Time Runs Out: a Case-Study in Baltic-going Sail, 1854 -1872

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La concurrence directe des navires à vapeur n 'explique pas toujours le fait qu 'ils remplacèrent les navires à voiles au sein du trafic maritime britannique. L'examen d'une voie de commerce spécifique, entre la Tyne (Angleterre) et la mer Baltique, indique plutôt que le déclin de la voile précéda - au lieu de coïncider avec elle - l'émergence des vraquiers à vapeur des années 1870. Une étude de cas quantitative portant sur trois vaisseaux représentatifs (1854-1872) illustre la nature du recul de la navigation à voile britannique. On y avance que dès le milieu des années 1860, ces navires n 'étaient plus rentables pour différentes raisons : chute des taux de fret du charbon, augmentation des coûts de voyage et impact de la navigation à vapeur sur les autres voies empruntées.

Although the nature of the technological and organisational changes that revolutionised British merchant shipping in the mid-nineteenth century are subject to consensus, many of that revolution's finer points still remain open for description and discussion.[1] When examined more closely, this shift in Britain's shipping stock from sail towards steam rarely involved clear-cut changes and, in historical terms, there is always the danger of confusing cause with effect. Even where a discrete shipping route is examined in detail it may still prove difficult to establish a statistically continuous transitional sequence, never mind to elucidate the underlying causes. Furthermore, since much of the discussion about the period's shipowning has pursued a national overview, the influence of factors which operated at regional levels may have been underestimated. It is understandable, too, that

[1] The author is especially grateful to Mr. 'Bob' Balmer of Blyth for access to his pamstaking transcriptions of John Herron's original account books, and to Mr. George Innes for providing facsimiles of the *Orient's* ledger. Valuable guidance on the paper's presentation was provided by Dr. David J. Starkey, Wilson Family Lecturer in Maritime History, Maritime Historical Studies Centre, University of Hull.

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attention has focused upon the arrival of the 'new order' of things, rather than in examining the nature of decline in the old.

This paper seeks to address some of these latter concerns in the context of a classic 'intermediate' shipping trade, the Tyne-to-Baltic route, c.1855 to 1870. In particular, it presents a regional case-study of a shipping cycle which, for local sailing ship operatives, proved to be a period of optimism that turned to irrecoverable decline. Initially, consideration is given to the commercial reasons which saw British-owned sailing ships deployed to the Baltic in the third quarter of the nineteenth century. Following this, attention is focused upon the trading records and management of the (three) selected case-study ships, and a comparison is made of profit trends and returns upon investment. Finally, the results of the case-study are considered as reinforcing the causal argument that British sail's decline in the Baltic commenced earlier than, and independently of, direct competition with Baltic-going steam. On the basis of the author's recent research, a number of arguments may be advanced as to the factors that underlay the deployment of British sailing ships in the Tyne-to-Baltic trade during the third quarter of the nineteenth century.[2]

Firstly, it seems that the previously accepted model for British shipping based upon "unprofitable coal freights out and mgh-earning timber home" is a potentially misleading one.[3] The author's own extensive freight analyses support Fischer's conjecture[4] that coal export rates figured largely in the decisions of British shipowners deploying sail to the Baltic. However, the balance between export and import freight returns was a shifting one, with short-term (e.g. seasonal) factors and long-term trends constantly juxtaposed.[5] For shipowners in sail, it seems that steady reductions in the latter eventually outweighed the opportunistic gains which might be made from the former.

Secondly, deployment was influenced at least as much by the need for year-round continuity of ship employment as by potential profits from high freights on Baltic imports alone. Indeed, this researcher's own analyses (based on profitability per route mile) suggests

[2] In 1861, when this case-study ' s ships were active, ten percent of all foreign voyages made by Tyne-registered ships were to the (southern) Baltic. In addition, trips made by these same ships contributed much to the 50% share of the ports on the west European seaboard (Elbe to Brest). Beyond that, Tyne-owned sailings to the Mediterranean and Black Seas comprised 25%. Despite the Tyne' s sizeable imports of North American timber, its domestic shipping made only thirty Atlantic crossings, a mere 2% of foreign-going trips.

[3] C. Knick-Harley, "Coal Exports and British Shipping, 1850-1914," *Explorations in Economic History,* XXVI, No.3(July, 1989), 311-338.

[4] Lewis R. Fischer. "A Flotilla of Wood and Coal: Shipping in the Trades Between Britain and the Baltic, 1863-1913" in Yrjô Kaukianen (ed.) *The Baltic as a Trade Road* (Kotka, 1989) 42-45.

[5] The presence of a joint production regime whose outward rates were directly susceptible to changes in inward ones is also indicated by contemporary commercial comment. Statements such as, "owing to the improvement in homeward rates, [outward] rates have been flat," are not uncommon *{Newcastle Daily Chronicle,* 3 September 1860). Such reports also make clear that, during the period under consideration, it was grain rather than forest products which comprised the premium import cargo. This is somewhat at variance with the impression given in standard works such as, B. Latham, *Timber, its Development and Distribution: A Historical Survey* (London, 1957).

that the relatively high rates obtained from the Baltic could prove illusory in respect of real profits.[6] Well-selected coastal routes with mundane cargoes could, and often did, yield more.

