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Salty Dogs and 'Philosophers'

a Saga of Seafaring Scientists and Sailors

Helen M. Rozwadowski

One definition of an oceanographer, at least until recently, is a scientist who goes to sea. Now, satellite data collection and remote sensing may be permanently changing the ocean-going culture of marine sciences. Oceanography as it emerged in the last quarter of the nineteenth century focused the attention of many scientific

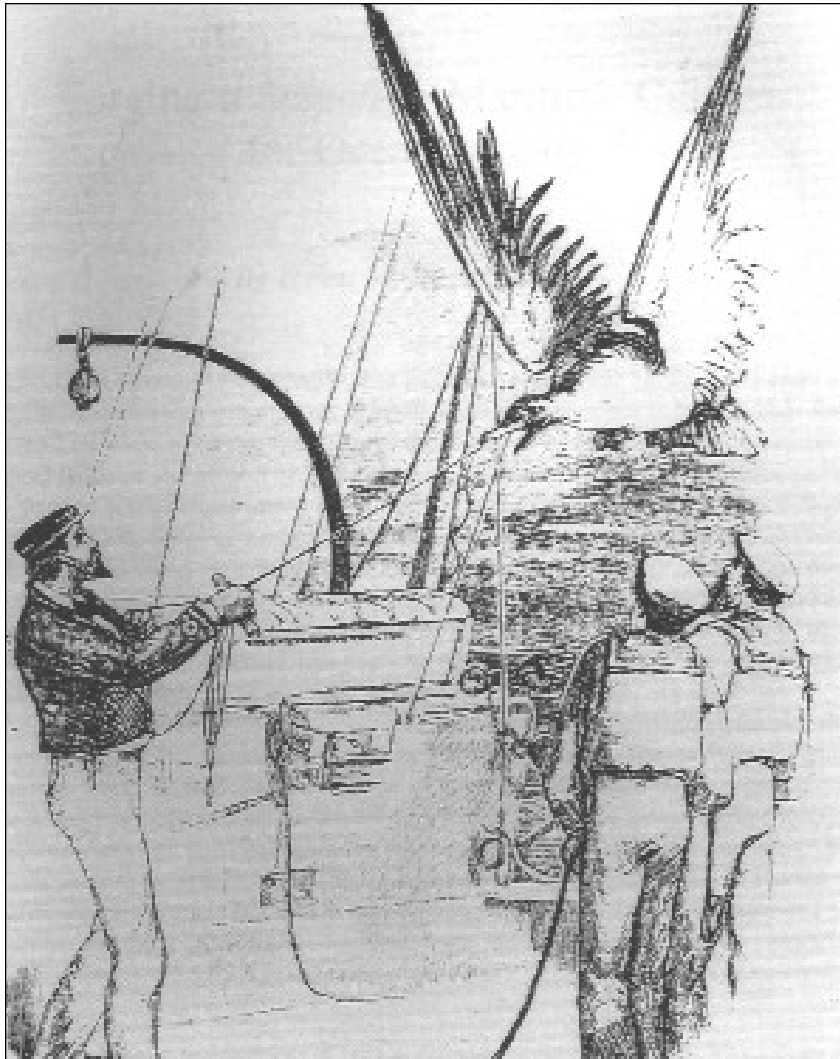
fields—physics, chemistry, biology, and geology—on the project of understanding the oceans. Its practitioners did not share a common set of intellectual questions, nor do they today. Instead, they shared the experiences of boarding vessels, meeting sailors, and wrestling with the maritime gear used to retrieve data or specimens from the restless sea.

More than land-based institutions, ships function tightly as units. Scientists traveling on ships, especially those whose primary mission was not science, fit only uneasily into the ship's bounded universe. They had to seek the cooperation of captains, officers, and common sailors who had priorities and interests quite distinct from their own.

Producing scientific knowledge about the ocean during the nineteenth century required scientists to integrate their work with existing maritime practices, traditions, and technologies.

Starting with the exploring voyages of Captain James Cook, men of science began to accompany expeditions to the far corners of the globe. Most of these scientific explorers did not study the ocean itself, nor its creatures. Instead they collected and catalogued the fauna, flora, and mineral wealth of distant lands and islands, in pursuit of the dual goals of expanding knowledge of the natural world and increasing the wealth conveyed from colonized areas to imperial nations.

