

"A critical situation. H.M.S. Beagle...East Coast of Patagonia, S. America," unsigned. Courtesy National Maritime Museum, Greenwich, England.

HMS *Beagle*, 1820-1870

Voyages Summarized, Research and Reconstruction

by Lois Darling

With appreciation for the valuable contributions made by
Commander Arthur Waite, Ret., National Maritime Museum, and Mr. John Chancellor

In all of maritime history, few vessels have had a career of more consequence than HMS *Beagle*. Built at Woolwich Dockyard on the Thames River below London, she was launched on May 11th, 1820, the forty-first in her class of 10-gun brigs, 235 tons and 90ft on deck. The great wars that opened the century were over, and although many ships of the Royal Navy had become engaged in various peacetime pursuits, there appeared to be no immediate need for the little brig's services. Except for a brief moment of glory during a naval parade in celebration of the coronation of King George IV, the *Beagle* lay "in ordinary," for her first five years.

The First and Second Voyages

In September of 1825, Woolwich Dockyard reinforced and repaired the brig's hull already afflicted with rot, sheathed and recoppered her bottom, added a poop cabin and forecastle, stepped a small mizzen mast, and otherwise prepared the *Beagle* for her future as a surveying vessel. Under her commander, Pringle Stokes, she was to accompany HMS *Adventure* (330 tons) for the purpose of exploring the labyrinth of channels existing at the southernmost tip of South America.

Here, buffeted by the foulest of weather, the *Beagle* would spend the better part of the next four years (1826-1830), surveying and charting waters acknowledged to be among the most dangerous in the world. By August 1828, with the little ship in sorry state and out of provisions, and her crew sick from scurvy and pulmonary diseases, Captain Stokes returned to Port Famine on the Strait of Magellan, retired to his cabin and shot himself.

He was replaced by twenty-three year old Robert FitzRoy, Flag Lieutenant, HMS *Ganges*, then stationed in Montevideo. After nearly losing the *Beagle* within months of his appointment, Fitz-

Roy learned to sail her with consummate skill for the duration of the first voyage and all of the second (1831-1836). Aside from extensive exploration and surveying, making studies of the weather, and much else, FitzRoy was charged with the formidable task of establishing the precise longitude of Rio de Janeiro. Also, a chain of meridian distances and determination of longitudes more accurate than hitherto must be made as the *Beagle* worked her way around the world. The official account of both voyages, written mostly by FitzRoy, was published in two volumes by Colburn in 1839.¹

FitzRoy writes, "I could not avoid often thinking of the talent and experience required for such scientific researches, of which we were wholly destitute; and inwardly resolving that if ever I left England again on a similar expedition I would endeavor to carry out a person qualified to examine the land; while the officers and myself would attend to hydrography." It was such thinking, not uncommon in the Royal Navy of this time, which resulted in a series of events which made it possible for Charles Darwin, then twenty-two, to be aboard the *Beagle* for her second voyage.

During the years of exploration on the waters, continents, islands, and coastlines of the Southern Hemisphere, the enquiring eyes of the ship's young naturalist saw many things. He wondered at the diversity of life in the seas and the incalculable number of microscopic organisms he found there. He roamed the tropical rain forests and the plains of South America. In Chile he climbed the Andes where he found beds of fossil seashells thirteen thousand feet above the sea. He sent boxes and barrels of specimens of both recent and fossil animals and plants home to England. On the lonely Galapagos Islands, some six hundred miles off Ecuador, Darwin found species of plants and animals

"The incredible beauty, the hope and discouragement are all there."

which existed nowhere else on earth, but which seemed related to similar species he had observed in South America. In the book he would one day write, he says of this experience, "...we seem to be brought somewhere near to that great fact—that mystery of mysteries—the first appearance of new beings on this earth."

The *Beagle* continued on into the Pacific. She visited South Sea islands and coral atolls. (Darwin's brilliant theory about how atolls were formed is still the accepted one.) He saw something of Australia and that isolated continent's own peculiar set of animals with pockets, the marsupial kangaroos, koalas and their relations.

Home at last after almost five hard, dangerous years, Darwin found himself already recognized as an accomplished scientist. With his travels fresh in mind and his notebooks at hand, he was able to complete his first book, with help from his inspired diaries, in a remarkably short time. Subtitled *Journal and Remarks, 1832-1836*, it was published by Colburn as Volume III of the *Narratives*. It became an immediate success, so much so two more issues were printed. In 1845, Darwin's revised and shortened version was published by John Murray. This second edition would be the first of many editions, issues and reissues by many publishers to follow.² In time, this book would become known world over simply as *The Voyage of the Beagle*.

The Third Voyage

HMS *Beagle's* little-known third and final voyage is just as interesting in its own right as her previous ones. The story of the voyage, *Discoveries in Australia*,³ is told by John Lort Stokes, Midshipman on the *Beagle's* first voyage, Mate and Assistant Surveyor on her second, and the *Beagle's* commander before the end of the third. At the beginning of Volume I Stokes writes:

"...I call to mind, that for eighteen years the *Beagle* has been to me a home upon the wave—that my first cruise as a Middy was made in her; that serving in her alone I have passed through every grade in my profession to the rank I have now the honour to hold—that in her I have known the excitements of imminent danger, and the delights of long anticipated success; and that with her perils and her name are connected those recollections of early and familiar friendship, to which even memory herself fails to do full justice!"

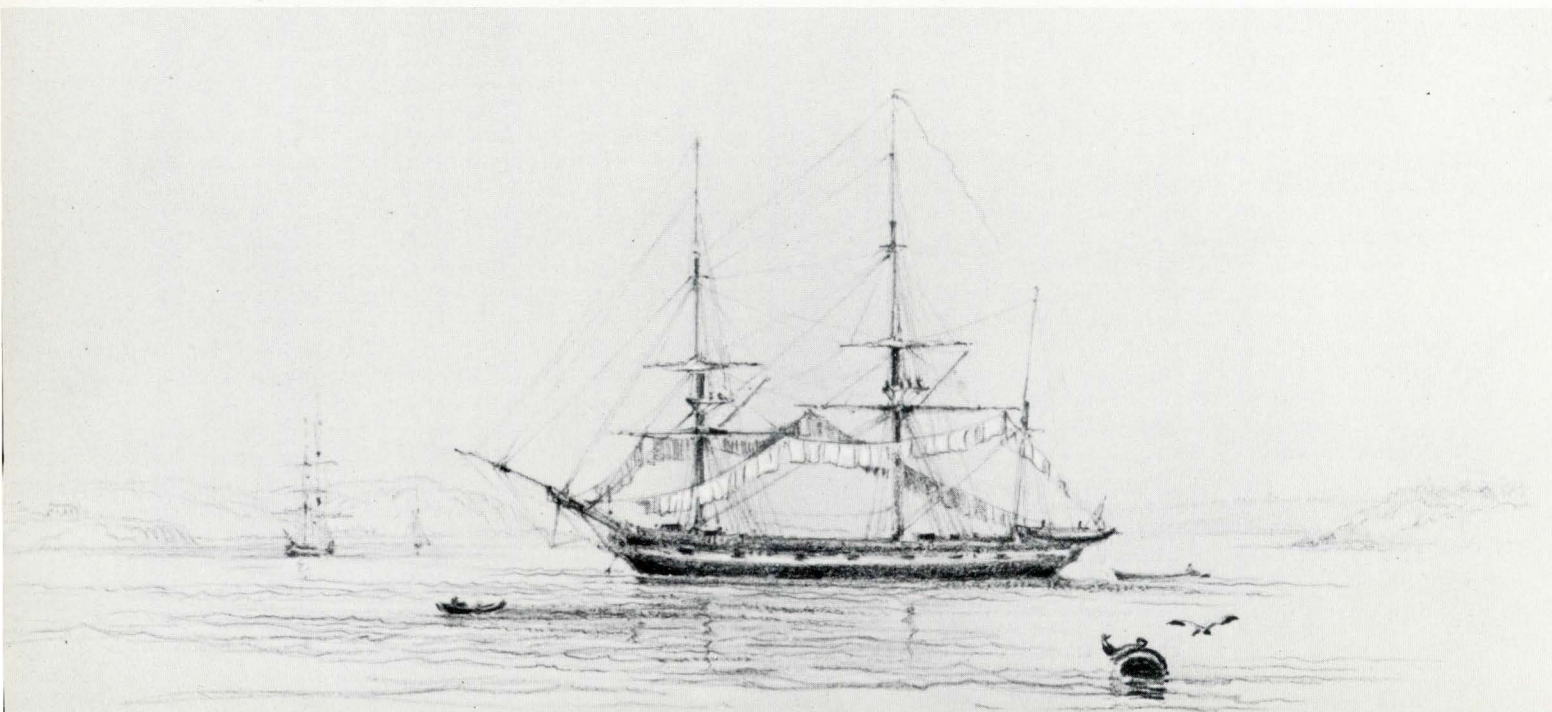
Obviously, Stokes was a superb seaman. But he was also a superb writer and an intelligent, sensitive observer. His account of the *Beagle's* wanderings along the shores of the vast unknown continent of Australia is a delight. FitzRoy had quoted Stokes as saying, "There is a pleasure I cannot express in roaming over places never visited by civilized man."⁴ And Stokes goes on proclaiming his joy, anguish and wonder in countless ways, throughout the entire six years necessary for the *Beagle* to complete her mission.

Parts of the Great Barrier Reef are explored and examined; estuaries and rivers found and penetrated far inland by the *Beagle's* boats; shore expeditions proceed despite intolerable hardships; the heat, the "mosquitos," the incredible beauty, the hope and discouragement are all there. Names which can be seen sprinkling the map of Australia today, are chosen. Unknown straits are braved, spice islands visited; the government, the penal system, the burgeoning settlements, the treatment of the natives, their looks and behavior are discussed. A fantastic array of flora and fauna from gouty-stem trees to cacti, kangaroos to crocodiles, cockatoos, platypuses, butterflies, beetles, fish, lizards and snakes are all brilliantly portrayed by word and engraving. Everything was new, strange and exciting—sometimes too much so, as when Stokes was speared by a native.

