This document is a collection of eight papers presented at a conference held at the Marine Science Center, Newport, Oregon, May 8, 1976. The conference concluded a course offered jointly by the School of Oceanography and the Department of English at Oregon State University. The conference had two purposes: (1) focus on the relationship between literature and marine science, and (2) establish a framework in which artists, humanists and scientists could work together to determine the impact of the oceans on the creative impulse of the writer as well as investigate how the writer has helped establish prevailing notions about the sea. Titles of presented papers include: (1) "'Andsome Is as 'Andsome Does"; (2) Since the Days of Aristotle; (3) The Sea, the Marine Mystique, and the Challenge to the Scientific Paradigm; (4) Psyche and the Sea - The Waste Land Era in America; and (5) Seal Rock II. (MR)
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NATIONAL INSTITUTE OF EDUCATION

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Literature and the Sea

proceedings of a conference held at the Marine Science Center
Newport, Oregon
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Richard Astro, Editor

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In the beginning I had reservations. True, the idea was exciting and made good academic sense. We would design a course and conference entitled "Literature and the Sea" and thereby establish a framework within which artists, humanists, and scientists could work together to determine the impact that the world's oceans have had on the creative impulse of the writer as well as investigate how the writer has helped to shape prevailing notions about the sea. The course would be jointly offered by the School of Oceanography and the Department of English at Oregon State University and would conclude with a conference where a diverse group of speakers would talk specifically about how individual writers use the sea as a source of plot, myth and symbol. The conference would also focus on the more general theme of the relationship between literature and marine science. The course and conference were to be trial balloons for a comprehensive marine and maritime studies program at Oregon State in which humanists, scientists and technologists would engage in an integrated examination of those values and attitudes that direct peoples' activities in and relating to the sea, including creative artists, scientists, and peoples whose existences are linked directly to the sea by their use of marine resources. We proposed a "systems approach" to knowledge in which real interchanges would take place as contrasting methods were brought to bear on similarly felt problems. Our approach was one of wholeness. We rejected the narrow-minded view that one person's way is the only legitimate way of getting at the truth. We in academic life have always preached wholeness and union. We have never believed that the intellect works best in
a vacuum. And so we proposed to move through and beyond specialistic approaches, to knowledge which we believe are fragmentary, reductionist and divisive, and practice what we have always preached.

Still, I had reservations. For though our objective was the noble one of fusing the many cultures, the fact is that any viable or enduring union depends upon the recognition that there are inherent differences between the arts, the sciences and the humanities. And if we hoped that our artists and scientists would be able to talk with one another, for in any sort of meaningful fashion, that either group would be able to talk with humanists, and that the students in the class and our conference audience would be able to make sense out of what might appear to be a chaotic assortment of approaches and directions, we had to identify those crucial differences. This done, we felt we could move toward an understanding of the common ground shared by everyone involved in the program, irrespective of academic discipline.

Definitionally, we observed that science (as we normally conceive of it) is the pursuit of theories and hypotheses which exhibit and explain relationships among verified facts. That is, the scientist attempts to develop theories which explain recurring and orderly relationships in the natural world. Scientific theories are what, in an important essay entitled "Concerning the Sciences, the Arts, AND the Humanities" (Critical Inquiry, Volume 1, 1974), Leonard B. Meyer calls propositional. "They are general in that they refer to classes or types; they are abstract in that they account for only some attributes of the natural world." But works of art are what Meyer calls presentational. They are patterns and are the occasion "for experiences that are found to be enjoyable, intriguing, and moving." A work of art is not an object for theoretical generalization. It exists for aesthetic appreciation and response. In our class and on our conference program there would be scientists theorizing about the sea. And there would be poets reading from their own and other peoples' work about the sea. The subject was the same. Everything else would be different.

It was the sea itself in its variety and diversity that fused disparate parts.

Between the artist and the scientist there is the humanist-critic, that individual whose task it is to seek out and define relationships presented in works of art and then to make clear how these relationships and connections are perceived by competent audiences. In a very crucial way, the humanist-critic is akin to the scientist. For although, as Meyer points out, "the phenomena to which they attend and which they analyze are different--the critic explaining the works of man, the scientist the work of 'God' (Nature)--they are similar in a number of ways."

Both select from phenomena, separating the essential from the accidental, in order to exhibit significant relationships; both are moved by a desire for consistency and elegance; both often work by trial and error; both reason and argue in basically the same way.

Nevertheless, there is a critical difference between the ultimate goals of the humanist and those of the scientist. For while the scientist is concerned, above all, with developing general laws and theories which account for relationships discovered in the natural world, the humanist attempts to understand and explain how the patterns and processes peculiar to a specific work are related to one another and to the aesthetic experience they shape. In order words, humanist criticism differs from science in that it is concerned with what is unique, indeed idiosyncratic about a particular poem, novel, sonata, or painting. Like the scientist, the humanist develops and employs theory and taxonomy. Unlike the scientist, the humanist is concerned chiefly with how one work is different from all others. It is, in fact, this crucial difference which in large measure accounts for the problems scientists have when trying to evaluate the work of the humanist. For no matter how systematic, how rigorous the scholarship of the humanist may be, the very nature of his study prohibits his arriving at the kind of final responses to observed phenomena which is the goal of the scientist. I quote again from Leonard Meyer who offers a brilliant summary of the essential differences between what to some may seem comparable activities.

The scientist formulates theories which refer to and explain relationships discovered in an already existing world. The artist neither formulates nor explains. He creates. And his creations--works of art--are equivalent, not to general propositions about phenomena, but to the phenomena
And so it should seem clear why I had reservations about bringing artists, scientists, and humanists together into one classroom and into one auditorium. But we did it and it worked, perhaps not so much because of our planning, but in spite of it. That is, it was the subject matter itself that made the various parts of it fit into a whole that grew to be larger than the sum of all of the parts which comprised it. It was the sea itself—in its variety and diversity—that fused disparate parts. It was the sea—at once a source of man's awe and wonder and a subject of scientific inquiry—that became that larger whole. It was the sea, in its vastness, which posed vexing questions and encouraged the pursuit of final answers from our teachers and our students from our speakers and our audience. And it was the sea which, more often than not, bewildered the seeker. In short, the sea invited our artists, our humanists, and our scientists to live the creative and re-creative process: to "speculate into the planks of the disciplines" to the very real connections between the arts, the sciences and the humanities. The sea lures and frustrates the scientist as it simultaneously demands and defies definition in precise propositional form. Scientists who study the sea do move toward truth, but they rarely attain more than partial or tentative answers to the questions they ask. As a result, the scientists—who has studied the sea for a time—is better equipped to understand the problems which face the humanist as he studies the sea itself—in its variety and diversity.

Between the artist and the scientist there is the humanist-critic. The proper analogue to the scientist is the humanist who formulates these theories and taxonomies which refer to and explain relationships found in works of art. That humanistic theories are less coherent, rigorous, and well confirmed than scientific ones is due not to a fault, in the comparison but to the complexity of works of art, the variability of their material means and stylistic manners, and the difficulty of studying human cognitive and affective processes empirically.

And so it should seem clear why I had reservations about bringing artists, scientists, and humanists together into one classroom and into one auditorium. But we did it and it worked, perhaps not so much because of our planning, but in spite of it. That is, it was the subject matter itself that made the various parts of it fit into a whole that grew to be larger than the sum of all of the parts which comprised it. It was the sea itself—in its variety and diversity—that fused disparate parts. It was the sea—at once a source of man's awe and wonder and a subject of scientific inquiry—that became that larger whole. It was the sea, in its vastness, which posed vexing questions and encouraged the pursuit of final answers from our teachers and our students, from our speakers and our audience. And it was the sea which, more often than not, bewildered the seeker. In short, the sea invited our artists, our humanists, and our scientists to live the creative and re-creative process: to "speculate into the planks of the disciplines" to the very real connections between the arts, the sciences, and the humanities. The sea lures and frustrates the scientist as it simultaneously demands and defies definition in precise propositional form. Scientists who study the sea do move toward truth, but they rarely attain more than partial or tentative answers to the questions they ask. As a result, the scientist—who has studied the sea for a time—is better equipped to understand the problems which face the humanist as he studies the sea itself—in its variety and diversity.

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In his essay in this volume, John Isaacs notes that the sea's interactions are strong, subtle, and dominating. The ocean therefore enables those who go to all fields of human endeavor, "the style of a great man is the stamp of his mind," so that the search for truth is more important than its discovery and the process of thinking more important than the thought. Too many humanists go about their work convinced that the world's great literature, art and music can be appreciated only by a cultured, cloistered few. Their scholarship is compartmentalized, excessively specialized. Inevitably it is more and more devoted to trivia. There are many art and music critics who are uneasy with any work which has a representational object or an acknowledged subject. And there are those teachers of literature who believe that real reading must be exegetic, heuristic and hermeneutic. But the humanist who studies the sea with the scientist, who takes the time to look and to appreciate that real knowledge of life, our life, is built communally and is often tentative, stones in a developing cathedral, eschews reductionist approaches, and so helps build that cathedral with creativity and with style.

Speaking as a scientist, John Isaacs notes that "it is the sea that first strongly challenges science as we now conceive it." I would add that the sea also challenges the artist and the humanist. Indeed, the burgeoning field of marine education provides fertile ground for the artist, the humanist and the scientist to understand their differences and then move to a recognition of interconnecting structures, of fundamental unities.

I believe that the Oregon State Seed Grant course and conference were first...
steps toward the achievement of that end. Surely, they convinced those of us who designed them and who are now developing the larger, more inclusive, marine and maritime studies program which will debut on the Oregon State campus in 1977, that curricula can be organized which—even in these difficult times of shortages and cutbacks—will enable students and teachers to ask important questions and seek important answers and so help in- sure that our universities do not become the hothouses of organization men, the manufacturing centers of bureaucrats and social engineers.

Readers of this volume who are interested in the course on "Literature and the Sea" should contact Professor Anne Taylor of the Department of English and Professor James McCauley of the School of Oceanography at Oregon State. Anne and Jim planned and developed that course, and with the help of thirty dedicated students they made it work. The eight essays which follow here are printed almost exactly as they were delivered by the speakers at the conference which was held at the Marine Science Center in Newport, Oregon on May 8, 1976. Only minor editorial changes have been made to prepare them for the reading audience.

Novelist John Steinbeck once wrote in a book about a certain sea—that the design of a book "is the pattern of a reality controlled and shaped by the mind of the writer." The design of this publication was controlled and shaped by the minds of eight writers into a loose but cohesive whole. The subjects of the essays which follow differ vastly in tone and idea. On the surface there seems little similarity between John Seelye's investigation of the "British connection" in American sea literature and Joel Hedgpeth's study of the writings of marine biologists, and even less between William Appleman Williams' "angles of vision" and John Haislip's presentation of his beloved Seal Rock. Propositional statements about the human community are the essence of Williams' piece, whereas Haislip refuses to talk about the transformation of "the stuff of my world into poetry" since, he claims, "it is a mystery for me, as I think it is for many poets." Similarly there seems little connection between John Pratt's exploration of the power of the elements in literature and John Isaacs' attack on the simple-minded scientific paradigm as well as on the "mariné mystique." And only the fact that both Joseph DeFalco and Robert Zoellner talk about American novelists links their respective essays. And yet, these eight writers do shape a pattern of reality that emerges when their essays are read together. And that pattern is an integrated nucleus from which strings of thought stretch into various reachable realities. These essays ask us to think and to look and to consider. And they give off a quality of light, perhaps not easily defined, but shining clear and bright in the minds of the perceptive reader.

I would like to express my thanks to William Q. Wick, Director of the Sea Grant Program at Oregon State University. Perhaps more than anyone else, Bill nourished our dream; he supported an idea as we brought that idea to life. I would also like to thank Jim Polts, Linda Hosek, Connie Morehouse, Jim Leadon and everyone else in the Sea Grant program who helped in the publication of these proceedings. My thanks go also to Robert MacVicar, President of Oregon State University, and to John Byrne, Dean of Research at OSU. Both supported the conference enthusiastically. I am grateful to Karen Hatch of Chico, California, and to Susan Cole of Washington, DC, who saw larger pictures and who helped us create more inclusive wholes. Special thanks go to Anne Taylor and Jim McCauley, and to Julie Mackaman of the Department of English who helped with a million details. And finally, my deepest thanks go to my wife, Betty, who spent too many long hours helping me plan the Newport conference and assisting me in preparing this volume of proceedings for publication.
'Andsome Is as 'Andsome Does''

Or, The Hamerican Hadam, Being
Some Random Rodericks Bearing Witness to the
British Connection in Our Maritime Literature

BY JOHN SEELYE

It is a curious fact that, until the advent of Joseph Conrad, sea literature in the English language was chiefly the work of American writers, and Conrad himself was born of Polish parents in the Ukraine. As a great colonial and mercantile power, Great Britain was the center of an imperial spiderweb of sea lanes, but except for the work of second-rate talents, like Captain Marryat and Michael Scott, England's contribution to maritime prose literature during the great century of sea-power, the nineteenth was decidedly slight. The landscape of English prose is surveyed in Fielding's Tom Jones—that mystic triangle of Town, Country, and the Roads between—and though Smollett's Roderick Random has in part a shipboard setting, as a scene it is not much more than an extension of London streets. The English most certainly do have a talent for castaway stories, but from Defoe to Robert Louis Stevenson, the emphasis has been on the island not the sea, the ocean providing for and intensifying the insular element—which is after all what Great Britain is all about.

But when we turn to what was, until 1775, the chiefest of her colonies, we find a much different story—and stories. Two of the highest points in world literature written by Americans, Two Years Before the Mast and Moby Dick, are set at sea, and if Melville was indebted to Dana at the start of his career, he went on to exceed and excel—though not to outsell—him, turning out a small shelf of quasiautobiographical fictions without which the literature of the sea would be considerably diminished. Even Edgar Allan Poe, who is generally associated with restricted spaces, well within—often below—terra firma, shoved a famous ship-
board story into a bottle, and when Poe came to write his one novel-length book, he likewise set his hero afloat. But the grand master of them all, precluding Dana, Poe, Melville, and even Captain Marryat, was James Fenimore Cooper, who invented a genre virtually out of whole cloth when he wrote The Pilot in 1823. It is not generally known, I think, that Cooper was the author of more romances about the sea than about life in the forest and prairie, that he was known to his contemporaries as "Cooper of the Wood and Wave"—though "wooden wave" might be appropriate, because though Cooper could get his heroes out of the woods, he could never quite get the wood out of his heroes.

Still, what we must acknowledge in Cooper is his amazing inventiveness, where genre if not incident is concerned, as single-handed he did for the United States what Fielding did for Great Britain, surveying the territory ahead for writers to come, running his spine as far west as the Rocky Mountains and south to the Antarctic Ocean. Still, it must be said that if Cooper invented the sea romance out of whole cloth, as with his romance of the frontier that cloth was Scotch tartan, namely the historic romance is written by Sir Walter Scott. For The Pilot was written, as Cooper himself declared, in response to the faulty seamanship in Scott's seacoast story, The Pirate, and if it provides a second in a series begun by Cooper's first historical novel, The Spy, in having a Revolutionary War setting so both books in celebrating America's independence from Great Britain manage to reveal (like the Constitution) a strong English influence. In asking the question why England finally produced a great sea literature even though the authors lived in America. What I will do in the time remaining is to trace briefly and I hope succinctly the complex ties between American maritime literature and what we may call the British connection.

It is at the start a colonial umbilicus that never severed its natal—or perhaps I should say "naval"—ties, and it begins with those anatomical epics assembled to inspire English imperialism, Hakluyt's Voyages and Samuel Purchas's Pilgrimes. If our sea literature of the nineteenth century is strongly indebted to Sir Walter Scott, then its origins may be traced back to another Sir Walter, for it was the accounts by Raleigh's captains of the New World that got things moving in the first place. The often-quoted report by Arthur Barlowe, good news brought back with two Indians from the outer banks of what would become North Carolina, establishes at the start a link between Columbus's voyages to America and the emerging English tradition, a search for the Passage to India ending with images of a terrestrial paradise Virginia—the Virginia Land—commences as an early version of Captain Cook's Hawaii, where America as Promised Land would end. But it is with the adventures of Captain John Smith that the story really gets rolling, Barlowe's golden-age vision given a much more realistic frame, yet one which is heroic withal. If Hakluyt's Voyages and Purchas's Pilgrimes are something of an English Odyssey and Iliad—the voyage and the battles reversed—then John Smith's Generall Historie of Virginia is the Anglo-American Aeneid, the Captain himself being joint hero of the double-ended epic. In the pictures illustrating his book, Captain Smith is shown wrestling giant heathen "kings" in single-handed combat (though with the benefit of superior arms), the hero of chivalric romance transplanted to the American shore. Prototype frontiersman, the Captain is also Kipling's securer of empire, being as his title suggests at home, on land or sea, "a giddy harumphrodite—soldier an' sailor too!"

. In Smith's defense let it be said that he was more Hermes than Venus, for as Hermes is the Greek god associated with boundaries and borders, so the Captain's voyages in America established the outlines of English dominion here. In his circumnavigation of that American Mediterranean, the Chesapeake Bay, Smith was looking for a water route to the Pacific Ocean, and he left his mark at the heads of navigation on the main watercourses of Virginia. In so doing, he mapped out what would become the tidewater region, a provincial empire centered by that humble enough Rome, Jamestown, much as at the far end of his voyage he sailed past the swampy site of the District of Columbia, named for the Admiral who initiated the search and the center of a much vaster empire to come. Smith also explored and mapped the New England coastline, and his chart is dominated by the symbolic shape of Cape Cod, that outreach of land called by Thoreau the "bare and beckoning arm of Massachusetts," within whose sheltering curve the Puritan experiment prevailed, nursing a notion
of Manifest Destiny which would develop 
a very strong arm indeed:

Virginia, dominated by her landlocked 
Bay, became a closed, agrarian world of 
river plantations, while New England— 
whose bays opened to the Atlantic, became 
a maritime power whose rivalry with Great 
Britain helped spark the Revolution. 
"So then her is a place," wrote Captain 
Smith, "a nurse for soldiers, a practise 
for mariners, a trade for merchants, a 
reward for the good, and that which is 
most of all, a business (most acceptable 
to God) to bring such poor infidels to 
the true light. Yet all of those early 
Puritan seaborne writings stress the 
importance of the ocean as New England's 
Red Sea, not only because so few of their 
crossings suffered shipwreck—thereby 
serving as evidence of Providential protection—but because the Atlantic separated the New-English Israel from the Old World Egypt."

