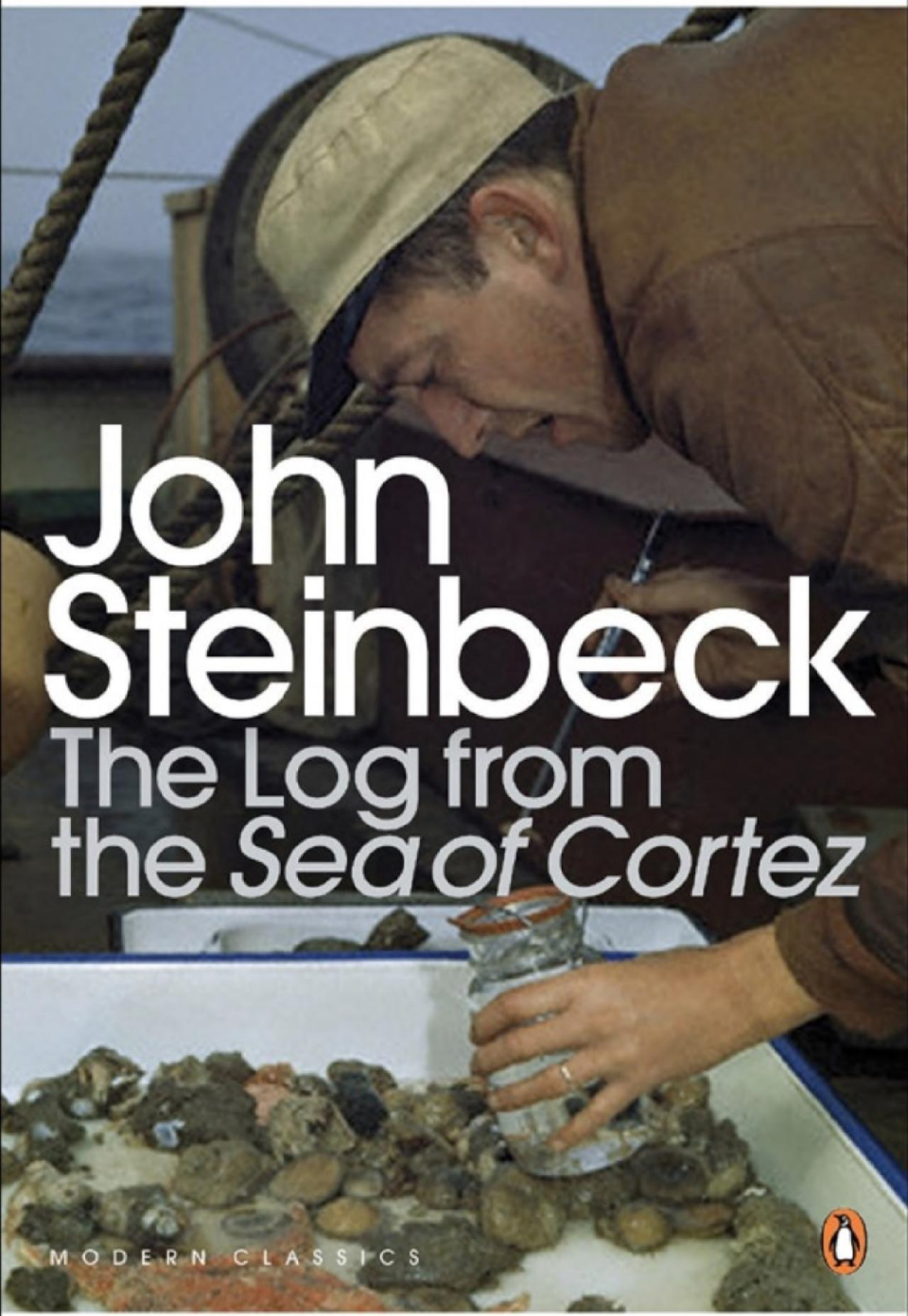

Contents

Introduction

In February 1995, a large and diverse group of Californians, most of them at least in their mid-seventies, gathered on Cannery Row to celebrate the fiftieth anniversary of the publication of Steinbeck's novel of the same name, and otherwise to reminisce about the two men who made the Row famous: the novelist himself and his closest personal and intellectual companion, marine biologist Edward F. Ricketts. The event was billed as "a symposium," and was cosponsored by the Cannery Row Foundation and Steinbeck Research Center at San Jose State University. But given the list of participants—including two of Ricketts's children; Joel Hedgpeth, senior curmudgeon of the California intertidal; Virginia Scardigli, former teacher and friend of both Steinbeck and Ricketts; Alan Baldrige, for many years the librarian at Stanford University's Hopkins Marine Station on Ocean Avenue near the Row; and Robert Enea, a nephew of two of the crew members from the Sea of Cortez expedition—the event was less a symposium than a giant party. And this seemed an appropriate way to commemorate the publication of the book in which Steinbeck wrote that every party has its own pathology, and that "a party hardly ever goes the way it is planned or intended." Of course, that book's leading character is a fictionalized version of Steinbeck's closest friend and his collaborator on *Sea of Cortez*—his most important work of nonfiction, a volume which contains the core of Steinbeck's worldview, his philosophy of life, and the essence of a relationship between a novelist and a scientist

that ranks among the most famous friendships in American letters. If many tall tales were told at the symposium, embellished by years of telling, it made no difference, except to enhance the festivities. For whatever the excesses, the surviving few from the Steinbeck-Ricketts years knew and talked about the breadth and depth of a friendship that was deep and permanent, and that, because of the impact of Ricketts's thinking on Steinbeck's most important fiction, accounts in large measure for the novelist's success as a writer.

Cannery Row was published five years after the Steinbeck-Ricketts expedition to the Gulf of California, and while Ricketts's life in Monterey remained largely unchanged afterward (he was drafted into the army during World War II, but never left the Monterey presidio), Steinbeck departed California altogether. His marriage to his first wife, Carol, ended. He romanced Hollywood singer Gwen Conger, married her in New Orleans, joined the war effort as a correspondent for the New York *Herald Tribune*, wrote a novelette about the war entitled *The Moon Is Down* (1942) and some propaganda pieces for the Army Air Corps that were later published as *Bombs Away* (1943), bought a brownstone on Manhattan's East Side, and gradually became a New Yorker. He and Ricketts communicated by mail, but they hardly ever saw each other again.

Cannery Row, which Steinbeck claims he wrote for a group of soldiers who told him to write something funny, something that wasn't about the war, is more nostalgia than anything else, and the leading character, Doc, is a Ricketts who sometimes resembles the original and is at other times purely a creation of Steinbeck's imagination. He is not the Ricketts who co-authored *Sea of Cortez*, which was published days before Pearl Harbor was bombed and

America entered the war that separated two men whose ideas were so closely interrelated that it is sometimes difficult to know who learned what from whom. That relationship and the thinking of the two men who wrote it are what *Sea of Cortez* is really all about. It is a useful work of travel literature, and it is a pioneering work of intertidal ecology, though it was written a full three decades before Earth Day turned environmental thinking into one of our national pastimes.

When Steinbeck died in December 1968, his critical reputation as a writer was severely tarnished. He had written little of significance in nearly two decades, and his support of the American war effort in Vietnam had put him in critical disrepute among even those critics who earlier had commended him as the champion of the victims of the Oklahoma dustbowl and the avarice of California agribusiness in *The Grapes of Wrath*, and for his compelling portraits of the simple but decent denizens of the Central California valleys in *Of Mice and Men, The Red Pony*, and *The Pastures of Heaven*. When he died, there were few serious scholars who did not share Harry T. Moore's feeling that his ultimate status as a writer would be that of a Louis Bromfield or a Bess Streeter Aldrich, and that even his best books were watered down by what Arthur Mizener called his "tenth-rate philosophizing."

History has proved otherwise. During the past quarter century, a veritable Steinbeck industry has emerged. All of his books have been reprinted. Important full-length critical studies have been published by major academic presses, and articles on virtually every aspect of his work have appeared in the best scholarly journals. The publication of his letters by his widow, Elaine, in collaboration with Robert Walsten, and a comprehensive and

carefully researched biography by Jackson J. Benson, have shed new light on the man and his creative process. Steinbeck research centers now exist at several universities, most notably in the unlikely location of Muncie, Indiana, where, at Ball State University, Tetsumaro Hayashi began in 1969 publishing the *Steinbeck Quarterly*, which helped young Steinbeck scholars to share their views long before the more prestigious journals were prepared to question the judgments of Harry Moore and Arthur Mizener.

Today, Steinbeck's reputation seems secure. While few would disagree that his canon as a whole reflects an uneven talent, it is clear that his best books champion ordinary men and women, simple souls who do battle against the forces that dehumanize the species, and who struggle, sometimes successfully, sometimes not, to forge lives of genuine meaning and worth. At the center of Steinbeck's thematic vision is a continuing dialectic between contrasting ways of life: between innocence and experience, between primitivism and progress, between narrow self-interest and an enduring commitment to the human community. His most interesting characters—George Milton and Lennie Small in *Of Mice and Men*, Doc Burton of *In Dubious Battle*, Tom Joad and Jim Casy in *The Grapes of Wrath*, and Mack and the boys in *Cannery Row*—search for meaning in a world of human error and imperfection.