Mission accomplished, *Beagle* and her crew head home to England. Stokes writes;

"From Portsmouth we proceeded round to Woolwich, where the ship was paid off on the 18th of October, 1843. After giving the men their certificates, I loitered a short time to indulge in those feelings that naturally arose on taking final leave of the poor old *Beagle* at the same place where I first joined her in 1825. Many events have occurred since my first trip to sea in her: I have seen her under every variety of circumstances, placed in peculiar situations and fearful positions, from nearly the antarctic to the tropic, cooled by the frigid clime of the extreme of South America, or parched by the heat of North Australia; under every vicissitude, from the grave to the gay, I have struggled along with her; and after wandering together for eighteen years, a fact unprecedented in the service, I naturally parted from her with regret. Her movements, latterly, have been anxiously watched, and the chances are that her ribs will separate, and that she will perish in the river where she was first put together. She has made

.H.M.S. Beagle, Sydney, March 9th 1839. Drawing by Conrad Martens who settled in Sydney but who was aboard the ship as artist for part of the second voyage. Courtesy The Mitchell Library, Sydney, Australia.



herself as notorious as during the war did her namesake, that reaped golden opinions from her success in prize-making; while my old friend has extensively contributed to our geographical knowledge.”⁵

It would be another sixteen years before the publication of Charles Darwin's *The Origin of Species* would give the *Beagle* a more permanent place in history than her contribution to “geographical knowledge” alone.

The End

The *Beagle* did not, as Stokes predicted, “perish in the river.” In a way her fate was worse. In June 1845 her bottom was recoppered at Sheerness Dockyard. On July 11th she made the short run down the Thames and up along the coast to the Rivers Crouch and Roach. Moored in Paglesham Pool, *Beagle Watch Vessel* was stripped of her upper masts and yards. Landlocked and pinioned, she would never again go to sea. No more than a hulk, the Preventive Service (Coast Guard) would use her for storage and possibly for personnel quartered aboard, for a cookhouse was erected on her once proud deck. In the year that *The Origin of Species* was published, 1859, the Royal Navy took over the Coast Guard and in final degradation the *Beagle* lost her name altogether, becoming WV7 (Watch Vessel 7). The end came on May 13th, 1870 when she was sold for a pittance to Murray and Trainer who presumably broke her up for scrap.⁶ Nothing tangible remains, except, possibly, two anchors. These, having proved inextricable, were left by the *Beagle* on November 29th, 1839, at Holdfast Reach, Victoria River, Australia.

Research and Reconstruction

With so many books written through the years, and still being written about all aspects of the *Beagle's* second voyage, I was amazed to find out, in 1958, that no comprehensive study had ever been made regarding the appearance of the ship herself. Presented here is the culmination of twenty-five years of sporadic “*Beagling*,” the third and I trust last article about my efforts to reconstruct the ship on which Charles Darwin circumnavigated the world from December 1831 to October 1836.⁷

The initiated reader will see that the inboard profile and sail plan appear to be much the same as those I have published earlier. Basically they are. But since I have gone to such pains to make the *Beagle* just as right as possible, it has become necessary to incorporate small but significant changes in the new drawings presented here. Although some things may forever remain in doubt, most important problems have yielded to conscientious research.

There is no reason to believe that the *Beagle's* lines were basically altered from those of her many sisterships, 10-gun brigs built after July 16th, 1817. At this time alterations made on a copy of an Admiralty plan⁸ were incorporated into subsequent copies, one of which is reproduced here, and sent to various shipbuilders, including Woolwich Dockyard for the building of the *Barracouta* and *Beagle*.⁹ Keith Thomson¹⁰ did not, as he thought, discover what was already well known about the plans from which the *Beagle* was constructed. But his conclusions regarding these and his mistakes made in depicting the ship are offset by his other worthwhile historical contributions.

Outboard Profile

It has been possible to establish the length and height of the *Beagle's* forecastle and poop decks within a few inches. The bulwarks remain the same as before the *Beagle's* captain FitzRoy had the deck raised 12in forward and 8in aft. This was suggested by John Chancellor, whose magnificent painting of HMS *Beagle* in the *Galapagos* has now been reproduced. His suggestions have been helpful in many ways and this one is corroborated in

one of FitzRoy's letters to the Principal Officers and Commissioners of His Majesty's Navy, July 9th, 1831:

“The *Beagle* is ordered to carry only two six pound guns,—therefore raising the deck will not be of consequence as respect the guns, and their ports. By making this alteration, the stowage and comfort of the vessel will be very greatly increased. She will be much dryer upon deck;—Her waist will be less deep, and as she carries only two guns, the stability of the vessel will not be affected...”¹¹

The concern of the *Beagle's* commander did not, in the end, keep him from carrying four six pound brass guns, two nine pounders, also of brass, and a six-pound boat carronade. The positions of these is described by FitzRoy.¹² After the voyage, FitzRoy is able to comment that raising the deck “...afterwards proved to be the greatest advantage to her as a sea boat, besides adding materially to the comfort of all on board.”

The hammock rail, channels and chains are based upon contemporary paintings and drawings made by the *Beagle's* artist, Conrad Martens, and her officers, as well as Admiralty draughts.¹³ Although Captain FitzRoy mentions “hammock netting” in his *Narrative*, there is a possibility that he was using a phrase which remained in use long after true hammock nettings were abandoned. Inconclusive evidence suggests that the *Beagle's* hammock “nettings” may actually have been hammock boarding, commonly in use by 1831.

The angles of the chains seen on Draught #3861 shown here are interesting as they confirm the heights of the masts in John Edye's *Naval Calculations*, which I'll take up later under “Sail Plan.”

When the *Beagle* was launched in 1820 only the lower edge of her wale would have been made fair with her planking.¹⁴ During alterations and rebuilding in 1831 it is possible that the upper edge would have been made to fair also, a common practice by this time.

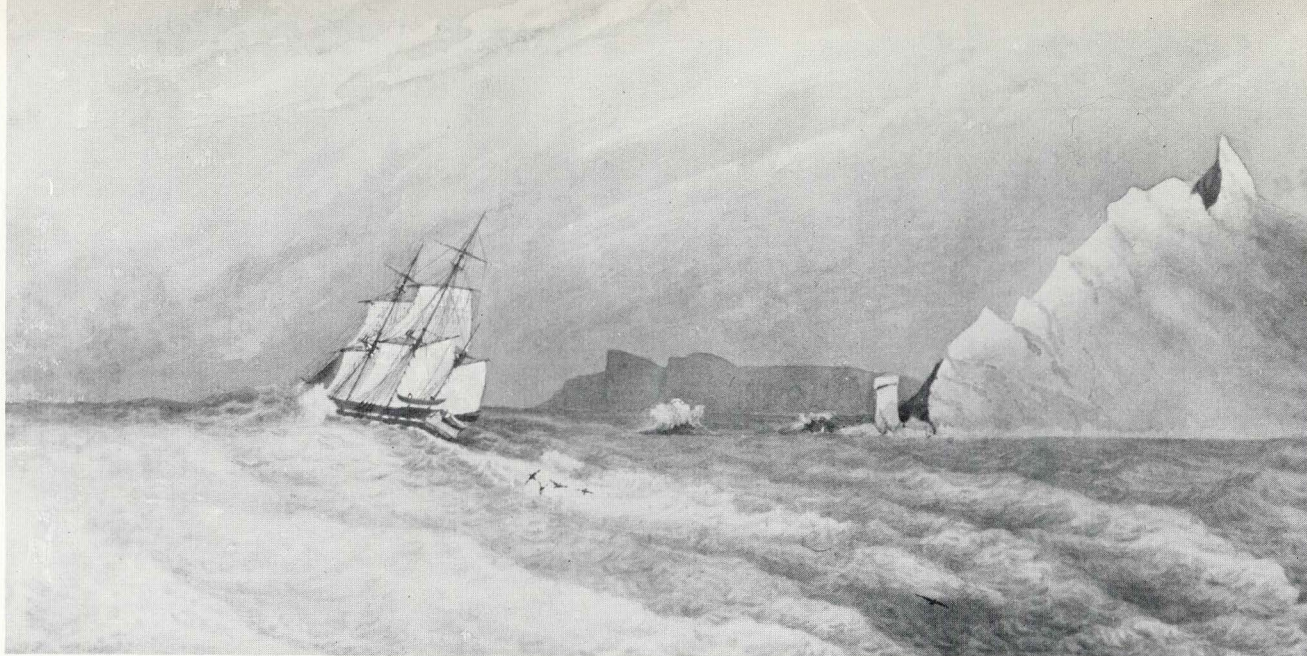
Actual quarter galleries are inconsistent with what is known of the *Beagle*, and yet most contemporary representations indicate an indecipherable something on her quarters. In a letter fellow *Beagler* David Stanbury in England states that these represent the quarter badges mentioned in the *Beagle's* log.

FitzRoy writes, “The *Beagle's* draft was eleven and a half feet forward, and thirteen feet aft, when in ordinary loaded trim.”¹⁵ And so I have drawn it.

“The rudder was fitted according to the plan of Capt. Lihou...” In all probability it would, by this time, have been of “plug-stock” design, a vast improvement over the “rule-joint” rudder shown on the Admiralty plans.

David Stanbury¹⁶ writes, “The original P.G. King plan quite clearly shows a figurehead of a beagle.” It does, but in 1959 I felt this would be less reliable than what could be seen in an engraving by Thomas Landseer showing the *Beagle Laid Ashore, River Santa Cruz*.¹⁷ This was based upon a sketch by Conrad Martens who, presumably, was there at the time, April 13, 1834, looking up at the bow. The sketch is unfortunately lost, but one would think that Martens would have been careful to show the carved and painted figurehead of a beagle had there been one. And Landseer would have copied Martens' sketch faithfully. No beagle is seen. Still, Martens' small sketch may have been difficult for Landseer to follow. This could explain why his beached *Beagle* abounds in errors.

