition, the 1880s. Under the auspices of the Shipwrecked Fishermen & Mariners' Royal Benevolent Society (SFMS), the Joiceys' allowed the coble to be exhibited at various British venues, with quoted appearances at: Glasgow (1888); Newcastle (1887); Liverpool (1886); London (1883); and, Tynemouth (1882). As yet, only the Great International Fisheries Exhibition (South

Kensington, London, 1883) has yielded datable photographic images, these showing the coble and its cradle very much as they were ten years later, at Chicago in 1893.[48] The only other photographic image assigned to the late 19th century — that published by Smedley — adds little useful information to the images of 1883 and 1893 cited above.[49] Surprisingly, the surviving exhibition ephemera for Newcastle, Liverpool, London, and Tynemouth do not even mention the coble's appearance, although all (except Liverpool's) confirm the attendance of the SFMS.

Consequently, although there are occasional uncertainties of date and detail, there is sufficient textual and photographic evidence to assure the coble's provenance from the early 1880s through to the 21st century. It is around the earlier links, those back to the 1870s and beyond, that potential problems arise. The contemporary (non-photographic) pictorial evidence becomes slim and unreliable, secondary sources shift towards the biased or vague, and even accredited primary material narrows to the risky territory of the single source. Nevertheless a synthesis can be achieved, and central to its realisation are the published accounts and rare correspondence of the Darling family.

GRACE DARLING: EARLY- AND MID-19TH CENTURY PROVENANCE

The Darling family's ownership of their now famous coble ceased in 1873, not with its sale to their long term patron, the Duke of Northumberland, but to Colonel John Joicey, M.P. for North Durham.[50] The sale was effected by one of the late Grace Darling's younger (twin) brothers, George Alexander Darling (1819–1903), and there seems little reason to doubt his title to the coble. Although stressing that he possessed 'a sincere respect for the boat' his motivation in selling seems unclear, although Smedley conveniently accounted for it as the act of a poor man after a poor fishing season.[51] Perhaps so, but perhaps not, for the little 'one-ton' coble was not this North Sunderland-based fisherman's sole means of livelihood.

Four years previously, in April 1869, George registered himself as sole owner and master of the 30-foot (9.14 m), 8-ton, *William and Thomasin*, BK378, a typical 'second class', open 'keelboat' of the period, manned by a crew of four and fitted out for the herring fishery.[52, 53] Although this was a potentially lucrative occupation, a chronic shortage of investment capital amongst the region's fishermen had seen the prices of herring boats fall steadily in the 1860s (to £50–£60) and, seemingly, George had been amongst the lucky few able to buy.[54] Indeed, the acquisition of *William and Thomasin* probably pre-dated 1869 (the first year of statutory registration), perhaps to 1865–66 when, following his father's death, the money that remained in the Grace Darling Trust Fund (£780) 'was split among surviving relatives'.[55] Given this boat's ownership and its potential earning power, George's final negotiating plea to Joicey's agent, John Scott, that he was 'only a poor man', seems a little disingenuous. On the other hand, he was a re-married widower who had fathered thirteen children.[56] Coincidentally, or otherwise, the reputed sale price (£100) amounted to a fisherman's gross annual earnings.[57]

When George received the coble from his father William, around 1856, he did perhaps need it for fishing. Significantly though, he did not formally register it in 1869, thus confining his use of her to casual or subsistence activities; and by 1872 the coble was acknowledged to be in poor condition. So, despite George's undoubted pre-sale repairs and repainting, the realisation of £100 for her must have appeared an extraordinary thing to his peers. For all practical purposes it was simply a 45-year old, worn-out coble fit (at best) for 'a gentleman'.[58] A new, three-man fishing coble ready for sea would have cost less than half as much, £40.[59] And

George probably continued to be lucky for the remainder of that decade, for there were some spectacularly successful herring seasons. But, after herring prices suddenly collapsed in1880, George, like many another owner, sold his herring boat, *William and Thomasin*, away (to Amble). Meanwhile, in 1879, at 60 years of age, he had diversified, acquiring the 17-foot of ram (5.18 m), 3-man, line-fishing coble *Water Lily*, BK923, a boat not that much larger than *GD*.[60] Some twenty years after that though, when nearing 80, he and his wife were reported to be 'in very necessitous circumstances … it is sad that through no fault of his own he should in the evening of his life [be] obliged to ask for Parish Relief [in North Sunderland].[61] By then, for cash or kind, he had disposed of all the *GD*'s remaining fittings (including mast and tiller) and finally, just three years before his death (in 1903) he sold *Water Lily* too.