Thirdly, it is clear that deployments to the Baltic were a single element in complex routeing (and seasonal) practices which, for the most part, confined the vessels concerned to North European waters and Britain's east coast. The loss, or long term non-profitability, of any part of this regular employment chain might jeopardise the whole deployment regime.

Finally, it can be demonstrated that the erosion of profits and fates suffered by the ships in the following case-study mirrors the more general decline revealed by ongoing researches into Britain's Baltic-going sail of the 1860s. The precise inter-relationship of the factors contributing towards this decline remains to be defined, but it may already be argued that it was not the direct result of competition from steam on the Baltic route itself. Whilst it is true, as Pearsall has pointed out,[7] that Baltic operators had long experience of steamships, their services had been of a very selective kind. By 1865, when this case-study's ships were all active, steamers still provided less than a twentieth of the carrying capacity on the Tyne-to-Baltic route, a proportion that rose only erratically to one-fifth or one-quarter by the end of the decade. It then took another five years before steam's capacity finally overhauled that of **Still.**

At the beginning of this case-study period, in the immediate post-Crimean War years (1856-58), it was the ports of Newcastle, Hull and Leith that were the largest participants in Britain's export trades to the Baltic. Newcastle, which was then said to handle some sixty percent of all outward-bound traffic,[9] may be considered to have been the clear leader,[10] although Hull and the port of London captured the lion's share of the resultant imports. Coal, drawn from the Great Northern Coalfield, lay at the heart of Newcastle's export pre-eminence,[11] and it was the coal trade's distributive demands which provided for a reservoir of locally-owned shipping too. Tyne-registered ships alone constituted over one-fifth of the

[6] For example, examination of the 1860-1861 voyage accounts of the Tyne-registered, case-study brigs *Gleaner andPeace* show that whilst their outward (backhaul) cargoes of coal grossed less overall than their inward ones with grain, wood products or tallow, the actual rate of return in terms of freight earned per 100 nautical miles was actually higher on the backhaul leg: *Gleaner* at £14.08 outward, as against £13.44 inward; and the larger *Peace* at £18.39 outward, as against £15.09 inward. The need to complete the Baltic trade's triangular 'round-trip' with a loss-making ballast passage from London (or Hull) to the Tyne, largely accounts for this. Previous commentators appear not to have factored this deficit into the inward returns.

[7] Alan Pearsall, "British Steamships in the Baltic, 1820-1870" in Kaukianen (ed), *The Baltic as a Trade Road* (Kotka, 1989), 139-151.

[8] This statement sums up the statistics for sailings to "Russia's Northern Ports" (largely the Baltic) in Parliamentary Papers: *Annual Statement of Trade and Navigation,* 1865-1870; *Annual Statement of Trade of the United Kingdom,* 1871-1875; *Annual Statement of Navigation and Shipping,* 1876-1880; supplemented by samples compiled from the *Newcastle Bill of Entry and Shipping List* (Newcastle, 1865-1880).

[9] Parliamentary Papers, *Report from the Select Committee on Harbours of Refuge,* 1857, 64-65.

[10] Fischer, 48.

[11] N.R. Elliot, "A Geographical Analysis of the Tyne Coal Trade," *Tidschrift voor Economische en Sociale Geografie,* Vol. 59 (March-April, 1968), 81-87.

international tonnage employed in the Tyne-to-Baltic trade, and they comprised nearly two-thirds of the English shipping thus engaged, (see, Table 1) By the early 1860s some 16 per cent (340,000 tons) of the coal exported from the port of Newcastle was destined for the

Table 1. Sailing Tonnage Supply in the Tyne-to-Baltic Trade, 1861
(register tons; percentage of total register tons)

	Tonnage	Tonnage Percent
England, North East Coal Ports	53688	24
England, Other Ports	26541	12
Prussia (East and West)	53223	24
German Confederation	45905	21
Scotland	11864	5
Dutch Republic	11537	5
Denmark	8099	4
Russian Empire	5465	2
Norway	2524	1
Others	6953	3

Statistics include 'repeated voyages'
Nearly nine tenths of the tonnage ascribed to the "North East Coal Ports" was registered on the Tyne
Source: Compiled from *Newcastle Bill of Entry and Shipping List,* 1861

Baltic, and these Baltic-bound cargoes were still carried almost exclusively by sail. In 1861, a mere fifteen departures were made by steamers compared to over one thousand by sailing ships.

Tyneside owners favoured their long-established, square-sail rigged "brigs" and "snows" for this Baltic work, and analysis reveals that the size of such ships was closely defined, more than eighty percent of them lay close to a size range of200-350 registered tons. With hull draughts of fourteen to sixteen feet, the majority of the larger Baltic ports (including St. Petersburg's outport, Cronstadt) were open to these brigs, although they rarely negotiated the immediate, shallow-water, approaches to the Russian and Prussian capitals themselves: St. Petersburg and Kônigsberg. So, although the smaller, shallower-draught schooners of their Scottish and Dutch competitors might suffer disadvantages in respect of economy of scale, they enjoyed slightly wider opportunities of access along the Baltic coast.