A theological symbol of separation, 
the Atlantic soon enough became for New 
England a mercantile symbol of connections, 
linking her coastal communities by means 
of trading routes, an economy which held 
major towns to the shoreline or to the 
heads of river navigation. It is mean-
ingful in this regard that the hero of 
Cotton Mather's Magnalia— if we discount 
the author himself—was the sea-captain 
Governor of Massachusetts, Sir William 
Phips, who was styled a King-Fisher by 
Mather because he owed his rise from 
humble origins to the recovery of treasure 
from a Spanish ship sunk off the Bermudas. 
Equally relevant are the early years of 
Benjamin Franklin, who as a boy in Boston 
yearned to go to sea as a sailor and who 
wrote as one of his first poetic produc-
tions a broadside ballad about Captain 
Kidd, evidence perhaps of his Nantucket 
ancestry. Franklin's first voyage took 
him only as far as New York, from whence 
he made his way by foot to Philadelphia, 
but his youthful ambitions do help to 
string a life-line between the seventeenth 
and the nineteenth century in New 
England, and Ben's autobiographical de-
sire to go to sea was finally realized in 
Dana's Two Years Before the Mast.

But before Dana, once again, there 
was Cooper, and before Cooper there was 
Byron and Scott. Ben Franklin's urge 
can be traced to his Nantucket-born 
mother but Ben's father was born in Eng-
land, and Franklin's subsequent sea 
voyages often took him to the island of 
his father's birth, a place he was in-
creasingly loath to leave. Sir William 
Phips may have been Governor of Massa-
chusetts, but it was, like his title, 
the gift of James II, the King in whose 
administration, but the buildings he 
held firm in America, Repub-
lican letters yielding to colonial ties, 
and though Joel Barlow celebrated the 
rising glory of American empire in his 
Columbiad, the ocean that beat on his 
native shore did so in the heroic couplets 
of Alexander Pope. The same ocean 
that separated the United States from 
England was also a mutual waterway, and 
cargo space on British ships was taken 
up by British bards and Scotch reviewers 
too. Jefferson huffed about King George 
in the Declaration of Independence and 
he puffed about the impressment of Ameri-
can citizens by British ships during his 
administration, but the buildings he 
built in Virginia were Georgian in de-
sign and his library undoubtedly con-
tained English titles obtained from 
American printers who pressed them with-
out paying their English authors, a 
quaint custom know as "Literary Piracy."

The grand master of them 
all was James Fenimore 
Cooper, who invented a 
genre virtually out of 
whole cloth.
Whatever the nationalistic intentions of fledging American authors, they had to face the fact that the victories over Great Britain, whether at Yorktown or New Orleans, did not put English literature out of fashion in the United States. The War of 1812 ended in 1815, having so far as our literature is concerned produced the most unsingable national anthem in the world—whose words were set, by the way, to the tune of an English drinking song—yet it was in the very next year that the first American writer to gain prominence abroad followed Ben Franklin's watery track to Great Britain some ninety years since, to manage his family business in Liverpool and pay homage to Sir Walter Scott. Washington Irving may have been named for the Father of his Country, but his own parent was English born, and if The Sketchbook opens with an ocean voyage, it is a trip back to what Hawthorne or Landscape, that is to say, 1800. For William Henry Harrison was flogged through the fleet soon after, suggesting that whatever the freedoms enjoyed by the other citizens of the United States, the men who protected them aboard the ship of that name might as well be serving in Great Britain's fleet. That was not Cooper's emphasis, but it does put a blade to his point, for the Revolution in which so many sailors died affected few changes in the lives of those who were still afloat, the autocratic system of rank and privilege being preserved entirely by both the Navy and the Merchant Marine.

In 1840 Fenimore Cooper himself most certainly did not vote for Tippecanoe and Tyler too, being a Democrat of Jeffersonian persuasion. But he was never a Jacksonian lover of the common man, and whenever his sailor heroes wear flowing blouses, they are most always young officers in disguise. Having been a midshipman and officer as well as a landed aristocrat and a student at Yale, Cooper saw nothing wrong with the contrast between life in the wardroom and forecastle, and in the literary models provided by Byron and Scott the heroes were likewise either blue-blooded or to a manor-house born, equivalents to Cooper's upper-crust salts in rank. It was, moreover, what his readers expected, and if the eponymous hero of Red Rover is George Gordon, Lord Byron, dressed up as the poet's name even as he expresses a modish, Byronic angst, and his narrative is strung out in a series of Gothic tales in the manner of Blackwood's Magazine.

As late as 1840, then, Great Britain still ruled America's literary waves, but Dana's Two Years Before the Mast would seem to have changed all that. Though a Boston Brahmin born and a graduate of Harvard College, Richard Henry Dana, Jr. was his father in name only, while Dana Senior was content to imitate in his quiet way English models—in life as well as literature—his son struck out on his own, making a clean break with Boston, Byron and Buccaneers. Where Cooper found the quarterdeck to his liking, Dana shipped before the mast, declaring that

"We must come down from our heights, and leave our straight paths for the byways and low places of life, if we would learn truths by strong contrasts; and in our hovels, in forecastles, and among our own outcasts in foreign lands; see what has been wrought among our fellow-creatures by acci-
The brig Pilgrim proved to be a hard ship literally, a veritable vessel of Puritan idealized treatment of maritime life. Even Cooper changed his tack before literary winds, serving as the amanuensis for a sailor named Ned Myers in 1843 as in 1848 writing Jack Tier, a book described by Thomas Philbrick as "a bitter rejection of the idealized treatment of maritime life."

But in considering this sudden descent to the forecastle inspired by the example of Dana we should not forget that Oliver Twist was published in 1838, that the vogue for Scott's romances was being replaced in America as in England by a pandemic rush to the realism of Charles Dickens, whose works were pirated by American literary Corsairs and Rovers as soon as they arrived on American merchant ships. The sailor whose checkered career (and tattooed body) inspired Dana's apostrophe to the truths found in forecastles was George Marsh, a Dickensian child of misfortune, and an Englishman besides. Even Tom Harris, Dana's ideal sailor, though a Jeffersonian "self-taught man of red merit" and "a far better sailor and probably a better navigator than the captain," was born and raised in Great Britain also, being the son of the "skippers of a small coaster from Bristol." Yet another English sailor provides a physical counterpart to the intelligent Harris, having a "chest as deep as it was wide, an arm like that of Hercules, and a hand 'the fist of a tar--every hair a rope yarn." With all this," adds Dana, he had one of the pleasantest smiles I ever saw. His cheeks were of a handsome brown, his teeth brilliantly white, and his hair, of a raven black, waved in loose curls all over his head and fine, open forehead; and his eyes he might have sold to a duchess at the price of diamonds, for their brilliancy. . . . Take him with his well-varnished black tarpaulin, stuck upon the back of his head, his long locks coming down almost into his eyes, his white duck trousers and shirt, blue jacket, and black kerchief, tied loosely round his neck, and he was a fine specimen of manly beauty. . . . His captain said he was a perfect seaman, and worth his weight in gold on board a vessel, in fair weather, and in foul. . . . He called himself Bill Jackson, and I knew of no one of all my accidental acquaintances to whom I would more gladly give a shake of the hand than to him. Whoever falls in with him will find a handsome, hearty fellow, and a good shipmate."

In physical appearance Bill Jackson suggests a young nobleman in disguise, reminding us that Dana's reading aboard the Pilgrim and Alert was Bulwer-Lytton's Paul Clifford and Scott's Woodstock, and that Dana himself remained throughout his cruise a sea-lawyer in drag, a sailor in habit but never a habitual sailor. Like Irving something of a tourist, Dana established the maritime mask for literary sailors thenceforth, the chief of whom was Herman Melville, who Ishmael is a veritable Waverly of wavering points of view. As Dana's unfortunate George Marsh prefigures Harry Bolton of Redburn, as Tom Harris looks forward to that apothecary British tar, Jack Chase, Captain of the forecastle in White Jacket, so Bill Jackson would be resurrected more than a half-century later as the Jacksonian Man himself, Billy Budd, a handsome enough sailor surely but as an American Adam having an English berth. Moreover, as the sailor named Jackson in Redburn testifies, Melville himself had imperfect Jacksonian sympathies, and though he sounded a democratic note in White-Jacket, the heroic captain of the Pequod has a mightily piratical look and a Carlylean sound as well, Melville's Ahab being but Cooper's Red Rover in metaphorical clothes, as a rebel taking something also from Roderick Dhu.

Ahab goes down with his ship and his whale, but he surfaces again as Captain Nemo by century's end, given an underwater vehicle by Jules Verne--who made a specialty of rescuing lost American heroes. And when the ocean's depths no longer held out romantic possibilities as a symbol of the unknown, a decline completed when a real Nautilus set out from the old whaling port of New London, Connecticut, the submarine became a more stately mansion in the sky, heading for a dome more vast and leaving its outgrown
shell by life's unresting sea. Captain Nemo is now Leonard Nimoy, sentenced forever to his nightly trek through the stars, playing a Martian with the ears of Hawthorne's marvelous faun. In the War between the Worlds, as in the First and Second World Wars, the British connection still holds, though England herself shows signs of sinking like Verne's mysterious island beneath the sea. Those voices that came back from the moon spoke with nasal resonances and slang of midland America, but on fictional spaceships as aboard Cooper's dark, dangerous hulls, the heroes are all captains courageous and speak the King's English still.

As for more recent maritime fiction there is Mr. Roberts, in which another young Jeffersonian officer sets his cap against a tyrannical captain, Henry Fonda assuming the burden of Clark Gable's Mr. Christian. Authority may, as in The Caine Mutiny, assume objectionable forms, but revolt seldom leaves Officer's Country, as sailors are limited to swarm on parts at the end, where they appear in the guise of grateful peasants, shedding tears over the sad but noble fate of Marse Roberts, killed defending their right to serve in de Wah. If Great Britain is shrinking, perhaps it is because America has absorbed her, like the eaglet the yolk of its egg, the child of the imperial womb becoming Empire itself at the last. If this is so, then it is in our sea literature that the metamorphosis may be mapped, the American Neptune emerging out of the rocking cradle of which, Walter Whitman sang, as Captain John Smith wading ashore through the foam, like General MacArthur an amphibious hero bearing the name of a chivalrous king.
Ail art depends, we know, upon metaphor—the intellectual and emotional equals-sign that distinguishes an artistic creation from that thing or action, its referent, which the work of art reflects, stands for, or transcends. As metaphoric referents, earth, water, air, and fire pervade the world’s literature, and one of these primal elements, water, provides in its most impressive manifestation, the sea, the subject for this conference and the papers which follow.

That the sea predominates as elemental subject and referent in literature is obvious; but the search to discover how and why it does so becomes almost as lengthy and labyrinthine a journey as that of Odysseus, whose voyage over the seas as the Greeks knew them provided a foil for all sea-epics which followed: It is not enough merely to say, as of Everest, that the sea is "there"; thus I think that only by considering the sea in relation to the other historic elements can we appreciate how the world’s writers have seen and used the sea in their art.

Of the four elements, fire is the least interesting in literature simply because its appearance is primarily adjectival. Although to John Donne in 1611, Galileo and the new philosophy so called "all in doubt" that "The element of fire [was] quite put out," fire’s literary use was not really affected. Poets have placed little emphasis on this primal element before or since Donne’s "First Anniversary" except to represent heat, to signify the damnations of an imagined hell, or to trump up the end of the world. The word "fire" appears often in literature, but almost never is it invested with any properties or metaphoric qualities that are not simplistic, direct, and of course,
consuming and quite warm.

Earth, however, especially in its appearance as "land"--or the land--is another matter. Most obviously the place on which people live and where things happen, in fiction and poetry, the earth also has been personified, vilified, worshiped, and used symbolically. Until the gods were moved from Olympus, the earth delimited all imagined and real human or divine beings, with the existence of Hades and the home of the immortals made believable only because of myth and their physical inaccessibility to man. Traditionally, well-known parts of the earth's surface produce neither fear nor fable; it has been mainly the unknown and the untravelled areas which have affected the poetic imagination. Consider these geographic locations, for instance, in their historic and metaphorical context: the Indies; the New World; Atlantis; Araby; Cleopatra's Egypt; the American Frontier; Byzantium; the "north country" of Chaucer and the Beowulf poet; and the Enchanted Isles--land areas which have been invested with mythic significance because of the imagination and the ignorance of man.

When discovered and known, land is used differently to provide a place for the actions of human beings: the Russian steppes; the prairies of the North American west; the rolling hills of Appomatox and Shiloh; the deserts of the Middle East; the jungles of Asia, Africa, and South America; and the snowy northern wastes. Rarely, however, even in such classics as War and Peace, Giants in the Earth, or The Grapes of Wrath does the land, sometimes presenting apparently impassable obstacles, seem to be more than massive locus where things happen. Of land, human antagonists clash--and prevail or fail in the face of earth's overwhelming, static presence. One should note, I think, that it is rarely the land which is the antagonist: humans die from cold, ice, fire, or heat--none of which causes are of the earth itself. To cite some adjectives used in poetry and fiction; the land "abideth forever," it is "good," "firm and stable," or (to MacBeth) "sure and firm set." Personified, the earth can be "niggard" or "gentle"; it is observed "listening"; or it can become "gray"

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and "lonely" and of course, "dry, thirsty, and parched." Often it is "barren," an adjective interestingly hardly ever used for the sea, and it can be "deep-delved," but the majority of writers agree with William Blake that ultimately, the land is and should be "green and pleasant." Whether seen in masculine or feminine terms, the land consistently represents stability in opposition to the transitory or fluctuating nature of everything else on earth.

As an example of this stability, consider the fleeting temporality of the following prepositional objects which have been used with the phrase "land of . . . ":
- cotton
- broken hearts
- darkness
- ferocious heroes
- heart's desire
- lost content
- my d-sons
- pure delight
- pilgrims' pride
- thought

That all these concepts will pass, but the elemental earth will remain is implied by each of these and many other similar phrases linked with the word "land."

Of course, things of the earth have always been the subject for countless poems, plays, and fiction. Aristotle advocated holding "a mirror up to Nature," a phrase the English Romantics appropriated and misunderstood in their minute examination of the English countryside. By the early nineteenth century, the poets' love of the picturesque had given way to their awe of the vast, the wild, the untamed in nature, and this attitude was soon transported to the New World to become part of Turner's frontier thesis about the formation of American character. Finally mapped and observed by at least somebody, our earth has now been relegated to a blasting off place for much of twentieth-century science fiction.

Nevertheless, the use of the land/earth in creative literature does have a common basis: this element is supportive (literally and figuratively) and above all, stable. The land represents something one can feel, taste, touch, heft, sleep on, or rest in. The land can provide shelter from each or all of the other elements; it is the creator of nations and nationalities, even though, as to the soldier in Hamlet, wars seem often fought "to gain a little patch of ground; That hath in it no profit but the name" (IV, iv). Despite what we do to it or on it, for most writers, the earth endures forever. "What we call real estate," says Clif-
ford in The House of the Seven Gables, "the solid ground to build a house on--is the broad foundation on which nearly all the guilt of the world rests." (Ch. XVII)

Attitudes toward the air in literature are quite different, made so I suspect not only by the nature of the element but also in this century by the mere fact of manned flight. Although one can usually see some distinctions made by pre-Kitty Hawk writers between Air, Sky, and Heavens, it was the usual custom to treat similarly in creative literature all aspects of that element which was neither land, sea, or fire. Technically, air was what man breathed, but phrases such as "of the air," "the airy Heavens," and "gods that wanton in the sky" are metaphoric, not scientific. The tropopause, as we now know it, did not exist: what counted was the sense of distance created by the "use of these phrases.

Obviously, no poet or writer of fiction had actually experienced prolonged, sustained flight before the beginning of the 20th Century, but all had looked up. Unlike those for the earth and sea, however, the words they used to describe the sky understandably derived primarily from their sense of sight. Here are a few: the sky was, equal -- pearl-gray -- milky -- ethereal -- clear -- empty -- eternal -- starry -- benign -- wide -- wind-swept. Groundlings all, they afforded only the breathable air any human qualities: to Hamlet, the air "bites shrewdly"; to Banquo it is "delicate"; to Thomas Gray's Bard, the air is "troubled." Other artists, both before and after the reality of flight, see air as "clear," "delicious," "homeless," "liberal," "living," and the mainstay of most clichés, "free." Not until artists began themselves to participate in aerial flight (William Faulkner, interestingly, was among the first) did the artistic perception of this third element begin appreciably to change--and with this change arose what is definitely a perplexing problem.

This problem is well stated by Charles Lindbergh:

Science, freedom, beauty, adventure: what more could you ask of life? Aviation combined all the elements I loved.... I began to feel

What other element creates authors as does the sea?

that I lived on a higher plane than the skeptics of the ground; one that was richer because of its very association with the element of danger they dreaded, because it was freer of the earth to which they were bound. In flying, I tasted a wine of the gods of which they could know nothing. (italics mine)

This attitude, held by most pilots until the present day, obstructs the transmission of experience through art--with the result that much of the literature of flight creates empathy only in the slowly growing numbers of readers who do fly or have flown, not only in the cabin but preferably at the controls. To people of the days before manned flight and to most readers today, the sky indeed seems fluid, fickle, intangible, and unforgiving--but this element which is neither earth, water, or fire can be experienced only vicariously by groundlings who are, I must add, also the primary buyers of books. And they buy few books about flight. Antoine de St. Exupéry, Anne Morrow Lindbergh, Richard Bach, Giro (pseudonym), Randall Jarrell, and other pilot/poets of distinction have an extremely select appeal because the language they use is not in the common vocabulary. Such words as pitch, airfoil, immelman, split-S, G-forces, mach, true airspeed, dive, pickle, and prang are not only technical or slang expressions of the pilot's experience but they are also much of the experience itself. As such, these words have meaning primarily to those who have learned the specialized language by participation. Non-pilots know only how to watch seagulls (and I do not mean to present a pejorative implication); hence Richard Bach's worst creation has received the greatest public acclaim.