Whatever his virtues or failings, George Alexander Darling was central both to the survival of his family's old coble and to the testimonies — slim as they are — that attest to its origins. Immediately post-sale, in 1873, he had volunteered that 'The name of the boat at the time of the rescue [1838] was "The Darlings"'.[62] Ten years later (1883) he reconfirmed this, adding further information as to its provenance:

> … glad to hear from you and likewise that the old boat was in way of benefiting such a valuable society as the Shipwrecked Fishermen and Mariners [of] which I am a member myself. I can assure you of her [GD] having been built at Tweedmouth in Berwick on Tweed by Mr Little Jones and named 'The Darlings' and built as near as I can recollect in the [year] 1828 and used by my father up to 1856 or by us. I was the youngest in the family and in the ship and boat building trade he gave her to me thinking I would be best able to keep her up. I many times think I would like to take a trip to see her once more.[63]

Knowing that this information was to be presented at the Great International Fisheries Exhibition, 1883, by a society whose work he respected, there is no obvious reason to doubt George's belief in his statements. He would have been nine years of age in 1828, old enough to have been excited by, and remember, the new boat's arrival at Longstone — and the family's subsequent name for her.[64] Later in life, as a time-served ship's carpenter in the coastal trade and then as a North Sunderland fisherman, he could well have acquired a knowledge of Berwick boatbuilding past and present. And Robert Littlejohn of Spittal was certainly active as a boatbuilder there in the early 1820s.[65] Moreover, George had good reason to remember the 'old coble' and its background. On 27 December 1834, it had preserved the lives of himself, his twin brother (William Brooks) and father in circumstances which, even allowing for subsequent embellishment, had been extreme — at the edge of survival.[66]

Confirmation of George's statements is hard to come by though. At best the allied evidence relies upon the sparse and uneven details in the published version (1886) of his father's personal journal: *The Journal of William Darling* etc, *1795–1860*. And, as a source, it must be remarked that this was edited by a middle-class friend of the family, one who relied upon the approval of George's eldest surviving sister, the upright Thomasin (1808–1886), holder of William's manuscripts and the family papers.[67] Notably however, right up until he retired from Longstone, late in October 1859, William's *Journal* entries continued to refer to this coble as 'our boat', perhaps explaining George's slightly ambiguous words 'used by my father up to 1856 or by us.' Perhaps, like many a father, William had found it hard to relinquish his proprietorial role. Nevertheless, William did note an event which may explain George's assumption of ownership after 1856 or, as Smedley transcribed it, '1856 or 57'. On 'January 4th 1857', William wrote that the heaviest sea 'we have had these thirty years' swept Long-

stone and 'both our boats [were] stove near 11 o'clock'.[68] These workboats were crucial to lighthouse life and immediate repairs must have been necessary, with George the likeliest candidate. Indeed, according to the *Journal*, both cobles were quickly put back in service. Interestingly, the other boat that features in this incident appears to have been 'The new boat brought home by Mr. King and T. Walker.' on 'July 1st, 1851'.[69] Its size and character are not recorded, but the inference is that it was supplied and owned by Trinity House. If so, this was not the first 'new boat' sent out by them, another had arrived in the summer of 1843 which, upon capsizing under sail on a routine trip, nearly drowned William Brooks within sight of his own father. Understandably, William was as outspoken as he dared be with his employers, pointing out that this boat had already proved unstable in a breeze, and that he was convinced 'it is too shallow for the Longstone'. Adding that, if the overturned boat was recovered — and plainly he hoped it would not be — it would 'be advisable to have her raised 5 inches' (127 mm).[70]