Characteristic exponents of this latter strategy were the Scots, for their east coast

ports had benefited from Baltic cultural contacts for several centuries,[12] and they had developed a regular shipping traffic to the region.[13] Similarly, the Scots had expanded their connections with the northeast English coal ports. For instance, in 1861, Scottish vessels made eighty-five sailings from the Tyne to the Baltic, including seventeen movements by vessels of under 150-tons from the (Moray Firth) port of Banff alone.

However, the deployment of all such vessels to the Baltic was constrained by climate, for ice generally denied entry from December through March. As a result, shipments were compressed into a relatively short season which contained two peaks of demand: spring and high summer. Although the northeast coal ports' ships used for this work were sometimes referred to as 'Baltic Traders,' it was a phrase which should not be taken too literally. The majority of these vessels made only one Baltic trip in a season, barely a quarter of them made two, and those few (including the case-study ships cited below) that chanced a third, late-autumn excursion into the Upper Baltic always risked becoming frozen in for the winter. For the rest of their non-Baltic working year all such ships were generally occupied in a near-continuous round of North European and domestic voyaging, with hardly any venturing further afield.

It is a reasonably straightforward, if labourious, process to re-construct the overall voyage patterns of such vessels, and to estimate their freight earnings from coal exports,[14] or (with less accuracy), from the carriage of Baltic grain and timber. Nevertheless, it is extremely difficult to arrive at usable figures concerning the capital outlays or annual operating costs of such ships. Thus, a close estimation of the returns actually achieved by vessels in the Baltic trades is generally denied to the researcher, although some pioneering theoretical calculations have been made.[15] But all such propositions suffer from two difficulties: an understanding of the exact nature of the ships involved; and, the need to factor in apparently illogical Baltic freight rates (whose levels rested as much upon hidden shipping problems as upon direct route distance).[16]

[12] M. North, "Scottish Irnrnigrants in the Southern Baltic Area, Sixteenth to Eighteenth Centuries," in P. Salmon and others (eds.), *Britain and the Baltic: East Coast Connections* (Sunderland, 2002) forthcoming.

[13] T. Riis, "Long Distance Trade or Tramping: Scottish Ships in the Baltic, Sixteenth and Seventeenth Centuries," in T.C. Smout (ed.), *Scotland and the Sea* (Edinburgh, 1992) .

[14] The attractiveness of a particular Baltic port to British carriers can be estimated by relating the freight rate offered to the route's mileage. This provides an objective measure of money earned per unit distance. For a sample year, 1861, the three highest ranked such ports within the southern Baltic could thus be anticipated to be: Cronstadt; Stettin (with its outport Swinemunde); and Kiel. Shipment totals derived from the Newcastle Customs House-compiled *Newcastle Bills of Entry,* confirm this theoretical ranking, for these three ports absorbed over ninety percent of all the coal shipped to the (nine) Baltic ports for which there were published freight quotations.

[15] Fischer, 48-53.

[16] Discussed further in, A.G. Osier, "Coal, Chemicals and Change: Tyneside's Baltic Trade, 1861-1880," in P. Salmon et. al (eds), *Britain and the Baltic: East Coast Connections* (Sunderland, 2002) forthcoming. Briefly, it may be noted that this paper supports Fischer's (1989) Newcastle-to-Baltic, weighted, coal freight series for the early 1860s. However, it also indicates that Harley's (1989) use of Danzig as a port of reference

Consequently, almost any surviving primary evidence which reveals the actual returns and costs of individual ships engaged in the Baltic trades of this period are sufficiently important (and rare) as to merit serious analysis. Fortunately, the three vessels whose "Voyage Accounts" provide the basis of this case-study were all acquired for service in the North European (primarily Baltic) and British coastal trades in the mid-1850s. Two of these were Tyne-registered brigs of slightly differing character and origins, whilst the third was a Scottish schooner newly-built for local owners.[17]

As was characteristic of the period, the ownership of each vessel was subdivided into sixty-fourths, a partnership system which provided for a spread of capitalisation, the ready transfer of assets, and an inarguable apportionment of profits or liabilities. The two Tyne registered brigs, *Gleaner* (1848) and *Peace* (1851), were under the nominal ownership of John Herron & Co. of Blyth, a sub-port of Newcastle which (although physically separate) had a common shipping and export regime.[18] Though Herron was cited as their owner, his partner John Cole actually held a majority shareholding in both, with third party holdings amounting to less than a third in each case.

Correspondingly, the owners of the Moray Firth schooner *Orient* (1855) were resident in the district of Speymouth, a locality noted for its wooden shipbuilding.[19] Theoretically, *Orient's* ownership appears a partnership of equals, since the four participants each held a quarter-share, but the ownership and management of the schooner was in reality vested in the hands of just one of them, Captain William Anderson - indeed, only one of the partners was not an "Anderson".