At the heart of this dialectic are the contrasting views of human society held by the novelist and Ed Ricketts. This contrast in views can be seen in *Sea of Cortez*, and in large measure accounts for the book's importance. For while in much of his work, and most notably in *The Grapes of Wrath*, Steinbeck celebrates what he calls "man's proven capacity for greatness of heart and spirit," the fact

that man "grows beyond his work, walks up the stairs of his concepts, emerges ahead of his accomplishments," he also concedes (in the narrative portion of *Sea of Cortez*) that man "might be described fairly adequately, if simply, as a two-legged paradox. He has never become accustomed to the tragic miracle of consciousness. Perhaps, as has been suggested, his species is not set, has not jelled, but is still in a state of becoming, bound by his physical memories to a past of struggle and survival, limited in his futures by the uneasiness of thought and consciousness."

I have long believed and I have written elsewhere that "the tragic miracle of consciousness" is, for Steinbeck, man's greatest burden and his greatest glory. And it is the manner in which Steinbeck portrays this burden and this glory in his novels and his short stories that accounts for his success as a writer. This is the basis of the feeling in his fiction, the compassion, and at its extreme, his sentimentality. It was his central concern as a writer, from Henry Morgan's drive for power in *Cup of Gold* and Joseph Wayne's search for meaning in *To a God Unknown*, to the last sentence of his Nobel Prize acceptance speech, in which he paraphrased John the Apostle, stating, "In the end is the Word, and the Word is Man, and the Word is with Man." It is to *Sea of Cortez* that we must look if we are fully to understand all this, if we are to grasp the thematic vision of this writer whose books continue to be read and reread by millions of all ages, in his native California, across the United States, and throughout the world—where, in such diverse countries as Portugal and Poland, Mexico and Moldova, Steinbeck remains among the most loved and appreciated of all American novelists.

Though Steinbeck was born and grew up in the city of Salinas, a major processing center for the foodstuffs raised in one the most fertile agricultural lands in America, he spent much of his

childhood and adolescence in the towns along nearby Monterey Bay. In 1930, he settled in the bayside community of Pacific Grove with his bride, Carol Henning, whom he met and married in nearby San Jose. The center of California's sardine fishing industry, Pacific Grove and its neighboring communities of Monterey and Carmel were for many years California's "seacoast of bohemia." Robinson Jeffers built Tor House along Big Sur. Robert Louis Stevenson, Jack London, and Ambrose Bierce were frequent short-term visitors, and Charles Warren Stoddard, George Sterling, and Mary Austin were permanent residents. Monterey Bay itself, as Robert Louis Stevenson wrote in "The Old Pacific Capital," resembles a giant fishhook—with Monterey cozily ensconced beside the barb. Just outside the barb, in a cove embraced by rugged Point Lobos, lies Carmel. And just short of Point Lobos, the Carmel River reaches the sea, flowing down from what Stevenson called "a true California valley, bare, dotted with chaparral, overlooked by quaint, unfinished hills."

The Steinbecks were in poor financial shape as the decade began. His first novel, *Cup of Gold*, failed to sell, and Carol had given up a teaching job in San Jose to move with him to the Steinbeck cottage in Pacific Grove. When Steinbeck and Ricketts met in 1930 (not at a dentist's office as Steinbeck states in his retrospective "About Ed Ricketts," but rather at the home of Ricketts's friend and other collaborator, Jack Calvin), the most immediate result of their budding friendship was that Ricketts hired Carol as his secretary at his Pacific Biological Laboratory, where Ricketts made ends meet during the Great Depression by selling prepared slides to local high schools. At the same time, Steinbeck and Ricketts gradually developed a deep and lasting

northwest side of the city). But Ritter's ideas had much in common with those of Ricketts's favorite teacher at the university, animal ecologist W. C. Allee, whose ideas about the universality of social behavior among animals, and whose theory that animals behave differently in groups than as individuals (described in detail in his classic 1931 treatise on the subject, *Animal Aggregations*), profoundly affected Ricketts's way of viewing life. Years later, Jack Calvin told this writer that "we knew W. C. Allee from Ed's conversations, discovering that all of his former students got a holy look in their eyes at the mention of his name, as Ed always did." Allee did much of his work at Woods Hole, Massachusetts, where he eventually concluded that "the social medium is the condition necessary to the conservation and renewal of life," but that this is an automatic and not a conscious process. And when Allee turned his attention from the lower animals to man, he concluded that so-called altruistic drives in man "apparently are the development of these innate tendencies toward cooperation, which find their early physiological expression in many simpler animals."

Ritter's organismal conception, his idea that the whole is more than the sum of its parts and that these parts arise from a differentiation of the whole, is different from but complementary to Alice's thesis that organisms cooperate with one another to ensure their own survival. The ideas of these two pioneering ecologists provided an expansive intellectual ground upon which Steinbeck and Ricketts could develop their friendship. From almost the first day of their meeting, they became members of a larger group of latter-day Cannery Row bohemians, bound together by their poverty, which they combatted, as Jack Calvin noted, "by raiding local gardens and stealing vegetables for communal stews." Over time, Steinbeck drew very close to Ricketts. They spent endless hours in Ed's lab discussing the work of Allee and Ritter as

Steinbeck worked on his novels and short stories and Ricketts studied what he called "the good, kind, sane little animals," the marine invertebrates of the Central California coast.

In time, they both succeeded. Steinbeck achieved modest successes with his early short stories, greater glory with *Tortilla Flat*, which won him critical recognition, and then—when he sold the movie rights to the novel for the then-magnificent sum of four thousand dollars—financial independence. In the late 1930s, his popularity skyrocketed as *Of Mice and Men* succeeded both as fiction and as theater, and as *In Dubious Battle* and *The Grapes of Wrath* established him as a champion of the proletariat. *Grapes* was and remains Steinbeck's masterpiece. This epic account of the plight of a family of disinherited Oklahoma tenant farmers made Steinbeck a novelist of international stature. It is the book upon which his enduring reputation as a major American writer continues to rest.

Ricketts, on the other hand, worked away on his studies of life in the tidepools, taking the necessary time to maintain his prepared-slide business, which was his only source of income until 1939. That year, Stanford University Press published the results of his work in *Between Pacific Tides*, which Ricketts co-authored with Jack Calvin. Calvin did little more than polish Ricketts's stilted prose into a thoroughly readable and very professional account of the habits and habitats of the animals living on the rocky shores and in the tide pools of the Pacific Coast. Some years later, Steinbeck wrote a foreword to the third edition of *Tides*, noting that the book "is designed more to stir curiosity than to answer questions.... There are good things to see in the tidepools and interesting thoughts to be generated from the seeing. Every new eye applied to the peephole which looks out at the world may fish

which the couple hoped would serve to help salvage a failing marriage. It didn't. The *Western Flyer* left Monterey Bay on March 11, and returned six weeks later on April 20. The four-thousand-mile trip covered some twenty-five to thirty collecting stations where Ricketts, Steinbeck, and the crew collected what Ricketts guessed was "the greatest lot of specimens ever to have been collected in the Gulf by any single expedition."

After the trip, Steinbeck and Carol returned to their home in Los Gatos, where their marriage promptly collapsed, and where Steinbeck was dragged into controversy over *The Grapes of Wrath*, which, during his absence, had been brutally attacked for its alleged communist sympathies. Typical was the charge by Phillip Bancroft of the Associated Farmers of California (and a former candidate for the United States Senate) that the novel "is straight revolutionary propaganda.... In page after page it tries to build class hatred, contempt for officers of the law, and contempt for religion." Steinbeck felt some vindication, however, when he learned in early May that *Grapes* had been awarded the Pulitzer Prize for fiction, though he was typically reticent about receiving the award, and turned over his one thousand dollars in prize money to a struggling Monterey writer named Richie Lovejoy, whose father had loaned Steinbeck money to begin his career a decade earlier.

Ricketts spent the better part of a year identifying and cataloging specimens, and many more months passed as the Viking Press assembled the volume, reproduced photographs of the most important animals collected, and dealt with the many criticisms and revisions of the authors as the book went to press. When Steinbeck returned to Cannery Row in January 1941, his marriage to Carol was over, and he was in the midst of a flourishing affair

with singer Gwen Conger. He worked on the book's narrative, and with Ricketts on matters relating to its publication, throughout the spring and summer of 1941. Pascal Covici, Steinbeck's editor at Viking, probably spent more time on the publication of *Sea of Cortez* than on any three of Steinbeck's other books combined. It was finally published during the first week of December 1941. But the reviews in the papers of Sunday, December 7, were hardly noticed as readers were distracted by events of much more immediate importance.