Seemingly it was not found, for William's subsequent journal entries (1843–1851) suggest the continued presence of 'our boat' only, the tried and trusted craft of the *Forfarshire* rescue and much else besides. This 'boat' was, in his own earlier words (1838) to the artist T. M. Joy: '16½ feet in the ram or keel, 21½ feet from stem to stern, gradually taken in to the cutwater forward and the same aft to 2 feet a-stern. Five seats, one of them astern.'[71] That description, and the tiny, endearingly naïve, sketch accompanying it, clearly indicate a coble, and one very close in dimensions to *GD* as exhibited today. Only two other pieces of contemporary iconography can be given credence, J. W. Carmichael and H. P. Parker's justly celebrated painting *The Rescue*, and Carmichael's companion piece of the survivors' return.[72] Making due allowance for some artistic licence in reducing the coble's apparent size and the scantlings of William's oars in the *Rescue*, that depiction tallies well with William's contemporary description (above) and the surviving *GD*. True, there are minor discrepancies in the artist's depiction of the framing aft, and no 'seat [right] astern', but Carmichael's experienced eye and brush relayed moulding grooves on the after-thoft, a feature discernible on *GD* today. Typically, but perhaps not literally, he also lightly limned in the leading letters of the boat's station, *LONGSTONE*, on the bow. Admittedly, the coble is generically portrayed in both paintings, but one cannot doubt Carmichael's on-site knowledge of the Longstone boat, something attested to in contemporary accounts of his (and H. P. Parker's) stay there.[73] But none of this helps answer the critical question: where did the coble portrayed come from, and when?

By 1838, William Darling's imposing figure and skills were well known locally, and from its commencement in 1795 his *Journal* instances boat usage. Succeeding his father, Robert, to the responsible position of Keeper of the Brownsman Light in 1815, William's first possessive mention of 'my boat' is dated 1823. But by 1828, some time after he had been promoted Keeper of the impressive new Longstone Light, this particular boat had become dilapidated and in need of replacement. Writing in October of that year, William's 'friend' (but distinct social superior) Henry Hewitson of Cullercoats indicates that he, and a third party, are interceding on William's behalf with the Trinity House Board (Deptford) for a new boat. Crucial to the story, this letter — with its admixture of flattery, self-interest and genuine concern — deserves quotation in full:

> 'Darling. I had so agreeable a Letter from Mr Chapman in reply to mine in which I named having been at the Ferns where I had inspected [?] the condition of you [sic] boat which approached as near a wreck that I had advised you not to attempt repairs until I had acquanted

> the Board. I shall give you quotation from my Letter & the moment I hear farther I shall write you & set the boat a foot. "Now for the poor light keeper what can be done for him in the way of a new boat, I shall be glad to second. I only regret the weather was such that we could not well land to judge for myself, but being in possession of your information I will not lose sight of the object but press it on the Light Committee who kindly say they will be glad to forward anything that will assist the comfort [of] Darling whose character I find stands high in the Estimation of those who have seen and know him — I will not fail to recollect you [sic] good Character of him whenever the [question of] his Light House is before us & I do all I can to promote his comfort. I must not forget to tell you that altho' we could not land we remarked Darlings light as particularly brilliant." I should not therefore advise you doing anything with your old boat as my next Letter will I have no doubt authorize me in some manner [?] to the full value. I shall endeavour amongst my sailing friends to make it up.
>
> Remember me to your wife & family. & believe me always. Your friend Henry Hewitson.[74]

Hewitson's practical, and socially advantageous, support for the Darling family in the 1830s has been well described elsewhere,[75] but his informal tone here (in 1828) suggests a significant period of prior acquaintanceship. As a wealthy land surveyor Hewitson apparently had professional ties to Trinity House, for instance, he was included in their official inspection party at the Longstone Light in 1831.[76] More unusually, he considered himself a capable small boat sailor, maintaining a seagoing coble and hired boat-keeper/crew at Cullercoats harbour — adjacent to his coastal residence, Cliff House. In 1833 he wrote to William 'I would bring them [some promised domestic supplies] in my boat for you. I hope to be down in June at Cullercoats: my boat is painting and will be in great force …' A year later, when arranging a family break at Holy Island, he asks William if he can recommend a 'very steady and sober [Holy Island] man' for a trip out to Longstone, because 'she [his wife] has never sailed with any but Sabown [his Cullercoats retainer].'[77] This is the language of the Victorian Corinthian (amateur) boating enthusiast, one who — together with his 'sailing friends' — was some fifty years ahead of his time locally.[78]