As do the land and the sea, the air and the sky provide an opportunity in contemporary literature to present a microcosm; like the Pequod or Thor Heyerdahl's reed boat, an aircraft can contain either a group or an individual study of struggle. Unfortunately for lasting art, however, such popular novels as The High and the Mighty and Airplane could just as well take place (and indeed have taken place) upon a railroad train or a ship; and serious attempts such as those of Muriel Rukeyser and Randall Jarrell perhaps fall not on deaf but understandably ignorant ears. Says Rukeyser in "The Structure of the Plane":

FLY and the footbeat of that drum may not be contradicted
must be mine
must be made ours, say the brothers.
Wright together although the general public had been invited few dared a cold December in order to see another plane not fly.3

Noble sentiments; good insight; but poetry often satisfies neither those who do fly nor those who watch to see planes suddenly not fly. A sample of my own verse also exemplifies the problem. Describing an aspect of the Vietnam war, a poet in my novel The Laotian Fragments writes that although most modern pilots have become "air-conditioned,"

There are still a few who strap into small birds, Call "Clear," cough from backfire smoke, Groan off the ground and shudder skyward, Bombs rigged with baling wire and wood blocks, Hanging upon a prop.4

Pilots have told me they really dig this stanza—no non-flyer has ever noted it.

Used in conjunction with other elements, the air/sky can be presented at its destructive and uncaring best; but the bi-elemental tornado, cyclone, or hurricane when seen in literature does not seem to connote the massiveness of an earthquake, a flood, or a tidal wave, each of which appears as an extreme manifestation of a single element which man can neither understand nor quite control.

Of the four elements, it is water which has prevailed in man's imagination. From Steinbeck's V... of the tide pool as microcosm of all life to the immensity and fecundity of Melville's whale-spawning ocean, the sea has represented all things to all artists. The sea is life-giving and life-taking, yet because it is at once a clear, harmless fluid, it can be physiologically sensed by anyone. Perhaps feeling, though not understanding his origins, batarachian man has composed The Odyssey, the Tales of Sinbad, stories of Columbus, The Tempest, Robinson Crusoe, and hundreds of other novels, stories, and poems which depend upon and derive from the sea. What other element creates authors as does the sea? Melville, Cooper, Conrad, Dana—and lesser writers such as C. S. Forester, Jules Verne, Kenneth Roberts, and Nicholas Monsarrat, to name but a few, are known in great part as "sea writers."

Not only titles but characters have been spawned by the sea: Odysseus, Jonah, the Ancient Mariner, Captain Bligh, Captain Ahab, Captain Nemo, Captain Queeg—there are a lot of captains, aren't there? The sea has been a creator of heroes, of figures larger than life whose command and control of lesser mortals in the microcosms of their ships have given rise to the finest of fictions.

In all writing of the sea and its people, certain attributes predominate. All things to all men, the sea has been described in the following terms: ageless—silent—eternal—silver—inviolate—mirkaked—boundless—everlasting—inmutable—inviolable—lapsing—unsounded—rough—unresting—monotonous—dangerous—perfused—engulfing—open—shoreless—labouring—and of course, cruel. Similar in their descriptive quality to the words associated with the land, these adjectives show only part of the attention given to the sea. Most interesting, I think, are the personifications which attest to the human qualities of this element. Much more often than does air—or land, the sea "whispers." It is "lonely," "rude," "desperate," "triumphant," "indifferent," "murmuring," "faithless," and over and over again, "cruel." The sea can grow either "stormy" or "civil," and, as in Webster's White Devil, can "laugh, show white, when rocks are near." (V, vi). With these and other human attributes, the sea can generate a power, often personified as intentional, against which no human being can prevail. Unlike the vastness of space which can cause death mainly as a result of man's ignorance, the sea, impassioned and powerful, can willfully destroy.

More than the other elements, the sea seems to have symbolized power and force to most writers, perhaps because the sea can be either masculine, feminine, or neuter, depending upon language, mood, and the perception of the poet. If the concept of Mother Earth found gymnastic fruition in Joyce Kilmer's "tree whose hungry mouth is prest / Against the earth's sweet flowing breast," the maternal nature of the sea has certainly predominated as well. But it has not
always done so. Even though Shakespeare and Swinburne, for instance, can refer conventionally to the "bosom of the sea" and the "great sweet mother./ Mother and lover of men," a few disagree. According to one minor author,

The sea has always been a seducer, a careless lying fellow, not feminine, as many writers imagine, but strongly masculine in its allure. The king of the sea, with his whiskers of weed and his trident of dolphins, truly represents the main and gives it character. The sea, like a great sultan, supports thousands of ships, his lawful wives. These he caresses and chastises as the case may be. This explains the feminine gender of all proper vessels.

Perhaps, after all, the reasons for the sea's appeal are rather basic: first, the sea is three-dimensional, with a definable surface and boundaries, yet it possesses unplumbed depths; second, the sea with its varied moods can be presented better in human terms than any of the other elements, and, like living beings, also comes in all shapes and sizes; third, the feeling of the sea can be experienced in some form by anyone—indeed, even a conch shell held to the ear provides the sound, and, some say, the sea's windrush; and last, particularly relevant in our technological age, there are times when all man's expertise cannot prevail against the dynamism of the sea. No other element, I think, has presented and still presents such a challenge.

What becomes most interesting, I think, is the way elements are metaphorically fused by many writers. To Gerard Manly Hopkins, the air is maternal, but in it, man becomes an island, as in the ocean. Hopkins addresses this element as follows: "World-mothering air, air wild,/ Wound with thee, in thee isled/Fold home, fast fold thy child." To Shelley, a cloud is "the daughter of Earth and Water,/ And the nursling of the sky." Tennyson in "Locksley Hall" envisions that not only would the "heavens fill with commerce, argosies of magic sails" but that there would be also "Pilots, of the purple twilight, dropping down with costly bales." Sadly, he also foresaw "the nations' airy navies grappling in the central blue." (1.119f.)

Even T. S. Eliot uses a combinative metaphor in "Ash-Wednesday," describing how "The white sails still fly seaward, seaward flying./ Unbroken wings." (VI, 11. 9-10) Of all the juxtaposed thoughts, perhaps my favorite is the axiom usually seen framed in ready rooms of pilot training squadrons. It reads, "Gentlemen: do not forget that the sky, like the sea, is not inherently dangerous—but like the waters below, it is terribly unforgiving of carelessness, stupidiry or neglect."

I am certain that the land, air, and sea will continue to provide inspiration for the writers of the world, but we still wait, I think, for the novelist, poet or filmmaker (a drama, I believe, is improbable) to provide, us with truly great literature of the air to match that of the land and sea. "The poetry of earth is never dead," said Keats in his sonnet "On the Grasshopper and the Cricket"--a truism which deserves no argument. Neither will the "poetry" of the sea ever die. So far, however, the fact of flight seems to have produced not literature about the sky itself, but works which enable their authors to comment on the earth or sea below. Perhaps no one has yet really been able to follow Wolfgang Langewiesche's instruction to "let go of his nervous hold on the ground and abandon himself to the air"--to think of himself not as a part of the landscape, but as part of the wind that blows across it—and then to write about the air/sky in language which non-flyers can really understand. To do so may be an impossible task, given the emotionally participatory nature of fictive and poetic metaphor.

I doubt, then, if the medium of flight will ever become to readers what the sea has been and will, I suspect, continue to be. The technology which gave birth to flight suppresses metaphor, the essence of all art. Radar, for instance, is non-experiential. It can only be understood—and for a poet/pilot to speculate or take notes upon the meaning of a radar landing approach in weather during the act of doing so could well be fatal. Recollecting in tranquillity, only a few have succeeded. St Exupery, Malraux, and Randall Jarrell come to mind, as does Richard Bach, despite Jonathan Livingston Seagull. Listen to Bach's description of a jet fighter entering a thunderstorm:
Flash to the left, alter course 10 degrees right. Flash behind the right wing, forget about it. Flash—FLASH directly brilliantly ahead and the instrument panel goes featureless and white. There is no dodging this one.

The storm, in quick sudden hard cold fury, grips my airplane in its jaws and shakes it as a furious terrier shakes a rat. Right glove is tight on the stick. Instrument panel, shock-mounted, slams into blur. The tin horizon whips from instant 30-degree left bank to an instant 60-degree right bank. That is not possible. A storm is only air.

Left glove, throttle full forward. My airplane, in slow motion, yaws dully to the left. Right rudder, hard. Like a crash landing on a deep-rutted rock trail. Yaw to the right. My airplane has been drugged, she will not respond. Vicious left rudder!

I hear the airplane shaking. I cannot hear the engine. I cannot control my airplane. But throttle, I need the throttle. What is wrong?

Ice. The intake vanes are icing, and the engine is not getting air. I see intake clogged in grey ice. Flash and FLASH the bolt is a brilliant snake of incandescent noon-white sun in the dark. I cannot... the windscreen is caked with grey ice and bright blue fire. I have never seen the fire so brightly blue. My wings are white. I am heavy with ice and I am falling, and the worst part of a thunderstorm is at the lowest altitudes.

The storm is a wild horse of the desert that has suddenly discovered a monster on its back. It is in a frenzy to rid itself of me and it strikes with shocks so fast they cannot be seen... I am a knight smashed from his square and thrown to the side of his chessboard.

Suddenly, "the terrier flings the rat free" and "the air is instantly smooth, and soft as layered smoke." The pilot has passed through the storm. The night is now serene.

One should note, I think, Bach's use of juxtaposed metaphor in this passage. His referents are of the earth and sea, those elements which every person knows. Terriers and rats, deep-rutted trails, ice, wild horses, the hurricane, even the game of chess—these we can experience, share, and perhaps even understand. Having flown through thunderstorms myself, I can also commend the accuracy of Bach's prose.

Few writers about flight succeed so well; therefore, I suspect that the land and sea, especially the sea, will continue to predominate as subject and metaphor in literature. Because of our human limitations, most people cannot fly and write as Bach has done, but at least we can try to emulate John Keats, who best for me epitomizes the artist's attitude toward and his use of any element in art. For his long poem Endymion, Keats claimed, "I leaped headlong into the sea, and thereby have become better acquainted with the Soundings, the quicksands, & the rocks, than if I had stayed upon the green shore, and piped a silly pipe, and took tea & comfortable advice." How other human beings, scientists as well as writers, have leapt literally and figuratively "headlong into the sea" is the subject of the papers which follow. This essay has been one means of launching forth.
While scientists refer to the published material concerning their discipline as "the literature", this does not necessarily mean "literature" in the sense of having a dimension beyond the immediate meaning. Some of the writings of scientists about their subject is also literature in this higher sense, interesting reading for its own sake, as well as for the facts being elucidated or the theories expounded.

The first great figure of science in our Western tradition is of course Aristotle, but we cannot be sure whether he was as great a writer as he was a scientist or philosopher, because it appears that much of what is attributed to Aristotle is based on lecture notes by his students. Most professors would feel very uncomfortable if they suspected that their reputation for all time might be based on notes taken by their students, and while that may be the case with Aristotle, nevertheless some things come through so loud and clear that they cannot but have been written by a superior mind, or carefully taken down for the record. To Aristotle, all nature was marvelous and beautiful, and worthy of study, as testified by that famous passage in the Fifth part of De Partibus Animalium: "... for though there are animals which have no attractiveness for the senses, yet for the eye of science, for the student who is naturally of a philosophic spirit and can discern the causes of things, Nature which fashioned them provides joys which cannot be measured... in all natural things there is somewhat of the marvellous." One should study the thing as a whole, and not the parts separate from the whole, and, above all: ". . . in the works of Nature, nur-
pose or end for the sake of which these works have been constructed or formed has its place among what is beautiful." Yet, as Aristotle, to whom we owe the essence of the scientific approach to nature, said: "But the facts have not yet been fully ascertained; and if at any future time they are ascertained, then credence must be given to the direct evidence of the senses rather than to theories—and to theories too, provided that the results which they show agree with what is observed." There has not been a better statement of the scientific method.

The biological writings of Aristotle are heavily flavored with descriptions and accounts of animals of the sea; in a real sense, the observation and writing about the life of the sea began with Aristotle. We do not find similar emphasis in literature for several hundred years, until we come to the Halieutica of Oppian, written apparently during the second century A.D. We do not know anything about Oppian, and probably he was not a scientist in the sense of Aristotle, but if anything an economic biologist, and insofar as the Halieutica is concerned, a fisheries biologist. It is in this writing of Oppian that we find the first expression of the concern for the comparative productivity of the sea and the land that is one of the major concerns of the Sea Grant program in these days:

But, since the sea is infinite and of unmeasured depth, many things are hidden, and of these dark things none that is mortal can tell; for small are the understanding and the strength of men. The briny sea feeds not, I ween, fewer herds nor lesser tribes than earth, mother of many. But whether the tale of offspring be debatable between them both, or whether one excels the other, the gods know certainly, but we must make our reckoning by human wits.

(Halieutica, I, 88-92.)

 Unfortunately, Oppian has never been adequately translated, into English at least, as poetry, except for the usually meticulous Loeb Classics prose version by A. W. Mair of 1928. The translation of the Halieutica begun by the unfortunate minor poet, William Diaper (who died in 1717) and completed by John Jones and published in 1722, was, in the tradition of the day, padded with extraneous matter by the translator as well as being wildly inaccurate. Oppian did not say, as Diaper did, that we must not speculate upon the limits of production in the sea. Yet, William Diaper is worth consideration for a modest place in the literature of the sea because he invented the marine counterpart of the then fashionable pastoral, the Nereides or "sea-eclogues", delightful concoctions of fancy and fact, of juicy oysters and luscious prawns and oddities from an imaginary sea:

While hoary Phoebus sat on floating Weed,  
And slowly drove th' unwilling herd to feed.

In a real sense, the observation and writing about the life of the sea began with Aristotle.

It would be pleasant to dwell more upon Diaper's odd conceits, and the even more delightful and similar extravagances of Erasmus Darwin, a generation later, but we are in danger of bypassing our essential theme. Whatever sources Diaper used, they were not scientific and often not even very good natural history, and his attempt to lead English literature into pastoral excursions among sea weeds and tidal flats came to naught.

The greatest poet of the sea was a sailor, a keen observer, especially of meteorological phenomena and a creator of myth in his own right: Luis Vaz de Camoes (Camoens). He sailed in the wake of Vasco da Gama to India and during his adventures wrote the Lusitana, which was published in 1572, when Shakespeare was eight years old. Again, alas, we have no adequate English translation; few poets of talent have attempted to translate the Lusiada, and Camoens has remained a poet to be sought out. Melville knew Camoens well, albeit from the often wildly inaccurate translation by William Julius Mickle, who added lengthy passages of his own invention here and there, so much so that Dr. Johnson knew him as "the most unfaithful of all translators". Indeed, an entire sea battle was invented by the translator to please himself. Be all this as it may, Mickle's defense of Camoens against Voltaire's philistine attacks (also based on bad translation) evidently convinced Melville that he was a kindred spirit of Camoens (as indeed he was).
But to get back to Camoens himself. After describing the action of the waterspout in vivid and accurate detail in the Fifth Canto, Camoens invites his learned contemporaries to write of these marvelous secrets of nature and, in the following stanza, how wonderful it would have been had ancient philosophers gone to sea to study its phenomena and write about their observations. This to me is a clear challenge to the learned men of Camoens' day to go forth and observe the sea, which they did not do for exactly three hundred years after the Lusiads:

Se os antigos Filósofos, que andaram
Tantas terras, por ver segredos delas,
As maravilhas que eu passei, passaram,
A tão diversos ventos dando as velas,
Que grandes escrituras que deixaram!
Que influência de sinos e de estrelas!
Que estranhezas, que grandes qualidades!
E tudo sem mentir, puras verdades!

Lusiads, V. 23.

If old Philosophers, who travelled through
So many lands, her secrets out to:
Had viewed the miracles which I did view,
Had sailed with so many winds as I,
What writings had they left behind?
What new,
Both stars and signs, bequeathed to us!
What strong influxes! What hid qualities!
And all pure truths, without allay of lies!

(Richard Fanshawe, 1655.)

The Lusiads was published in 1572, and it was in 1872 that the Challenger set sail with a load of philosophers to study the phenomena of the sea, in a voyage of circumnavigation. By that time, however, there was a much more direct relation between the study of the creatures of the sea and literature, demonstrated first by Coleridge's "Ancient Mariner" and later by the flowering of shore books. As John Higgington Lowe so abundantly demonstrated, Coleridge ransacked the travel and scientific literature of his day and from this omnivorous habit of reading, and of going back to the sources of the authors that he read, there came by the alchemy of

Admiring Tritons sound their twisted shells;
Charm'd o'er the car pursuing Cupid's sweep,
Their snow-white pinions twinkling in the deep;
And, as the lustre of her eye she turns,
Soft sighs the Gale; and amorous Ocean burn's.

(The 'Botanic Garden.)

Up to the time of Coleridge, knowledge of the sea came from mariners and travelers, whether they wrote as adventurers about their travels and experiences, or as poets committing themselves to verse. It was a contemporary of Coleridge, only seven years his junior, who was in the vanguard of the critical, observing naturalists who brought their knowledge of the sea to the reading table of both scientist and ordinary reader. This was O. Vaughan Thompson, of whom we know little, other than that he was a medical man like Erasmus Darwin, but unlike him a critical observer of nature in the sea. Between 1828 and 1834, while Deputy Inspector of Hospitals at Cork, Thompson published, at his own expense, a series of five memoirs concerning "nondescript, or imperfectly known animals". All of these five memoirs are basic contributions to marine biology, on such matters as the life cycles of crabs and barnacles, of the nature of crinoids and bryozoa. Each one would be considered an adequate basis for a doctoral thesis in our time. In that memoir in which he established the crustacean nature of barnacles (some thought them to be related vaguely to snails or clams in those...
days), we find a remarkable statement of the naturalist's approach:

"The facts about to be laid open in regard to the Cirripedes are of so extraordinary and novel a nature, that they would hardly gain credence did they not proceed from some respectable source, or were they not placed within the power of every Naturalist to satisfy himself of their correctness without any remarkable degree of trouble. They were partly, like many other interesting discoveries, the result of chance rather than of design and industry, and were at the same time accompanied by so many interesting circumstances as to render memorable the day on which they first presented themselves to the notice of the author. On that day, April 28, 1823, devoted to the investigation of some marine productions, he was returning home without any addition to the stock of knowledge, when casually throwing out a small muslin towing net on crossing the Ferry at Passage, such a capture of minute animals was made as furnished a treat which few can ever expect to meet, and could hardly be excelled for the variety, rarity, and interesting nature of the animals taken."