The ownership structures of all three vessels were thus broadly similar and, when seen against the author's analysis of (117) Baltic-bound, Newcastle-registered ships of 1861, seems typical. Over a fifth of all these ships were held by partnerships of mutual equality, whilst a further quarter fell into a closely related category where one partner held a fractional shareholding dominance only. However, these commonplace structures of near-equality may already have been becoming outmoded,[20] for in the decades leading up to 1850 there seems to have been a definite move towards single-person ownership on Tyneside.[21] As a consequence, nearly a half of all the Tyne-registered, Baltic-bound ships of 1861 can be

cannot be sustained.

[17] Transcript of the Voyage Accounts of the brig *Gleaner* 1854-1872, in R. Balmer, "The Life of John Herron, 1816-1895: Watch and Clockmaker and Shipowner of Blyth," unpublished typescript Newcastle Central Library; Transcript by R. Balmer of the Voyage Accounts of the brig *Peace* 1857-1867, unpublished manuscript, author's Collection; Voyage Accounts of the schooner *Orient* 1855-1867, "Money Engrossed by the Orient," unpublished manuscript, author's Collection.

[18] C E . Baldwin, *The History and Development of the Port ofBlyth* (Newcastle upon Tyne, 1929).

[19] Ian Hustwick, *Ships of the Moray Firth* (Aberdeen, 1994), 1-22.

[20] S. P. Ville, "The Growth of Specialisation in English Shipowning, 1750-1850", *Economic History Review,* XLVI, 4 (1993), 707-708.

[21] S. P. Ville, "Patterns of Shipping Investment in the Port of Newcastle upon Tyne, 1750-1850", *Northern History,* XXV (1989), 217-218.

shown to have been under single ownership.

Nevertheless, two features of the ownership structures of these case-study vessels were entirely characteristic. Firstly, ownership was divided amongst four or fewer partners. Secondly, the intellectual and financial investment in each ship was a fusion of experienced maritime skills with small-scale bourgeois capital; this latter derived from the assets built up by tradesmen, landholders, professional men, or seafarers.

The major shareholder in Herron's brigs, John Cole, was a ship's master who had turned shipowner,[22] as also was Captain William Anderson of the *Orient.* John Herron of Blyth was a successful small businessman, with a watch- and clock-making workshop in an expanding port town, whilst Capt. William Anderson's kinsman (also named William Anderson) was a farmer whose region was experiencing "a time of confident expectation."[23] The family of *Orient's* fourth partner had mercantile and landed interests, whilst *Gleaner's* William Winship was a professional figure in Blyth who also became a shipowner in his own right. Both Cole and Anderson acted as their respective vessels' shipmasters in the early years, whilst the first master of the *Peace,* William Ferrow, invested a full quarter share upon joining. However, all three vessels' owners later reverted to appointing masters who were simply wage employees, and mostly short-stay ones at that.

Establishing the capitalisation of each vessel highlights the first comparative problem. *Orient* was recorded as new-built in 1855 at a total cost of £1,384 (£13.44 per ton), whilst the considerably larger *Gleaner* had been bought third-hand in 1854 for a similar sum, £1,293 (£6.60 per ton). Unfortunately, *Peace's* second-hand purchase cost in 1857 was not recorded, although a calculation based upon Herron's insurance cover suggests £2,070 (£9.24 per ton). At the time, the three vessels' relative costs would probably have been seen against the coal trade's standard measure of carrying capacity, the keel (21.2 tons). If thus compared, then the relative costs were as follows: the newly-built, eight-keel *Orient,* £173 per keel; the fourteen-keel *Gleaner* barely half as much at £93; and, the sixteen-keel *Peace* (of similar age) rather more at £129. All things being equal, the *Gleaner* appears to have been much the 'best buy', but even a bargain requires good management.

Since John Herron is cited as principal owner in Lloyd's Register, and the handwritten ledgers of *Gleaner* and *Peace* long-survived with his descendants, it is reasonable to assume that he actively managed them. Majority shareholder John Cole probably played a considerable role too, especially during the five years when he was *Gleaner's* master (1854-1858), for it seems significant that the brig's three subsequent years with a wage-employed master provided poor returns. The beneficial influence of a self-interested, cost-conscious, share-owning master is also reinforced by the case of the *Peace,* for she returned consistent profits and showed steady reductions in outgoing expenses under William Ferrow's command.

Sir W. Runciman, *Collier Brigs and Their Sailors* (London, 1926), 272, 282.
E. Simpson, *Discovering Banff, Moray and Nairn* (Edinburgh, 1992), 100-101.

(1857-1861).[24] Shipmasters of the time were effectively beyond communication in the Baltic - where letters were advisory tools rather than executive ones - so they became temporary managers, responsible forthe ship's forward positioning, its freights and daily aidministration.