Tantalisingly, Hewitson's promised 'next Letter' appears not to have survived, although circumstantially it appears likely that his proposals came to fruition. That is, the Trinity House Board compensated William Darling for disposing of his worn out boat, whilst Hewitson, together with his friends, generously managed 'to make up' the balance required to commission a new one.[79] Taking into account factors of ease of delivery, known boatbuilding capacity, and confidence of the end user (i.e. William Darling), then Berwick would have been a logical procurement point. Though why the coble came from Robert Littlejohn, rather than the later renowned Lee family, who now can tell?[80] Speculatively, the author suspects that William had a say in this new coble's specifications, for his descriptive letter to T. M. Joy has the feel of a deeply involved and seasoned user, one whose coble's dimensions are engraved in his mind. Most intriguingly, the date of Henry Hewitson's discussions relate well to George Alexander's mature memory of the, later to be famous, coble's arrival date: 1828.

CONCLUSIONS

A range of distinctive construction features and differentiation of hull form leads to the conclusion that the build date of the coble *Grace Darling* lies in the early nineteenth century. Although her structure and form are congruent with the slender iconographic and descriptive evidences of cobles of that period, there is insufficient comparative material to nominate her

as characteristic of the type, although she may well represent the smallest seagoing class employed. Correspondingly, the craft's layout and shape suggest that the balance of her usage lay with oar power and not — as was later the case — with sail, and that there was an unusual emphasis on providing head-to-sea capability. Whether these are generic or specific characteristics it is now difficult to tell, likely there is an element of both. In respect of vernacular boat typology, confirmation of the *Grace Darling*'s era of build, i.e. the early nineteenth-century, also helps clarify a controversial element in the evolution of the so-called 'English' and 'Scots' types of coble: in north Northumberland their usage, and probably their builders, overlapped during that era.

As to the exhibited coble's precise provenance, the circumstantial arguments are not conclusive, although they are extremely persuasive. Decisive historical proof that the *Grace Darling* is indeed the coble *Darlings* (commissioned *c*. 1828) remains elusive.

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Nevertheless, in such a potentially sensitive subject area as this the author bears sole responsibility for all content, interpretation and conclusions.

GLOSSARY APPENDIX

Aft. At, or near, the stern.
Aftermost. That item, among those designated, nearest the stern.
Amidships. The middle part of a vessel.
Broach. To slew, uncontrollably, broadside on to wind and wave.
Chine. An angular line of junction between a vessel's side and its bottom.
Chine Batten. An internal reinforcement piece for a chine (see above).
Clencher, Clinker, Lapstrake. A form of hull construction in which succeeding planks overlap each other.
Draft. A longitudinal protecting piece on a coble's bottom aft.
Entry. The foremost underwater part of a vessel's hull.
Floor. An internal transverse component that stiffens the hull's bottom.
Fore. At, or near, the bow.
Fore-stem. Upright component that unites a vessel's sides at the fore end (bow).
Forward. Towards the bow.
Freeboard. The height of a vessel's side above water-level.
Garboard. The hull plank immediately adjacent to a vessel's centreline, or keel.
Heel. To lean over under pressure of wind (or weight).
Knee. Angular end-support for a transverse component.

Land. The prominent plank edge overlap of clencher construction (see above).
Quarter. The side of a vessel between amidships and the stern.
Reaching. To sail with the wind across a vessel's side.
Rove. Metal washer, or plate, onto which a nail's end is riveted (clenched).
Running. To sail with the wind over a vessel's stern.
Scantling. The cross sectional dimensions of a component.
Scarph. A smooth-faced joint formed by making matching bevels on components.
Shear. Lateral mechanical stress induced by external forces.
Sheer. The upper profile of a vessel's side.
Starboard. Right-hand side of a vessel looking forward (conversely, port side).
Thwart. Transverse, plank-like component that may serve as a seat or mast support.
Topside. The side of a vessel's hull above water-level.
Waist. The sheer, or interior, of a vessel amidships (see above)

NOTES

BPP	British Parliamentary Papers
GD	Coble *Grace Darling*
NA	National Archive
NRO	Northumberland Record Office
RNLI	Royal National Lifeboat Institution
SFMS	Shipwrecked Fishermen & Mariners' Royal Benevolent Society
TWCMS	Tyne and Wear Museums