The spirit of friendly, leisurely writing about life in the country and the every-day doings of birds, fishes, insects and the passing vagaries of the weather was introduced to English literature by Gilbert White's "Natural History of Selborne", in 1789, and this tradition of nature writing flourished in England throughout most of the 19th Century. As E. D. H. Johnson reminds us in the introduction to his anthology, "The Poetry of Earth" (1974), this kind of writing arose from the settled manner of life of the times and the unsophisticated delight in the commonplace things of nature. The best known exponent of this genre for the seashore was Philip Henry Gosse, whose "Naturalist's Rambles on the Devonshire Coast" (1853) set a standard for careful, original observation presented in a fresh and direct way. Immensely popular in his own days, and perhaps responsible (so both he and his son Edmund thought) for some of the destruction of that fauna of the shore they so loved, Gosse deserves to be revived in our own times. He set a standard for illustration by the author himself that has not often been equalled; photography is such an easy and essentially lazy way of illustration that too often we forget what we are really looking at. He exemplifies the ideal popularizer: an original researcher in his own right, recognized by his peers (he became F. R. S.), careful to state the facts as he saw and understood them, and he has stated his calling well:

"If it should be objected that to treat of the facts which science reveals to us, in any other manner than that technical measured style, which aims not at conveying any pleasurable emotions beyond the mere acquisition of knowledge, and is therefore satisfied with being coldly correct - is to degrade science below its proper dignity, I would modestly reply that I think otherwise. That the increase of knowledge is in itself a pleasure to a healthy mind is surely true; but is there not in our hearts a chord that thrills in response to the beautiful, the joyous, the perfect, in Nature? I aim to convey to my reader, to reflect, as it were, the complacency which is produced in my own mind by the contemplation of the excellence impressed on everything which God has created."

Gosse, despite or perhaps because of his devoutness, appealed to the spirit of the years just before "The Origin of Species", but his extremely conservative religious faith became the direct cause of one of the great biographies in the English language: "Father and Son", by Edmund Gosse. It is a sad and moving story of two divergent temperaments, but of course it is only a coincidence that this book is related in any way to the study of the sea. Interestingly enough, there seems to be only one other book in English about a marine biologist, and that is of course "Cannery Row" by John Steinbeck, and that is a very different story indeed.

Gosse was essentially an amateur as he held no post in biology and supported himself by his writings, although his professional competence was acknowledged by his contemporaries. A different kind of amateur was the literary critic and philosopher, George Henry Lewes, best remembered as the consort of George Eliot. He also wrote a sea-side book,
strongly physiological in tone, but stud-
ded with purple passages rich in all the
adjectives traditionally applied to the
sea. The most memorable passage in this
book, "Seaside Studies at Ilfracombe,
Tenby, etc." (1858) concerns the fasci-
nation of the sea:

"The fact is, the sea is a passion.
Its fascination, like all true fasci-
nation, makes us reckless of conse-
quences. The sea is like a woman:
she lures us, and we run madly after
her; she ill-uses us, and we adore
her; beautiful, capricious, tender,
and terrible! There is no satiety
in this love; there never is satiety
in true affection. The sea is the
first thing which meets my eyes in
the morning, placidly sunning her-
self under my window; her many voices
beckoning me, her gently-heaving
breast alluring me, her face beam-
ing with unutterable delight.
All through the day I wanton with her;
and the last thing at night,
I see
the long shimmering track of light
from the distant beacon thrown
across her tranquil surface - dark
now, and solemn, made more desolate
by the dark and silent hulls of
anchored vessels, but beautiful
even in her sombre and forlorn con-
dition. I hear her mighty sighs
answering the wailing night-winds.
She lures me to he
I cannot go
to bed."

One cannot but wonder what George
Eliot thought of this passage.

The influential "professional"
figure of the early 19th Century, the
government bureau man and later uni-
versity professor, was Edward Forbes,
the Manxman. He obviously had a charis-
ma that swayed audiences at scientific
meetings and in no small measure he in-
fluenced the eventual authorization of
the Challenger Expedition twenty years
after his death. But he also wrote in
a lively and refreshing style that was
welcomed by amateur and professional
alike. We find, in his posthumously
published "The Natural History of the
European Seas" a sentiment many con-
temporary writers of scientific works
have either forgotten or never known:

"In this age of volumes, a man had
needs offer a good excuse before add-
in a new book, even though it be a
small one, to the heap already accumu-
lated. He should either have some-
thing fresh to say, or be able to
tell that which is old in a new and
pleasanter way." (1859)

Alas, no one would now think of at-
ttempting to write research monographs
pleasantly; the pleasing anecdotal style of
the early Victorian sea-side writers
is entombed in their dusty, shelf-worn,
volumes left stranded in libraries and
second-hand book stores. This style, as
far as writing about the sea is con-
cerned, began to wane after the heavy
barrage of facts in "The Origin of the
Species", and, apparently, it became
more appropriate to be severely factual
and closely logical. As a result, such
a work as C. Wyville Thomson's "The
Depths of the Sea" (1873) is more of
historical than literary interest, in
spite of its significance as an account
of the events before the Challenger
Expedition.

Nor did the great experience of the
Challenger Expedition itself produce a
memorable journal. That of the natural-
ist H. N. Moseley is so detailed it is
dull, and in any event concerns mostly
the observations and experiences while
on shore leave, for more than 500 close-
ly printed pages. From the 1870's on.
and in fact until after the First World
War, the literature of the sea-side was
in its doldrums or lost among the horse
latitudes of hack writers and recyclers
of older books. Strangely enough, it
was in these times that a Polish sea
captain began writing in English, with
"Altmayer's Folly" in 1895, a great series
of stories about man and the sea.

We do not find again any first rate
writing by scientists about their ex-
perience with the life and ways of the
sea until William Beebe, a student of
birds and jungles, turned to the sea in
the 1920's. People were again eager to
read about the sea, and his first book
about the sea, "Salapagos, World's End"
appeared in 1924, followed by "Arcturus
Adventure" (1926) and "Beneath Tropic
Seas" (1928). This book concerned div-
ing experiences in waters around Haiti,
and was the forerunner of a vast host
of books by and about divers made pos-
sible by the apparatus invented during
World War II by Captain Cousteau and
Emile Gagnan. There were several other
books; by far the most notable is "Half a Mile Down", for it is a story of danger and adventure by the man who experienced it (how dangerous, Beebe may have never realized, even after looking at the photograph of the winch with only 15 or so turns of cable left on the drum). Many readers were fascinated by this account, including Thomas Mann, who copied parts of it almost verbatim, except for an odd mixture of metric dimensions and English weights, as part of a dream fantasy in Chapter 27 of Dr. Faustus. Interestingly enough, Thomas Mann's daughter, Elisabeth Mann Borgese, is a writer of books about the sea, most recently of a very handsome coffee table book, "The Drama of the Oceans".

William Beebe was the Captain Cousteau of our generation in his power to capture the imagination of everyone by his activities. His books turned many of us toward the sea, although in my case there was also that marvelous old hack work in my grandfather's library, J. W. Buel's "Sea and Land", whose solid calf binding suggested that it had escaped from his law office across the bay in San Francisco. Perhaps there have been more copies of Rachel Carson's "The Sea Around Us" published than all of Dr. Beebe's books; certainly, she also has been a great influence, although she was not a practicing scientist and her appeal has been through her writing, not as an example of an active, knowledgeable scientist as Dr. Beebe seemed to us when we were young, or P. H. Gosse in his day, and C. M. Yonge in England, in these days.

Many who have a taste for philosophy with their scientific seafaring have cherished their copies of John Steinbeck and Ed Ricketts' "Sea of Cortez" (1941), or the appendectomized "Log of the Sea of Cortez." Originally criticized by an unsympathetic reviewer as a sort of "chopping" of science, philosophy and travel, it has outlived such disdain and in its shorter version is to be found on the shelf of almost every marine biologist in the land. Aristotle would probably have enjoyed it.

As for Captain Cousteau, who has convinced so many admirers that the study of the sea is diving into it and touching its creatures with your own hands, there is something about his later days that brings to mind Captain Nemo of the Nautilus. Both captains sail ships that belong to no nation; Captain Nemo sailed about in his submarine, supporting himself with plunder from the sea and wreaking mysterious vengeance upon some nameless nation, but Captain Cousteau lives off his motion pictures and the proceeds of his own society. Both of them seem to have about the same level of scientific sophistication. Captain Nemo's came from French seashore books of the 1850's - 1860's (and the French had their purpose prose artist, Jules Michelet) as read by Jules Verne for "20,000 Leagues Under the Sea" (1870) and now and then it sounds as if Captain Cousteau has not gone much beyond his own boyhood reading of the book or for that matter, beyond those harrowing scenes with the octopus in the cave in Victor Hugo's Toilets of the Sea.

Although writing about the life and science of the sea has not always reached the heights of literature, much of it has, and its influence on the literary imagination is yet to be adequately traced. There has never been a dearth of such books now for more than 125 years; all of us can experience the sea from them and many of us can remember some favorite that influenced us to go down to the sea and study its ways. It may have been Dr. Beebe's high adventure in the darkness of the deeps or Captain Cousteau's plunges with a device available to every man healthy (if not always careful) enough to use it, or the modest, pleasant words of some guide to the creatures between the tides. All of them, in their various ways, are invitations to look into the sea and to emulate that ancient philosopher who, as the first marine biologist, saw so much in the clear waters around the Island of Lesbos more than 2300 years ago.
The Sea, The Marine Mystique, and the Challenge to the Scientific Paradigm

BY JOHN D. ISAACS

My discussion is going to be of a somewhat less laudatory nature than apparently is common to discussions of science and literature of the sea. I am going to talk about how the Marine Mystique, aided and abetted by literature, has fouled up Marine Science. I do not intend to present the sea in a calm mood with a gently and smoothly undulating discussion, disturbed only by gales so distant as to fall in another hemisphere and another time. Rather, I expect it to storm and surge a bit, and if some of the spume stings, it may only be because in 20 minutes or so I cannot smooth all of the sharp points--alternatively, the epidermis may be tender.

I will have only time for a few scattered references to my favorite literary roots of marine thinking that I admire, as the first squall builds over features that are not admirable.

For my scattering:

Is it not curious that Aristotle could be convinced of the existence of the Southern Hemisphere and a second cold pole, when all he conceivably might have observed was the curve of the earth's shadow slicing the eclipsing moon? Thus, although he unerringly understood what he had never observed, he often fumbled meaninglessly in his efforts to explain what he could observe--the earth's hydrologic cycle of evaporation and rainfall and "why the sea is salt", for example.

Fourteenth century Dante knew also of the "other pole", with its four stars (the Southern Cross), "unseen by mortals since the first mankind". Was it Marco Polo who brought this knowledge, or were there more ancient observers, the Egyp-
tian circumnavigators of Africa, perhaps, who passed down this knowledge for thirty unrecorded centuries?

The Bible speaks frequently of the sea, for example, "that which is far off and very deep," and the four mysteries "that surpasseth understanding." But why in the creation of the world were the waters allowed to exist already before the first creative step—"before the creation of light itself," as Conrad says? Lao Tsu and the Polynesian tales of creation, and the Kalevela, also, for that matter, conceive of the waters as the "form yet unformed"—the primal stuff—not the substance but rather the unparticipating matrix within which the creation unfolded—"as we are wont to misconceive of extra-galactical space, or, better perhaps, of the infinities of finite spaces that our universe newly and forever embraces in its implacable expansion.

I admire also great epic poems as the Odyssey or the Kalevela, with their sharp conceptions and misconceptions of the sea—the great Finnish epic in particular—the building of the boat from a spindle (Sibelius' theme) with a mountain crag as a chisel—iron, "personified, turning against its master, the Promethean man-god, Vainamoinen, twisting and seeking the sources, springs and courses of its master's blood, the sea incarnadine—a reminder of our own unrestrainable industry, perhaps.

I am fascinated also by the revelation in the notebooks of Leonardo da Vinci—artist, researching for his masterpiece "The Dog" and "ily transmitting into da Vinci's—"ri issued of any universal inundation a vinci, who casually refer to the Straits of Gibraltar. ut oken through" as though it were the common understanding of the times.

Indeed, much of what we now conceive of as modern discoveries were relatively common concepts of the past—continental drift, for example. The past had its misconceptions, too, and in abundance, and so do we in our times less-enlightened times—which brings me to my principal raison d'être at this conference.

An implicit theme of science and literature (and, for that matter, of economics, law, religion, philosophy, political science, sociology and other engineering) is that there exists an underlying order and certainty—a divinity that shapes our ends—can we but discern it. The ultimate aim of modern science palpably is still that of the alchemist—penetration to the ultimate immutable quintessential kernel of truth and of knowledge and of order and of certainty—the "touchstone" by which the universe can be shown unfolding as a cosmic lotus bud. In this picture, ultimately it should be possible to inseminate a vast computer with the fundamental equations of \( F = ma \), \( E = mc^2 \), \( S = k \log W \), etc., and generate a universe or a tree, or a fish or a prediction of the planet evolving under the hand of man. (I am not denigrating this ambition, it is an admirable and transcendent concept, and involves important discoveries and revelations, but unquestionably it fundamentally is an unattainable goal.

Even Bronowski, in his Ascent of Man, deeply thrilled with the evolving concepts and discoveries of lay and trained philosophers, technicians and scientists throughout history, was eagerly willing to abandon his admiration of this struggle and hard-won understanding to kneel in obeisance before the monument of Boltzmann, surmounted by the modern icon of worship—\( S = k \log W \)—the equation expressing entropy, and the Boltzmann Constant.

This reduction of complexity to an equation and a constant is high-caste science. It is vital, but those lesser workers who merely attempt to ascertain the working rules of the creation, census and classify what the creation entails, fit these rules and this census together, or determine what the creation can be used for, are held to be lower-caste, somewhat in that order, without regard to, indeed in opposition to, their undoubtedly ultimate role in the survival of the human species.

It is for reasons of admiration of high-caste science that scientists and public alike seek out and cling to inspiring pictures of order and certainty in our strivings to reach an accommodation with this complex and variable planet, when in actual fact, simple order and certainty have continuously been replaced by expanding recognition...
of disorder and uncertainty since the celestial clockwork of Newtonian mechanics first held sway.

Science, like the classic tragedy, the novel, the mystery story, or even the modern Western, follows the dissolution of a thread of destiny, an underlying order, cause and result, action and reaction, and final inevitable resolution, bequeathed to him who is wise enough to record the facts and devote sufficient of "the little grey cells" of highest quality to their solution.

Totally and broadly antithetical is Jim’s question in Tom Sawyer Abroad, after an exchange between Tom and Huck of what made all of the stars. Jim asks; "Why does there have to be a reason? What if they just happened", which appears now to strike closely to the "Big Bang" theory of Cosmogony—some theory of matter—matter as the statistical fluctuation of nothing.

But scientists and the remainder of humanity will not relinquish their grip on the idea of an underlying simplicity.

There is an old anecdote, undoubtedly apocryphal, of Leland Stanford, whose love of horses initiated the motion picture industry. Stanford, wanting insight into what made a great race horse, was persuaded to support a famous physicist to engage in a study of the matter. (Physicists think they can solve all problems!) After a year or so the physicist returned to Stanford seeking more money, but reporting great progress, for he had "solved the problem—in the case of a sphere."

A difficulty with the search for underlying order and simplicity is its un-supportable appeal to scientist and nonscientist alike. An isolated laboratory experiment—that appears to be straightforward, a complex problem that appears to be understood and resolved, and most importantly, a theory of hypothesis that appears to display a beautiful transcendentally simple celestial order, is embraced and greeted as a Messiah and engraved in the holy writ of text and reference books, on the indurate marble of the public mind, and on the golden and un tarnished tablets of legislation.

"Our scientific paradigm is dedicated to the penetration of natural law. Nobel prizes are given for penetration—not comprehension."

To paraphrase one of the great philosophers—the Scotsman, Machiavelli, I believe—"A hypothesis is always more believable than the truth, for it is tailored to resemble truth, whereas the truth is just its own clumsy self," and, "Never discover the truth when an hypothesis will do."

For these reasons, we have beautiful and ordered textbook pictures of cellular division that occurs in almost no other creature but the sea urchin; lovely diagrams and descriptions of the formation of the tides from a pair of moving gravitational bulges flanking the earth—that have almost nothing to do with the formation of tides, and, indeed, from which no one has ever been able to predict the tidal periods of amplitudes; thrilling diagrams of the ordered food chains of the sea in which each of God's creatures is born destined to fit into its sacred niche in the glorious plan, whereas most marine creatures, if they are born at all, will eat almost anything available, and be eaten by almost anything to which they are available, and have little or no assurance what their food, competitors, or predators will be; theories of bioaccumulation, elaborated from the food web picture, of trace materials passing through the food webs and finally poised like a gathering lightening bolt to strike at the top predator and to bring this vast, heretofore beautifully arranged house of cards tottering into azotic chaos; etc.; etc.

In fact, I have recently scanned through a half-dozen Sea Grant leaflets, available through the Smithsonian Institution, that mumble exactly this sort of platitudinous unreality and which are sent to school children in response to what, God knows, might well be fresh, unsullied, insightful, novel and inquisitive questions—children do this, you know!

Obviously I could carry on in this vein, and ask questions like "How did Heyerdahl, having sighted a beer can in the North Atlantic, deduce that the planet was dying and the oceans were dead; whereas Columbus, discovering the flotsam of his day—husks, fruit peels and spears—hundreds of miles at sea, deduced only that he was approaching land?"

But there are much deeper concerns
than this. The mysteries and problems will neither go away nor be solved by the simple and uncomplicated act of discovery. The magic sword, the prince's kiss, the discovery of the paternity of the central protagonist, the butler's nose-print at the keyhole, the chains of nothingness to bind the dragon, the touchstone, the ordered pyramid of life, the ultimate equation of the universe, none of these are, in ultimate truth, real.

Desalination of seawater does not solve the world's water problem; a carload of hybrid corn seed does not raise a nation to sufficiency; atomic power is not the God-like resolution of all energy ills; nor is an antibiotic meaningful longer than it takes a bacterium to take the code of the counteracting plasmid from its library. These are aids to the struggle, but partial and temporary only.

Yet our myths, our history, our fiction, our textbooks, our laws, our teachings, and our ambitions are directed towards discovering the "touchstone" of the universe for the ministering to our ills.