Those reviews that did appear were mixed, but largely favorable. The venerable Clifton Fadiman was miffed. He was at a loss to understand how the author of *The Grapes of Wrath* got mixed up with such a project in the first place, and he and others pointed to parts of the narrative that seemed obscure, almost unreadable. Joseph Henry Jackson, then the arbiter of literary taste in San Francisco, thought it "suspicious mysticism." In terms of its scientific value, the critical response was more favorable. Among the more disparaging was that of John Lyman, who noted that the authors said a great deal about the "Panamic" character of the Gulf's fauna, but gave "only the bare lists of forms taken at each collecting station." More approvingly, Rolf Bolin, the Hopkins ichthyologist and longtime friend of Steinbeck and Ricketts, wrote that it was a good book and would be a great aid to people going to the area to collect. But whatever its scientific merits, the fact is that the book is recognized by nearly all of Steinbeck's critics as a statement of his beliefs about man and the world; that, as Peter Lisca noted as early as 1958, it "stands to his work very much as *Death in the Afternoon* and *Green Hills of Africa* stand to that of Hemingway." Accordingly, it is essential to dispel myths about the book's authorship and to understand just how it was written.

Sea of Cortez is a big book, nearly six hundred pages long. For many years, it was assumed that Steinbeck wrote the first part, the narrative of the trip—published separately by Viking in 1951 as *The Log from the* Sea of Cortez—and that Ricketts authored the second part, a phyletic catalog describing the animals collected, prefaced by a series of notes on preparing specimens. At the same time, it was believed that the material for the narrative came from two journals, one kept by Steinbeck, the other by Ricketts. Both assumptions are inaccurate. There were two journals, but neither was kept by Steinbeck. Rather, they were kept by Ricketts and by Tony Berry, the owner and captain of the purse seiner which Steinbeck and Ricketts chartered for the trip. And while Steinbeck referred to Berry's log for matters of fact (chiefly dates and times), he composed the narrative chiefly from Ricketts's journal. Indeed, in a joint memorandum which the authors wrote to Covici in August 1941, they set the record straight:

> Originally a journal of the trip was to have been kept by both of us, but the record was found to be a natural expression of only one of us. This journal was subsequently used by the other chiefly as a reminder of what had actually taken place, but in several cases parts of the original field notes were incorporated into the final narrative, and in one case a large section was lifted verbatim from other unpublished work. This was then passed back to the other for comment, completion of certain chiefly technical details, and corrections. And then the correction was passed back again.

In this memorandum to Covici, the authors dismiss the notion that *Sea of Cortez* is two books. Instead, they insist, "the structure is a collaboration, but mostly shaped by John. The book is the result."

The phyletic catalog is a comprehensive and remarkably readable account of marine life in the gulf, though it is not as complete as *Between Pacific Tides*, because it is based on a single

branches of thought grew away from the trunk of external reality." Indeed, notes Steinbeck, "we worked together, and so closely that I do not now know in some cases who started which line of speculation since the end thought was the product of both minds. I do not know whose thought it was."

The Log from the Sea of Cortez is an exercise in speculative metaphysics, grounded in the factual record of the trip itself, though even here simple facts like dates get mixed up. Consider, for example, that chapter 24 records events that occurred on April 3. Chapter 25 continues the narrative but is dated April 22, and chapter 26 is dated April 5. And remember that the *Western Flyer* returned to port on April 20.

There are entire sections where the thinking of both men coincide, and it is difficult if not impossible to distinguish the authorship of ideas. Typical of these sections are those about the scientific method, about seeing life whole, and about how the mind of the observer inevitably colors what is observed. Both Ricketts and Steinbeck were avid enthusiasts of the work of John Elof Boodin, who wrote in *Cosmic Evolution* (1925) that "the laws of thought are the laws of things" (the phrase is used verbatim in the *Log*), and that this law underpins the very notion of human creativity, since man and man alone can be a knower and can use his knowledge to understand the universe.

There are other sections of the *Log*, however, where research into the composition of the narrative reveals single authorship. The complex and controversial chapter on what the authors call "non-teleological" thinking was written almost entirely by Ricketts a decade before *Sea of Cortez* was published. Steinbeck enlisted Paul de Kruif to help market it and two of Ricketts's other essays ("The Philosophy of Breaking Through" and "A Spiritual Morphology of

Poetry") to the editors of *Harpers*, but Ricketts's convoluted prose and his complicated thinking made this an exercise in futility. So, to provide a forum for Ricketts's ideas, and because he thought he could find a way to incorporate them into the *Log* that would be unobtrusive and consistent with the tone of the manuscript as a whole, Steinbeck included the twenty-page essay as "an Easter Sunday sermon." And there are other sections of the narrative, specifically those dealing with the patterns of tides and with something the authors call "sea-memory," that date back to a collecting trip Ricketts made with Jack Calvin and with the now-legendary comparative mythologist Joseph Campbell in the early 1930s.

Most important, however, are those passages of the *Log* in which Steinbeck and Ricketts work out their differences in their views of the world and man's role in it, for it is in these sections that we find clues to what is really going on in such important novels as *In Dubious Battle* and *The Grapes of Wrath*. There are those who believe that Steinbeck drew most if not all of his ideas from Ricketts. Indeed, Jack Calvin speaks for more than a few of Ricketts's friends when he suggests that "Ed was a reservoir for John to draw on… in Ed he found an endless source of material—or call it inspiration if you like—and used it hungrily." The fact is, however, that the intellectual relationship between Steinbeck and Ricketts was a very complicated affair. They disagreed on matters of intellectual substance almost as often as they agreed. Those agreements and disagreements can be found in the *Log*, and are worked out in fictional form in Steinbeck's most important novels.

Though Ricketts read widely and was extraordinarily knowledgeable, his worldview was narrow in that it was essentially

animals" of the intertidal than with physicians or philosophers. But while Steinbeck understood and was sensitive to human weakness, and while he sometimes envied the simple Indians of the Gulf of California—who, as he notes in the *Log*, may one day have a legend about their northern neighbors, that "great and godlike race that flew away in four-motored bombers to the accompaniment of exploding bombs, the voice of God calling them home"—he was not content to view the world with what he identified as simple "understanding-acceptance." Rather, for Steinbeck, man is a creature of earth, not a heaven-bound pilgrim, and the writer's most memorable characters are those who see life whole, and then act on the basis of that understanding, to "break through" to useful and purposeful social action.

The clearest picture of the differences between Steinbeck and Ricketts regarding the proper course of human action for those who can "break through" can be drawn from a short film script Steinbeck wrote during the composition of *Sea of Cortez*, and an essay Ricketts wrote in response. Steinbeck returned to Mexico for a short time during the summer of 1940 with filmmaker Herb Klein to make a study of disease in an isolated village; this study was made into a well-received documentary entitled *The Forgotten Village*. The script focuses on the initiative of a young boy, Juan Diego, who is outraged because a deadly microbial virus, which has polluted the village's water supply and has killed his brother and made his sister seriously ill, is being treated by witch doctors when real medical help is nearby. Juan Diego leaves the village to find the doctors of the Rural Health Service, who return with him to cure the problem. Noting that "changes in people are never quick," Steinbeck prophesies that, because of the Juan Diegos of Mexico, "the change will come, is coming; the long climb out of

darkness. Already the people are learning, changing their lives, working, living in new ways."

After reading Steinbeck's text, Ricketts wrote an essay he called his "Thesis and Materials for a Script on Mexico"—actually an antiscript to Steinbeck's. In it, Ricketts noted that "the chief character in John's script is the Indian boy who becomes so imbued with the spirit of modern medical progress that he leaves the traditional way of his people to associate himself with the new thing."

> The working out of a script for the "other side" might correspondingly be achieved through the figure of some wise and mellow old man, who has long ago developed beyond the expediencies of economic drives and power drives, and to whom for guidance in adolescent troubles some grandchild comes.... A wise old man, present during the time of building a high speed road through a primitive community, appropriately might point out the evils of the encroaching mechanistic civilization to a young person.

In his best fiction, Steinbeck worked out the conflict between primitivism and progress, between his own view of the world and that of Ricketts—both of which were based, of course, on a scientific view of life organized around the concept of wholeness which is as spiritual as it is biological. And the Ed Ricketts characters in Steinbeck's fiction (they are several and are usually named "Doc") are those who are somehow cut off. They see and understand, but they cannot act on the basis of that understanding for the betterment of the species. Doc Burton in *In Dubious Battle* sees and understands the plight of the striking apple pickers in the Torgas Valley, but he wanders off into the night, frustrated by his inability to act on their behalf. He is "reincarnated" as Jim Casy in *The Grapes of Wrath*, who returns as Christ from the wilderness, and, seeing life whole, realizing that "all that lives is holy," gives

his life to aid the dispossessed and disinherited. And there is Doc in *Cannery Row*, who wants only to "savor the hot taste of life," even as the Row itself (which for Doc and his friends is "a poem, a stink, a grating noise, a quality of light, a tone, a habit, a nostalgia, a dream") is really an island surrounded by an encroaching society which will ultimately destroy it. Little wonder the book is dedicated "to Ed Ricketts, who knows why or should." And there is its sequel, *Sweet Thursday*, where the Ricketts character seems even more isolated in a book which is less sweet than bittersweet. And finally there is that strange play-novelette, *Burning Bright*, in which the Ricketts character (named Friend Ed) teaches the Steinbeck character (Joe Saul) how to see and understand things whole and then how to receive (a trait which, in "About Ed Ricketts," Steinbeck identified as among Ricketts's greatest talents).