[1] The coble *Grace Darling* is now (2008) displayed in the RNLI Grace Darling Museum, Bamburgh, Northumberland.
[2] Available at: http://nationalhistoricships.org.uk/index.cfm/event/getVessel/vref/627 (Accessed: 4 August 2008)
[3] B. Greenhill and J. Mannering, eds., *The Chatham Directory of Inshore Craft*, London (1997), 8–13.
[4] E. McKee, *Working Boats of Britain, Their Shape and Purpose*, London (1983), 208–18.
[5] E. McKee, *The English Coble*, London (1978), 1–4.
[6] P. Frank, *Yorkshire Fisherfolk*, Chichester (2002), 56–63.
[7] E. J. March, *Inshore Craft of Britain in the Days of Sail and Oar*, Newton Abbott (1970), 93–5.
[8] B. Griffiths, comp., *Fishing and Folk: Life and Dialect on the North Sea Coast*, Newcastle (2008), 69–82.
[9] A. Osler, 'The Salmon's Kingdom, Net Fisheries of Northumberland', *Maritime Life and Traditions*, 25 (2004), 28–9.
[10] For example: half-block model inscribed 'G. Graham, Boatbuilder, So. Hylton [Sunderland], 1854', (TWCMS 1999.206); full model, *Sarah*, inscribed 'John Ball, 1853, Hull; George Walker, 1853, Builder' (Private Collection, US). In form and structure, neither of these is dissimilar to GD.
[11] Sir Thomas Chaloner's account of the Elizabethan era, Redcar coble fishery as extracted from a '*Cott. Ms*. (Julius F. C. fol. 455)' in, Rev. J. Graves, *A History of Cleveland*, Carlisle (1808), 399–400.
[12] G. Muirhead, 'The Fishing Industry of Northumberland and Durham, 1780–1914' (Unpublished PhD thesis, University of Newcastle, 1992).
[13] S. McGrail, *Boats of the World from Stone Age to Medieval Times*, revised paperback ed., Oxford (2004), i-ii, 1–13.
[14] P. Bahn and C. Renfrew, *Archaeology: Theories, Methods and Practice*, 4th ed., London (2004), 338–9.
[15] A. E. Christensen and R. Gardiner, eds., *The Earliest Ships: the Evolution of Boats into Ships*, London (1996), 72–85, 113–5.
[16] McGrail, *Boats of the World*, 207–32.