The case for Captain William Anderson as the manager of the *Orient* is a strong one. The surviving ledger evidence indicates that he directed the schooner's activities both as master afloat (1855-1859) and, subsequently, as her shore-based manager too (1860-1867). Ashore, he acted as the ship's broker and agent, travelling locally to negotiate freights and insurances or to oversee repairs, and his task was no sinecure; in eight years he had to deal with seven new masters. Significantly, in the later stages of the vessel's career Anderson formalised and rewarded his own position by introducing a specific management charge (£10 per annum). His situation thus came to foreshadow that of the salary-remunerated "managing owner," a position which became a commonplace in the subsequent shipowning era.[25]

The surviving records indicate that the principal management tasks of Herron and Anderson revolved around the need to decide their ships' deployments and freighting, combined with the maintenance of such financial records and assessments of voyages as would allow calculation of annual profits (or losses). Although none of the deck logs for these mundane merchant ships survive, the question of the three vessels' geographical deployments can be answered by analysis of the owners' surviving financial ledgers supported by published shipping 'intelligences'. It is also a fairly straightforward matter to disentangle the ships' individual financial accounts, for these are all based - albeit with quirks and inconsistencies - upon a simple voyage-by-voyage accounting system of income less expenditure. The resultant voyage details may then cumulate in a yearly statement of the ship's gross "balance", i.e., profit (or loss), and its proportional distribution to shareholders. However, unlike later and more sophisticated approaches involving company 'minute books ', these mid-century shipowners' records were not designed to chronicle (or conceal) decision-making processes. Consequently, although an informal management strategy that resulted in specific decision-making may often be inferred, its presence cannot actually be confirmed.

Commercially and culturally it is a self-evident, although often overlooked, fact that the management of such vessels relied upon owners applying what may be termed a 'home-port' strategy. A subconscious indicator of this strategy is the fact that discrete voyage accounts within the owners' ledgers were normally (and by preference) carried out on a round trip basis: home-port towards home-port. This was an understandable convention, but not always a logical one. More practically, the home-port was where the owner's shipping information network was concentrated, where his opportunities to obtain discounts and insurances (or redress from them) were most favourable, and, critically, it was where personal

[24] Basil Greenhill, personal communication, also emphasises the role of the share-owning (and preferably family-related) master in ensuring the success of North Devon's sailing vessels during that region's final era of sail.

[25] G. Boyce, *Information, Mediation and Institutional Development: The Rise of Large-scale Enterprise in British Shipping, 1870-1919* (Manchester, 1995), 3.

supervision and intervention might be exercised during periods of outfitting, repair and supply. Kinsmanship ties were strongest there too, for example, a quarter of all the sMp-ovvning partnerships of Tyne-registered Baltic-bound vessels of 1861 indicate direct (let alone indirect) blood-ties.

So, although the coal ports of Blyth and Tyne were only seven miles apart, with *Gleaner* and *Peace* registered at the latter, the two brigs made only ten calls into the Tyne during their careers, as against one hundred and ten into their home-port, Blyth. *Orient's* Scottish home-port allegiances were just as strong, for although Garmouth was an inconveniently small trading creek, the schooner's operational base became the improved harbour of Lossiemouth nearby. Here, a regular demand for coal and reciprocal supplies of timber resulted in her making thirty calls in twelve years.

Given this propensity to cycle or sequence voyages around their owners' home-ports, it is important to understand how Herron and Anderson deployed their ships to the Baltic, and to evaluate the overall roles and returns of such Baltic voyages to them. On a career-long basis, 1857-1867, Herron's larger brig *Peace* was deployed to the Baltic for well over a half (61 %) of her voyaging time, with the London and north French coal trades absorbing a further quarter (23%). But for his slightly smaller brig *Gleaner,* 1854-1872, this deployment pattern was effectively reversed, for she spent almost half (48%) of her time in home trade coal trips, and about a third (32%) in Baltic voyaging. Anderson's schooner *Orient,* 1855-1867, was the most prolific Baltic-voyaging ship of the three, spending well over two-thirds of her time (70%) in Baltic voyages and around a quarter (26%) in the East coast trades - both Scots and English. Sailings outside the regions cited were relatively insignificant, the *Peace* ventured a few nugatory trips to Iberia and *Gleaner* made a singular one to the White Sea, whilst *Orient* undertook nothing outside 'Home Trade' limits. Such circumscription of voyaging reflects less upon these vessels' absolute size than their mediocre character. For example, neither of Herron's cheaply purchased brigs were copper sheathed, thus denying them the (teredo vulnerable) southern-going trades.

It is not especially illuminating to examine each vessel's career on a voyage-by-voyage basis.[26] However, it is instructive to compare the workings of all three during a sample period in their mid-careers, the years 1860 and 1861.

The intensity of use is striking. In the two years under consideration, the square-rigged *Gleaner* and *Peace* each traversed more than 16,000 nautical miles port-to-port (approximating 24,000 miles over the ground). Despite a bad stranding, the smaller, schooner-rigged *Orient* covered 14,500 miles port-to-port too and, moreover, in 1860 she was active on an astonishing (but typical) 345 days of the year. Herron's brigs achieved the creditable, but slightly lower, usage figure of around 325 days per year (maybe reflecting these square-riggers more complex maintenance needs). In the two year period under consideration, *Gleaner* completed four separate Baltic voyages together with nine in the Home Trade (i.e.,

[26] A list (with minor omissions) of the *Orient's* voyages and a summary of her operations are provided in Hustwick(1994), 59-64, 124-126.