Zoologists and geologists who accompanied exploring expeditions were recruited by naval and government officials, and lauded by a fascinated public back home who followed news of voyages and read popular narratives of expeditions with enthusiasm. Scientists were not, however, always welcomed wholeheartedly by their expedition shipmates. In the early tradition of naval service, "a philosopher afloat used to be considered as unlucky a shipmate as a cat or a corpse."¹ The dominant maritime attitude toward naturalists on naval vessels early in the nineteenth century had been one of derision.



An officer of the *HMS Challenger* catches an albatross—historically considered by sailors to be a bad omen. The attitude towards seafaring scientists, or "philosophers", aboard was sometimes the same—"as unlucky a shipmate as a cat or a corpse." This illustration is from the *Report of the Scientific Results of the Exploring Voyage of the HMS Challenger, 1873-76*.

continued

Some of the first scientists who set sail to study oceanic fauna encountered this attitude, when marine science got its start in the mid nineteenth century. Earlier, natural philosophers had investigated characteristics of seawater and collected seashells, while hydrographers had charted inshore waters.

A continuous tradition of studying the sea began only at midcentury. The North Pacific Exploring Expedition, which sailed from 1853 to 1855, represented a bid by the still youthful United States to discover and name marine fauna of that ocean. The expedition's botanist, Charles Wright, complained that, "the majority of the [officers'] mess have a most sovereign contempt for science and no esteem for its devotees." The young marine zoologist, William Stimpson, who hoped that the expedition would establish his scientific reputation, complained that Commander Cadwallader Ringgold insisted that Stimpson sail aboard the flagship, which visited only major ports, rather than the smaller surveying brigs, which explored zoologically unknown and therefore more interesting areas.

Indeed, Ringgold all but shut down scientific work for a time during the expedition by refusing to allow "anything to be preserved on board the ship which will make any dirt or create the slightest smell." Needless to say, this order stifled Stimpson's work, which consisted of dredging the sea floor and sifting sediments to find animals, then dissecting and drawing them, or storing them in preservative. ⁱⁱ

In the decades that followed that expedition, naval officers became more accustomed to working with scientists at sea. Familiarity mellowed the nastiness that Stimpson encountered into friendlier jibes. By the time of the famous voyage of *HMS Challenger*, which spent the years 1872 to 1876 circling the globe to study the deep sea, mariners were more likely to laugh at naturalists' odd behavior and preoccupations. One young officer teased the naturalists who "paddle and wade

about, putting spade-fuls [of mud] into successively finer and finer sieves, till nothing remains but the minute shells." In return, chief scientist Charles Wyville

To many, ...the sea was an appalling place, the refuge of degenerates, and a dangerous, immoral environment.

Thomson dubbed *Challenger's* officers "ministers of cleanliness and order."ⁱⁱⁱ

As strange as officers and common sailors found scientists' habit of covering the deck with mud and mucking about in it, exclaiming over the shapeless, colorless animals, scientists found maritime culture even more foreign. They readily acknowledged their ignorance of the unfamiliar world. Thomson drolly noted that the naval officers referred to the naturalists as "philosophers"—not, I fear, from the proper feeling of respect, but rather with good natured indulgence." He readily admitted that scientific educations were sadly deficient in "the matter of cringles & toggles & grummets & other implements by means of which England holds her place among the nations."^{iv}

Scientists joined the wider public who became newly acquainted with the maritime world in the mid-nineteenth century. Until that time, sailors were generally considered by most genteel people to be a motley collection of undesirables, even criminals. During the voyage of *HMS Rattlesnake* (1846 - 1850), Thomas Henry Huxley, later better known as the staunch defender of Darwin's evolutionary theory, discussed the evils of ship life with one of the ship's officers as they walked the decks during watch. They agreed that it was "the worst & most unnatural . . . fit for none but the unscrupulous . . . it [of all courses of life] tended most to harden the heart & render the conscience callow."^v To many, then, the sea was an appalling place, the refuge of degener-

ates and a dangerous, immoral environment.

Despite this disdain of common sailors, respectable people began at mid-century to view the sea in a new way, as a romantic and heroic place. The vogue of the seashore attracted middle class attention toward the ocean, and soon polite society began to express cautious interest in travel across the ocean. Tentatively, they sampled life, and even work, at sea. Yachts, packet ships, and steamers bore first aristocrats and gentry, and subsequently the middle classes, out to the blue waters. Ralph Waldo Emerson expressed well the trepidation that gave way to enthusiasm: "I find the sea-life an acquired taste, like that for tomatoes and olives. The confinement, cold, motion, noise, and odour are not to be dispensed with."^{vi}

The first generation of novelists to base their work on personal experience at sea, including Richard Henry Dana and Herman Melville, imbued the act of going to sea with new meaning, creating the expectations that generations of passengers and sailors took with them to sea.