[17] B. Greenhill, ed., *Archaeology of the Boat*, London (1976), 74–85.
[18] W. H. Smyth, *The Sailor's Word Book*, paperback reprint ed., 2005, London (1991), 197.
[19] McKee, *The English Coble*, 7.
[20] Reports commissioned by the RNLI's Heritage Trust: R. Elsey, 'Examination Report: *Grace Darling* Coble', Newcastle (2001); J. Kearon, '*Grace Darling* Coble, *c*.1830, Survey and Condition Report', Liverpool (2004).
[21] A. Osler, 'The Shetland Boat — Measuring and Recording Techniques', *Northern Studies*, 14 (1979), 45–53.
[22] A. G. Osler, *The Shetland Boat: South Mainland and Fair Isle*, London (1983), 113–5.
[23] R. G. W. Prescott, D. E. Atkinson, and S. Liscoe, "Lindisfarne Castle, Holy Island, Northumbria: Archaeological Survey and Recording of a 19th Century Boat Portion", report for National Trust by Headland Archaeology, Edinburgh (2006). This is an excellent illustration of the capabilities of EDM and associated software (Penmap) when surveying and recording a boat structure.
[24] For example, the work of: W. Maxwell-Blake; E. J. March; E. (J. E. G) McKee; P. J. Oke; and Owain Roberts.
[25] A. G. Osler, report for the RNLI's Heritage Trust, 'Survey, Appraisal and Measured Plans of the Coble *Grace Darling*', Lesbury (2008).
[26] A. C. Rutter, *A Seahouses Saga*, Stockport (1998), 84–5.
[27] S. F. Sanderson, 'The Tweed Salmon Coble', *Studies in Folk Life: Essays in Honour of Iorwerth C. Peate*, G. Jenkins ed., London (1969), 274–80.
[28] For the 1838 rescue Grace had to use a single, relatively light 'paddle' from the 'fore thwart', and William a pair of 'heavier half long [single piece?] oars' from the 'midships thwart'; such mixed oar provisions remained commonplace in cobles. Letter by George Darling, 7 December 1883: RNLI GD 2002.328; March, *Inshore Craft*, 100. Rutter, *Seahouses Saga*, 83–4.
[29] D. Phillips-Birt, *Sailing Yacht Design*, 2nd ed. rev., London (1966), 213–31.
[30] D.H. Atkinson, ed., *The Journal of William Darling, Grace Darling's Father; from 1795 to 1860*, London (1886), 62.
[31] NRO, 2713/5, SB.1/6, 'No. 63 Register of Fishing Boats'.
[32] Author's analysis of the first 150 cobles registered (i.e. post-1868) at North Shields.
[33] McKee, *The English Coble*, 7.
[34] *Peggy*, by D. L. Towns, 1971.
[35] *Leslie*, by E. McKee, *c*.1980: McKee, *Working Boats*, 178.
[36] A view not altogether discounted by the author in the past. In 1983, Eric McKee also expressed a well-presented, if circumspect, concern over the exhibited coble's authenticity: McKee, *Working Boats*, 177. Deliberate substitution before William's death (d. 1869) would seem highly unlikely, as it would in the immediate pre-sale period, 1869–1873, when George's elder sister, Thomasin, was still very active; unfortunately, no photographic evidence has yet emerged pre-1882.
[37] All are '3-stroke' cobles, i.e. with three topside (and three bottom) strakes each side.
[38] This angularity shows in some early 19th century engravings, and examples include: 'Cullercoats' del. G. Balmer, engr. W. Finden, in W. and E. Finden, *Finden's Ports, Harbours and Watering Places*, London (1842); 'Fishing Cobles', in Sir C. Sharp, *History of Hartlepool*, Hartlepool (1851), 179.
[39] Rutter, *Seahouses Saga*, 69–71. This locally well-informed and seamanlike reconstruction of the rescue is the best available, only a couple of details might be contested.
[40] Q. Mitchell ed., *RNYC Sailing Directions: Humber to Rattray Head*, 4th ed. (2002), 62–4.
[41] D.A. Wheeler, 'Grace Darling's Storm, 7 September 1838', *Weather*, 44, No.11 (1989), 430–7. Extrapolating from this expert account, the sea state outside Longstone was probably "very rough" with wind-generated waves of 4–6m (13–20 ft), and a "high", 4m (13 ft), swell building.
[42] Critical to William Darling's decision making was his understanding of that day's exceptional spring tide and the brief 'window' between the resultant, strong, tidal streams (HW 5.4 m; LW 0.2 m; data derived from *Admiralty EasyTide*. Available at: http://easytide.ukho.gov.uk (Accessed: 4 August 2008)).