London and northern France), whilst *Peace* carried out six exceptionally long round-trips to the upper Baltic plus two in the London coal trade. *Orient,* despite time-consuniing repairs in 1861, made a total of seven voyages into the lower Baltic and an equal number of (mainly) short-haul coastal trips.

Following the established model of British ships engaged to-and-from the Baltic, all three vessels' voyage patterns were generally triangular ones, involving a return to a British import destination quite separate from their place of departure.[27] This, from a shipowner's point of view, was the first drawback to the Baltic regime, for after discharging their import cargoes ships had to regain an export locality in order to fix further 'back-haul' (export) cargoes to the Baltic. Characteristically, this meant a costly three hundred-mile trip ' in ballast' from an import centre such as London to a northern coal port or, alternatively, to the ship's home-port. The second major drawback was of course the fact that Baltic trips could not be carried out all the year round.

For brevity, consideration of the 1861 voyage regimes of *Gleaner* and *Orient* are sufficient to example such voyage patterns (Table 2). *Gleaner's* schedule typifies that

Table 2. Comparative Voyage Patterns *of Orient* and *Gleaner,* 1861

Orient					*Gleaner*			
Season	Trip	From	To	Cargo	Trip	From	To	Cargo
Winter					C	Blyth	London	coal
					C	London	Blyth	ballast
Spring	E	Leith	Kônigs	iron	E	Blyth	Cronst.	coal
	I	Kônigs.	London	oats	I	Cronst.	London	timber
	Ic	London	Tyne	ballast	Ic	London	Blyth	ballast
Summer	E	Tyne	Kônigs	coal	E	Blyth	Cronst.	coal
	I	Kônigs.	Leith	rags	I	Cronst.	London	deals
	C	Forth	Moray	coal	Ic	London	Blyth	ballast
Autumn	E	Moray	Stettin	herring	C	Blyth	London	coal
	I	Stettin	Leith	wheat	C	London	Blyth	ballast
Fore-	E	Forth	Malmo	coal	C	Blyth	London	coal
Winter	I	Nysted	London	barley	C	London	Blyth	ballast
	Ic	London	Forth	manure	HT	Blyth	Boul'ne	coal
					C	Boul'ne	Blyth	ballast

Column one, Seasons: Fore-winter comprises November and December only.

[27] Tyne-registered sailing ships made 188 sailings from the Tyne to southern Baltic ports in 1861, but only a bare handful returned direct to Newcastle with imports. Almost three-quarters of these outgoing ships subsequently appear to have been fixed inwards from the Baltic for London (together with a few to minor east coast ports), and the rest almost invariably returned to Hull.

Columns two and six, Trip type: C, coastal; E, export; HT, home trade limits; I, import; Ic, coastal leg consequent upon import voyage.
Columns three and four, and, seven and eight, Ports: Cronst., Cronstadt; Kônigs., Kônigsberg; and Boul'ne, Boulogne.

Source: compiled from the Voyage Accounts of the *Orient* and *Gleaner,* 1861.

adopted by Herron at this time, although he subsequently withdrew her into the Lower Baltic and left the longer Cronstadt route to his bigger brig, *Peace.* The seasonal division of voyaging is clear cut, with *Gleaner's* Baltic trips compressed into the spring, summer and autumn, whilst those of the Home Trades occupy the fore-winter (November-December) and winter. That the seasonal separation is less obvious for *Orient* is, quite literally, accidental, for she lay seriously damaged throughout the early months of the year. Normally at this time she would have been on the coast, shuttling Moray-grown pit props to Sunderland and coals back. When serviceable again, Anderson took immediate advantage of her accidental positioning to freight iron from Leith to the Prussian capital of Kônigsberg. This was the initial leg of a typical triangle involving cereals inwards to London, followed by a non-earning ballast passage back north, before re-commencing with coals from Newcastle for Kônigsberg once more. Scottish coal then formed two more outward freights for the lower Baltic and Sweden, together with the inevitable cargo of salted Scots herrings from Hopeman (near her home-port) to Stettin. Winter eventually saw the schooner looking to get north again from London.

But ships are not run simply to leave tidy and continuous track-lines on a chart. They are operated in order to record substantial balances in their owners' ledgers. So how did these three vessels show up on the 'bottom line' in 1860 and 1861?

An initial analysis of the ships' returns for 1860-61 suggests the pertinacity of the modern advertising slogan, "size matters," for *Peace,* the largest vessel, grossed £3,016 in freights, *Gleaner* £2,574 and *Orient* just £1,863. Comparatively, if these figures are adjusted for their differing capacities (at ratios of 16:14:8) the earnings' efficiencies of Herron's two brigs appear closely matched, at £188 and £184 per keel, whilst the much smaller Scots schooner actually returned some twenty-five percent more, at £233 per keel. Nevertheless, the figures that really counted for the individual shareholders were the end of year balances, the profits accrued from the year's trading.