Aside from King's original sketch, the best evidence that the *Beagle* did indeed have a beagle for a figurehead can be found, with careful searching and wishful imagination, in the lovely watercolor by Owen Stanley showing the ship in Sydney Harbor, 1841 (N.M.M.). Stanley was in command of the *Beagle's* sister-ship, *Britomart*, in Australia at the same time as the *Beagle* was surveying there during her third voyage, and it is unfortunate that



"H.M.S. Beagle rounding the Cape of Good Hope," unsigned watercolor dated July 10, 1843. Courtesy National Maritime Museum, Greenwich.

he failed to paint his rare close-up of the *Beagle* with more of the eye of a naval officer familiar with 10-gun brigs, and less of the eye of an artist. Had he, many questions regarding the ship could be answered with certainty. As it is, Owen Stanley's painting, with its top-heavy rig, overly steeved bowsprit, the "beagle" sitting on the stubby cutwater, the forecastle break, but not one for the poop deck, etc., leaves us in a quandary.

A consensus of contemporary art shows the ship's headrails to have been boarded in. Less attractive than the open head which almost surely graced the *Beagle's* bow at her launching, the closed head, prevalent by this time, would have provided needed protection as well as privacy for her crew.

Contemporary paintings and drawings show the *Beagle's* white band to have been narrow. However, even in the work of the same artist, the band is seen to range up and down. Sometimes it is broken by the gunports, the aftermost of which is faked, sometimes it extends just below them, and sometimes a black stripe can be seen cutting in and running parallel.

Boats

At the beginning of the *Narrative*, Volume II, FitzRoy lists the rather extensive alterations which were made on the ship in preparation for what lay ahead. The *Beagle's* more important additional equipment is also mentioned, including "...six superior boats, besides a dinghy carried astern, were built expressly for us,..." On page 79 he mentions the six boats again: "Four of the set were built by Mr. Johns, the well-known boat builder in Plymouth Dockyard, the other two by Mr. May, our carpenter." FitzRoy's official request to the Principal Officers and Commissioners of His Majesty's Navy for the boats to be supplied by Plymouth Dockyard is dated July 9, 1831:

"I have to request that you will allow four Boats to be built at this Dockyard for the use of His Majesty's Surveying Vessel *Beagle*, of the undermentioned descriptions, being best calculated for convenient stowage on the vessel, and for the Surveying Service—Yawl 26 feet in length, Cutter 23 feet in length, and two Whale Boats 25 feet in length. I have also to request that the Yawl and Cutter may be built on Mr. Johns' principle of Diagonal planking; and that the Yawl may be fitted with the Windlass invented by Captain, the Hon'ble George Elliot."

On July 28th, FitzRoy asks for "Two small Boat Tents" and "A strong awning for one Boat (Yawl of 26 feet) made according to the enclosed plan."¹⁸

A year later found the *Beagle* in the harbor of Rio de Janeiro,

in July 1832. FitzRoy, in a particularly long and informative paragraph regarding the ship, writes, "...and amidships two boats, on the diagonal principle, one stowed inside the other, and as close to the deck as possible; being secured by iron cranks, or supports.... Over the quarter-deck, upon skids, two whale-boats eight and twenty feet long, were carried; upon each quarter was a whale-boat twenty-five feet in length and astern was a dinghy."¹⁹

These quotations leave no doubt as to the number and location of the *Beagle's* boats, their type, and except for the dinghy, their size and builder. FitzRoy describes the Johns-built yawl as "excellent" and "largest boat," and one is tempted to believe that he contrived to have it made longer than the 26ft initially asked for. I feel certain he did not, however, and that "largest boat" referred to displacement, not length. The quotation David Stanbury used to describe the yawl (M.M., 65), and, I, earlier, comes from the *Narrative*, Vol. I, p. 180: "She was a beautiful boat, twenty-eight feet in length...." This sad eulogy for the yawl goes on to describe its loss on being hauled aboard halfway through the *first* voyage.

The 28ft whaleboats built by the *Beagle's* carpenter, Jonathan May, and the 25ft whaleboats built by William Johns, would have been made as light as possible, clinker-built in the Royal Navy of this time.

In the few drawings in which the whaleboats are shown large enough, they do appear to be clinker-built and extremely "banana-shaped." Often they are silhouetted. When not, they still seem to be dark or of a middle value and quite possibly varnished. However, one of the many watercolors made by Conrad Martens depicts a black whaleboat under sail. Another, also by Martens, made upriver from Port Desire, Patagonia, gives a fine idea of the yawl.²⁰ This boat appears to have been varnished with a white strake. The bowsprit, if indeed it is one and not some other spar, is offset to starboard of her stem. Her fore and mainmasts are sharply raked, and her gaff mainsail is lowered. Her rudder is unshipped. A similar painting in sepia wash and done at the same time, includes the dinghy, equally dark.

Many questions, once I delved into them, had clear-cut answers. Others remain elusive. An example is the question of the boat the ship carried on her port quarter from mid January 1833 to the end of the voyage. From the time the *Beagle* left England until this date we know it to have been a 25ft whaleboat. Further, in the same paragraph already partially quoted,²¹ FitzRoy states that, "...the *Beagle's* equipment afterwards remained unaltered,..."

Then, in describing a gale off Cape Horn on January 13th, 1833, in which the *Beagle* was nearly capsized, he writes of "...the loss of a lee quarter boat, which although carried three feet higher than in the first voyage, was dipped under water and torn away."²² A log entry of this date reads, "At 1:45 lost the lee Quarter Boat by a heavy lee lurch." (Wind and course directions make it possible to deduce the lurch was to starboard.) One would expect the *Beagle's* meticulous captain to inform the reader when, where, and with what the lost whaleboat was replaced. He does not.

David Stanbury writes, "The second cutter, rather smaller than 25ft was carried upon the port quarter and may have been known as the gig. Certainly gigs are referred to in the log and the terms first and second gigs are used."²³ Mr. Stanbury does not give the dates of the log entries for the gigs, but one for March 1833, only two months after the loss of the whaleboat, coincides with Captain FitzRoy's acquisition of a schooner of 170 tons in the Falkland Islands, which he renamed *Adventure*. Bought to assist the *Beagle* with her surveying, it is possible, since FitzRoy wrote, "I always carried seven boats on the *Beagle*", that either a boat from a wrecked French ship or one of the schooner's three boats replaced the lost whaleboat.

Mr. Stanbury continues, "The outlines of these boats, so vital to a survey ship, can be seen in the plans of the *Beagle* drawn up by P.G. King (Mitchell Library ML 816) although these plans were not drawn up until 1897." And several paragraphs later, "The original sketches by P.G. King, who was a midshipman on the second voyage, are in the Mitchell Library but they were drawn from memory over sixty years later and although they show details they are out of proportion. Attempts to fit them to scale plans run into many difficulties but they do seem to show some minor points."

In King's *H.M.S. Beagle's Upper Deck, 1832*, the *Cutter 2nd (Gig)* is not only out of proportion, at least in relation to the ship, but when compared to contemporary drawings and paintings, it can be seen to be much too far forward. Also, date and cutter are incompatible as we know a whaleboat occupied the port quarter through all of 1832. If the *Cutter 2nd* in King's original is divided into the length of his ship (*Beagle* was 90ft between perpendiculars and about 98ft from stem to stern), it comes out roughly 17ft 8in. This is but one instance of many which make it clear that P.G. King's efforts cannot be accepted on face value. This does not mean they are not of interest to the researcher and an important aid if evaluated carefully.

In the case of the missing quarter boat, King's memory indicating that the port quarter whaleboat, (after having been moved to starboard), was replaced by a "*Cutter 2nd (Gig)*," the occasional mention of a gig in the log; and the knowledge that the replacing boat must be rather light, are all we have to go by. Although the log reports sending "...the Cutter to pick up a boat drifting past the ship" (November 27th, 1833), it is not likely that this would be the permanent replacement. One can but speculate that FitzRoy, with an eye for a finely made boat, would, in the end, have kept one of the gigs belonging to the schooner he so reluctantly parted with in Valparaiso, September, 1834. The *Adventure* was no ordinary schooner. Built as a yacht in England, both she and her boats would have been exquisite examples of the shipwright's art. As a replacement for the lost whaleboat, what better than the *Adventure's* graceful gig, about 24ft, clinker-built, light and able?

Among the few known reasonably close-up contemporary representations of the *Beagle* are a drawing and a painting which depict the ship from an after quarter. The drawing shows the *Beagle* from her lee side and as close hauled as she can be on the port tack off the east coast of Patagonia in a "critical situation."²⁴ The painting *H.M.S. Beagle rounding the Cape of Good Hope*

(July 10th 1843), shows the ship on the port tack also, but from to windward. She is on her last voyage and homeward bound. Both drawing and watercolor are ably executed. The boxy shape of the *Beagle's* stern, her poop cabin, rig, and a number of other things are clearly delineated. Her whaleboats hang from their davits at each quarter and the dinghy hangs astern. This can be seen to extend well across the *Beagle's* after end, thus indicating a length of 14ft. The lines of a dinghy of this size are reproduced in Commander May's *The Boats of Men of War*.²⁵ This boat appears to be not unlike that which the *Beagle* may have carried. Commander May writes, "The word dinghy is of Indian origin and the type of boat as used in this country probably originated in East Indiamen. The earliest reference in the English language is 1794."²⁶

In the concluding page of *Discoveries in Australia*, J. Lort Stokes relates, "Arrived Spithead 30 Sept. (1843)...after an absence of six years. During this period we lost only two men, and preserved throughout almost the same spars and boats we left Plymouth with in 1831."

P.G. King and His "Diagram Sketches" of the *Beagle*

Due to the important role time has thrust upon P.G. King in regard to the appearance of the *Beagle*, I feel it is necessary to think about his contribution more carefully than has been done hitherto, at least in print.