In the *Log*, Steinbeck writes a passage which could easily have been taken from the work of William Emerson Ritter (it appears nowhere in Ricketts's notes on the trip), in which he reflects that "there are colonies of pelagic tunicates which have a shape like the finger of a glove." Steinbeck remarks that "each member of the colony is an individual, but the colony is another individual animal, not at all like the sum of its individuals." And, says Steinbeck, "I am much more than the sum of my cells and, for all I know, they are much more than the division of me." There is "no quietism in such acceptance," notes the novelist, "but rather the basis for a far deeper understanding of us and our world." This is Ritter's organismal conception, which Steinbeck learned at Hopkins and discussed for so many years with Ricketts. At the core of the argument is the premise that, since given properties of parts are determined by or explained in terms of the whole, the whole is directive, is capable of directing the parts. In other words,

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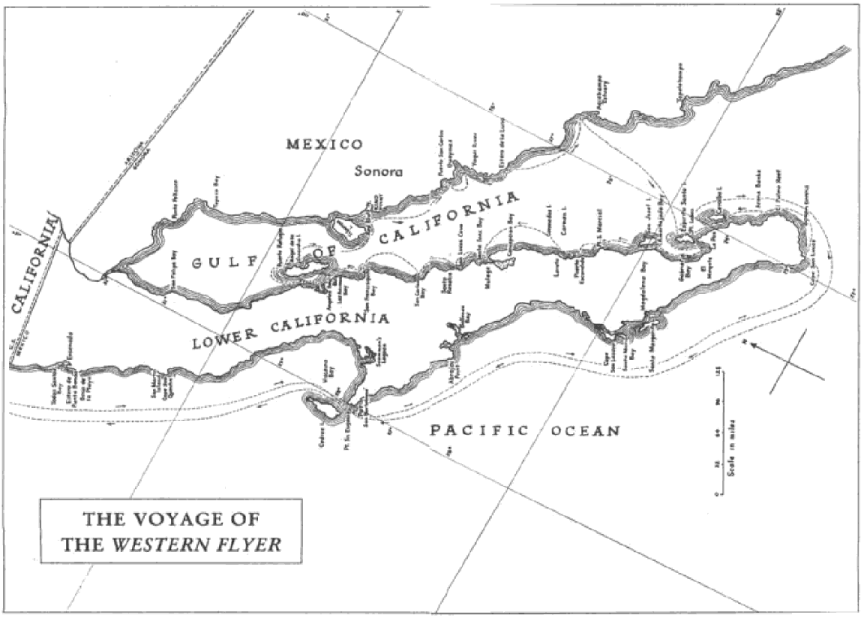
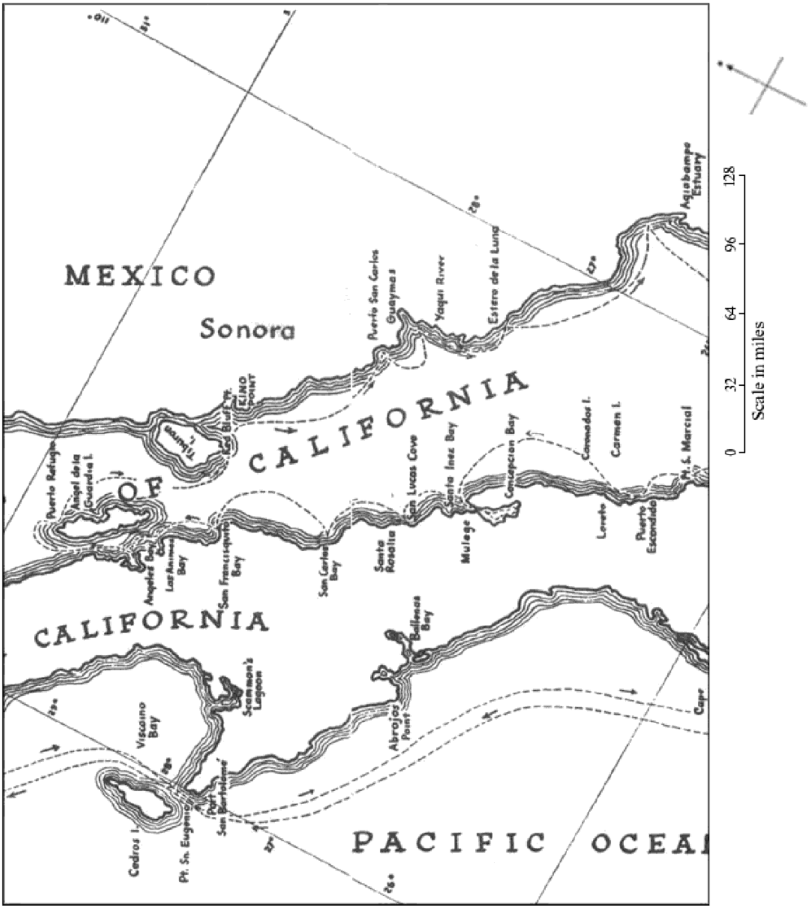


THE VOYAGE OF THE WESTERN



THE VOYAGE OF THE WESTERN

The Log from the Sea of Cortez

Introduction

The design of a book is the pattern of a reality controlled and shaped by the mind of the writer. This is completely understood about poetry or fiction, but it is too seldom realized about books of fact. And yet the impulse which drives a man to poetry will send another man into the tide pools and force him to try to report what he finds there. Why is an expedition to Tibet undertaken, or a sea bottom dredged? Why do men, sitting at the microscope, examine the calcareous plates of a sea-cucumber, and, finding a new arrangement and number, feel an exaltation and give the new species a name, and write about it possessively? It would be good to know the impulse truly, not to be confused by the "services to science" platitudes or the other little mazes into which we entice our minds so that they will not know what we are doing.

We have a book to write about the Gulf of California. We could do one of several things about its design. But we have decided to let it form itself: its boundaries a boat and a sea; its duration a six weeks' charter time; its subject everything we could see and think and even imagine; its limits—our own without reservation.

We made a trip into the Gulf; sometimes we dignified it by calling it an expedition. Once it was called the Sea of Cortez, and that is a better-sounding and a more exciting name. We stopped in

many little harbors and near barren coasts to collect and preserve the marine invertebrates of the littoral. One of the reasons we gave ourselves for this trip—and when we used this reason, we called the trip an expedition—was to observe the distribution of invertebrates, to see and to record their kinds and numbers, how they lived together, what they ate, and how they reproduced. That plan was simple, straight-forward, and only a part of the truth. But we did tell the truth to ourselves. We were curious. Our curiosity was not limited, but was as wide and horizonless as that of Darwin or Agassiz or Linnaeus or Pliny. We wanted to see everything our eyes would accommodate, to think what we could, and, out of our seeing and thinking, to build some kind of structure in modeled imitation of the observed reality. We knew that what we would see and record and construct would be warped, as all knowledge patterns are warped, first, by the collective pressure and stream of our time and race, second by the thrust of our individual personalities. But knowing this, we might not fall into too many holes—we might maintain some balance between our warp and the separate thing, the external reality. The oneness of these two might take its contribution from both. For example: the Mexican sierra has "XVII–15–IX" spines in the dorsal fin. These can easily be counted. But if the sierra strikes hard on the line so that our hands are burned, if the fish sounds and nearly escapes and finally comes in over the rail, his colors pulsing and his tail beating the air, a whole new relational externality has come into being—an entity which is more than the sum of the fish plus the fisherman. The only way to count the spines of the sierra unaffected by this second relational reality is to sit in a laboratory, open an evil-smelling jar, remove a stiff colorless fish from formalin solution, count the spines, and write the truth "D. XVII–15–IX." There you have

colony of soft corals from a rock in a little water world. And that isn't terribly important to the tide pool. Fifty miles away the Japanese shrimp boats are dredging with overlapping scoops, bringing up tons of shrimps, rapidly destroying the species so that it may never come back, and with the species destroying the ecological balance of the whole region. That isn't very important in the world. And thousands of miles away the great bombs are falling and the stars are not moved thereby. None of it is important or all of it is.

We determined to go doubly open so that in the end we could, if we wished, describe the sierra thus: "D. XVII–15–IX; A. II–15–IX," but also we could see the fish alive and swimming, feel it plunge against the lines, drag it threshing over the rail, and even finally eat it. And there is no reason why either approach should be inaccurate. Spine-count description need not suffer because another approach is also used. Perhaps out of the two approaches, we thought, there might emerge a picture more complete and even more accurate than either alone could produce. And so we went.