As the sea became safer and sailors marginally more respectable, the act of setting sail on the blue water was transformed into a heroic undertaking. Middle class men of science, who embraced the mid-century values of bravery and manly sport, followed naturalist-explorers, yachtsmen, and professional writers out to sea.

Not all sea-going naturalists embraced maritime life with relish. Huxley accompanied *Rattlesnake* as an assistant surgeon, but he remained aloof from the maritime work world on deck. He described his daily routine this way: "Shut up as I am in the midst of this busy world, I manage to lead more completely than I have ever done, perhaps, the solitary life of the student."

Landlubbers often focused on details that would not ordinarily have appeared in more salty reminiscences, reflecting their tendency to stay below in bad weather. During a gale Huxley

wrote, "Every now and then. . . there is an instant of silence, then comes a roll. Ugh, the timbers creak, the pigs squeal, the fowls cackle, two or three plates fly with a crash out of the steward pantry." His perspective did not include wind whipping the lines and sails, or cold waves crashing over the rail. ^{vii}

Even the studious Huxley could not stay below indefinitely during his five-year voyage. Unlike many of his fellow naturalists who accompanied hydrographic surveying ships, including Charles Darwin, who sailed with *HMS Beagle*, Huxley devoted considerable attention to marine fauna, focusing on pelagic organisms collected from tow nets while *Rattlesnake* was under way. Specimens were the essential currency of natural history. With his collections at stake, Huxley paid careful attention to tow net operations and lamented problems that arose out of incongruent work rhythms between himself and the sailors. He complained bitterly, for example, of sailors' propensity for emptying the head or the garbage during surface tow net operations. Simpson had faced similar problems, as when the deck officer tried to record in the official log his sighting of a penguin in the Coral Sea. With difficulty, Stimpson managed to persuade him of the geographical impossibility of such an event. The next day Stimpson crowed sarcastically in his journal that the "penguin" had been an escaped chicken. ^{viii}

Huxley's motive for setting sail resembled Stimpson's: to gain access to collections of animals new to science. After the *Rattlesnake's* return, Huxley won a grant from the Admiralty to support the publication of his book reporting results from the voyage. He subsequently parlayed his years at sea into a paid position as a scientific lecturer in the Government School of Mines. As such, Huxley numbered among the first generation of scientists who earned their living through a career in science. The success of voyaging naturalists such as Huxley, Darwin, and the botanist Joseph Hooker encouraged others to think of sea-going as a route to a career in science. This was particularly true for scientists interested in marine fauna, so much of which was relatively unknown. George Wallich, the British microscopist who accompanied the cable surveying voyage of *HMS Bulldog* in 1860, went to sea, he explained, "for the acquirement of the reputation I covet." He chose marine zoology because "the field might almost be said to be untrodden." ^{ix}

Unlike Huxley, Wallich was as interested in technology as science. He designed a new deep-sea sounding device and spent long hours talking about sounding gear with the hydrographic surveying officers who were his shipmates. He failed utterly, however, to understand and negotiate the social and political dynamics on board, a failure that compromised his scientific work. As a microscopist, Wallich desired samples of deep-sea bottom sediment to examine, hoping to discover whether life could exist at great depths. Wallich's voyage on *Bulldog* provides a vivid example of how scientists' shipboard conflicts manifested themselves differently with officers and

crew. In the case of social equals, tensions erupted into direct confrontation. Wallich constantly argued with Captain Leopold McClintock, complaining that they were not frequently enough employing sounding devices that retrieved bottom samples. After weeks of argument and mutual frustration, McClintock snapped sarcastically, "I suppose you would like to have a diving bell sent down," clearly a ridiculous proposition for working in thousands of fathoms. ^x

The crew was not as free to complain openly. *Bulldog* sailors relied on time-honored forms of protest such as stealing officers' food, desertion, and even taking Wallich's boots, to express their dissatisfaction for what must have been an extremely arduous and unpleasant cruise. If desertions are a good index, then Wallich's frequent complaints about the *Bulldog* voyage were well grounded. Three months into the expedition, fourteen men deserted. The next few nights, more men attempted to run away until, as Wallich reported, "The men are evidently in far from a proper state. Today they applied for leave to go ashore in a body!!" He added unnecessarily, "Of course it was refused." ^{xi}