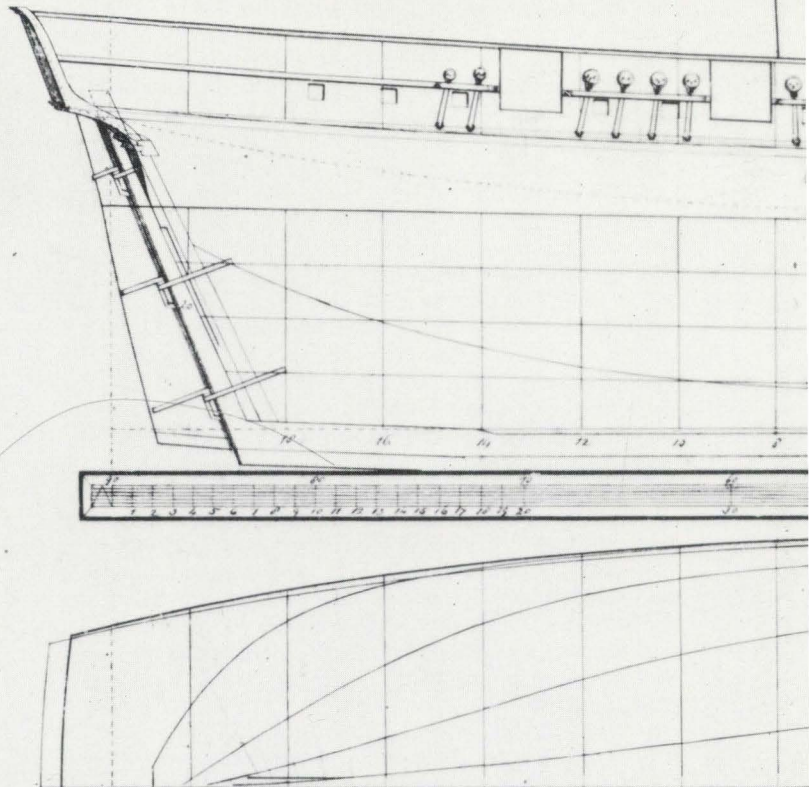
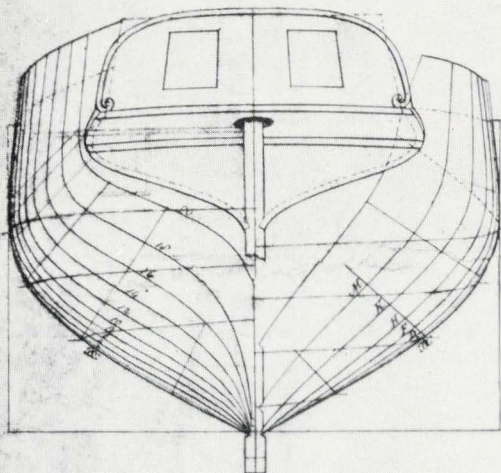
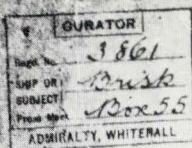
Nine year old Philip Gidley King (1817-1904) accompanied his father, Captain Philip Parker King, RN, FRS, in command of His Majesty's Ships *Adventure* and *Beagle*, commissioned principally to survey the dangerous waters in the area of Tierra del Fuego, 1826-1830.

In 1831, fourteen-year old Midshipman King sailed on the *Beagle's* second voyage. Darwin wrote his sister, Caroline, April 25, 1832, "...he is the most perfect pleasant boy I ever met with, and is my chief companion."

Upon the *Beagle's* arrival in Sydney, January 1836, King left the ship and the Navy to rejoin his parents living in Parramatta, Australia, where he was born. By twenty-five he had entered the service of the Australian Agricultural Co. in charge of its cattle and stud horses. Stockman, mayor, legislative counselor, bank director, P.G. King had removed himself from his early seafaring years. While touring Australia in 1890, Hallam Murray, son of England's publisher John Murray, and his wife visited Mr. and Mrs. P.G. King. From the correspondence which followed it is possible to better understand the background of what King called his "diagram sketches" of the *Beagle*, as well as the copies made of them. My inquiries sent to the still esteemed publishing house of John Murray, on Albemarle Street, London, brought immediate response. Along with her helpful letter, Virginia Murray not only sent me Xeroxed copies of King's letters to Hallam Murray from 1890 to 1899, but a photograph of King's original sheet of sketches, *H.M.S. Beagle's Quarter deck and Poop Cabin*. This is the only original of those King sent Hallam Murray in November 1891 remaining in the publisher's hands. The "originals", reported by David Stanbury²⁷ to be in the Mitchell Library, Sydney, are actually photographic copies which King appears to have had made before sending his sketches to England.

In his letter to Hallam Murray of November 27th, 1890, King mentions, "Your brother's request that I could write an Article for 'Murray's Magazine' a 'Voyage with Darwin' is very flattering..." A year later, November 3rd, 1891, he writes:

"I had been wondering...whether you would still like to have any remembrances of mine of dear Mr. Darwin—Once or twice I have taken the idea up but from my youth at the time it is very likely my production would be thought puerile. However I have it in hand—but what will be more acceptable perhaps will be some diagram sketches



of the Old Ship's interior arrangements. I had intended to have had them copied here into something like a neat style but fearing some unnautical hand mulling the whole or a part I now send them in the rough for what they are worth—they are very interesting to me and I may tell you are as accurate as it is possible to make them—Even to the contour of the ship's bow and cut-water both of which came back to my mind very vividly and confirmed by a Sketch found since you were here—"

The following day he continues with a PS, ending, "If you ever mean to put these *Beagle* diagrams into a 3rd Edition of Her Voyages and you go to the trouble of having them Copied I would like to see a tracing of the Copies for Correction...."

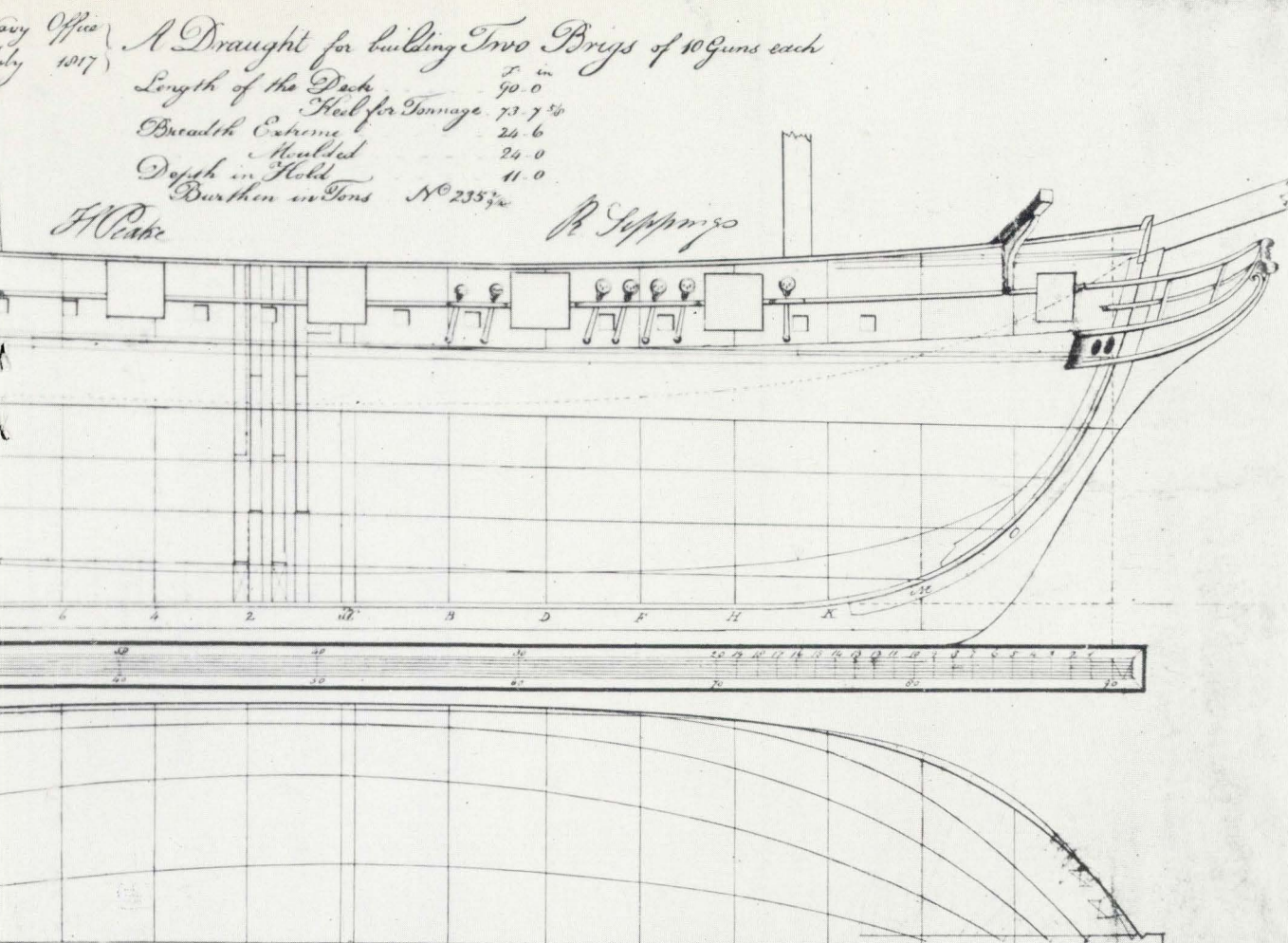
By the time he wrote this letter, John Murray's 1890 illustrated edition of *Journal of Researches* had already been published. Its introduction states rather ambiguously, "Most of the views given in this work are from sketches made on the spot by Mr. Pritchett, with Mr. Darwin's book by his side." Illustrator R.T. Pritchett, (1827-1907), could hardly have made his well known but faulty engravings of the *Beagle* or views of the areas visited "on the spot." That King's sketches arrived too late to be included with the other illustrations explains why the engravings made from two of them, *H.M.S. Beagle, middle section fore and aft, 1832* and *Upper Deck 1832*, can only be found in some books of the 1890 edition and not others, and why they are not listed with the other illustrations. These copies of King's originals, quite possibly the work of Pritchett also although no record appears to exist, show the ship to be slightly more compressed fore and aft than King shows it. Some details made in apparent effort to correct King, are erroneous instead. Aside from this, the John Murray engrav-

ings copy King's sketches faithfully, including such aberrations as drawing the mizzen mast all the way through the deadwood! It would have interested the reader to find that P.G. King had been a midshipman on the *Beagle* and it is a shame that John Murray never, even in later editions and reissues, gave King credit for his valuable contribution.