1

How does one organize an expedition: what equipment is taken, what sources read; what are the little dangers and the large ones? No one has ever written this. The information is not available. The design is simple, as simple as the design of a well-written book. Your expedition will be enclosed in the physical framework of start, direction, ports of call, and return. These you can forecast with some accuracy; and in the better-known parts of the world it is possible to a degree to know what the weather will be in a given season, how high and low the tides, and the hours of their occurrence. One can know within reason what kind of boat to take, how much food will be necessary for a given crew for a given time, what medicines are usually needed—all this subject to accident, of course.

We had read what books were available about the Gulf and they were few and in many cases confused. The *Coast Pilot* had not been adequately corrected for some years. A few naturalists with specialties had gone into the Gulf and, in the way of specialists, had seen nothing they hadn't wanted to. Clavigero, a Jesuit of the eighteenth century, had seen more than most and reported what he saw with more accuracy than most. There were some romantic accounts by young people who had gone into the Gulf looking for adventure and, of course, had found it. The same romantic drive aimed at the stockyards would not be disappointed. From the information available, a few facts did emerge. The Sea of Cortez,

or the Gulf of California, is a long, narrow, highly dangerous body of water. It is subject to sudden and vicious storms of great intensity. The months of March and April are usually quite calm and dependable and the March–April tides of 1940 were particularly good for collecting in the littoral.

The maps of the region were self-possessed and confident about headlands, coastlines, and depth, but at the edge of the Coast they become apologetic—laid in lagoons with dotted lines, supposed and presumed their boundaries. The *Coast Pilot* spoke as heatedly as it ever does about mirage and treachery of light. Going back from the *Coast Pilot* to Clavigero, we found more visual warnings in his accounts of ships broken up and scattered, of wrecks and wayward currents; of fifty miles of sea more dreaded than any other. The *Coast Pilot*, like an elderly scientist, cautious and restrained, on one side—and the old monk, setting down ships and men lost, and starvation on the inhospitable coasts.

In time of peace in the modern world, if one is thoughtful and careful, it is rather more difficult to be killed or maimed in the outland places of the globe than it is in the streets of our great cities, but the atavistic urge toward danger persists and its satisfaction is called adventure. However, your adventurer feels no gratification in crossing Market Street in San Francisco against the traffic. Instead he will go to a good deal of trouble and expense to get himself killed in the South Seas. In reputedly rough water, he will go in a canoe; he will invade deserts without adequate food and he will expose his tolerant and uninoculated blood to strange viruses. This is adventure. It is possible that his ancestor, wearying of the humdrum attacks of the saber-tooth, longed for the good old days of pterodactyl and triceratops.

invasion of England might begin; our radio was full of static and the world was going to hell. Finally in all the crackle and noise of the short-wave one of our men made contact with another boat. The conversation went like this:

"This is the *Western Flyer*. Is that you, Johnny?"

"Yeah, that you, Sparky?"

"Yeah, this is Sparky. How much fish you got?"

"Only fifteen tons; we lost a school today. How much fish you got?"

"We're not fishing."

"Why not?"

"Aw, we're going down in the Gulf to collect starfish and bugs and stuff like that."

"Oh, yeah? Well, O.K., Sparky, I'll clear the wave length."

"Wait, Johnny. You say you only got fifteen tons?"

"That's right. If you talk to my cousin, tell him, will you?"

"Yeah, I will, Johnny. *Western Flyer's* all clear now."

Hitler marched into Denmark and into Norway, France had fallen, the Maginot Line was lost—we didn't know it, but we knew the daily catch of every boat within four hundred miles. It was simply a directional thing; a man has only so much. And so it was with the chartering of a boat. The owners were not distrustful of us; they didn't even listen to us because they couldn't quite believe we existed. We were obviously ridiculous.

Now the time was growing short and we began to worry. Finally one boat owner who was in financial difficulty offered his boat at a reasonable price and we were ready to accept when suddenly he raised the price out of question and bolted. He was horrified at what he had done. He raised the price, not to cheat us, but to get out of going.

The boat problem was growing serious when Anthony Berry sailed into Monterey Bay on the *Western Flyer*. The idea was no shock to Tony Berry; he had chartered to the government for salmon tagging in Alaskan waters and was used to nonsense. Besides, he was an intelligent and tolerant man. He knew that he had idiosyncrasies and that some of his friends had. He was willing to let us do any crazy thing that we wanted so long as we (1) paid a fair price, (2) told him where to go, (3) did not insist that he endanger the boat, (4) got back on time, and (5) didn't mix him up in our nonsense. His boat was not busy and he was willing to go. He was a quiet young man, very serious and a good master. He knew some navigation—a rare thing in the fishing fleet—and he had a natural caution which we admired. His boat was new and comfortable and clean, the engines in fine condition. We took the *Western Flyer* on charter.

She was seventy-six feet long with a twenty-five-foot beam; her engine, a hundred and sixty-five horsepower direct reversible Diesel, drove her at ten knots. Her deckhouse had a wheel forward, then combination master's room and radio room, then bunkroom, very comfortable, and behind that the galley. After the galley, a large hatch gave into the fish-hold, and after the hatch were the big turn-table and roller of the purse-seiner. She carried a twenty-foot skiff and a ten-foot skiff. Her engine was a thing of joy, spotlessly clean, the moving surfaces shining and damp with oil and the green paint fresh and new on the housings. The engine-room floor was clean and all the tools polished and hung in their places. One look into the engine-room inspired confidence in the master. We had seen other engines in the fishing fleet and this perfection on the *Western Flyer* was by no means a general thing.

sentence of death, a ship's charter is as portentous a document as has ever been written. Penalties are set down against both parties, and if on some morning the rising sun should find your ship in the middle of the Mojave Desert you have only to look again at the charter to find the blame assigned and the penalty indicated. It took us several hours to get over the solemn feeling the charter put on us. We thought we might live better lives and pay our debts, and one at least of us contemplated for one holy, horrified moment a vow of chastity.

But the charter was signed and food began to move into the *Western Flyer*. It is amazing how much food seven people need to exist for six weeks. Cases of spaghetti, cases and cases of peaches and pineapple, of tomatoes, whole Romano cheeses, canned milk in coveys, flour and cornmeal, gallons of olive oil, tomato paste, crackers, cans of butter and jam, catsup and rice, beans and bacon and canned meats, vegetables and soups in cans; truckloads of food. And all this food was stored eagerly and happily by the crew. It disappeared into cupboards, under little hatches in the galley floor, and many cases went below.

We had done a good deal of collecting, but largely in temperate zones. The equipment for collecting, preserving, and storing specimens was selected on the basis of experience in other waters and of anticipation of difficulties imposed by a hot humid country. In some cases we were right, in others very wrong.

In a small boat, the library should be compact and available. We had constructed a strong, steel-reinforced wooden case, the front of which hinged down to form a desk. This case holds about twenty large volumes and has two filing cases, one for separates (scientific reprints) and one for letters; a small metal box holds pens, pencils, erasers, clips, steel tape, scissors, labels, pins, rubber bands, and so

forth. Another compartment contains a three-by-five-inch card file. There are cubby-holes for envelopes, large separates, small separates, typewriter paper, carbon, a box for India ink and glue. The construction of the front makes room for a portable typewriter, drawing board, and T-square. There is a long narrow space for rolled charts and maps. Closed, this compact and complete box is forty-four inches long by eighteen by eighteen; loaded, it weighs between three and four hundred pounds. It was designed to rest on a low table or in an unused bunk. Its main value is compactness, completeness, and accessibility. We took it aboard the *Western Flyer*. There was no table for it to rest on. It did not fit in a bunk. It could not be put on the deck because of moisture. It ended up lashed to the rail on top of the deckhouse, covered with several layers of tarpaulin and roped on. Because of the roll of the boat it had to be tied down at all times. It took about ten minutes to remove the tarpaulin, untie the lashing line, open the cover, squeeze down between two crates of oranges, read the title of the wanted book upside down, remove it, close and lash and cover the box again. But if there had been a low table or a large bunk, it would have been perfect.

For many little errors like this, we have concluded that all collecting trips to fairly unknown regions should be made twice; once to make mistakes and once to correct them. Some of the greatest difficulty lies in the fact that previous collectors have never set down the equipment taken and its success or failure. We propose to rectify this in our account.

The library contained all the separates then available on the Panamic and Gulf fauna. Primary volumes such as Johnson and Snook, Ricketts and Calvin, Russell and Yonge, Flattely and Walton, Keep's *West Coast Shells*, Fisher's three-volume starfish

monograph, the Rathbun brachyuran monograph, Schmitt's *Marine Decapod Crustacea of California*, Fraser's *Hydroids*, Barnhart's *Marine Fishes of Southern California, Coast Pilots* for the whole Pacific Coast; charts, both large and small scale, of the whole region to be covered.

The camera equipment was more than adequate, for it was never used. It included a fine German reflex and an 8-mm. movie camera with tripod, light meters, and everything. But we had no camera-man. During low tides we all collected; there was no time to dry hands and photograph at the collecting scene. Later, the anesthetizing, killing, preserving, and labeling of specimens were so important that we still took no pictures. It was an error in personnel. There should be a camera-man who does nothing but take pictures.