Peace definitely provided the highest gross profits, returning £7.42p per share per annum from profits totalling £950. Surprisingly perhaps, although she was only half *Peace's* size, *Orient's* shareholders enjoyed a return almost two-thirds as great, at £4.67p per share from profits of £598. By comparison, *Gleaner's* return was a meager £2.91 per share from profits of £372. On a simple price to earnings (p/e ratio) calculation, *Peace's* shareholders could theoretically have expected to clear their original investment in just under four and a half years, and *Orient's* in only a little more. *Gleaner,* although cheaply bought, would have

kept her shareholders waiting nearly seven.[28] If this all sounds favourable to their investors, it must be remembered that even in normal times ships were depreciating assets operated under constant risk.

For the shipowners concerned, the situation in 1860 and 1861 probably did appear as 'normal times'. The *Orient* and *Gleaner* - presumably acquired in expectation of a wartime boom - had actually benefited from a couple of years of high, war-related freights, albeit followed by two poor ones before a moderate revival. *Peace,* purchased in 1857, had missed some of the war-induced boom, but freights on her core Baltic voyages soon grossed an encouraging, if fluctuating, £450 to £550 per year. With hindsight, however, the period 1860 to 1861 can be seen as a taming point in all three vessels' careers. For even *Orient's* freight earnings entered a period of overall decline, whilst *Gleaner* suffered from the downward trends even more acutely. *Peace's* frequent (and occasionally risky) high-freighted Cronstadt voyages seem to have insulated her earnings for a while, but in the two years prior to the vessel's loss in 1867, the net profits contributed by this premier Russian route fell sharply. If declining freight rates were the underlying cause of this overall trend, were there potential areas for savings which more responsive shipowners might have taken advantage of?

Seamens' wage levels remained stable both in England[29] and Scotland[30] during the late 1850s and early 1860s, suggesting that there was little opportunity for reducing expenditure through cutting wage bills. Nonetheless, Herron's intermittent accounts for "portage" (wages) show that he often paid rates below those quoted in the region.[31] More significant to him than changes in wage rates must have been the increases in recurrent annual expenses and the marked rise in voyage disbursements. Allowing for 'exceptionals', there was an escalation in the non-wage operating costs of both Herron's brigs from 1864 onwards, and Anderson's *Orient* suffered much the same too. His schooner's expenditure trend from 1860 onwards was a decidedly upward one, and this despite the fact that a slight rise in wages had been offset by reducing insurance premiums. In fact, the overall rise in *Orient's* voyage expenses, from around £600 in 1859-60 to just under £700 in 1867, was equivalent to nearly half her annual wage bill, (see, Table 3) Unfortunately, since all three ships' ledgers are variously detailed and disaggregated, it has not been found possible to isolate and identify

[28] In reality, the periods needed to clear the vessels' respective purchase costs were: *Gleaner,* four years (through enhanced war-time earnings); *Peace,* six years; and *Orient,* four years.

[29] Lewis R. Fischer, "Seamen in a Space Economy: International Regional Patterns of Maritime Wages on Sailing Vessels, 1863-1900"inS. Fisher (ed.) *Lisbon as a Port Town, The British Seaman and Other Maritime Themes* (Exeter, 1988), 61-66.

[30] G. Jackson, "Scottish Sailors", in P. van Royen, J. Bruijn, and J. Lucassen (eds.), *"Those Emblems of Hell"? European Sailors and the Maritime Labour Market, 1570-1870* (St. John's, 1977), 130-131.

[31] Throughout 1860 and 1861, Herron held to the low rate of £4-10s (£4-50p) for the rate-setting 'London Voyage', despite the fact that local commercial reports indicate that this was accepted only briefly when, "seamen [were] in excess of demand." Similarly, *Gleaner's* AB accepted £3-10s (£3-50p) per month for two Baltic voyages in 1861, although local reports specified that £4 (£4-00p) had been agreed the previous autumn. Obviously, publicly quoted wage shifts did not necessarily translate through into individual owner-to-crew agreements.

common causes for the clearly increased operating costs of the 1860s. The overriding impression, however, is one of an escalation of small but necessary costs that lay outside the

Table 3. Annual Expenses and Disaggregated Expenses of the *Orient,* 1859-1867
(in pounds sterling)

	Total Expenses	Voyage Expenses	Wages	Insurances
1859	579	248	206	56
1860	629	320	222	73
1861	650	320	222	50
1862	691	392	233	39
1863	645	346	218	67
1864	922	400	218	78
1865	679	336	269	37
1866	655	359	211	37
1867	678	334	235	56

Note: The exceptional total for 1864 (£922) includes non-recoverable costs incurred as a result of damage to the ship and its cargo off Denmark.

Source: Analysis of Voyage Accounts, "Money Engrossed by the *Orient* 1855-1867."

owners' immediate control. The cumulative effect of these are typified by the upward trend in the *Gleaner's* expenses from 1864 onwards (see Table 4, page 26). Northeast masters often complained of the unfair charges levied by officials in Baltic ports, but some causes probably lay closer to home - Herron's regular London agent for the *Peace* seems to have doubled his charges during her career.