The last letter I have from King to Hallam Murray, dated March 25th, 1899, is also important to *Beagle* research as it gives the source of the halftone frontispiece, showing the *Beagle* under full sail, found in the Murray 1901 edition of *Journal of Researches*, and subsequent reprintings up to 1912. King writes:

"Instead of your apologizing for having kept my drawing of the *Beagle* by Wickham I have to thank you for having kept it so safely and for sending it to me. I had forgotten there was such a pretty remembrance of my Old Ship—I immediately sent it to be framed and now have it ornamenting my room. I am glad you had a photo taken of it and trust you will find that someday you may be justified in reprinting the Voyage. I still think the masts are too taunt [tall] but it was drawn by a thorough sailor the 1st Lieut of the Ship—It might be objected to that he drew her with her lee topmast and topgallant studding sails but that is all right with the wind abaft the beam."

Finding this obscure information in one of King's letters came as a happy surprise. Hitherto I had discounted this frontispiece for research purposes as its source was unacknowledged. Wickham ought to know what the *Beagle* looked like and though he proudly makes his future command look far larger than she was with masts too "taunt" as King pointed out, other things such as the proportions of the *Beagle's* headsails, one to the other, could be trusted. Errors which had made me cautious



years ago, including bobbing off the tack of the jib, could now be attributed to the ignorance of the engraver as he prepared the halftone plate made from Murray's photograph of Wickham's drawing for reproduction. I too am "glad" Hallam Murray "had a photo taken"—as the original appears to be lost.

Anyone interested in Darwin and the ship on which he sailed is also familiar with a different set of drawings attributed to King. The story of their discovery by Sir Geoffrey Keynes, along with a letter written by King, December 1897, to Captain (later Admiral) F.W. Fisher, can be found in *Charles Darwin's Diary and the Voyage of H.M.S. Beagle* by Nora Barlow, 1933, and in *The Beagle Record* by R.D. Keynes, 1979. Both of these exceptional books include reproductions of the copies under discussion. Under *Illustrations* Lady Barlow writes, "The drawings were prepared at the request of Mr. Hallam Murray, who used one of the drawings in...the *Naturalist's Voyage* (Journal of Researches) in 1890, and again in...1901." Further along she says that King's letter to Captain Fisher enclosed "press copies of the drawings."

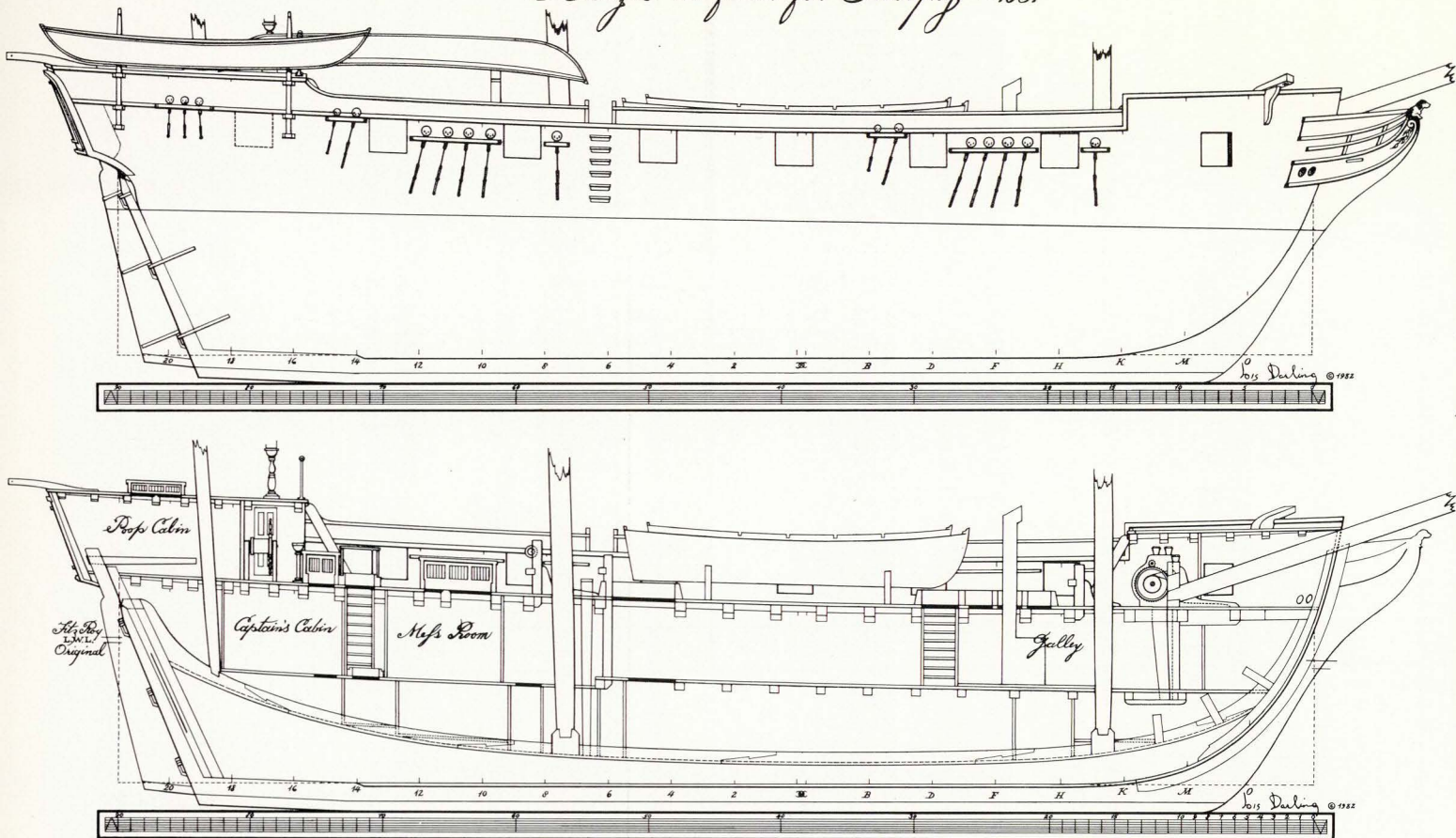
Actually, it is the Murray engravings discussed earlier and not what Keynes found which appear in the volumes mentioned. To me, "press copies" and proof prints are synonymous. And yet I have been unable to find any record that the Keynes discoveries were ever published before Nora Barlow included them in her first mentioned book, *Charles Darwin's Diary*. In a helpful letter, John Chancellor's paleontologist son, Gordon, suggests that if these copies *had* been printed anywhere by 1897, "why did not King say so in his letter to Fisher?" He also points out that Lady Barlow may "...have mistakenly thought they were press copies

The names of various 10-gun brigs, such as Cadmus, Rolla, Frolic, and in this case Brisk, should not be taken as meaning they are the vessels represented by the drawings on which they appear! They are merely class names put on by an Admiralty Librarian sometime in the 1920's (along with the number) for listing purposes. These draughts might as well have been given the name Beagle instead, as she was built from just such an Admiralty plan as is reproduced here, not impossibly this very one.

of the originals"—copies of those King sent to Murray. Were this not confusing enough, the Keynes copies contain extremely perplexing features in themselves.

From his letter of Nov. 3, 1891, one receives the impression that if King, then 74, could have made "neat style" drawings to send to Hallam Murray rather than risk some "unnautical hand," he would have done so. Where, then, did the Keynes "neat style" copies come from and when? Further, these copies are not simply neaten versions. Many things have gone sadly awry, and it becomes difficult to understand how King could have made errors on his second set of drawings not seen on the first. For example, it seems strange that he would have changed his whaleboat, too small but of an acceptable outline in his original sketch, *H.M.S. Beagle* 1832, into something so totally unlike a whaleboat in the Keynes copy. Why would he have made his figures, tables and chairs, shown however crudely on deck in the first instance, so strangely levitated in the second? Poor vision perhaps? And could this account for the figurehead of a beagle clearly drawn in King's sketch, being so amorphous in the Keynes copy? On King's Murray sketch, *Beagle's Quarter deck*, he has added more information than is on the Mitchell Library photograph. This

Beagle as fitted for Surveying - 1831



HMS Beagle at the time of Darwin's voyage, reconstructed and drawn by the author.