Particularly in our teaching we recognize and train and test only those aspects of intellectual quality that we deem pertinent to this mystique--memory and formal reason. Unrecognized, unvalued, untaught and indeed suppressed, since they are so challenging to teachers, are those other great components of the intellect, precisely those components that are essential to dealing with the complex systems of this planet, and since these qualities are suppressed in our educational system, untutored people often possess them in a more highly developed form than do the educated.

My point is, of course, that the intellectual qualities that we neither teach nor know how to teach (nor how to test), and hence tend to suppress, are precisely the ones essential to dealing with the complex systems of this planet, and since these qualities are suppressed in our educational system, untutored people often possess them in a more highly developed form than do the educated.

It is here that I come to the last thesis of my remarks--the challenge of the oceans to science as we now conceive of and practice it.

Our scientific paradigm is dedicated to the penetration of natural law. Nobel prizes are awarded for penetration--not comprehension. Yet it is the development of increasing breadth and comprehension as well as penetration, that we must espouse with open-eyed, broad, undogmatic intellectual fervor, confidence and devotion, if we are to understand some part of a nature of infinite complexity, and man's complex interactions with it.

Penetrating science, that is, the special disciplinary fields of science, has greatly benefited man in the last several hundred years. Yet this has been mainly taking things apart. It is increasingly clear that our crucial task is now to learn how the pieces fit together, for we begin to comprehend that it is interaction on this planet, rather than its components, that form the limiting problem of mankind. We also begin to comprehend that the total is vastly greater than the simple sum of the parts, and that present disciplinary science is neither designed nor especially competent to deal with these vital problems.

Indeed, it is in the sea where interactions are so strong, subtle and dominating. It is in this salty broth where the winds, the currents, the whirling earth, the chemicals, the sediments, the solid boundaries and the living entities that inhabit its realms, act and interact with total disregard for the artificial barriers by which man has compartmented his knowledge. I believe it is the sea that first strongly challenges science as we now conceive it, and most strongly demands its reappraisal.

I realize well that the marine sciences are touted as the only example of a truly interdisciplinary field, and it
is true that almost all of the basic disciplines are involved; that a marine biologist, for example, must know much of physical oceanography and indeed may contribute fundamental understanding to the dynamics of the ocean through his inquiries. This all is good. But even within this enlightened field of marine science, the disciplines tend to recrystallize in special forms. It is often conceived that its disciplines cover the entirety of pertinent knowledge—"the planks of the disciplines" as it is said—and that only a few odd matters fall through the cracks. In my mind, this is a totally wrong perspective. The cracks are far wider than the planks, which are only thin timbers, scantlings stretching out into an unknown and largely unrecognized space—all that falls between the disciplines.

Like the three blind men in the fable, one of whom described the elephant as a wall, one as a column, and one as a rope, having touched his side, leg and tail, respectively; the disciplinary scientist describes detailed features of nature that are comprehensible through his particular highly developed but focused tools. Although like the blind men, what he discovers may well be true, and perhaps important, it is only a small part of the truth. The interconnecting structures and the whole may be invisible, and remain so, no matter how many disciplines are brought to bear on its resolution.

Many a disciplinary scientist rarely inquires whether the larger machine, of which he is a part, is meaningful or meaningless. He is quite content to know that his local portion rotates or oscillates with comparative smoothness, that he meshes reasonably well with the adjacent parts, and that the small gears or wheels or teeth that he begets during his span care similarly avoid being ground up in the system. Fearsome and frightening are those interludes when his machine is examined and tested for its relevancy to some practical problem of man and the planet, and he reassures himself on his prescience in having selected a machine or a region of a machine that is remote in time or location from the practical test.

It is no wonder then that the public clings to old cliches or wholeheartedly buys and believes demagogic pseudoscientific entrepreneurs who paint a celestial picture of a simple, harmonious and unsullied nature, now irreparably damaged by man. These preach and hysterically proclaim with hardly a scintilla of evidence, that the planet is dying or the ocean is dead—and particularly and irretrievably dying or dead unless the public contributes a stated small sum of money to their research foundations or other cause. People relish ghost stories and also beautifully painted pictures of a precise and certain and immutable order of the universe, but misguidedness of the public and of public policy by such demagogues is an anathema. On the other hand, there are entrepreneurs who want to believe that their obviously destructive activities bring no harm and there are scientists who will give them supporting evidence. The eventual damage to human and natural interests may be astronomical.

The serious, competent, honest scientist also unintentionally misguides in this same way, for he, like the public and the law, is seeking order and certainty in a system where order and certainty are rarely more than transient and fleeting.

The ultimate difficulty is that these misconceptions, fears and hysterias become engraved in textbooks, on the public mind, and on those persistent tablets called law. They then constrain rational development or force unwarranted and unsound developments or place scientific research in a narrow, policy-oriented direction, which may be and often is fundamentally unsound. I have been following the developing U.S. environmental and resource policy, and most of it increasingly suffers from all of the worst features of misconception, at least as it pertains to the ocean and other areas of which I am cognizant. The difficulty is not only one of science, which can and does change, but rather the fund of unchanging popular misunderstanding and ill-considered and persistent legislation that past science, the scientific paradigm, and unresolved events leave their wake.

In the U.S. we now have an inheritance of legislative malactions based on popular misconceptions of past scientific dogma. In the aquatic resource field,
these run the gamut from severe restrictions to fisheries based on obsolete and misunderstood single-species models of populations, through the prohibition of new offshore structures resulting from public exaggeration of the effects of a minor oil spill and wholly unnecessary restrictions on the discharge of domestic wastewater into coastal waters, based on unreal highly idealized food chain and bioaccumulation models, to single-minded research programs set up by law to apply perpetually frozen approaches to poorly analyzed problems. At best these latter are nostrums applied to the superficial lesions of undiagnosed fundamental disorders, and at worst an effort to clean up behind--rather than to guide--a rampant society, forcing the scientist into the position of the man with the bucket and shovel behind society, so to speak, rather than the scout searching for alternative vistas and blazing the trail ahead.

At this final point in my discussion, I would rather that this conference were not Sea Grant sponsored and that the presentations were not to be published under Sea Grant auspices, because I have some somewhat flattering things to say about that program. (In my defense, however, I presented some of the same points before the Pacific Science Congress last August, and I did enunciate a derogatory remark about Sea Grant leaflets, earlier in my discussion here.)

The Sea Grant program as it has developed seems to me to possess aspects that are fundamental departures from the anaerobic mire into which we have entrapped ourselves in our attempts to deal with the problems facing our accommodation with this planet. It is a sharp and refreshing alternative from the common scientific pontification, and from the typical large research program of perpetually fixed approaches to perpetually frozen objectives, which may be and often are based on erroneous precepts. This is not to say that the Sea Grant program is pristine and flawless. Indeed, it possesses a sufficiency of problems, but these are the problems of attempting to dig out of the morass of legislative, public and scientific misunderstanding and malactions, rather than those of efforts that immerse us further.

Sea Grant is a real and vital struggle toward heuristicism in our dealings with nature. Capitalizing and enlarging on the fundamental interdisciplinary and practical nature of marine science, Sea Grant brings together people of many intellectual proclivities--students, natural and social scientists, humanists, professionals, laymen and legislators--as this conference exemplifies.

It possesses opportunities that no large coherent program can conceivably possess, for it can examine novel and unconventional approaches. It can capitalize on its inherent flexibility and a freshness of novel ideas and new insights generated by new mixes of the broad range of human proclivities and intellectualities. It can return to discovering and elucidating the working rules of nature and mankind, rather than blindly following the scientific paradigm and the marine mystique.
Psyche and Sea: The Waste Land Era in America

When T. S. Eliot published his now-famous poem *The Waste Land* in 1922, something of a major cultural significance came into being. Both the title and the contents of that poem made manifest for a generation of writers a host of historico-cultural forces that had been in evidence since the demoralizing debacle of World War I and its political aftermath. Eliot had created a metaphor of such magnitude and dynamism that it effectually synthesized the topographical and psychic forces of which the war was only a symptom. Poets and novelists before Eliot had characterized many of the same ailments, but few approached the unique fusion of tenor and vehicle necessary to quicken with words the tensions of an entire age.

Even Ezra Pound, Eliot's mentor and a major poet in his own right at the time Eliot wrote *The Waste Land*, had not found a suitable combination of metaphor and artistic treatment that could provide a suggestiveness of sufficient potency to generate that "image" which in "Hugh Selwyn Mauberly" he said his "age demanded." In the same poem, what Pound fashioned in lieu of such an image was highly descriptive but not metaphorically resonant: "For an old bitch gone in the teeth,/ For a botched civilization." "An 'image,'" Pound had written in 1917, "is that which presents an intellectual and emotional complex in an instant of time."1

In its impact upon a generation of writers, Eliot's *Waste Land* metaphor was nothing less than a cultural phenomenon. Writers of the Eighties and Nineties attempted to embody fictionally the deficiencies of their epoch, with a variety of metaphors, but
allegiance to pronounced political and social views legislated against the kind of image Pound called for in the "new" age. In America, for example, Stephen Crane, Frank Norris and Jack London committed themselves to a naturalistic approach, and the result was the limited metaphorical range of such broad symbolizations as the red badge, the octopus and the northland. These served well to depict the plight of individuals struggling in animalistic darkness in Darwinian universe and to characterize large, exploiting and dangerous human forces that conspired against the economic welfare of the individual. These symbolizations were limited, however, by the very narrowness of the target towards which they were aimed.

What Eliot's metaphor accomplished was something that the lingering banalities of middle class Victorianism and the thinly disguised moralizing of the culture and particular societies obeyed static laws of value. Eliot's poem struck straight at the heart of that assumption. Through a complex interweaving of myth, legend, symbol, ritual, allusion and foreign phrase, he placed before his audience in a new poetic language a portraiture of cultural transformations in process. Eliot recognized the role of historical forces, and his poem indicted the brutal travesties that passed for human existence. The young writers who fell under the spell of his Waste Land tutelage were quick to respond. In his 1931 study of the modernist movement, Edmund Wilson characterizes that response in a semi-humorous way:

"In London as in New York they for a time took to inhabiting exclusively barren beaches, cactus-grown deserts, and dusty attics overrun with rats. The dry breath of the Waste Land now blighted the most amiable country landscapes; and the sound of jazz, which had formerly seemed jolly, now inspired only horror and despair."

A revolutionary change in style and sensibility that W. H. Auden in his discussion of Romanticism in The Enchanted Flood sees as a cultural rarity had definitely, taken place by 1922. Gathering together seemingly random shards from a variety of generations and cultures with the imaginative power of the metaphor but also by the intellectual intimidation of Eliot's mentor, the formidable Ezra Pound. A mythic monster of sizable proportions had been loosened, and modern, urban, industrial, technological, with all of their mechanistic implications, were the cultural elements upon which it fed, and atheism and materialism were its dam and its sire.

Whatever the larger structuration of historical forces that Eliot assumed were operative in his synthesis, his eclectic presentation makes it clear that he did not conceive of it as static. The progress of his own poetry from early disillusionment to orthodox religiosity makes this clear. If we turn to W. H. Auden's seminal comments on Romantic consciousness and his representations of desert and sea images, we find a touchstone for the psychic predicament of Eliot and the modernists who wrote under the influence of the outsized metaphor of cultural aridity that he had created.

Auden makes it clear that the Romantic sensibility, the symbolic representations of desert and sea shared certain features which allowed the Romantics to transcend the inherent paradoxes of the implied contraries. Both represent psychic dimensions that lie outside the community and outside of historical change, thus freeing the individual from communal responsibilities. By the very nature of these conditions, the individual finds himself alienated and lonely. Auden is describing the Romantic voyager, and if there is the desert that represents "actualized trivility" and "lifeless decadence" there is also the sea, "the symbol of primitive potential power" and "living barbarism." If the Romantic voyager possesses a sufficiently heroic soul (and most of the great Romantic
voyagers do), he escapes the "trivial" desert Waste Land and immerses himself in the symbolic sea. Through immersion, reintegration takes place. The quester discovers the uniqueness of his own soul and, paradoxically, re-enters the community he has fled when he discovers that he participates spiritually in the community of all souls.

Auden, of course, knew his own age, and he summed up the implications of his observations for the Waste Land culture:

"We live in an age . . . in which the heroic image is not the nomad wanderer through the desert or over the ocean, but the less exciting figure of the builder, who renews the ruined walls of the city. Our temptations are not theirs. We are less likely to be tempted by solitude into Promethean pride; we are far more likely to become cowards in the face of the tyrant who would compel us to lie in the service of the False City.

It is not madness we need to flee but prostitution.

Nowadays it is all the rage to portray madness as some sort of positive and redeeming method of escaping from the prostitution that Auden described. I do not think that Auden would approve, but avant-garde commentators such as R. D. Laing have applied psychiatric observations on madness to larger social and cultural concerns. In works like The Divided Self (1959) and The Politics of Experience (1967), Laing views individual madness not only as a synecdoche of social aberrations but also sees them as interdependent. In one way or another and in varying degrees many contemporary writers have implied that somehow losing oneself is to find oneself -- and to believe that the Yossarian come to mind, not to mention a host of considerably more grotesque (and less artistic) examples of recent years. Of the contemporary writers taken seriously by critics, perhaps Doris Lessing in her later works best gives voice to something approximating Laing's views. Here one sees another decided shift in "sensibility" (if not in the "style") that has taken modern American literature upon its own regressive voyage into a pre-Waste Land limbo that lies somewhere between that self-destruction. To put it in the best light I can, the fable is transparent, the rhetoric is intrusive and the images and symbols are less evocative than one encounters in a cartoon. Such a parodic reprise of the highly suggestive desert and sea polarities instructs us that the dynamic literature of the Fitzgerald, Hemingway, Faulkner and Steinbeck generation was dynamic because its metaphors were rooted deep in the imagination of the entire culture.

The freeing of the literary imagination from the cultural ailments that conjured the Waste Land metaphor was no easy task for these writers. Once Eliot had severed the desert from the sea and removed the garden-island sanctuary as well, he set the task of his literary generation. Given the new sensibility activated by Eliot's metaphor, we know through hindsight that the task was the monumental one of reordering a disordered universe. The vision for the major novelists was a realistic one, colored strongly by the bleak Darwinian views of their immediate predecessors. Without the authority of a living mythic tradition upon which to rest their symbolizations, the modern writers found themselves dispossessed of the imaginative forces available to all of the great artists of the past. The American writers of the Twenties inherited scientific positivism and religious skepticism, and most of their early works carry the signature of this blighted inheritance.

One need only glance at the degeneration of the once potent desert and sea polarities as they appear and disappear in Lessing's Briefing for a Descent into Hell (1971) in order to understand Auden's warning over the compelling lure of the "False City.

Lessing's mad hero undertakes an unconscious journey not only over land and sea but in the air as well. Ending in a cosmic never-never land, he observes the "gods" briefing those who are to descend to earth and "save" mankind from decadent sentimentalisms of the post-Romantic period and the vigorous evocations forced upon Eliot's contemporaries.

With his tempered realism, Frost never accepted the conclusions that man was totally divorced from nature
and cultural praxis, such restorations are subject to the slow processes of evolution. Disintegration may have demanded fluidity, but as long as the age remained traumatized by its positivism and skepticism no such reconciliations were possible. By its very nature, the age demanded concrete embodiments of its condition in either/or terms. For the artist to accede meant literary suicide, of course, as a young Ernest Hemingway articulated in his parody of Pound's phrase from "Hugh Selwyn Mauberly":

"The age demanded that we dance/
And jammed us into iron pants./
And in the end the age was handed/
The sort of shit that it demanded."6

The curative that was needed to establish the kind of orientation that led finally to the great works of fiction of the period is embedded in Eliot's Waste Land itself. Based as the poem is upon an elaborate and complexly designed system of myths that function as antinmyths, when it proclaims the severance of the desert from the sea at the same time it reminds us forcefully and in no uncertain terms of the penalties imposed upon a culture that has dissociated itself from a meaningful substructure of myth. The plight of the narrator-fisher protagonist, left in the disintergrative Babel of the final lines, is a not-very-subtle portrait of modern man: "I sit upon the shore/Fishing, with the arid plain behind me."7 "Fear death by water," warns Madame Sísris, a commercial charlatan in the guise of a spiritualist; and Section IV of the poem is entitled "Death by Water." The brevity of the section suggests that Eliot carefully contrived to preserve the dominance of the images of aridity. As anti-myth, however, the section elucidates Eliot's metaphorical purposes in other ways.

Here, the representative of the corrupting commercialism of the modern world is characterized as "Phlebas the Phoenician," and Eliot charts his atavistic passage through "the stages of his age and youth/ Entering the whirlpool."8

If we accept the convention of mythology, the sea is typically the symbol of Cosmos, of pre-history, a reflector and reminder of the continuity of man's existence and of human experience. In the psychoanalytical version of Carl Jung it is the archetype of the unconscious, and antinomy of the womb, entrance into which foretells the possibility of renewal or rebirth. But Eliot frustrates the mythic and archetypal affirmations of the water symbolism in his poem in order to emphasize the spiritual and psychic plight of his age. For example, he alludes to the "rock" where there "is no water but only rock" -- suggestive of the impossibility of Christ's miracle as well as the sterility of the modern Church. Associative imagery such as the "empty chapel" near the "tumbled graves" suggests that the day of the last Judgement has arrived without the appearance of the redeeming savior. In this context, the regressive thrust of the "Death by Water" section is elucidated by the Phoenician's fate. His descent into the "whirlpool" of time to a time before-time effectively stifles the redemptive associations of the sea symbolism. The ironic reversal of the traditional pattern of youth-to-age-to-death and redemption desacralizes the image of redeeming waters and substitutes primal chaos.

The instrument with which Eliot had effected his severance of sea and desert, and of sea from its traditional associations with healing and redemption, was fashioned by his age out of the positivistic dicta of science, out of new social science and political theory; in short, out of loyalties given to that manifestation of the desert that Auden termed the "False City." One major implication of this shift appeared in the demand that society made upon the individual to look at himself as part of an aggregate. The movement to "the brotherhood of man" resulted directly in the divorce from nature. Where the Romantic viewed himself in nature, under the aegis of progressive thought modern man viewed himself as apart from nature. Once the process was complete, the possibility of a reunified sensibility in the Romantic way was forever gone.