[43] C. Smedley, *Grace Darling and Her Times*, London (1932).
[44] H. Cunningham, *Grace Darling, Victorian Heroine*, London (2007).
[45] An un-attributed newspaper cutting in Newcastle Library's copy (L920 D221G) of: D.H. Atkinson, *Grace Darling Her True Story* (n.d. [c.1880]), dates the transfer to Cullercoats as, 13 January 1913.
[46] This marine paint manufacturing company subsequently sponsored unspecified repair-works that, presumably, included repainting.
[47] See *The World's Columbian Exposition of 1893* website. Available at:
http://columbus.gl.iit.edu/bookfair/00104085.html and
http://columbus.gl.iit.edu/bookfair/ch18.html (Accessed: 4 August 2008)
[48] NA, COPY 1/364/425–31; RNLI Grace Darling Museum. The inscription 'Grace Darling' may first have been applied to the coble's bows around this time, 1883.
[49] Smedley, *Grace Darling*, 263–4. Smedley's attribution is confused, captioned as 1887 (Newcastle) on the photographic figure, it is given as 1883 (London) in a subsequent footnote. Incidentally, as a port-side view, this image shows the repair at the forward end of *PII* still evident today.
[50] Cunningham, *Grace Darling, Victorian Heroine*, 107–8.
[51] Smedley, *Grace Darling*, 262.
[52] NRO, 2713/5, SB.1/6, f.64. Named after his parents.
[53] Rutter, *Seahouses Saga*, 67; A. C. Rutter's grandfather, R. Allen, crewed for George Darling.
[54] Muirhead, thesis, 205.
[55] Cunningham, *Grace Darling, Victorian Heroine*, 56.
[56] *Grace Darling's Family Tree*. Available at:
http://homepage.ntlworld.com/foxtree/genealogy/darling2.htm (Accessed: 4 August 2008)
[57] Muirhead, thesis, 204. Subject to fluctuations, a local fisherman of the early 1870s averaged some £100 (gross) p.a.; in addition to which George could probably fall back on casual income from his original trade, 'ship carpenter'.
[58] Cunningham, *Grace Darling, Victorian Heroine*, 107.
[59] BPP, LI[51] J. Washington, *Report on the Damage Caused to Fishing Boats by the Gale of 18th August, 1848*, 72–3.
[60] NRO, 2713/5, SB.1/6, f.121.
[61] News-cutting as for note [35] ; original source indicated as the *Scots Pictorial, c.*1897.
[62] Smedley, *Grace Darling*, 262.
[63] Letter from G. A. Darling to J. Scott, 6 April 1883: RNLI GD.2004.767.
[64] George's inclusion of 'The' seems figurative, coastal naming convention points to: *Darlings*.
[65] Though absent from Directories of the late 1820s and early 1830s, a Robert Littlejohn, Boatbuilder, Spittle (Spittal), is listed in *Piggott's Directory*, 1822.
[66] Atkinson, *The Journal*, 19–21; D. H. Atkinson, *Grace Darling Her True Story* (n.d. [*c.*1880]), 21–2.
[67] Cunningham, *Grace Darling, Victorian Heroine*, 89, 130.
[68] Atkinson, *The Journal*, 77–8.
[69] Atkinson, *The Journal*, 53.
[70] Atkinson, *The Journal*, 61–2.
[71] Draft of letter to artist T.M. Joy, 1838: NRO, SANT/BEQ/14/2/18.
[72] RNLI GD.2002.390; RNLI GD.2002.480.
[73] Cobles feature liberally in Carmichael's preparatory sketches and finished works, for example: *The Opening of Sunderland Docks*, 1850, TWCMS, E3483; *Old Hartlepool*, 1835, TWCMS, B10565; *Holy Island, 22nd October*, 1839, Bonham's Marine Pictures Sale, 27 February 2007; watercolour (n.d., unfinished), coble off Bamburgh, TWCMS, G9620. These last two works are of especial note since their dates and locale accord closely with the 1838 event. Indeed, the small lively watercolour of a coble making sail hints at observations made during Carmichael's visit to Longstone.
[74] Letter from Henry Hewitson to William Darling, 16 October 1828: RNLI GD.2002.715.
[75] Cunningham, *Grace Darling, Victorian Heroine*, 22, 37.
[76] Atkinson, *The Journal*, 18.

[77] Smedley, *Grace Darling*, 56, 58.
[78] J. Salmon, *The Coble*, South Shields (1885); G. C. Davies, *Practical Boat Sailing for Amateurs*, 1886 ed., London (1880), 56–7. Maybe Henry Hewitson's coastal activities influenced his successors, for after his death in 1843 his principal legatee, nephew William Hewitson, retired to pursue a distinguished career as a local natural historian. Another nephew, Rev. Wm. Hopper, gave incumbent support to the Cullercoats fishing community and was acknowledged by E.W.H. Holdsworth in his seminal work: *Deep-Sea Fishing and Fishing Boats*, London (1874).
[79] BPP, LI [51] J. Washington, *Report on the Damage Caused to Fishing Boats by the Gale of 18th August, 1848*, 72–3. In 1849, a larger (25 feet overall) coble cost £25 'ready for sea' so, given allowance for size and date, *Darlings* probably cost around £20.
[80] By 1828 Robert Littlejohn might even have been employed by George Lee Co., or the Old Shipping Co. Boat users often still talk of a boat as being 'by' (i.e. built by) a respected named individual, rather than his employing company.