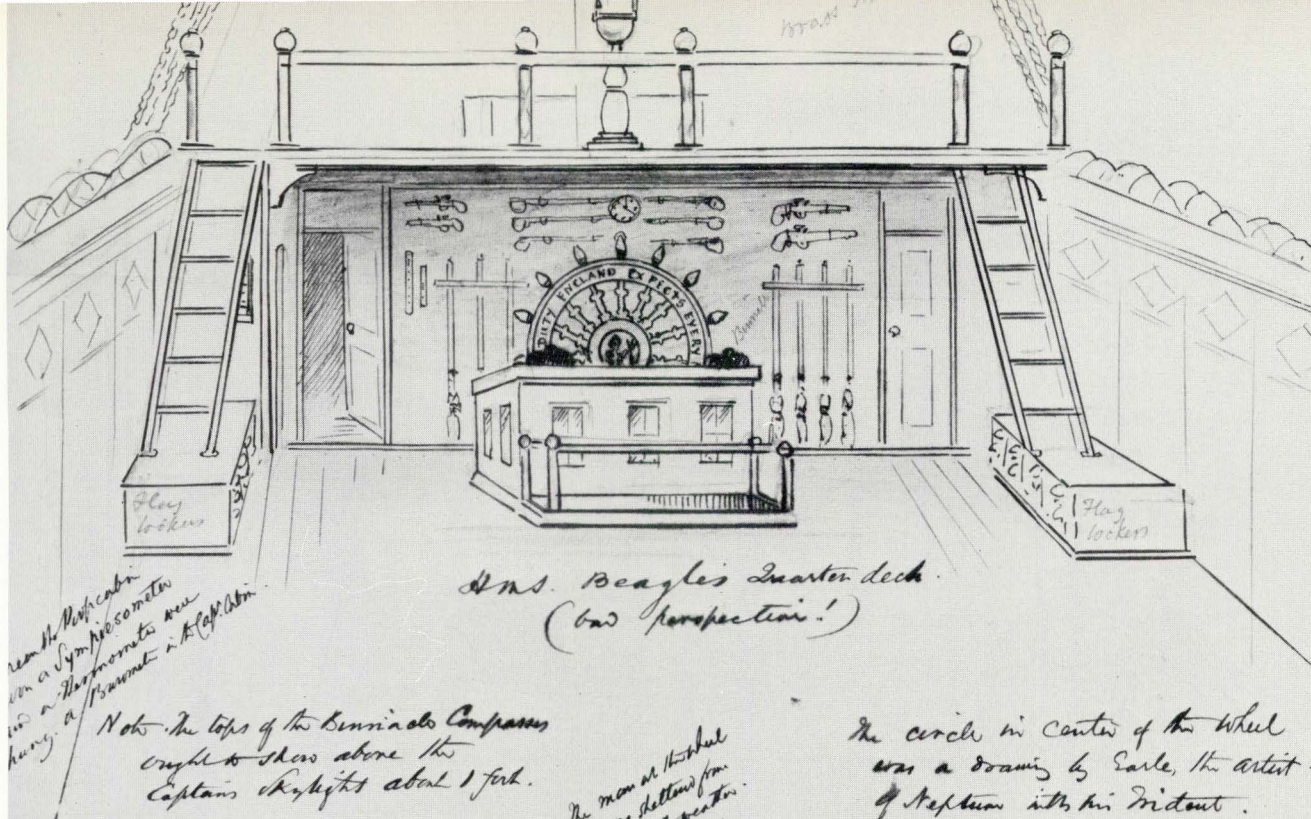
and other notes, e.g., "The tops of the Binnacle Compasses ought to show above the Captain's Skylight about 1 foot" and "(Bad perspective!)," would not have been made for himself. Rather, they would have been instructions for John Murray's illustrator should it have been decided to publish a copy of this sketch. Had the Keynes *Quarter deck* included the last minute correction seen on the King original we would know that it was drawn from this. It does not, therefore proving that it was made from one of the photographic copies in Australia, and, presuming that King did indeed make it, he had forgotten his added note. The "bad perspective" has been corrected but King's note regarding the binnacles has been misunderstood. Rather than showing "above the Captain's Skylight about 1 foot" from a position *behind* it, they are placed *on top* of it! This is contrary to where King shows them, not only in his sketch, *Poop Cabin*, but on his profile and the Keynes copy of the same! The original *Quarter deck* shows the diamond pattern (a stylized reminiscence of netting, perhaps) often found on inboard panels of hammock boarding, with the level of hammocks tending to fall flush with the poop deck. The Keynes copy appears to lack understanding as it leaves out both the hammocks and the boarding. Instead the bulwarks are made as high as the poop deck, an impossibility on the *Beagle* with her low bulwarks. This situation contradicts the King *Quarter deck* sketch, and his profile, the Murray engraving and, amazingly once more, the Keynes profile.

One could go on and on. There is no need to belabor the point but so many errors and discrepancies not seen on King's originals appear to demonstrate the very fears King mentions in his letter. It looks as though some "unnautical hand" *had* made an attempt to neaten his drawings at the expense of their validity. Could King's advancing age have caused his own hand to have been the unnautical one? Not impossible, but it does seem

unlikely. Captain Fisher's note thanking King and returning "his plans of the *Beagle*" mentions that "he had taken copies of them."²⁸ Could he, himself, have drawn neatened copies from the copies he had "taken"? This, too, seems unlikely. As a naval officer he would have understood ships too well to have changed his King copies to their detriment.

In reference to King's "minor points," David Stanbury writes²⁹ "the galley is shown under the forecabin and in front of the foremast and not in the position shown by Mrs. Lois Darling [M.M., 64, 320]. Companionways are shown at both the fore hatchway and the main hatchway and they are fore and aft in position." He continues, "The yawl and cutter are shown in the deck plan as being stowed partially over the fore and main hatches and presumably they would have to be moved to completely open up these hatches—but if the galley was where the cabin plan suggests then at least the tin chimney would be out of the way."

By pointing out the various discrepancies between P.G. King's drawings and my reconstruction of the inboard profile of the *Beagle*, Mr. Stanbury has not, perhaps, considered the complexities carefully enough. When Captain FitzRoy mentions "one of Frazer's stoves" to replace the "fireplace" but fails to include a major change in its location, it could be an oversight, but I would doubt it unless the change took place at the time of the first voyage. No request for such a change is mentioned in FitzRoy's letters of 1831.³⁰ Also, it cannot be considered as "better than those of vessels of her class"³¹ to move the galley from the central, relatively roomy area where the Admiralty draughts show it with grating above, to the dark, motion prone, confined and airless part of the ship where King places it. Some seventy souls depended upon the output of that galley and there must have been a limit, even in the 1830s, to how badly the unsung heroes, the ship's two cooks and their helpers, could have been treated.



H.M.S. Beagle's Quarterdeck. Photograph of original drawing by P.G. King courtesy of John Murray.

While looking at King's galley it is also necessary to examine the various objects which must become involved with such a change. These would include the *Beagle's* patent windlass which can only be placed where the Admiralty plans show it.³² This heavy and cumbersome piece of machinery is installed on the upper deck just ahead of the foremast. Here its bitts and standard knees, as well as the heel of the bowsprit, form a massive whole. Built to withstand extraordinary stresses, the bitt's timbers pass through the upper deck to be let into the beams of the lower deck at the exact spot King has placed his galley. In his inboard profile King sidesteps this conflict by showing the windlass but without the timbers just referred to *or* the galley. Instead, he wanders to starboard where he shows a hammock, *Locker and Sick Bay*.

King does not show the stove's "tin chimney" which Mr. Stanbury suggests "would be out of the way" and no wonder. Had he, it must pass through the upper deck in an area already crowded with the windlass, its bars (cranks, apparently, in this case), and bitts, anchor "chain and hempen cables," not to mention toiling sailors, and extend through the fo'c's'le deck above. A study of ships' draughts shows that such a condition is not impossible, but it is unusual. Surely it would seem that the *Beagle's* forecastle deck would be the last place for a stovepipe if it could be avoided. Here the forecourse would be "handy-by" to catch escaping sparks and force a down-draft, and here the heavily tarred mainstay and main preventer (spring) stay must come uncomfortably close. And no matter how well stayed and protected the stovepipe was, thrashing headsail sheets, other running rigging, rain, sleet, breaking seas, and sailors handling anchors and much else, would all conspire to make the position of the *Beagle's* "tin chimney," although out of the way of the boats, in the thick of it here, and very vulnerable.

With no galley in his profile, there is room aplenty for fore and aft companionways as King shows them, particularly so since he leaves out the bitts in these areas. Forward of the mainmast there can be little doubt the bitts were there. But abaft the foremast questions arise. Among FitzRoy's requests to the Naval Board, July 4, 1831, he asks to have "...the *Beagle* to be fitted with a "Pa-

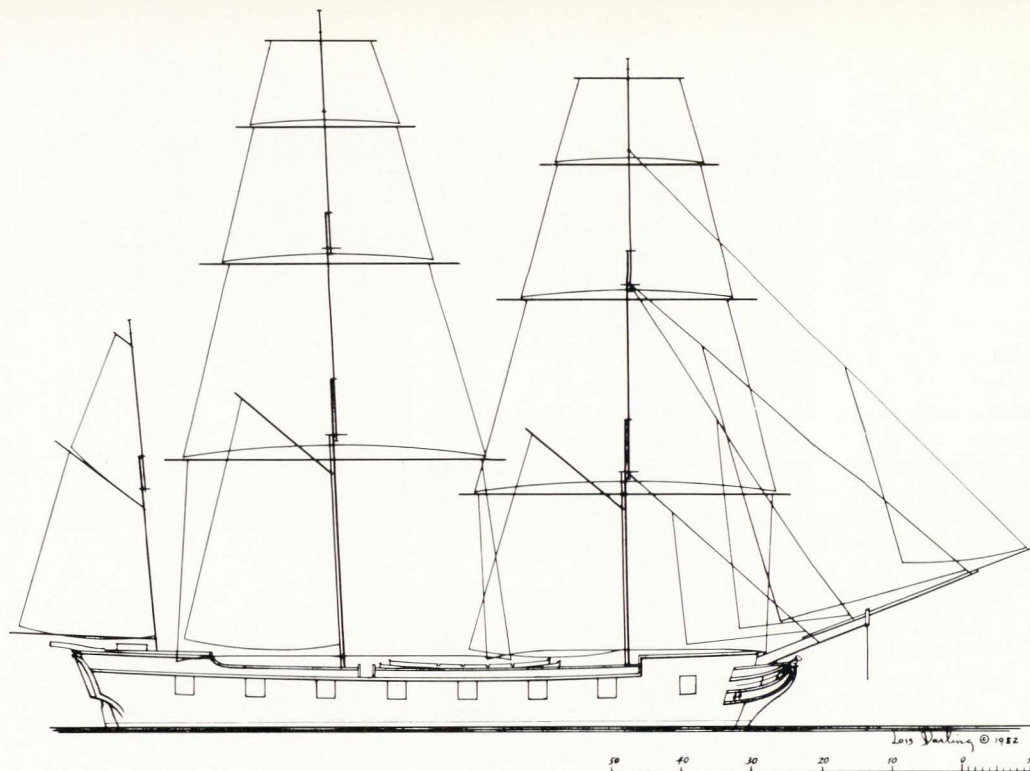
tent Windlass" in addition to her Capstan..." Once the windlass was installed, there would be no need for riding bitts. Such a condition can be seen in the *Beagle's* sisterships *Barracouta* and *Frolic*. Both were converted to barks and fitted as packets. On October 8th 1831, FitzRoy writes again:

"I have the honor of requesting that you will allow the Patent Capstan of His Majesty's Surveying Sloop under my command to be returned to Store. The excellent Patent Windlass...renders the Capstan *Unnecessary*...it causes the Compass cards in the Binnacles to deviate *ten degrees*...The Windlass which is now on board the *Beagle* was in the *Chanticleer* during her last voyage and answered every purpose exceedingly well."