Our collecting material at least was good. Shovels, wrecking- and abalone-bars, nets, long-handled dip-nets, wooden fish-kits, and a number of seven-cell flashlights for night collecting were taken. Containers seemed to go endlessly into the hold of the *Western Flyer*. Wooden fish-kits with heads; twenty hard-fir barrels with galvanized hoops in fifteen- and thirty-gallon sizes; cases of gallon jars, quart, pint, eight-ounce, five-ounce, and two-ounce screw-cap jars; several gross of corked vials in four chief sizes, 100x33 mm., six-dram, four-dram, and two-dram sizes. There were eight two-and-a-half-gallon jars with screw caps. And with all these we ran short of containers, and before we were through had to crowd those we had. This was unfortunate, since many delicate animals should be preserved separately to prevent injury.

Of chemicals, we put into the boat a fifteen-gallon barrel of U.S.P. formaldehyde and a fifteen-gallon barrel of denatured

2

What little time we were not on lists and equipment or in grudging sleep we went to the pier and looked at boats, watched them tied to their buoys behind the breakwater—the dirty boats and the clean painted boats, each one stamped with the personality of its owner. Here, where the discipline was as individual as the owners, every boat was different from every other one. If the stays were rusting and the deck unwashed, paint scraped off and lines piled carelessly, there was no need to see the master; we knew him. And if the lines were coiled and the cables greased and the little luxury of deer horns nailed to the crow's-nest, there was no need to see that owner either. There were deer horns on many of the crow's-nests, and when we asked why, we were told they brought good luck. Out of some ancient time, they brought good luck to these people, most of them out of Sicily, the horns grown sturdily on the structure of their race. If you ask, "Where does the idea come from?" the owner will say, "It brings good luck, we always put them on." And a thousand years ago the horns were on the masts and brought good luck, and probably when the ships of Carthage and Tyre put into the harbors of Sicily, the horns were on the mastheads and brought good luck and no one knew why. Out of some essential race soul the horns come, and not only the horns, but the boats themselves, so that to a man, to nearly all men, a boat more than any other tool he uses is a little representation of an archetype. There is an "idea" boat that is an emotion, and because the emotion is so strong it is probable that no other tool is made

with so much honesty as a boat. Bad boats are built, surely, but not many of them. It can be argued that a bad boat cannot survive tide and wave and hence is not worth building, but the same might be said of a bad automobile on a rough road. Apparently the builder of a boat acts under a compulsion greater than himself. Ribs are strong by definition and feeling. Keels are sound, planking truly chosen and set. A man builds the best of himself into a boat—builds many of the unconscious memories of his ancestors. Once, passing the boat department of Macy's in New York, where there are duck-boats and skiffs and little cruisers, one of the authors discovered that as he passed each hull he knocked on it sharply with his knuckles. He wondered why he did it, and as he wondered, he heard a knocking behind him, and another man was rapping the hulls with *his* knuckles, the same tempo—three sharp knocks on each hull. During an hour's observation there no man or boy and few women passed who did not do the same thing. Can this have been an unconscious testing of the hulls? Many who passed could not have been in a boat, perhaps some of the little boys had never seen a boat, and yet everyone tested the hulls, knocked to see if they were sound, and did not even know he was doing it. The observer thought perhaps they and he would knock on any large wooden object that might give forth a resonant sound. He went to the piano department, icebox floor, beds, cedar-chests, and no one knocked on them—only on boats.

How deep this thing must be, the giver and the receiver again; the boat designed through millenniums of trial and error by the human consciousness, the boat which has no counterpart in nature unless it be a dry leaf fallen by accident in a stream. And Man receiving back from Boat a warping of his psyche so that the sight of a boat riding in the water clenches a fist of emotion in his chest.

We have looked into the tide pools and seen the little animals feeding and reproducing and killing for food. We name them and describe them and, out of long watching, arrive at some conclusion about their habits so that we say, "This species typically does thus and so," but we do not objectively observe our own species as a species, although we know the individuals fairly well. When it seems that men may be kinder to men, that wars may not come again, we completely ignore the record of our species. If we used the same smug observation on ourselves that we do on hermit crabs we would be forced to say, with the information at hand, "It is one diagnostic trait of *Homo sapiens* that groups of individuals are periodically infected with a feverish nervousness which causes the individual to turn on and destroy, not only his own kind, but the works of his own kind. It is not known whether this be caused by a virus, some airborne spore, or whether it be a species reaction to some meteorological stimulus as yet undetermined." Hope, which is another species diagnostic trait—the hope that this may not always be—does not in the least change the observable past and present. When two crayfish meet, they usually fight. One would say that perhaps they might not at a future time, but without some mutation it is not likely that they will lose this trait. And perhaps our species is not likely to forgo war without some psychic mutation which at present, at least, does not seem imminent. And if one place the blame for killing and destroying on economic insecurity, on inequality, on injustice, he is simply stating the proposition in another way. We have what we are. Perhaps the crayfish feels the itch of jealousy, or perhaps he is sexually insecure. The effect is that he fights. When in the world there shall come twenty, thirty, fifty years without evidence of our murder trait, under whatever system of justice or economic security, then

we may have a contrasting habit pattern to examine. So far there is no such situation. So far the murder trait of our species is as regular and observable as our various sexual habits.

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We talked to Tony, the master and part owner of the *Western Flyer*, and our satisfaction with him as master increased constantly. He had the brooding, dark, Slavic eyes and the hawk nose of the Dalmatian. He rarely talked or laughed. He was tall and lean and very strong. He had a great contempt for forms. Under way, he liked to wear a tweed coat and an old felt hat, as though to say, "I keep the sea in my head, not on my back like a Goddamn yachtsman." Tony has one great passion; he loves rightness and he hates wrongness. He thinks speculation a complete waste of time. To our sorrow, and some financial loss, we discovered that Tony never spoke unless he was right. It was useless to bet with him and impossible to argue with him. If he had not been right, he would never have opened his mouth. But once knowing and saying a truth, he became infuriated at the untruth which naturally enough was set against it. Inaccuracy was like an outrageous injustice to him, and when confronted with it, he was likely to shout and to lose his temper. But he did not personally triumph when his point was proven. An ideal judge, hating larceny, feels no triumph when he sentences a thief, and Tony, when he has nailed a true thing down and routed a wrong thing, feels good, but not righteous. He retires grumbling a little sadly at the stupidity of a world which can conceive a wrongness or for one moment defend one. He loves the leadline because it tells a truth on its markers; he loves the Navy charts; and until he went into the Gulf he admired the *Coast Pilot*. The *Coast Pilot* was not wrong, but things had changed since its correction, and Tony is uneasy in the face of variables. The whole relational thinking of modern physics was an obscenity to him and he refused to have anything to do with it. Parallels and compasses and the good Navy maps were things you could trust. A circle is true and a direction is set forever, a shining golden line across the

mind. Later, in the mirage of the Gulf where visual distance is a highly variable matter, we wondered whether Tony's certainties were ever tipped. It did not seem so. His qualities made him a good master. He took no chances he could avoid, for his boat and his life and ours were no light things for him to tamper with.

We come now to a piece of equipment which still brings anger to our hearts and, we hope, some venom to our pen. Perhaps in self-defense against suit, we should say, "The outboard motor mentioned in this book is purely fictitious and any resemblance to outboard motors living or dead is coincidental." We shall call this contraption, for the sake of secrecy, a Hansen Sea-Cow—a dazzling little piece of machinery, all aluminum paint and touched here and there with spots of red. The Sea-Cow was built to sell, to dazzle the eyes, to splutter its way into the unwary heart. We took it along for the skiff. It was intended that it should push us ashore and back, should drive our boat into estuaries and along the borders of little coves. But we had not reckoned with one thing. Recently, industrial civilization has reached its peak of reality and has lunged forward into something that approaches mysticism. In the Sea-Cow factory where steel fingers tighten screws, bend and mold, measure and divide, some curious mathematick has occurred. And that secret so long sought has accidentally been found. Life has been created. The machine is at last stirred. A soul and a malignant mind have been born. Our Hansen Sea-Cow was not only a living thing but a mean, irritable, contemptible, vengeful, mischievous, hateful living thing. In the six weeks of our association we observed it, at first mechanically and then, as its living reactions became more and more apparent, psychologically. And we determined one thing to our satisfaction. When and if these ghoulish little motors learn to reproduce themselves the

5. It hated Tex, sensing perhaps that his knowledge of mechanics was capable of diagnosing its shortcomings.

6. It completely refused to run: (a) when the waves were high, (b) when the wind blew, (c) at night, early morning, and evening, (d) in rain, dew, or fog, (e) when the distance to be covered was more than two hundred yards. But on warm, sunny days when the weather was calm and the white beach close by—in a word, on days when it would have been a pleasure to row—the Sea-Cow started at a touch and would not stop.