Such broad outlines of the cultural forces that took shape in the Waste Land era cannot account for the many artists and commentators who struggled against the tendencies of their epoch. Among the poets, for example, Edwin Arlington Robinson brooded darkly over the mysteries of mortality; Carl Sandburg's Whitmanian unorthodoxies seemed to hail the democratic mass man; E. E. Cummings emphasized human feelings in an atmosphere
of mechanistic social forces; and Hart Crane plunged romantically into an imaginative sea in a number of poems, until finally he plunged literally into the sea in 1932 -- apparently seeking still the solace which his age denied him.

Some of the more profound responses to modern man's divorce from nature came from Robert Frost. Grounded in a poetic vision that antedates "The Waste Land," Frost may well have been the last American poet capable of representing the tensions of the desert-sea opposition. With his tempered realism, Frost never accepted the conclusion that man was totally divorced from nature, nor did he accept the Romantic alternative. In "Desert Places" (1934), for example, Frost employs the Waste Land image but heightens its implications when he extends it to the self. The new consciousness to which scholars like David Daiches in "The Novel and the Modern World" and Leon Edel in "The Modern Psychological Novel" point is the prose of major writers like Lawrence, Woolf, Joyce and Hemingway was equally a part of Frost's ethos. In this poem, Frost locates the post-romantic desert squarely in the human psyche: "They cannot scare me with their empty spaces...I have it in me so much nearer home/To scare myself with my own desert places."9

If we accept Mircea Eliade's view in "The Sacred and the Profane" that man is ever "the descendent of homo religious and he cannot wipe out his own history," what Frost brings to modern poetry here and elsewhere is essentially a rudimentary religious response. The self may feel itself facing a vast emptiness in nature and cosmos unarmed ("absent-spirited" in "Desert Places"), but it does comprehend a power larger than itself. This may be agnosticism, but it is not atheism. For Frost, the knowing self remains the center, whether it looks out in terror or wonderment.

In the prose fiction of the Waste Land era, the most immediate document of significance to portray the hopelessness of the attempt to maintain the integrity of the self was F. Scott Fitzgerald's "The Great Gatsby." Published only three years after Eliot's poem, it bears all of the marks of cultural aridity pointed out by Eliot: The "valley of ashes" superintended by the "eyes of T. J. Eckleburg" has been so often identified with Eliot's metaphor that further comment would be indecent. Let it stand, then, that Fitzgerald's representation brought the metaphor to America directly, and it presented an indictment of America culture in no uncertain terms.

Fitzgerald's Gatsby brought the metaphor to America directly, and it presented an indictment of American culture in no uncertain terms.
Fitzgerald's larger concern in the novel goes beyond the obvious social criticism, for the death of Gatsby marks the death of the Romantic sensibility. For Fitzgerald that meant the death of idealism and the death of a self that was capable of a vision of value beyond time and beyond personal history. Gatsby's belief that through an act of will he could change the past is one reflection of that theme. Another enters through the ironic parallel Fitzgerald established between the death of Gatsby and the death of the fabled King Arthur of the Round Table. Catsby represents for Fitzgerald what Arthur represents for Malory in his Le Morte D'Arthur: the hope of the past as it contrasts and clashes with the paths of the present. In Malory's account, when Arthur is mortally wounded, he is placed upon a barge and is attended by three queens: Morgan Le Fay, the Queen of Northgalis and the Queen of the Waste Lands. He does not die "on stage," rather he sails for the paradisical island of Avalon. Gatsby, his twentieth century avatar, whose "gorgeous pink suit" has many affinities with Arthurian armor, has no island-garden to which he can voyage in order to escape the annihilation of time; he takes a less ceremonious voyage in a vessel that mocks all hope of living-on in the memory of those he leaves behind: "There was a faint, barely perceptible movement of the water as the fresh flow from one end urged its way toward the drain at the other. With little ripples that were hardly the shadows of waves, the laden mattress moved irregularly down the pool. A small gust of wind that scarcely corrugated the surface was enough to disturb its accidental course with its accidental burden." All of these details are in a minor key, and all point to a contingent universe and the insignificance of man. The transcendental waters of Arthurian fab-

le have been transformed into a concrete pool, and Gatsby's attendant Queen of the Waste Lands, Daisy, has betrayed him.

Ernest Hemingway published The Sun Also Rises a year after Fitzgerald's The Great Gatsby, and he too turned to Eliot's The Waste Land for his metaphorical materials. Specifically, he extracted the myth of the Fisher-King, but his employment of the myth differed from Eliot in a significant way. Fitzgerald, like Eliot, adapted the mythic realm of the Fisher-King to his own purpose, and the Waste Land became a symbolization of the modern environment. This environment is as much human nature as it is external nature. Fitzgerald saw it as an absolute barrier to human drives and motivations, and in Gatsby and other characters in his major works he depicts the folly of the attempt to scale Romantic heights and transcend that barrier. Thus the psychic worlds of his heroes are worlds in which ideals are turned into perversions: Amory Blaine in This Side of Paradise muddles off toward some vague social panacea; Anthony Patch in The Beautiful and Damned ends up wealthy, alone and mentally and emotionally wasted; and Dick Diver in Tender Is the Night, a psychiatrist in the role of healer-priest, brings about his own emotional destruction. Hemingway, like Frost, never accepted the view that nature means human nature, nor that external nature was merely a symbolization of unknowable forces. A number of his characters accept one or other of these views, but as his mature writings reveal, he strove to achieve that delicate balance between a sentimental view of nature and the darker views of his realistic outlook.

To be sure, The Sun Also Rises portrays the desiccation of a culture, but there is the symbolism of the waters which invokes the myth of the redeeming waters and provides a counter to the metaphors of aridity. This is not to say that the work ends in affirmation, but clearly Hemingway meant to indicate some possibility of the avoidance of the emasculating desert of contemporary existence. As he insisted on a number of occasions, the "sun also rises" extract from Ecclesiastes was intended to indicate that "man passeth away but nature or 'earth abideth forever." Such a veneration of nature never waned in Hemingway's world view, and it led him to the higher synthesis and reconciliation that sets off The Old Man and the Sea as the most significant literary expression to announce the passing of the Waste Land era.

In the thirty years between the publication of Eliot's poem and The Old Man and the Sea, every major work published by Hemingway probed the vital questions of human existence that led him to the conclusion that modern man could come to terms with his physical and spiritual environment without turning his back...
upon positivism and without rushing into the arms of sentimentalism. The first major indicator that Hemingway's view of nature would lead to a new kind of psychic reintegration oddly enough came in what is virtually a narrative intrusion in his 1935 book about big-game hunting, Green Hills of Africa: "This gulf stream you are living with, knowing, learning about, and loving, has moved, as it moves, since before man...and those that have always lived in it are permanent and of value, because that stream will flow, as it has flowed." More than a simple rehearsal of the views expressed in the quotation from Ecclesiastes cited in the epigraph of The Sun Also Rises, Hemingway postulates an affirmative view of man's existence and his endeavors. Man does not pass away simply, he is permanent with nature. What is more, his work, actions and experiences have a value in the larger scheme of the universe.

It was some seventeen years later before Hemingway wrote The Old Man and the Sea and advanced his premise from the plural of the "those" who lived in the Stream to the singular, individual self dramatized in the character of Santiago. As he indicated, the dignity and worth of the individual was the point of the characterization of the old fisherman. When he accomplished this artistic and philosophic feat, he had freed the self from the tyranny of the False City to which Eliot's metaphor had consigned it. In the interim, Hemingway had been sorely tempted to accept a compromise with despotic communalism. Works like To Have and Have Not and For Whom the Bell Tolls came close to articulating a total commitment to the "brotherhood values" of Auden's False City, but Hemingway's stronger commitment to individualism always tempers that sort of simplistic resolution.

In the creation of his supremely humanistic fisherman in The Old Man and the Sea, Hemingway presented a portrait of modern man which is the exact opposite of Eliot's fisher-narrator and all of the Waste Land protagonists modeled after Eliot's type. Even before his physical and spiritual agon with the hugh marlin, Santiago is invested with attributes that suggest his link with nature. As Hemingway implies in his description of the character, he is considerably more than a separate biological organism: "Everything about him was old except his eyes and they were the same color as the sea and were cheerful and undefeated." As the Gulf Stream analogy in Green Hills of Africa suggested, the sea symbolizes ongoing reality; in this work, it becomes the symbol of the generative power of the universal man forever undergoing change in an ontological flux. His eyes reflect that he is "undefeated" because both man and sea share the generative impulse and derive their powers from the same source.

When Hemingway describes Santiago further, we are told that his face is blotched with scars "as old as erosions in a fishless desert." Nature, too, has eroded through immemorial time, but such geological changes do not destroy it any more than biological changes destroy man. If the deserts were once seas, there are other seas, and so, too, of the passing of the generations of men. Neither can resist change, but in the order of things both are permanent. Change, then, is the result of process, not the motive force of process. As Santiago's voyage in search of the marlin suggests, that motive force is imaged by the primal, almost mystical flux and reflux of the generative sea.

The pain and suffering Santiago undergoes during his three-day ordeal with the fish test his physical and spiritual capacities to their limits. His landing of the fish in the one sphere, however, becomes his victory in the other. Through his indomitable will, Santiago affirms man's capacity to contend with the forces of ontological flux, to dominate the contingencies inherent in that flux, and, finally, give these endeavors worth and meaning. Man cannot overcome biological change -- Santiago has grown old and weak, and likely this is his last agon -- but he can invest his existence with dignity and worth by the exertion of his will. Santiago as individual must pass on, but as in Arthur of the Round Table his memory will survive in the young boy of the story.

In his fiction, Hemingway exemplifies his fulfillment of the task Eliot's poem had set for his generation of writers. Aridity demanded fluidity, and Hemingway's Gulf Stream and generative sea
provided it in meaningful metaphors. His tempered realism did not permit him to consider a return to the Romantic modes of past generations, and Eliot's desert was a positivistic desert. The difference resides in Eliot's partial Romantic nostalgia and Hemingway's discovery of a new perspective that would accommodate positivism. Fragmentation, alienation, isolation and disintegration became the watchwords for the Waste Land era, but Hemingway's heroes could quest because he held a strong belief in man's capacity to reconcile himself to reality and reinte-egrate the self with some meaningful force. In *The Old Man and the Sea*, that force is nothing less than the dynamic of the universe.

8. Ibid., p. 46.
10. Ibid., p. 394.
11. Ibid., p. 314.
15. Ibid., p. 10.
I have been aware for a long time that there isn't enough communication between the sciences and the humanities. Last week John Pratt and I happened to see a recently published bibliography on Ken Kesey's *One Flew Over the Cuckoo's Nest*. There must have been 100 or 150 articles, and not one (as far as I could tell) dealt with the clinical, psychodynamic, or behavioral dimensions of the book. So I suppose it would be presumptuous of me to say that the scientists need us literary types, but I think we literary types really need the scientists.

John Isaacs mentioned the way literature has been mucking up science, and he cited what I think he would call oversimplifications—the nice, linear conceptualizations that give us food chains and pyramids that don't pyramid. I was struck by his comments because I sense that when we deal with literature, we seek out these oversimplifications. Whatever the problems are for the scientists we as human beings need these tremendously simple vehicles for conceptualizations.

English teachers spend a lot of time studying this sort of thing. The seventeenth- and eighteenth-century idea of the great chain of being is just what John Isaacs meant: it starts with God; then there are the angels; down here are the animals; and then, the crucial link to the middle—a little of both, spirit and matter—man.

I suggest that great literature very frequently carries this kind of conceptualization, almost schematic, very simple, so that almost all the elements of the work of art can be ordered in one way.
or another around this kind of scheme. I had been aware of this for a long time, and then I ran across a book, about six or seven years ago, that has had a tremendous influence on my thinking: Thomas S. Coon's *The Structure of Scientific Revolutions*. Coon suggests that science is determined by a paradigm, by a way of seeing reality. He talks about Gestalt shifts in perception that precipitate scientific revolutions and about how any group of scientists is governed by some kind of perceptual paradigm. He has some fairly compelling examples, compelling to even an English teacher—for instance, the idea of a falling body, 32 feet per second per second.

But if you were a medieval philosopher, or one in Aristotle's time, you saw a falling body as an entity made by God and trying to fulfill its nature. For you, the significant parameter would be the distance yet to be traveled or the nearness to the final point where the body would fulfill itself.

Now that's really an incandescent example of paradigm, a way of seeing things. Given two different paradigms, you see two totally different worlds. Coon has a particularly interesting instance of a shift in perception: people who previously had seen a roswing on the end of a rope, at some moment in history, suddenly saw a pendulum. My favorite is the Scholastic question, "What makes a moving body move?" Well, it's got something in it that a rock doesn't have. What it has... it is impetus. It's got impetus in it, and that takes care of that!

You can see that my angle of vision on science is a little different from that of a scientist. I would like to reconcile the scientists to literature rather than the other way around. What's implicit here, I think (as John Isaacs pointed out) is that there's no such thing as truth. We devise orderly formulations that help us understand, but none of them are true, and perhaps the saving thing is simply to realize that they are not.

Consider a paradigm that might be pictured like this: first, a wavy horizontal line, then a straight vertical line bisecting it. This is the paradigm, I would suggest, out of which Melville wrote *Moby Dick*. Let me suggest how it works.

There is a famous passage in the book cited by all the scholars, in which the crew of the *Pequod* has killed the sperm whale, and then hoisted the head up one side so they can get the oil out of the case, but the *Pequod* is canted over perilously. So a right whale comes along, and they kill him off and hoist his head on the otherside of the ship so that the ship is balanced. Then Melville says:

In good time, Flask's saying proved true. As before, the *Pequod* steeply leaned over towards the sperm whale's head, now though sorely strained, you may well believe. So, when on one side you hoist in Locke's head, you go over that way; but now, on the other side, hoist in Kant's and you come back again; but in very poor plight. Thus, some minds forever keep trimming boat. Oh, ye foolish! throw all these thunderheads overboard, and then you will float light and right.

And right there we have a paradigm a ship in counterpoise, balanced with John Locke on one side and Immanuel Kant on the other. That's a paradigm—almost—of whether one should major in philosophy or not! I think Melville is saying, "Don't; forget it."

Melville may have called the philosophers thunderheads, but his thought is deeply influenced by polarities, dualities, ways to see things. Essentially, what John Locke meant for him was input. (One of the things I like about Melville is that all of his philosophy is Sunday-supplement philosophy; literary artists who make use of philosophy simplify it pretty much down to this level so it will fit into the literary mode of discourse.) Locke is a representative of the British empirica! school of thought, and what they overwhelmingly say is that the world impresses itself upon us. In terms of sensation, we are shaped by the world; an empirical view of the world is the only one that really counts.

Kant, on the other hand, representing German idealism, are opposite point of view, says simply that to a large extent, time—that great absolute of science—is relative and subjective;
we impose time and space.

These are two profoundly compelling ideas, that the world impresses itself on us, or that we impress ourselves on the world. Now, those divisions suggest the beginning of a paradigm.

At the beginning of *Moby-Dick*, we haven't gotten to the ocean, but we get to water fairly quickly. You remember that in his first chapter, Melville spends some time on people's fascination for water. He starts off, "Call me Ishmael," and within three paragraphs he's saying, in effect, now go out on a Sunday afternoon and take a look at New York City. It's incredible; everybody's wandering down to the seashore. Everybody's out of their houses, and they wander down to the wharves, some of them clear down on the edge of the piers as if they all are going to dive in. What compels people to do this; what is this fascination with water? Near the end of the chapter, he asks, (Melville was always heavy when he questioned),

"Melville may have called the philosophers thunderheads, but his thought is deeply influenced by dualities, dualities, wants to see things."

Now if you examine his discussion here, you hear echoes of Kant and Locke. We are moving from philosophy to fountains, and from fountains we will "get to oceans. What he's saying, essentially, is that the image of Narcissus is dominantly a Kantian image. Narcissus looked into the fountain, that is, he looked at exterior reality. And the water image suggests reality as a changing thing, not very stable. In that fountain he--his own reflection; he saw himself. You hear the echo of Kant.

And then he comes to a crucial metaphor that has to do with a fountain—not yet with the ocean, but with a fountain, the myth of Narcissus.

And still deeper the meaning of that story of Narcissus, who because he could not grasp the tormenting, mild image he saw in the fountain, plunged into it and was drowned. But that same image, we ourselves see in all rivers and oceans.

Then the key sentence:

"It is the image of the ungraspable phantom of life; and this is the key to it all."

One of the terrifying things about both Kant and Locke, when handled in terms of these dualities, is that they both suggest that reality, the stable thing we deal with every day, is in some way deceptive, false; and untrue—that is, if it's true that the ordering ideas of the world are imposed by the mind, then we make the world. (Given a realistic self-estimate, anybody would have to be disturbed by that!)

This idea suggests that reality is deceptive, that we live in a world of false color. Melville in *Moby-Dick* deals mostly with white. He deals with white in the albino whale because he is so terrified by the idea that, for instance, the green in the exit sign here, the red in my tie--these are harlot colors. "Laid on from without," he says, painted there by the mind.

The red is in your eye, the green is in your eye—it's not really out there at all; hence, what most of all compels us in the world, its' beauty and its esthetic coherence, we create. The great question is, what lies underneath? If we create the sensuous, esthetically coherent world in which we live--then..."
what lies underneath?

Melville's answer was whiteness, a palsied, sick whiteness--"a colorless all-color of atheism from which (any rational man must) shrink." He made the albino, white whale the central, cosmically constitutive symbol for that terrifying reality that may underlie nature.

That's all philosophy. How did Melville put it together in terms of *Moby-Dick*? Well, he uses the sea as a conceptual metaphor. A number of novelists have been compelled by what Willa Cather calls the novel denue, the unfurnished novel, the stripped-down novel. She sought this stripped-down world, I think, for the reason we all seek rather stark and simple landscapes occasionally. And, of course, the sea is the supreme example. In a stark stripped-down world, with trees gone, with all sorts of colors reduced, one gets closer to the essential verities of life.

Fenimore Cooper did the same thing in *The Prairie*, in a rather amusing way. He takes people out in the middle of the Great American Desert, a thousand miles from anybody. Leatherstocking wanders in on the scene, and, within about 15 pages, some 40 people show up in a remote Grand Central Station. But Cooper has his stripped-down world.