In the area originally occupied by the capstan, the *Beagle's* artist, Augustus Earle, in his *Crossing the Line*³³ shows two cavorting "Neptune's assistants" leading a man blindfolded. When I made my inboard profile I copied Earle's carefully delineated skylight, with its cambered top and barred lights, as well as the smaller skylight King drew to a like design over the captain's cabin.

The only way to obtain access to the upper deck forward would be to pass under the yawl's forequarter with companionway athwartship as the Admiralty, not King, shows it. As for a companionway at the main hatch, there seems no reason to place King's sketch above the Admiralty plans, which show none.

King's halting efforts convey the charm and intimacy of having been made by someone who actually sailed on the *Beagle* in his youth. In many ways his sketches are remarkably consistent with what I have been able to find out about the ship. They also include details which otherwise would be lost to history. That copies of them are occasionally published under such misleading titles as "*Detailed plans of H.M.S. Beagle*" is hardly King's fault. I doubt if he ever meant his efforts to be taken so seriously. The old gentleman simply made his sketches "...from old drawings and recollections..." as he said in his letter to Capt. Fisher, with no idea they would be forever accepted as exact portrayals of his ship. In so doing he gave pleasure to himself, Hallam and John Murray, and to the reader who would buy *Jour-*



Sailplan - Beagle as fitted for Surveying - 1831

nal of Researches enhanced by King's remembrances and would sail away on what would in time become better known as *The Voyage of the Beagle*.

Sail Plan

David Stanbury writes,³⁴ "Although a number of sketches of the *Beagle* are now known, there is really no accurate representation which would enable her detailed sail plan to be reconstructed." I agree that any attempt to recreate a "detailed sail plan" for the *Beagle* would be impossible. However, specifications, relative proportions, and details, other than those unique to the *Beagle* as she was fitted for surveying, can be found in excellent books solely devoted to masting, rigging and sailmaking as it was practiced through time on ships and classes of ships in the Royal Navy. With naval specifications from which to work, spar dimensions and simple sail plans often sufficed. I had this in mind when I made my diagrammatic drawings in an attempt to reconstruct the *Beagle's* sail plan initially, as well as with the drawing published here, which incorporates small changes.

For those interested in how I arrived at my sail plan, the following is a summary of factors which went into its drafting. Nothing I have come across in either the "sketches" Stanbury refers to, some of which go far beyond this definition, or in the literature, leads us to believe that the proportions of the standard 10-gun brig rig, other than the replacement of the mainsail and its long boom with a mizzenmast, its spanker and topsail, and the addition of what FitzRoy called "large trysails between the masts," were basically altered in the *Beagle* at the time of her conversion from brig to bark. This is confirmed by FitzRoy's request to The Principal Officers and Commissioners of His Majesty's Navy, August 19th, 1831, "I have the honour of requesting that you will allow His Majesty's Surveying Sloop, under my command, to be furnished with Spars and Sails according to the accompanying List, in addition to the present establishment for vessels of her class."³⁵ As all FitzRoy asked for was certain "additional" spars and sails and "her class" was a 10-gun brig, we have only to turn to John Edye's *Naval Calculations*, 1832. The date is right and in

table after table one finds a wealth of information, not only pertaining to the *Beagle's* class, but other H.M. Ships from 120-guns to cutter.

With the help of Edye's tables listing the *Dimensions and Weight of the Masts and Yards*, (pp. 110-111), along with his table, *The Dimensions and Area of the Principal Sails*, (pp. 120-121), questions regarding the *Beagle's* basic rig are immediately answered. Edye also includes a scaled diagrammatic drawing, *The 10 Gun Brig*.³⁶ Essentially this is the same as his tables, but small variances allow a choice when weighed against other evidence.

With Edye as a basis, closely corroborated by Fincham's *A History of Naval Architecture*, 1851 (page 270), the judicious use of contemporary drawings and paintings of the ship make it possible, with the help of proportional dividers and more measurements than I care to look back upon, to reconstruct a sail plan of the *Beagle* as she appeared at the time of her second voyage, one which can be accepted as reasonably accurate.

Poop Cabin

In 1976, thanks to Commander and Mrs. Arthur Waite and Mr. Peter Gautrey of the Cambridge University Library, I received a photograph of a simple diagrammatic drawing titled *Poop Cabin*. Labeled in Darwin's unmistakable handwriting, the style resembles that found in other of Darwin's drawings, e.g., *Formation of a coral island*.³⁷ I feel certain that Darwin made it, but regardless of who did, this authoritative plan view provided the solution to the problems I had been having.

Captain FitzRoy writes, "...over the wheel the poop-deck projected, and under it were cabins, extremely small certainly, though filled in inverse proportion to their size."³⁸ P.G. King in his original plan view, *Poop Cabin*, labels these No. 7, *Stokes' cabin*, to starboard and No. 8, *W.C.*, to port. In his sketch *H.M.S. Beagle's Quarter deck*, it is possible to find the barest indication of Stokes' cabin if you look hard enough for something you know should be there. But the little cabin to port is omitted both here and in King's profile. Only the starboard of the two midget size doors shown in *Quarter deck* is shown in *Poop Cabin*. The port

door, had King included it, would have been blocked by *Mr. Darwin's Drawers*. Such baffling inconsistencies confused me, and I only wish I had known of the Darwin drawing when I made my little model of HMS *Beagle* in 1959.

Happily for the researcher the Darwin plan view includes the scale as an integral part. Equally scientifically Darwin has saved himself time and the possibility of being incorrect by schematically drawing a straight line to represent the curve of the ship's side. To make such a curve properly would involve many measurements from stations on a fore and aft line, measurements further complicated by the need to measure through what Darwin labels *Book Cases* and King labels *Chart Lockers*. As charting was a principal occupation it is probable that this area was used for charts as well as books. And it was reassuring to see that Darwin's *Poop Cabin* drawing, painstakingly measured at the time on hands and knees, and King's *Poop Cabin* sketch, painstakingly wrested from his memory, were in many ways similar. There is an all-important difference however. In King's poop cabin the main cabin occupies the entire after end of the *Beagle's* upper deck. Darwin's does not.

In his drawing's upper right hand corner, the after end of *Old Stokes' Cabin* can be seen to project 18in into the poop cabin's starboard side. We note with relief that "Old Stokes," the *Beagle's* young mate and assistant surveyor, could now stretch out on a bunk at least 6ft long rather than the mere 3ft 6in allotted by King! Aft of Stokes' cabin is the large area marked *Book Cases* already mentioned. These run along the starboard side and continue across the after end of the cabin. Darwin draws these with a straight line also, without the transom's bow.

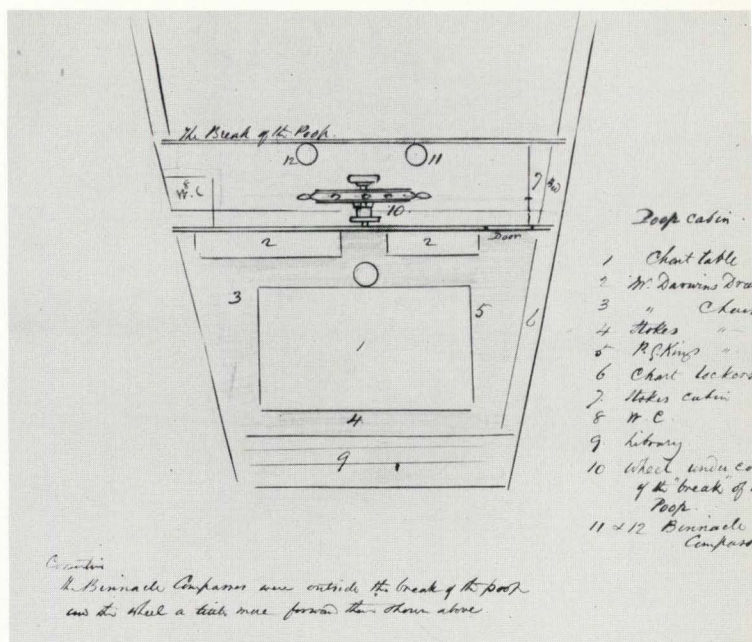
At the very bottom of the drawing the crudest of outlines can be seen overlapped by the scale. Here Darwin has scrawled *Rudder*. From it the tiller thrusts forward from beneath the *Book Cases*, passes under a bar and vanishes from view, hidden by the *Great Table*. This is roughly centered on and just aft of the mizzenmast. Before the start of the voyage Darwin, in a letter to his sister, Susan, September 17, 1831, wrote, "My cabin is the Drawing one, and in the middle is a large table over which we two sleep in hammocks...."

Diagonal guards cover the sheaves and ropes leading from tiller to wheel barrel, not shown but just forward of the bulkhead. Even a bit of what appears to be the tiller's relieving tackle is drawn in with its blocks. Aft, two large amorphous masses may forever remain unidentified.