The *Bulldog's* crew blamed Wallich as much as any of their officers for their hard lot. Besides causing extra work, Wallich condescended to them. He assumed that the sailors would lose valuable bottom sediments in the "sort of scramble to see what was in the apparatus." So he instituted a policy that only he was allowed to extract sediment from the sounding device. In great depths, sounding apparatuses were sent down weighted. The detaching mechanism for the sinkers also triggered the valve that trapped the bottom samples. One day when the apparatus failed and came up empty, with the sinker still attached, the sailors saw their chance to embarrass and annoy Wallich by adhering to the letter of his law. Lugging the 118-pound sinker below to Wallich's cabin, they roused him and solemnly, with straight faces, showed him the film of mud on one side. This sample, Wallich tersely recorded, he did not "deem" worthwhile to preserve. ^{xii}

By the 1860's, the ocean was recognized as a promising research site by amateur naturalists, professional zoologists, and physical scientists as well. As scientific interest in the deep ocean broadened, biological and physical scientists banded together to argue for national resources to support major investigations. British scientists mobilized the support of the Admiralty and the Royal Society for a series of cruises to dredge and study the deep sea. The most famous of these, the *HMS Challenger* expedition, sailed in 1872 to study the world's oceans.

Early ocean scientists, especially the *Challenger* organizers, were cognizant of their role in forging a functional workplace for scientific investigation of the depths. Thomson described the effort to associate independent civilian scientists with a man-of-war as a "critical experiment." The success of that experiment depended on a new commitment for naval officers to facilitate, even participate in, the scientific work

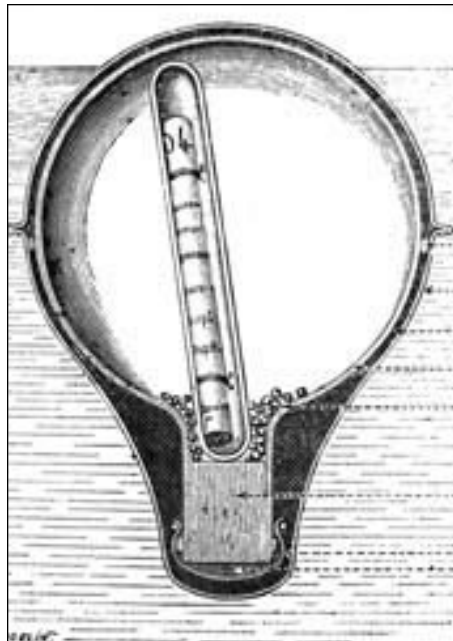
brought on board by naturalists. *Challenger's* captain, George Nares, commented that "Everyone here is most civil," referring to the adoption of a new level of politeness and deference between scientists and naval officers. Efforts at civility did not, however, entirely mitigate differences that were part of the maritime social fabric. While sailors with middle-class aspirations were sometimes interested in the scientific work, most common sailors regarded with some contempt the scientific "idlers," as they called anyone who did not stand watch. ^{xiii}

Unfriendliness towards scientists on board was quickly reinforced by antipathy towards the extra work they caused. Initially, dredging, trawling, and sounding inspired intense curiosity about what lay beneath the waves. Early in the *Challenger* cruise, as botanist Henry Moseley reported, each dredge haul attracted a crowd of "every man and boy in the ship who could possibly slip away," waiting breathlessly for a glimpse of the secrets of the depth. Instead of merfolk or monsters, sand, mud, and a soon-monotonous assemblage of animals appeared in nets and sounding devices. As the novelty wore off, the crowds dwindled. Naval officers, engineers, and seamen soon began to refer to scientific work "drudging." Who could blame them? Even the scientific staff came to regard collecting work as tedious and, increasingly, they were "not present at the critical moment, especially when this occurred in the middle of dinner time, as it had an unfortunate propensity of doing." ^{xiv}

Even on voyages not as fraught with conflict as that of the *Bulldog*, scientists and officers held incommensurate viewpoints about control of collecting operations. Before the 1860's, naturalists dredged alone or supervised a small hired crew, often from their own or a patron's yacht. In depths over one or two hundred fathoms, dredging required not only many hands, but also someone skilled at coordinating their work. On naval vessels, the watch officer took over

supervision of dredging from scientists.