7. It loved no one, trusted no one. It had no friends.

Perhaps toward the end, our observations were a little warped by emotion. Time and again as it sat on the stern with its pretty little propeller lying idly in the water, it was very close to death. And in the end, even we were infected with its malignancy and its dishonesty. We should have destroyed it, but we did not. Arriving home, we gave it a new coat of aluminum paint, spotted it at points with new red enamel, and sold it. And we might have rid the world of this mechanical cancer!

4

It would be ridiculous to suggest that ours was anything but a makeshift expedition. The owner of a boat on short charter does not look happily on any re-designing of his ship. In a month or two we could have changed the *Western Flyer* about and made her a collector's dream, but we had neither the time nor the money to do it. The low-tide period was approaching. We had on board no permanent laboratory. There was plenty of room for one in the fish-hold, but the dampness there would have rusted the instruments overnight. We had no dark-room, no permanent aquaria, no tanks for keeping animals alive, no pumps for delivering sea water. We had not even a desk except the galley table. Microscopes and cameras were put away in an empty bunk. The enameled pans for laying out animals were in a large crate lashed to the net-table aft, where it shared the space with the two skiffs. The hatch cover of the fish-hold became laboratory and aquarium, and we carried sea water in buckets to fill the pans. Another empty bunk was filled with flashlights, medicines, and the more precious chemicals. Dipnets, wooden collecting buckets, and vials and jars in their cases were stowed in the fish-hold. The barrels of alcohol and formaldehyde were lashed firmly to the rail on deck, for all of us had, I think, a horror-thought of fifteen gallons of U.S.P. formaldehyde broken loose and burst. One achieves a respect and a distaste for formaldehyde from working with it. Fortunately, none of us had a developed formalin allergy.

Our small refrigerating chamber, powered by a two-cycle gasoline engine and designed to cool sea water for circulation to living animals, began the trip on top of the deckhouse and ended back on the net-table. This unit, by the way, was not very effective, the motor being jerky and not of sufficient power. But on certain days in the Gulf it did manage to cool a little beer or perhaps more than a little, for the crew fell in joyfully with our theory that it is unwise to drink unboiled water, and boiled water isn't any good. In addition, the weather was too hot to boil water, and besides the crew wished to test this perfectly sound scientific observation thoroughly. We tested it by reducing the drinking of water to an absolute minimum.

A big pressure tube of oxygen was lashed to a deck rail, its gauges and valves wrapped in canvas. Gradually, the boat was loaded and the materials put away, some never to be taken out again. It was agreed that we should all stand wheel-watch when we were running night and day; but once in the Gulf, and working at collecting stations, the hired crew should work the boat, since we would anchor at night and run only during the daytime.

Toward the end of the preparation, a small hysteria began to build in ourselves and our friends. There were hundreds of unnecessary trips back and forth. Some materials were stowed on board with such cleverness that we never found them again. Now the whole town of Monterey was becoming fevered and festive—but not because of our going. At the end of the sardine season, canneries and boat owners provide a celebration. There is a huge barbecue on the end of the pier with free beef and beer and salad for all comers. The sardine fleet is decorated with streamers and bunting and serpentine, and the boat with the biggest season catch is queen of a strange nautical parade of boats; and every boat

carried no firearms except a .22-caliber pistol and a very rusty ten-gauge shotgun. But an oxygen cylinder might look too much like a torpedo to an excitable rural soldier, and some of the laboratory equipment could have had a lethal look about it. We were not afraid for ourselves, but we imagined being held in some mud *cuartel* while the good low tides went on and we missed them. In our naïveté, we considered that our State Department, having much business with the Mexican government, might include a paragraph about us in one of its letters, which would convince Mexico of our decent intentions. To this end, we wrote to the State Department explaining our project and giving a list of people who would confirm the purity of our motives. Then we waited with a childlike faith that when a thing is stated simply and evidence of its truth is included there need be no mix-up. Besides, we told ourselves, we were American citizens and the government was our servant. Alas, we did not know diplomatic procedure. In due course, we had an answer from the State Department. In language so diplomatic as to be barely intelligible it gently disabused us. In the first place, the State Department was *not* our servant, however other departments might feel about it. The State Department had little or no interest in the collection of marine invertebrates unless carried on by an institution of learning, preferably with Dr. Butler as its president. The government never made such representations for private citizens. Lastly, the State Department hoped to God we would not get into trouble and appeal to it for aid. All this was concealed in language so beautiful and incomprehensible that we began to understand why diplomats say they are "studying" a message from Japan or England or Italy. We studied this letter for the better part of one night, reduced its sentences to words, built it up again, and

came out with the above-mentioned gist. "Gist" is, we imagine, a word which makes the State Department shudder with its vulgarity.

There we were, with no permits and the imaginary soldier still upset by our oxygen tube. In Mexico, certain good friends worked to get us the permits; the consul-general in San Francisco wrote letters about us, and then finally, through a friend, we got in touch with Mr. Castillo Najera, the Mexican ambassador to Washington. To our wonder there came an immediate reply from the ambassador which said there was no reason why we should not go and that he would see the permits were issued immediately. His letter said just that. There was a little sadness in us when we read it. The ambassador seemed such a good man we felt it a pity that he had no diplomatic future, that he could never get anywhere in the world of international politics. We understood his letter the first time we read it. Clearly, Mr. Castillo Najera is a misfit and a rebel. He not only wrote clearly, but he kept his word. The permits came through quickly and in order. And we wish here and now to assure this gentleman that whenever the inevitable punishment for his logic and clarity falls upon him we will gladly help him to get a new start in some other profession.

When the permits arrived, they were beautifully sealed so that even a soldier who could not read would know that if we were not what we said we were, we were at least influential enough spies and saboteurs to be out of his jurisdiction.

And so our boat was loaded, except for the fuel tanks, which we planned to fill at San Diego. Our crew entered the contests at the sardine fiesta—the skiff race, the greased-pole walk, the water-barrel tilt—and they did not win anything, but no one cared. And late in the night when the feast had died out we slept ashore for the last time, and our dreams were cluttered with things we might have

backed and turned and wove our way out among the boats of the fishing fleet. In our rigging the streamers, the bunting, the serpentine still fluttered, and as the breakwater was cleared and the wind struck us, we seemed, to ourselves at least, a very brave and beautiful sight. The little bell buoy on the reef at Cabrillo Point was excited about it too, for the wind had freshened and the float rolled heavily and the four clappers struck the bell with a quick tempo. We stood on top of the deckhouse and watched the town of Pacific Grove slip by and dark pine-covered hills roll back on themselves as though they moved, not we.

We sat on a crate of oranges and thought what good men most biologists are, the tenors of the scientific world—temperamental, moody, lecherous, loud-laughing, and healthy. Once in a while one comes on the other kind—what used in the university to be called a "dry-ball"—but such men are not really biologists. They are the embalmers of the field, the picklers who see only the preserved form of life without any of its principle. Out of their own crusted minds they create a world wrinkled with formaldehyde. The true biologist deals with life, with teeming boisterous life, and learns something from it, learns that the first rule of life is living. The dryballs cannot possibly learn a thing every starfish knows in the core of his soul and in the vesicles between his rays. He must, so know the starfish and the student biologist who sits at the feet of living things, proliferate in all directions. Having certain tendencies, he must move along their lines to the limit of their potentialities. And we have known biologists who did proliferate in all directions: one or two have had a little trouble about it. Your true biologist will sing you a song as loud and off-key as will a blacksmith, for he knows that morals are too often diagnostic of prostatitis and stomach ulcers. Sometimes he may proliferate a

little too much in all directions, but he is as easy to kill as any other organism, and meanwhile he is very good company, and at least he does not confuse a low hormone productivity with moral ethics.

The *Western Flyer* pushed through the swells toward Point Joe, which is the southern tip of the Bay of Monterey. There was a line of white which marked the open sea, for a strong north wind was blowing, and on that reef the whistling buoy rode, roaring like a perplexed and mournful bull. On the shore road we could see the cars of our recent friends driving along keeping pace with us while they waved handkerchiefs sentimentally. We were all a little sentimental that day. We turned the buoy and cleared the reef, and as we did the boat rolled heavily and then straightened. The north wind drove down on our tail, and we headed south with the big swells growing under us and passing, so that we seemed to be standing still. A squadron of pelicans crossed our bow, flying low to the waves and acting like a train of pelicans tied together, activated by one nervous system. For they flapped their powerful wings in unison, coasted in unison. It seemed that they tipped a wavetop with their wings now and then, and certainly they flew in the troughs of the waves to save themselves from the wind. They did not look around or change direction. Pelicans seem always to know exactly where they are going. A curious sea-lion came out to look us over, a tawny, crusty old fellow with rakish mustaches and the scars of battle on his shoulders. He crossed our bow too and turned and paralleled our course, trod water, and looked at us. Then, satisfied, he snorted and cut for shore and some sea-lion appointment. They always have them, it's just a matter of getting around to keeping them.

And now the wind grew stronger and the windows of houses along the shore flashed in the declining sun. The forward guy-wire

of our mast began to sing under the wind, a deep and yet penetrating tone like the lowest string of an incredible bull-fiddle. We rose on each swell and skidded on it until it passed and dropped us in the trough. And from the galley ventilator came the odor of boiling coffee, a smell that never left the boat again while we were on it.