The owners were thus caught in a classic predicament, with freight incomes fluctuating and generally falling, whilst their fixed costs rose and the ships themselves depreciated. Tactically, owners might respond by re-deployment or seeking to 'sweat' their assets further, and there is some indication of both. Anderson, who had exploited the short boom of 1856-57 in the Baltic trades soon directed *Orient* back onto 'the coast', only to re-deploy her onto higher-freighted Baltic runs once more in the 1860s. Herron also demonstrated flexibility with his small, low-earning *Gleaner.* After 1861 he shifted her Baltic chartering from Cronstadt to the more consistent, if less lucrative, imports of the lower Baltic, and pulled her out of the wintertime London coal trade (where steam competition was now severe) in order to concentrate upon voyages to northern France. His larger brig, *Peace,* was purposefully retained in the long-mileage upper Baltic trades, although the balance of the ship's freight earnings there changed significantly in the mid-1860s. Prior to 1864 her earnings' rate (per mile/day) from north east coal exports had actually exceeded that from return cargoes with Baltic imports, but after 1864 falling coal freight rates saw the situation

reversed, with a consequent reduction in round-trip earnings.

Table 4. Freight Income, Expenses and Profits of the *Gleaner,* 1854-1872
(all rates in pounds sterling per 100 route miles)

	Freight Income	Total Expenses	Annual Profits
1854	25.42	1.75	9.53
1855	22.88	10.22	1.82
1856	19.71	8.22	3.66
1857	18.03	2.43	5.37
1858	15.90	1.77	4.09
1859	15.05	2.74	2.09
1860	16.48	3.53	2.31
1861	14.73	2.70	2.20
1862	13.93	2.52	3.59
1863	14.61	2.29	2.53
1864	13.84	2.57	3.63
1866	14.15	4.13	0.05
1867	14.87	3.19	0.68
1868	16.53	4.33	2.15
1869	15.02	3.81	0.36
1870	15.90	6.82	1.98
1871	15.52	3.85	0.74
1872	13.93	8.89	2.02

Note: The high freight income of *Gleaner's* first season, 1854, resulted from an advantageous time-charter to the French War Administration; conversely, the large expenses incurred in the following year, 1855, resulted from a grounding.

Source: Analysis of Voyage Accounts of the brig *Gleaner,* 1854-1872.

From the mid-1860s onwards the situation became ever more critical. Although declaring a nominal profit from 1865 through 1867, *Orient* seems to have been trading at a loss as against a fixed return investment. So Anderson's decision to sell into a falling market appears to have been a sensible one, for the 12 **'/2**-year old vessel fetched £541 when sold in 1867 (a depreciation rate of 4.9% p.a). Coincidentally, *Peace's* career ended in the same year when she was driven ashore - without loss of life - on the coast of Jutland, realising a substantial £1,345 in insurances and small profits (a depreciation rate of 3.5% p.a.). With her owners' trading returns from each of the previous two years having averaged only £278, *Peace's* insurance premiums of around £140 per annum must suddenly have seemed remarkably good value. Nonetheless, Herron & Co. had to struggle on with the aging *Gleaner,* for local commercial reports indicate that brigs of this "second and third class" type were

beyond effective sale. Over what proved to be *Gleaner's* last half-dozen years, 1867-1872, her profits averaged only eighty pounds a year. Eventually, late in 1872, she lay idle for several weeks, took on a new master together with a cargo of coals rather larger than those carried earlier in her career and, within days, drove ashore under stress of December weather - three crew were lost. The resultant mutual insurance claims netted her owners £683, a sum half that of her 1854 purchase price (a depreciation rate of ***2Vi%*** p.a.).

Summarising the financial careers of the three vessels, it would seem that *Peace* returned a net annual income of 14.5% and *Orient* 11.8%, whilst the relatively low earning but longer-lasting *Gleaner* still managed about 10.5%. Nevertheless, their earnings' profiles were all skewed towards the earlier parts of their careers, and their long-term success as investments clearly depended upon the realisation of a high residual value: either by recouping insurances or making an advantageous sale.

In concluding this particular case-study it would be unwise to attempt a delineation of all the operational factors that underwrote British sail's decline in the Tyne-to-Baltic trades. Nevertheless, when set within a broader context of research, it does reinforce the argument that this decline had become an irreversible fact well before the bulk-cargo steamship had made a direct impact on the 'intermediate' (Baltic) routes concerned. The three, representative, British sailing vessels selected were clearly suffering an erosion of financial rewards by the mid-1860s, and their voyage records allow definition of the principal factors involved: loss of previously realised profits on the outward leg due to a steady decline in coal freight rates; a rise in fixed costs resulting from significant increases in voyage disbursements; and, direct competition from steam on the coastal and Home Trade routes which they also prosecuted. Unfortunately, however, the primary sources that underpin this case-study are far too limited and fragmented in nature to shed light upon broader market conditions - upon economic causes rather than shipowners' responses. Matters such as the actual inroads into the Baltic trade (if any) being made by foreign shipping, or, the causes underlying the decline in coal freight rates, must remain open for future discussion.