Once steam machinery was introduced to hoist sounding and dredging apparatus, the officer in charge had to orchestrate the crew's labor with the work of the engineers who ran the machinery. Scientists had no choice but to stand aside and let officers decide where and when to dredge and sound, then to watch and wait until sailors final-



This odd looking apparatus is an early drift bottle, one of many ingenious contributions to the emerging science made by Albert I, Prince of Monaco (1848-1922). Inside the glass ampule is a message in 14 languages.

ly emptied the nets on deck. Officers' complete control over operating deep-sea apparatus led, when the devices came up empty, to heated debates about whether or not they had even reached the bottom. Naturalist John Murray archly observed that the statistics on sounding and dredging posted in the Wardroom did not include attempts in which instruments were lost. ^{xv}

Differences of perspective between scientists and non-scientists meant that where sailors gazing over the rail saw jellyfish, scientists observed "many specimens . . . float[ing] past the ship." Most

of all, landlubbers on ships tended to retain a landsman's perspective, sometimes consciously, sometimes not. To the great irritation of the naval officers, *Challenger* naturalists "persist[ed] in calling things by either shore-going names, or terms which they have picked up in merchant passenger steamers." In the middle of the expedition, Thomson still reckoned time in the land unit of university sessions. Sailors, by contrast, kept their lives organized around "watches" even during overland explorations. ^{xvi}

Although scientists resisted some aspects of maritime life, they imbibed eagerly in maritime customs that they could re-create as entertainment. Following the precedent of captains who doled out additional grog for unusually hard work, chief scientist Thomson produced champagne for the officers' mess after the capture of a crinoid new to science. As the kind of "living fossil" zoologists and geologists expected to find in the deep sea, this discovery early in the cruise augured well for the rest of the expedition. Often scientists partook more eagerly than the sailors in traditional maritime activities.

When *Challenger* crossed the equator for the first time, Lt. Herbert Swire noted that he and the other novice officers "may consider that we have been lucky in escaping the levee which Neptune usually holds on these occasions." The idea of "crossing the line" amused the philosophers, though. John Murray recorded in his journal that his crossing cost him two quarts of Moselle, probably extorted by his social equals, the officers, rather than the crew. ^{xvii}

Landlubbers on ships were intrigued, but not at all convinced, by maritime superstitions. One tested repeatedly on nineteenth-century scientific exploring expeditions was the stricture against killing albatrosses while at sea, made famous by Samuel Taylor Coleridge's *The Rime of the Ancient Mariner*. As one of the sights that landsmen were educated to expect at sea, scientists were thrilled by their first glimpses of these birds. That did not

stop them from capturing and killing them to preserve their skins, as Stimpson did during the North Pacific Exploring Expedition. Even after scientific specimens were secured, scientists and officers shot them for sport, prompting fears of shipwreck by common sailors when large numbers of birds were shot. *Challenger* scientists delighted in poking fun at such superstitions, as when Murray noted ironically, "Have been sailing all day. Not an Albatross has been seen today, so that the first day we really got a good trade wind, the Albatross left us." xviii

Many sea-going scientists, such as *Challenger* naturalist Henry Moseley, became fond of their adopted maritime lifestyles. Moseley welcomed his freedom from the day-to-day distractions of newspapers and letters. At sea, he devoted his time to work and reading. As *Challenger* approached England at the end of the voyage, he reflected, "I felt almost sorry to leave, at Spithead, my small cabin, which measured only 6' x 6', and return to the more complicated relations of 'shore-going' life, as the sailors term it. I had lived in the cabin three years and a half and had got to look upon it as home." Those few miserable scientists who never got their sea legs converted their experiences into tales of heroic perseverance. Of Alexander Agassiz's constant seasickness, his son and biographer wrote: "Anyone afflicted with the malady can easily imagine what fortitude and enthusiasm it must have required to crawl on deck from a bunk of despondency and pain and lose one's self in the eager examination of the treasures which the dredge had just brought to the surface." xix

Agassiz, along with *Challenger* scientist John Murray, numbered among the handful of ocean scientists who bridged the nineteenth and early twentieth century practice of oceanography. When they boarded naval vessels like the *Challenger*, midcentury ocean scientists encountered an unfamiliar maritime world.

Oceanography developed in the crucible of ocean-going ships, on whose decks these landlubber naturalists faced

the challenge of integrating their work into ships' physical and social structures. Together with the officers, their social equals, scientists created a safer and tamer version of traditional maritime culture, one that not only made them comfortable in the alien world of ocean-going ships, but also promoted their scientific work. This new scientific, maritime culture profoundly shaped the emerging discipline of oceanography by encouraging future generations of oceanographers to define themselves as scientists who go to sea.

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