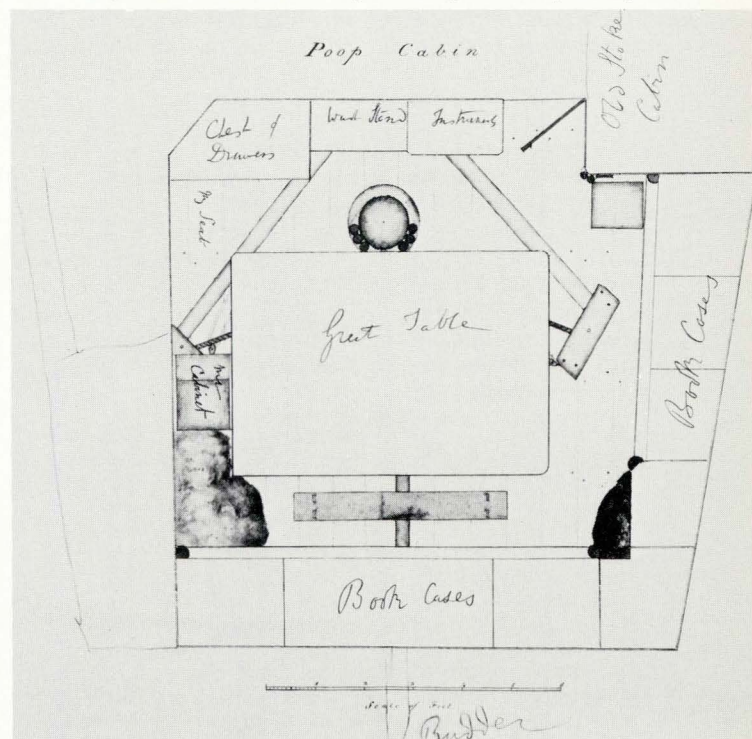
To port of Stokes' cabin the poop cabin's narrow door hinges to starboard and opens inwards so as not to interfere with Stokes' door on deck or the man at the wheel. To the left of the door is a cabinet marked *Instruments* and next to this a *Washstand*. A *Chest of Drawers*, undoubtedly the same as those King remembered as *Mr. Darwin's Drawers*, is shown farthest to port, its corner lopped off at a forty degree angle.

To port of the poop cabin, I was delighted to find faintly sketched lines delineating the *Beagle's* port quarter. A passageway, with what could be a row of lockers, can be seen leading to an area 6ft long, 32in wide forward and 21in aft. This space scales to be the same as the *Water Closets* shown in the same location, to starboard as well as port, in the *Beagle's* sistership *Frolic* (#4057), and on other of the Admiralty draughts. Arthur Waite, in a letter, had questioned where I originally placed the WC in my inboard profile drawing. I agreed he was right, but, at the time, justified it as being "a la King!" With the poop cabin no longer extending across the entire after end of the ship, and Darwin's draught conforming with those of the Admiralty, King's WC loses what credence it had.

But how was access to the passageway achieved? This is nowhere shown and King's WC (FitzRoy's "extremely small"



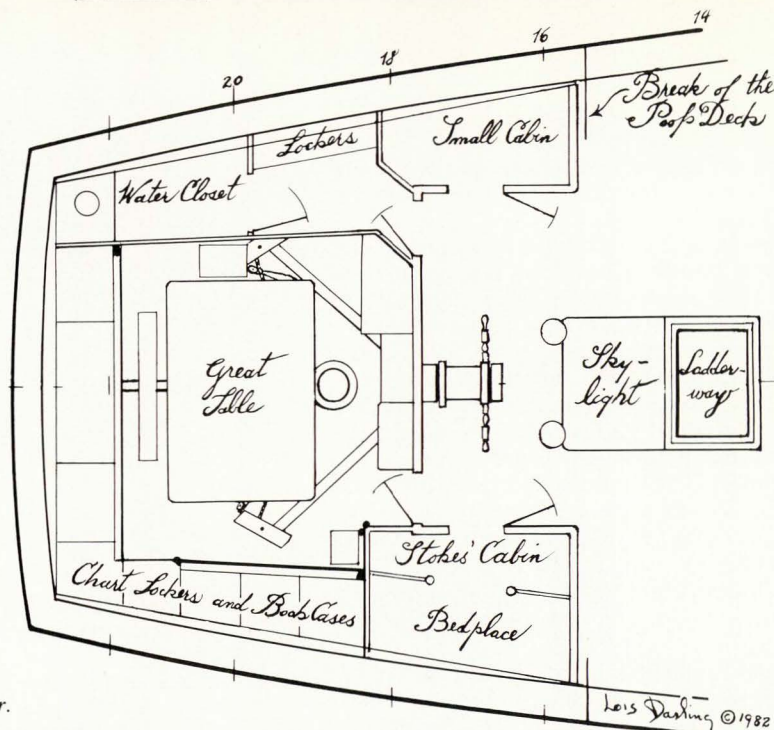
Above, H.M.S. *Beagle's* poop cabin. Photo of original drawing by P.G. King, courtesy John Murray. Below, plan of H.M.S. *Beagle's* poop cabin annotated by Charles Darwin. Courtesy Cambridge University Library.



cabin) would appear to block the way. In an attempt to answer the question, I laid both of King's drawings, *Poop Cabin* and *Quarter deck*, and Darwin's one, upon the drawing board. In so doing, the reason for the port door King shows in *Quarter deck* but not in his *Poop Cabin* and the forty degree angle off the corner of Darwin's poop cabin became suddenly apparent. I had only to place tracing paper over an Admiralty plan of the upper deck to see if the Darwin drawing would lay in as well as I expected it to do before I could find out if my supposition were correct. Frankly, the fitting in process was not as easy as I had anticipated. First it would be necessary to draw in the changes which occurred after the upper deck was raised.

With this worked out, the Darwin *Poop Cabin* drawing,

Beagle, Poop Cabin Area —



Reconstructed and drawn by the author.

Stokes' cabin, the "extremely small" cabin to port, the W.C., the passageway to it, and the entrance to the passageway with its door made possible by the forty degree angle off the corner of the poop cabin, all slid into place as neatly as a jigsaw puzzle.

Dramatically exposed to the overwhelming variety and exuberance of life during his world encircling voyage on the *Beagle*, Charles Darwin had already begun to have thoughts which would ultimately lead to the publication of *The Origin of Species* in 1859. This book, the result of over twenty years of patient, painstaking work, thought, and experiment, was to give the science of biology the great unifying concept it had previously lacked. And although biologists of diverse disciplines may still argue fiercely over the mechanistic details of the evolu-

tionary process, the scientific fact that evolution has indeed occurred is accepted. Today every branch of the life sciences—paleontology, genetics, embryology, anatomy, physiology, behavior, etc.—all take the concept of organic evolution into account.

Most people have come to like the idea of being related to other animals, however distantly, and find this oneness even more exalting than the older explanations of life. Darwin expresses this in the closing sentence of his great book: "There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that whilst the planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful, have been and are being evolved."

Notes

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- 2 Darwin, C., *Journal of Researches into the Natural History and Geology of the countries visited during the voyage of H.M.S. Beagle round the world under the Command of Capt. FitzRoy, R.N.*, John Murray, 1845; also Freeman, R.B., *The Works of Charles Darwin, an Annotated Bibliographical Handlist*, 2nd Ed., 1977.
- 3 Stokes, J. Lort, Commander, R.N., *Discoveries in Australia; with an account of the Coasts and Rivers explored and surveyed during the Voyage of H.M.S. Beagle, in the years 1837-43.* In two volumes, T. and W. Boone, 1846; also *Australiana Facsimile Editions*, No. 33, Adelaide, Libraries Board of South Australia, 1969.
- 4 *Narrative*, Vol. I, p.5.
- 5 *Discoveries in Australia*, Vol. II, p.526.
- 6 Thomson, K.S., "H.M.S. Beagle, 1820-1870," *American Scientist*, Vol. 63,6, p.671, 1975.
- 7 Darling, L., "The Beagle—a search for a lost ship," *Natural History May 1960*; "H.M.S. Beagle, Further Research or Twenty Years a-Beagling," *The Log of Mystic Seaport*, Vol. 29,1, 1977; Reprinted in *The Mariner's Mirror*, Vol. 64,4, 1978.
- 8 No. 3974, Box 56, *National Maritime Museum*, Greenwich, England.
- 9 *Log of M.S.*, 29,1; *M.M.*, 64,4.
- 10 *Am. Sc.*, 63,6.
- 11 Public Record Office, London, 106/1346,6520.
- 12 *Narrative*, II, 82.
- 13 N.M.M. 3974,3861, 4052 and details, 6586.
- 14 M.M.M. 3861 and others.
- 15 *Narrative II*, p.292.
- 16 Stanbury, D., Notes, *The Mariner's Mirror*, Vol. 65,4,357, 1979.
- 17 *Narrative II*.
- 18 P.R.O. 106/1346,6520.
- 19 *Narrative II*, 82.
- 20 Smyth, M., Mitchell Library, Sydney, Australia.
- 21 *Narrative II*, 82.
- 22 *Narrative II*, 125.
- 23 M.M., 65,4.
- 24 N.M.M.; *Log of M.S.*, 29,1.
- 25 N.M.M. Monographs and Reports, 15.
- 26 *Ibid.*, See also M.M. 2, (1912), p.8.
- 27 M.M., 65,4.
- 28 Mitchell Library, King Papers, Ref. A-1977.
- 29 M.M., 65,4.
- 30 P.R.O., 106/1346,6520.
- 31 *Narrative II*, 82.
- 32 N.M.M., 4052,4057.
- 33 Landseer, T., engr., *Narrative II*.
- 34 M.M., 65,4.
- 35 P.R.O., 106/1346.
- 36 *Log of M.S.*, 29,1; *M.M.* 664,4.
- 37 Cambridge University Library, Darwin, MSS.
- 38 *Narrative II*, 82.