However, the world of the prairie cannot match the sea for raw simplicity. Part of the primal attraction of the ocean has to be that one can simply say, "Now I'm down to the bare bones, the bare, raw bones of reality. This is the essence of things, if any essence there is." So, on the most obvious level, like Cooper and Cather, Melville uses the sea in its unfurnished sense. One of the things that compelled Melville--because of his preoccupation with perception, with the falsity of colors--was what might be called the phenomenal opacity of reality. The way it is hidden--by color, by shape and by form--so that while we have a perception of the thing, we have a terrible time realizing or intuiting what the thing might be in itself, the thing as it is before the human mind shapes it.

We come to one of the key elements in *Moby-Dick*, which occurs again and again: simply, that the sea is transparent. Melville combines the idea of transparency with a pastoral idea. He talks about the sea as a metaphor. He speaks of plankton in their great swaths as "these great meadows"; he talks about "these blue hills and these Salisbury plains of the sea." Again and again in *Moby-Dick*, even though this is a sea novel, Melville writes--though so cleverly one doesn't notice it--about the sea as though it we were land. With this difference: at sea, the realities of the land become transparent. But what does he glimpse as underlying reality?

In all of his books, from *Moby-Dick* there are constantly passages that catch a glimpse of some white. *Moby-Dick* talks about the sea and the transparent sea resembles whiteness, the colorless all-color. The transparencrey of the sea is a device to suggest the intuitive level of consciousness where we do begin to sense the reality of things independent of ourselves.

The sea is also reflective. Over and over in *Moby-Dick*, we are fascinated by water for this reason, in the way we are fascinated by mirrors. The sea is reflective many times in the book, just as in the Narcissus fountain when Ishmael looks out at the ocean, and in some sense the ocean reflects on him, and he sees himself in the water.

Ahab speaks toward the end of the book of the linked analogies and cunning duplicates between the inner and outer worlds. In so doing, he's articulating in terms of water, in terms of the ocean, this primal, utterly profound sense that all of us have of inner and outer, me here and me out there. And so the reflective element builds a paradigm here.

He used other devices, too, because he was so concerned with the surface of things, the appearances and the perceptions that may lie under the surface. He was fascinated with the creatures of the sea, and he speaks again and again in *Moby-Dick* of, for instance, "the dainty, embellished shape of the most vicious and insensate of sharks, "this paradoxical blending in sea animals of exquisite colors and shapes and forms with the kind of terrible perspicacity that at least as an English professor I've never gotten used to.
Melville furnished his ocean with idyls. He talks, though, not in *Moby-Dick*, about an island rising up into the clouds. He suggests that the islands in the ocean (an old symbolism, of course, not confined to Melville) convey a sense of innerness and insularity; he writes that "as his appalling ocean surrounds the verdant land, so in the sail of man there lies one insular Tahiti, full of peace and joy, but encompassed by all the horrors of the half-known life." In many there is something that rises above the level of the surface of the ocean, as a volcanic island might, and that separates man and isolates him from this terrestrial biological broth that he talks about all the time.

He also talks about divers in *Moby-Dick*. Ishmael speaks of diving into the researches of whaling. Tashtego takes a dive, into the whale's head, as you remember; then the head breaks loose and starts its own dive. Queequeg then performs a kind of caesarean section on the head and rescues Tashtego.

Melville uses this diving motif and suggests constantly that there is something in man more than the biological that gives us directness and elevation so that we indeed dive into the ocean. The word must come up on most every page of *Moby-Dick* in one way or another: dive into the ocean; dive through appearances and confront what is under the ocean; find out what's there.

All of this is an attempt, I think, to order reality and to give the philosophical imponderables of Kant and Locke a kind of tactile reality. Finally, and ultimately, Melville sees the sea as a symbol for the way we are. Perhaps this touches, at the deepest level, man's constant preoccupation with the sea. He has a passage near the end of the book, just before *Moby Dick* is sighted—a brief chapter called "The Symphony" that suggests a reconciliation of disparate elements. He talks about the firmament of the sea; listen to the metaphors he uses, lovely language just before the great three days' chase:

It was a clear steel-blue day. The firmaments of air and sea were hardly separable in that all-pervading azure; only, the pensive air was transparently pure and soft, with a woman's look, and the robust and man-like sea heaved with long, strong, lingering swells, as Samson's chest in his sleep.

Hither, and thither, on high, glided the snow-white wings of small, unspec-ckled birds; these were the gentle thoughts of the feminine air; but to and fro in the deeps, far down in the bottomless blue, rushed mighty leviathans, swordfish, and sharks; and these were the strong, troubled, murderous thoughts of the masculine sea.

There is an important, recurring metaphor here; Melville again and again, as he sets up, touches on primal things. The metaphor is sexual; this is a marriage of the feminine and the masculine. The creatures of the sea and those of the air are articulated in masculine and feminine thoughts, and it's very clear that what Melville is doing here is making a final resolution of the tremendous tensions that run through *Moby-Dick*. The mild and the minatory in nature are being married and finally resolved.

This, of course, is one of these terrible oversimplifications and happy resolutions that I suspect John Isaacs would object to, but what Melville is saying, finally, is that the world is false. We have looked into the ocean as Narcissus looked in the fountain. What we see reflected there is our own minds and our own selves at the deepest level.
Life, as contrasted with existence, begins with words. Hence, now as then, we begin with the word sea. Those of you who have been at sea know that it is not what it appears to be: it is not simply the exterior surface of a slightly squashed sphere. The best way I know of conveying to you the true nature of the sea—and hence of being at sea—is to compare it to the Möbius strip.

Like the sea, the Möbius strip is a very simple and a very complicated experience. I think it would be most useful for you, the reader, to make one before I talk about it as a way of understanding the sea.

In one sense, of course, the Möbius strip is an exercise in elementary geometry. Get hold of a piece of regular typing paper, 8½ by 11 inches, and cut a strip along the 11 inch edge about half an inch wide. Now hold the left end of that in your left hand, then with your right hand twist the right end 180°. Next, carefully bring the right end (now twisted) back to the left end and with a touch of glue bind them together. You should now have what is illustrated to the left.

Next take a pen or pencil and put an X on the Möbius strip, and then carefully trace a path along the middle of the strip until you return to the X. As you will now have learned, if you did not know before, there is but one side even though that one side moves inside and outside.

That is what it means I suggest to you, to be at sea. It means to be on the inside as well as on the outside, and yet always to be on the same side. It
is a paradox worthy of our awe and wonder. Hence we want to find out where we are. If you are at sea, that is to say, you want a fix.

But do we get in on the inside or on the outside? There is a great temptation to try to find it on the inside. We all do that at times: booze, cocaine, sex, or the addiction to a possessively individualistic career in the marketplace. Or to the equally possessive addiction to a few others who think as we do. But I want to suggest that the only place to get a true fix is on the outside: to learn from others rather than to think that one can find oneself inside oneself.

So we are back to being at sea. When you are at sea you are defined by two irreducible elements: space and time. You are reduced to working with a piece of paper upon which are printed lines representing time in the hope that you can define space. The printed lines represent longitude and latitude, conventions that we have all agreed upon in order to find ourselves. But we can not find ourselves even with those conventions unless and as we use another convention called time. Put it bluntly: charts come down to time. So how do we make time? We make it outside ourselves.

To find ourselves, that is, we must take shots (measure the angle) of the sun, the moon, and various planets and stars. Those angles will appear upon our chart as our lines drawn at various angles to the printed lines upon the chart. Unless you know the time that you took those shots, however, those lines to the planets, stars, and so forth will be meaningless. They will be random scribbles upon a piece of paper.

But if you know the time, then those lines will intersect in such a way as to leave a small, still center. The smaller the center, the better you know where you are. Ideally, all the shots that emerge on your chart as lines intersect to form a dot. Then you truly know where you are.

So here we are: standing on the burning deck with nothing more than a sextant in hand. The sextant is your mind engaged with literature, and I suggest that you take these five shots to place yourself in the ocean of truth.

First. Look at the relationship between the crew and the ship.

Second. Look at the relationship between the ship and the sea.

Third. Look at the relationship between the crew and the sea.

Fourth. Look at the sea itself as a Spinozian network of relationships: with the sea and between the sea and ourselves.

Fifth. Look at how the writer deals with all those relationships.

I am sure that you see that I am suggesting that literature (in all its forms) provides us with the sun and the moon and the planets and the stars whereby we get our fix. Five shots for a fix.

The relationship between the crew and the ship.

Let us begin with W. H. Auden telling us, in his ode to Melville, how the ship confronts and confines the crew with the essence of life.

"Evil is always unspectacular and always human. And shares our bed and eats at our own table. And we are introduced to Goodness every day, Even in drawing rooms among a crown of faults; He has a name like Billy and is almost perfect. But wears a stammer like a decoration: And every-time they meet the same thing has to happen; It is the Evil that is helpless like a lover And has to pick a quarrel and succeeds. And both are openly destroyed before our eyes."

Then there is a man who is not taught or read in the classroom, but I suggest he tells us much we need to know: Martin Dibner recounting the way a captain talks about his wounded ship and his shaken crew:

"Paige inspected his damaged ship... She had always been a taut and happy ship... Now the sight of her ruptured decks saddened the men. They slung
there hammocks on the open decks or slept sprawled on thin blankets in the hot spaces below. Paige did what he could to comfort his men, walking among them and speaking lightly. His presence was all they asked of him...

"Sick bay corpsmen labored to free the remains of men glued by blood and sun to the steel sides of open gun nests. Flesh tore badly from the twisted metal...Paige finally came face to face with Turret Three, unwilling to admit to himself he had been avoiding it.

"He stood silent before the gaping hole. It was hard to believe one bomb could do that much damage.... The weakened girders presented a serious threat to the ship's structural integrity—and he knew then he would have to do something about it and do it fast...."

And in that mood he spoke to the young lieutenant sent aboard by the task force commander with orders to be ready to sail.

Have you seen Turret Three? You could run the whole Jap fleet through it and not scrape paint...And only God Almighty in His infinite wisdom knows how that torpedo went through the starboard side of the hull at the waterline and came out the portside without damaging a hair of anyone's head or even so much as cracking a cup and saucer....

"My evaps are shot...Half my searchlights are smashed...and once this bucket gets underway I doubt that her damaged deck and bulkheads can stand the strain...I won't bother you with the details of turbine.... or human failures due to gunfires, wet pants....You've been patient and polite, Lieutenant Doorn. Now go tell your—fucking admiral my ship will be ready to get underway at 0600."

"I think it goes deeper, into a kind of Freudian double identification, in which the wrath of the sea is interpreted both as super-ego and as id.... A wrecking sea is part of what we all dream ourselves to be every night; and the ship becomes our own punk-calculations, our repressions, our compromises, our kowtowings to convention, duty and a dozen other idols of the top-hamper we call civilization...."

"The other great nexus of metaphor and feeling is the ship itself. No human invention, with all its associated crafts in building and handling, has an older history.... That is why we have sexed it without ambiguity...which, in the context casts the sea, the dominance of Neptune, as rape, raper, Bluebeard."

"As 'the finest ship in dock,' and 'Rode the great trackwa: to sea.... Already gone before the stars were gone....To trample billows for a hundred days...."

But a ship so arrogant as to imagine that she could trample billows for a hundred days must learn to love the sea or die. And The Wanderer almost died. The sea sent her back to port again and again, but in the process she learned "to moan a little as she swayed." And in the process she came to love the sea, to be in and of the sea. And years later she sighted once again the only place to get a true fix on the outside to learn from others rather than to think that one can find oneself within oneself.
protagonist is aboard a small ship being carried inexorably into a giant vortex.

"It was not a new terror that thus affected me, but the dawn of a more exciting hope...I no longer hesitated what to do. I resolved to lash myself securely to the water-cask upon which I now held, to cut it loose from the boat, and to throw myself with it into the sea... (And, after descending part way into the whirlpool, he found himself saved.) The sky was clear, the winds gone down, and the full moon was setting radiantly in the west, when I found myself on the surface of the ocean."

Poe, thus anticipates Joseph Conrad in Lord Jim, and Stephen Crane in "The Open Boat." Conrad has the talent, and the necessary ego, to encapsulate Poe. Stein tells Marlow that when one is at sea, it is necessary to surrender to the sea in order to survive. "Yes, strictly speaking," Marlow replies, "the question is not how to get cured, but how to live."

That exchange can be read as a preview of Auden's perception about the crew and the ship; but also of Fowles's insight that the sea is the grand metaphor for life as a combination of Good and Evil, and that we live only as we acknowledge the reality and the power of Evil. So let us, in conclusion, look at The Sea Itself.

Here we must distinguish between three angles from which to view the sea: the scientific, the emotional, and from the perspective of marketplace institutions and practices.

Directly and indirectly, the scientists have given us some fine literature. Consider first the relationship between Ed Ricketts and Joel Hedgpeth as tutors to John Steinbeck. I do not think that Steinbeck would have done half so well without the long hours with those men who knew the sea and had committed themselves to it with a kind of passion rever venerated after they had moved out of his life.

But that is debatable, so consider Willard Bascom. Here he is telling us about the primeval encounter between the sea and the land.

Literature (in all its forms) provide us with the sun and moon, with the planets and the stars whereby we get our fix:

"The sea attacks relentlessly... It collects the energy of instant winds and transports it across thousands of miles of open oceans as quietly rolling swells. On nearing the shore this calm disguise is suddenly cast off, and the waves rise up in angry breakers, hurling themselves against the land in final furious assault. Turbulent water, green and white, is flung against sea cliffs and forced into the cracks between the rocks to dislodge them."

"When the pieces fall, the churning water grinds them against each other to form sand; the sand already on the beach melts away before the onslaught."

"The tide rises, the tide falls, The twilight darkens, the curfew calls... The little waves, with their soft, white hands, Efface the footprints in the sands... The morning breaks; the steeds in their stalls Stamp and neigh, as the hostler calls... And the tide rises...."

Next hear Emily Dickinson talk about the magic of the landlubber going to sea:

"Exultation is the going Of an inland soul to the sea... Can the sailor understand The divine intoxication Of the first league out from land?"

And so to e. e. cummings:

"When god lets my body be... (i want my... .) heart (to be) with the bulge and nuzzle of the sea."

But the corporations have little understanding of the "bulge and nuzzle of the sea." The enormous power of corporate capitalism (in its academic or industrial sharksins) has now declared that it is possible to be in but not of the sea. The classic American idiom.
But ponder your mobius strip. And remember that if you cut it down the middle you destroy the awe and wonder.

And then go back to Thomas Jefferson. He had one great monoment. "A subject comes into my head," he wrote (and rewrote) James Madison on September 6, 1789:

"The question Whether one generation of men has a right to bind another... 'that the earth belongs in usufruct to the living:' that the dead have neither powers nor rights over it."

Translated into our idiom, that means simply that (we) leave as much as you can (we) can for your daughters and sons.

That holds as good for universities as for corporations. It will not do to say that Jefferson flunked the course with Blacks, with Women, with the First Americans. If you are looking for excuses do not come to me. My code as a historian is to offer you no way out. As a historian I know that many, many women and men have told us both the name of the game and the current score: my first responsibility is to inform you of those truths. My second is to say to you, that we do know what to do. It is up to you to do it.

I hope you now recognize that I have been talking about community. Community is the only fix that ends the need for a fix. Take that anyway you choose. You and you, you and me, or the sea and us. Individual liberation is but a means to the creation of a community. Community with the sea is the grand metaphor for the reality of community upon the earth among each of us the living. In that primeval sense, ecology is but another word for the revolution we have yet to make.

So be it: make your choice. Remain at sea, or become in and of the sea. The second option is extremely difficult, and has to be made each hour of your life. Hence you will need all the literature you can get. Perhaps, indeed, literature is the ultimate fix.

1. This continuous one-sided surface was first conceived by August Ferdinand Mobius, mathematician, pioneer in topology, and theoretical astronomer. The eeriness of the construction is further revealed by cutting the form down the center line.

2. The vertical angle to the star, etc. is measured with a sextant and the time is noted: those two numbers are the key to the subsequent calculations that tell the navigator where to draw the line on the chart.


8. W. Bascom, Waves and Beaches. The Dynamics of the Ocean Surface (Garden City: Anchor Books, 1964),1:


10. H. W. Longfellow, "The Tide Rises, the Tide Falls," lines 1-2, 8-9, 11-12, 15

11. E. Dickinson, "J. 76, " lines 1-2, 6-9;


13. Examine, for example, any of the centerfold advertisements by firms like Mobil.


When I was invited to deliver this paper, I promised myself that I would avoid an analysis of the processes, which go into the composition of the poetry I have written about the sea. Or an analysis of my growing dependence on the sea as the primary source for my themes. As you will learn later, the transformation of the stuff of my world into poetry is a bit of a mystery to me, as I think it is for many poets. And as for my dependence on the sea as a theme, it would take me too long to chart the journey from my first home in the East to my present commitment to Seal Rock, a village ten miles south of here (Newport) where I have been putting down roots for the last twelve years. My promise to avoid analysis, of course, means that I am left with demonstration. I said to myself, somehow I must show what my current love affair with Seal Rock (that ocean, that particular stretch of beach, the coastal streams, and the people there) means to me. Demonstration is poems: from them I hope you will get a concrete sense of what the whole incredible experience called the Oregon coast is to one writer.

However, before I get into the Seal Rock material, I want to make several observations about my earlier poems in relation to my present ones. Both early and present poems were written from the same impulses. As you will see later, I have always believed that in order to write well about the natural world I begin with what I have termed an act of true attention. If I look hard enough, the things of this world look back. There is reciprocity. Where and how I developed that sense, I am not sure, although I suspect it derives from my earliest experiences in the country.
I loved outdoors more than in. I was a persistent roamer and observer of the meadows, fields, woods, streams in and around the village of Eden outside of Lancaster. So, although I dare not take the time to read any of the earlier poems to demonstrate the continuity in my work, still I believe it's there. This then is my first point: as a poet I am reacting to my environment now just as I did when I began to write about my first home.

Still, on looking back over the early poems, before the Seal Rock experience, it is interesting to see how few of their images derived from the sea, or from the rivers, or from the waterman and tidewater people. I also knew as a child from the many summers I spent with relatives in Virginia. This is probably due to the commitment to place in my work. During the writing of the first book, I spent days at our old cabin at the coast writing about the rural land-locked landscape, where I lived, went to school, made most of my friends. Only gradually did I learn to see, clearly and come to terms with Seal Rock and to transfer my allegiances from the east to the west, from the village of Eden (and tidewater Virginia) to the tidewater reaches of the Alsea River and the Oregon coast. This, then, is my second point: it's obvious to me that I must learn to know a place thoroughly before I can meaningfully explore it.

But now, as I promised, demonstration.

It is the title poem, "Not Every Year," from my first book. It is the last poem in the fifth and final section. And I can see now (as some of the reviewers did too) that it's an appropriate end to a book that starts with my childhood, exploring the themes of death and loss, but which works its way toward a resolution of those themes in the acceptance of the new physical and symbolic home with my wife and children in Oregon.

I

A part of me
Stood aside,
Watching the other part
Help you bargain for gulls:

It's obvious to me that I must learn to know a place thoroughly before I can meaningfully explore it.

III

At first, we slept In their rusted bed, Behind the curtains They'd hung for walls. The storm outside rose in tempo. The panes of the windows Bent in and out With every gust; how far We saw by the candle's flame Swaying against the glass. Later we walked The beach, you in a flimsy, Rose-colored sleeping gown, Your shoulders draped.

This was to be our perch As it was our summons.

And the wicker chairs That creaked like harness? I sat up half the night, pushing down and out With my bare feet. The windows stared in their frames. I wanted a wheel in my hands. If I could steer, I thought, Bring her round, and make Her climb the gales.

One hundred and forty feet Of ocean front, a layer of duff, Kinnikinnick, and huckleberry.

Distracted, walking between The bushes, I pinched their berries, Licking my fingers, waving away the kids, counting Julis, but not rooms.

The real me was there All right, beside the real You, the desert ocean Ebbing, a low fog Hiding the kids Under the cliff.

One hundred and forty feet Of ocean front, a layer of duff, Kinnikinnick, and huckleberry.

Distracted, walking between The bushes, I pinched their berries, Licking my fingers, waving away the kids, counting Julis, but not rooms.

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One hundred and forty feet Of ocean front, a layer of duff, Kinnikinnick, and huckleberry.

Distracted, walking between The bushes, I pinched their berries, Licking my fingers, waving away the kids, counting Julis, but not rooms.

The real me was there All right, beside the real You, the desert ocean Ebbing, a low fog Hiding the kids Under the cliff.
The scum: the dogs
Make at the cover.

Nor every year
A pure migration:
The Whales already
In early March swimming
North inside their summer.
But where have the children gone?

My brother writes:
In Copenhagen the moon
This spring is drawing
His children away and south.
What does it mean?

I answer:
Now and then
Ours begin to relax
And read each other's faces.
Today, after a week
Of rain, they complain
Of being confined.
Their radio blares,
But their games develop substance.

A hut
The kids
Built --
Abandoned
Weeks
Before.

Here are the walls
The color of weathered stakes.
And here the window
The color of isinglass;
The door, a dark
Square: no color there.

I learned to scrounge,
Not because I was broke,
But because it was a way of life with Blanchard
And he hated extravagances.

Although I promised no analysis, let me discuss two sections in that poem which seem to me now important. The first is:

The real me was there
All right, beside the real
You, the desert ocean
Ebbing, a low fog
Hiding the kids
Under the cliff.

It's the expression: the desert ocean. How I came by that I'm not sure. But I think it's linked with my interest in another theme in a long poem I wrote about the death of my friend, John Breitenbach, on Mt. Everest. In that poem, "Elegy for Jake," I explore the relationship between the dangerous journeys men like Jake undertake and the kind of psychic chances taken by the artist. I quoted from Hopkins:

The monotonous surf
(A permanent blue)
Ditto the milky aletes,
The tide pools brown with kelp,
The strong translucent grays
Of cove, creek, and bar.

Only the black crows
Are really marginal,
Flying and crying
Every season.

Mutual and endless
The duplication
Of vegetable, mineral,
Bird, and fish.
The sea last week.
Resembling the one to come:
The one in March
The same as the year before.

That other beach
Beyond the creck.
A narrow stretch of rock.
Its razorback a jam
Of weathered logs
(Im rounds, poles, and slabs)
Choked with sand and grass.
This in a surprising August
Of sudden, low barometers
And stiffly falling hail
That caught me cold,
Tired, and hungry,
A mile from home.

Depleted,
I waited,
Hunched
Inside

Down wind, down wind!
Look, look.
(But no one heard.)
The ravens, the ravens!
Fishing the leeward surf,
They cut my line of sight,
Rocking from trough to trough.
One wave, one wave!
They followed but one wave.

We came to the end
To love even the fear
And boredom, that turned
Our meanings inside out:
The mind, the mind has mountains, 
Cliffs of fall...no man fathomed, 
Held them cheap...who ne'er hung there.

And I evoked the memories of four explorers: Mallory, Shakleton, Lawrence, Doughty. Two men who, to paraphrase Conrad, went into the waste places of ice and snow and two who explored the Arabian desert. About them I wrote:

Interior, the deserts where they worked; 
Luminous, their downward curving pain.

All journeys are inward, whether in the Antarctic, the Arabian Peninsula, or on the Pacific. But can the sea be thought of as a desert? Of course not, but I think that metaphor reveals a perception of mine which gets elaborated at the end of "Not Every Year."

We came in the end 
To love even the fear 
And boredom, that turned 
Our meanings inside out: 
The monotonous'surf 
(X permanent blue) 
Ditto the milky agates,

And 

Mutual and endless 
The duplication 
Of vegetable, mineral, 
Bird, and fish. 
The sea last week 
Resembling the one to come: 
The one in March 
The same as the year before.

That, of course, is only one side of the coin. The other, which I must admit I have not really begun to develop, is my feeling for the richness and variety of life, small and large, at the verge of the sea, on the beaches, in the coastal streams. I would like to work my way into that material, but in the past as well as the present, more often than not, I am reacting to and writing about the terror, the force and strength of the sea, its storms and their destructiveness, even the horror of what it throws up, expels, as in this short poem, called "Kelp."

Its holdfast gone; its every last 
Rawhide tentacle torn by the high sides 
And the winter storms' demented beatings, 
The kelp, loosened, will slowly surface 
Inside the coves --tumbling ton by ton, 
Out of the great waves, across the sand.

What a welter, what a ferment of coils 
And knotted mounds of excrementitous Horror: look, look there, and there! 
Such dotage, in brilliant moonlight too.

This time the poem is about a friend of mine who drowned at sea off Waldport, Oregon, in July 1966. The prose section which explained the origin of this poem, and which I wrote to accompany the poem in American Poets in 1976, is too long to read, but let me sketch the personality of my friend and some of the "events" which led to his death. They are important because they made it possible for me to understand the meaning of our loss and, I would add, something of the character of this region.

Born in Boston, Robert Blanchard came to the west coast with his family when he was a kid. His father drank, and that was held against Bob. The old man was a carpenter of sorts and a housemover, and he taught Bob his trade, I guess, under the houses he moved, sitting in the shade with a case of beer. But Blanchard, himself, was good at his work. He put in long hours and seldom drank, and yet the established builders on the coast regarded him a marginal craftsman. It's also true that there isn't much of a living to be made moving houses on the thinly populated Oregon coast. So he specialized in new foundations for old houses whose rutted timbers were letting them down. He built one for us. A foundation. But most of his work it seemed to me was for widows who needed some jerry-built back room on their aging houses chopped up and set level; or, for poor couples who bought a shack and wanted it shifted to a vacant lot they'd gotten for peanuts in the boondocks. His reputation was good with the widows and the poor, but as Willie Loman said, not really good. The community generally ignored him.

But he meant everything to my wife and
me when we settled in on the coast. He taught me some carpentry and a little bit about mortar and bricks. And I learned to scrounge, not because I was broke, but because it was a way of life with Blanchard and he hated extravagance. Make do, he said. He taught me other things. Where and how to clam, how to rake crabs at low tide in the pools around the piers of the bridge spanning the bay, and what and what not to fear from the big storms. He knew this particular stretch of coast and the valleys and mountains inland better than anyone I've met. He had to. It was his survival and it had been since childhood.

He was a powerful man. About 6'2", with shoulders and hips like a halfback. And he seemed indestructible, even though he took a lot of chances no matter what he was doing. Shortcuts, really, to save some dough. He gambled in other ways. I think he poached, but this is not unusual on the coast. Many of the men get to doing it to feed their families in the lean months when there's no work in the forest, the commercial fishing is nyt, or the mills in the coast range close down. Blanchard got his elk every year. As for salmon: I guess he did some gillnetting now and then in his youth. I know he often got impatient and would cross the bar at Waldport when he knew for sure it was not really safe, but anything to get in the ocean for the big ones.

And that's what killed him. The bar at Waldport is unprotected. No jetty. A few large, but flat-hulled boats go over. And a few small ones dare it now and then. Bob's boat was a 14 footer, small for the ocean; in the swells, a mean ride, even if conditions are ideal. The tide must be running from low to high not more than a few feet or the surf at the mouth is rough. And beyond the bar, the sea should be flat for a 14 footer, like a pond, and the weather good, no wind to speak of.

Blanchard went over the bar on a beautiful Sunday in July. He had a friend with him, Old Red, a man he hired occasionally to do easy manual chores for him in town because nobody else would hire him. Bob's reputation extended to helping the stumblings, the half-educated, the marginal men.

The talk in town was that the Coast Guard found Blanchard seated in the bottom of his boat, deep as his waist in water, his left arm locked firmly under a seat. Because the boat was empty, no motor or gear, it was assumed by some of us that the old 7-horse motor my friend Harlan gave Bob, quit, that night came on and the wind and swells picked up, that he capsized when Old Red jumped. But no one knows for sure.

So Waldport did a lot of guessing, and the mean little church was jammed and the preacher had his audience. My wife and I drove over the mountains and down the Alsea for the service and the burial. But before they took him to the tiny cemetery in the backwoods on the hill above town, they opened the coffin and we reluctantly went by for a last look. I was stunned! The incongruity! Living, a tall, powerful man. Dead, I could not believe the rouged cheeks, the stiff hair, the awkward coat and tie. The incongruity: his head jammed into the satin; the same for his feet at the other end. I had the impression that if I stood his coffin up and tilted it forward, he would not fall out. "Jesus, it's too small." Outside, I thought: no one bothered to take your dimensions dead, just as no one bothered when you were alive.

FOR ROBERT BLANCHARD,
Who Died at Sea
Waldport, Oregon
July, 1966

1. Where to begin? The motor dead in the water? Or that bright morning you cleared the bar, Your hand steady, firm on the throttle, Your small boat riding low, heavy With gear? Or your crazy friend, His back to the wind in the bow-- Red hair curling forward over his eyes-- Nagging and prodding for weeks To change his luck?

2. Who said some months before,
Was it me or your wife
Or your friends, dead sober:
Robert drowned at sea?
Never, he knows too much,
But from a few -- Jesus,
He ought to poach himself
A new frigging motor,
Besides, he takes chances.

3.

Under the bridge, now north, but
still in the channel,
Then south and west, up to the bar,
before
The slack's at its full, waiting,
rocking, waiting.
Then brilliant in sunlight -- winds
moderate north and west--
You cross over, the stern riding high,
The bow dipping, climbing the up-hill
swells.
To the north, a few breakers, the bar
rising into dunes.

4.

The motor, you, or the erratic tug
of the current?
A moment only, a nothing, yet down
along your arm:

Came later the full horror
Clamped to the low stern
One dead motor, dead
In the water, wind
Rising, night
And your idiot friend.

5.

Was there a moon? We can't remember.
Glacial-cold the night-black swells.
Sensuous by day, gleaming, alive,

But treacherous at night, moon or not.

6.

You were found sprawling backwards,
Deep as your waist in water,
Your left arm crooked, locked, strong
As a vice under the bench.

And the heavy, cold sodr brine
In the half-swamped boat, the small
black boat.
Sloshing like so much pig-iron.

The transformation of the
stuff of my world into
poetry is a bit of a mystery
to me.

7.

I can see it: how when Old Red was
clambering
The low gunwale, thinkin': he'd swim
ashore,
The boat went over so fast you half
screeched
At a man so cold, damn is he stoned
with it?

And you in the water too must find
the boat
And right it, but now Jesus where's
the gear?

What's to be done, nothing, but ride
it out.

No way to make her take this sea bow-
first?

8.

The surf, now can you hear the surf
At Yachats? But Jesus again, the
cliffs,
Where would you land? I know, I
know:

Any steep shingle of gravel would
do,
Even if waiting meant waiting for
hours.

9.

Did you kneel in the water? Then
kneel and bail.
Washing, the water against your
thighs, working,
But steadily until your hands and
arms are raw:

The strong tide of feeling
Pulling away, leave you quiet,
Aroused --your head, heart
P-one on the distant swells,
Your feet anchored lightly
Deep inside the cove--

Waiting,
Your hands heavy as bells,
Waiting.

10.

And the dream?
Did you dream
The one dream?

Of the young gulls
High in the crowns
Of the great oaks
In the morning
In the silence
This storm done
That drove them
Into the marsh
And your meadow
Under the trees.

Not now
Say to yourself
Not now
Though the long swells lull you
Lull you
Though they break your will with
Rocking
And the wind
Coming round and down
At last over your back
Rubs its icicle
Yellow beak
On your
Burning
Neck.

Demonstration.

For several years I have kept a journal, not one of those intellectual and philosophical bookkeeping systems employed by some writers. I never write down anything from my reading, never reflections that could be construed as profound, never any details about my work at the university, seldom a word about my family or friends. I've dubbed it: "Storm Journal," and although I carry it back and forth with me to the coast, I don't use it when I am at home. Perhaps it's because nothing seems to happen to me at home, or there in the valley, or at the university. At least nothing significant. Of course, that needs qualification: I am devoted to my family, serious about my teaching, involved with my friends. But Seal Rock is unique. Things happen to me there which seem not to happen elsewhere.

One evening several winters ago, Jan. 25 to be exact, I was alone at the cabin. I had driven over the day before in order to finish a small writing project. It had been a difficult month, starting a new quarter at school, and taking care of our daughter because my wife had been gone for part of the month, helping her father close his year-end accounts at his lumber yard in Nebraska. It was cold in the valley, and I hate the cold. So I went alone to Seal Rock, to isolation and rain, and completed the writing there. That morning and the night before we'd had a storm, winds gusting in the 40's, tons of rain. But that evening, the cloud-cover broke, the wind died down, the tide was out, the beach deserted. I took a walk. A lot of things happened in the half-mile down to the cove and back. Later, I sat down and wrote them out, as I have done many times, in their exact sequence.

Storm Journal:

On the beach late before sunset.
Wind at 15 knots, WSW. On the ebb tide. Packed it off, 150 yards, from the cliff to the surf. A few pipers here and there feeding. 4 large ducks down in the water this side of the big rocks. Much bobbing in the criss-cross waves. Occasionally out of the water, flapping their wings, as though about to take off. But one gull to the south black against the grey and red tinted sky down at the cove this side of the towering headland, climbing, wheeling, plummeting in and around the chunks of foam whirling up under it.

The rocky beach exposed. Great slabs and boulders dug out of the sand from the winter storms, the high tides. Some of them as big as rooms or locomotives. Not there in the summer, except their tops. How many car loads of sand must the sea pull out from around them and back in to the waves? Climbing over them, the great boulders, it's the eye that sees and not the ear that hears the surf. Now walking between them, around them, in and out. What colors? Grey, some red and iron colors in layers. Some browns too. But it's the great sheen on everything! The luminous milk-mercury burnish of the reality of it all. And I am in it to my waist, the rocks all around me shining, shining. I back away.

Turned south and came on a few small rocks tossed or rolled from below the cliff onto the great slabs. Walking up to them from the north in the fading light, they are sitting there like bowling balls. They have to be rounded, pretty much, to roll in the surf of the storm the 100 yards from below the bank where they normally lie. They seem out of place. The wave action not lifting them, I think, but rolling them down the beach, and down the little gullies between the flat rocks, then into the surf and then back up and into the hollows when the sea retreats. But they do not shine.
A kind of lumpish, doughy dull-not burnished counterpoint to the reality on which they rest.

So into the cove, not deep, but into it wary, like moving out of the skin of it all and into the center of a dark sound, my pulse breathing with ease, and the whole shine gone.

A couple of acres of ankle-deep foam churned up in the cove. It's blowing and skidding on a thin layer of water, back and forth. I bend and pick up a handful the size of a baseball, and hold it in my palm. There are grains of sand suspended in it. I pluck them out, rolling them between my fingers, freeing them.

This walking into it. This seeing in a profound way. Seeing the light as the only reality and as though for the first time. But it was the light around the great boulders, the unexpected. And it came on me back there, mixed up with the sound of colors. Reflect. It is often when I am going alone is a dull way (where anxiety is a kind of force out there in the sea, out there in the surf, or further out in the swells) that it happens when I begin my little ritual of the naming of colors. That's grey, I say. That, is not grey, I say. But more than grey, a white grey, green grey, blue grey, rose grey -- my little ritual -- and then, and then it overdoses me. Not rising around my ankles or descending like a breezy halo, but at on my shoulder. Like a high, strong surf, urgent, and running on my shoulder. Walking along.

How is it that we come across a poem? That's a question I keep asking in the journal, over and over, but indirectly. Bound up with that, however, is a more basic question: 'How do we come to see things clearly (or feel them strongly) in the first place? As I said at the beginning of this paper, I believe rather firmly that I have always begun with an act of true attention. If I look hard enough, the things of this world look back. There is reciprocity. Yet the transformation of the primal stuff into poems is puzzling to me. Do poems just happen? Yes and no. If I am lucky, or blessed, or in some way ready for them, they happen. But I do not squat on my haunches at Seal Rock waiting for lightening to strike. I can never stop being a poet, so in some respects my Seal Rock experiences are deliberately sought and just as consciously shaped. But these journal entries are not poetry. Some of them might, however, just might become poems.

Demonstration.

The last one, and it is a short poem, its title is "Hunting for Blues in the Rain." "Blues" refers to the prized blue agates found on some of our beaches. If there is some irony and a touch of belligerence here, it's only half-intended, having crept into the poem in a desultory fashion during composition.

Hunting for Blues in the Rain

So it's not all piss ants in the rain after all when the great agates roll up out of the surf

in and around the flat round stones and up our long beach coming down hard on me is a fat, old woman in her rain gear, black comes right through sheet after bruising sheet of water like a crane through tough Fifth Avenue plate except this is has got to be that other end of the continent you better believe we are shattering more than glass out here busting up more than silence plowing into finding more than little blues in the rain.

Notes.


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