In the evening we came back restlessly to the top of the deck-house, and we discussed the Old Man of the Sea, who might well be a myth, except that too many people have seen him. There is some quality in man which makes him people the ocean with monsters and one wonders whether they are there or not. In one sense they are, for we continue to see them. One afternoon in the laboratory ashore we sat drinking coffee and talking with Jimmy Costello, who is a reporter on the Monterey *Herald*. The telephone rang and his city editor said that the decomposed body of a sea-serpent was washed up on the beach at Moss Landing, half-way around the Bay. Jimmy was to rush over and get pictures of it. He rushed, approached the evil-smelling monster from which the flesh was dropping. There was a note pinned to its head which said, "Don't worry about it, it's a basking shark. [Signed] Dr. Rolph Bolin of the Hopkins Marine Station." No doubt that Dr. Bolin acted kindly, for he loves true things; but his kindness was a blow to the people of Monterey. They so wanted it to be a sea-serpent. Even we hoped it would be. When sometimes a true sea-serpent, complete and undecayed, is found or caught, a shout of triumph will go through the world. "There, you see," men will say, "I knew they were there all the time. I just had a feeling they were there." Men really need sea-monsters in their personal oceans. And the Old Man of the Sea is one of these. In Monterey you can find many people who have seen him. Tiny Colletto has seen him close

vestigial gills, the preponderantly aquatic symbols in the individual unconscious might well be indications of a group psyche-memory which is the foundation of the whole unconscious. And what things must be there, what monsters, what enemies, what fear of dark and pressure, and of prey! There are numbers of examples wherein even invertebrates seem to remember and to react to stimuli no longer violent enough to cause the reaction. Perhaps, next to that of the sea, the strongest memory in us is that of the moon. But moon and sea and tide are one. Even now, the tide establishes a measurable, although minute, weight differential. For example, the steamship *Majestic* loses about fifteen pounds of its weight under a full moon.[1] According to a theory of George Darwin (son of Charles Darwin), in pre-Cambrian times, more than a thousand million years ago, the tides were tremendous; and the weight differential would have been correspondingly large. The moon-pull must have been the most important single environmental factor of littoral animals. Displacement and body weight then must certainly have decreased and increased tremendously with the rotation and phases of the moon, particularly if the orbit was at that time elliptic. The sun's reinforcement was probably slighter, relatively.

Consider, then, the effect of a decrease in pressure on gonads turgid with eggs or sperm, already almost bursting and awaiting the slight extra pull to discharge. (Note also the dehiscence of ova through the body walls of the polychaete worms. These ancient worms have their ancestry rooted in the Cambrian and they are little changed.) Now if we admit for the moment the potency of this tidal effect, we have only to add the concept of inherited psychic pattern we call "instinct" to get an inkling of the force of the lunar rhythm so deeply rooted in marine animals and even in higher animals and in man.

When the fishermen find the Old Man rising in the pathways of their boats, they may be experiencing a reality of past and present. This may not be a hallucination; in fact, it is little likely that it is. The interrelations are too delicate and too complicated. Tidal effects are mysterious and dark in the soul, and it may well be noted that even today the effect of the tides is more valid and strong and widespread than is generally supposed. For instance, it has been reported that radio reception is related to the rise and fall of Labrador tides,[2] and that there may be a relation between tidal rhythms and the recently observed fluctuations in the speed of light.[3] One could safely predict that all physiological processes correspondingly might be shown to be influenced by the tides, could we but read the indices with sufficient delicacy.

It appears that the physical evidence for this theory of George Darwin is more or less hypothetical, not in fact, but by interpretation, and that critical reasoning could conceivably throw out the whole process and with it the biologic connotations, because of unknown links and factors. Perhaps it should read the other way around. The animals themselves would seem to offer a striking confirmation to the tidal theory of cosmogony. One is almost forced to postulate some such theory if he would account causally for this primitive impress. It would seem far-fetched to attribute the strong lunar effects actually observable in breeding animals to the present fairly weak tidal forces only, or to coincidence. There is tied up to the most primitive and powerful racial or collective instinct a rhythm sense or "memory" which affects everything and which in the past was probably more potent than it is now. It would at least be more plausible to attribute these profound effects to devastating and instinct-searing tidal influences active during the formative times of the early race history of

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The evening came down on us and as it did the wind dropped but the tall waves remained, not topped with whitecaps any more. A few porpoises swam near and looked at us and swam away. The watches changed and we ate our first meal aboard, the cold wreckage of farewell snacks, and when our watch was done we were reluctant to go down to the bunks. We put on heavier coats and hung about the long bench where the helmsman sat. The little light on the compass card and the port and starboard lights were our outmost boundaries. Then we passed Point Sur and the waves flattened out into a ground-swell and increased in speed. Tony the master said, "Of course, it's always that way. The point draws the waves." Another might say, "The waves come greatly to the point," and in both statements there would be a good primitive exposition of the relation between giver and receiver. This relation would be through waves; wave to wave to wave, each of which is connected by torsion to its inshore fellow and touches it enough, although it has gone before, to be affected by its torsion. And so on and on to the shore, and to the point where the last wave, if you think from the sea, and the first if you think from the shore, touches and breaks. And it is important where you are thinking from.

The sharp, painful stars were out and bright enough to make the few whitecaps gleam against the dark surrounding water. From the wheel the little flag-jack on the peak stood against the course and swung back and forth over the horizon stars, blotting out each one

as it passed. We tried to cover a star with the flag-jack and keep it covered, but this was impossible; no one could do that, not even Tony. But Tony, who knew his boat so well, could feel the yaw before it happened, could correct an error before it occurred. This is no longer reason or thought. One achieves the same feeling on a horse he knows well; one almost feels the horse's impulse in one's knees, and knows, but does not know, not only when the horse will shy, but the direction of his jump. The landsman, or the man who has been long ashore, is clumsy with the wheel, and his steering in a heavy sea is difficult. One grows tense on the wheel, particularly if someone like Tony is watching sardonically. Then keeping the compass card steady becomes impossible and the swing, a variable arc from two to ten degrees. And as weariness creeps up it is not uncommon to forget which way to turn the wheel to make the compass card swing back where you want it. The wheel turns only two ways, left or right. The fact of the lag, and the boat swinging rapidly so that a slow correcting allows it to pass the course and err on the other side, becomes a maddening thing when Tony the magnificent sits beside you. He does not correct you, he doesn't even speak. But Tony loves the truth, and the course is the truth. If the helmsman is off course he is telling a lie to Tony. And as the course projects, hypothetically, straight off the bow and around the world, so the wake drags out behind, a tattler on the conduct of the steersman. If one should steer mathematically perfectly, which is of course impossible, the wake will be a straight line; but even if, when drawn, it may have been straight, it bends to currents and to waves, and your true effort is wiped out. There is probably a unified-field hypothesis available in navigation as in all things. The internal factors would be the boat, the controls, the engine, and the crew, but chiefly the will and intent of the master, sub-headed with

his conditioning experience, his sadness and ambitions and pleasures. The external factors would be the ocean with its bordering land, the waves and currents and the winds with their constant and varying effect in modifying the influence of the rudder against the changing tensions exerted on it.

If you steer *toward an object*, you cannot perfectly and indefinitely steer directly at it. You must steer to one side, or run it down; but you can steer exactly at a compass point, indefinitely. That does not change. Objects achieved are merely its fulfillment. In going toward a headland, for example, you can steer directly for it while you are at a distance, only changing course as you approach. Or you may set your compass course for the point and correct it by vision when you approach. The working out of the ideal into the real is here—the relationship between inward and outward, microcosm to macrocosm. The compass simply represents the ideal, present but unachievable, and sight-steering a compromise with perfection which allows your boat to exist at all.

In the development of navigation as thought and emotion—and it must have been a slow, stumbling process frightening to its innovators and horrible to the fearful—how often must the questing mind have wished for a constant and unvarying point on the horizon to steer by. How simple if a star floated unchangeably to measure by. On clear nights such a star is there, but it is not trustworthy and the course of it is an arc. And the happy discovery of Stella Polaris—which, although it too shifts very minutely in an arc, is constant relatively—was encouraging. Stella Polaris will get you there. And so to the crawling minds Stella Polaris must have been like a very goddess of constancy, a star to love and trust.

What we have wanted always is an *unchangeable*, and we have found that only a compass point, a thought, an individual ideal,

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MARCH 12

In the morning we had come to the Santa Barbara Channel and the water was slick and gray, flowing in long smooth swells, and over it, close down, there hung a little mist so that the sea-birds flew in and out of sight. Then, breaking the water as though they swam in an obscure mirror, the porpoises surrounded us. They really came to us. We have seen them change course to join us, these curious animals. The Japanese will eat them, but rarely will Occidentals touch them. Of our crew, Tiny and Sparky, who loved to catch every manner of fish, to harpoon any swimming thing, would have nothing to do with porpoises. "They cry so," Sparky said, "when they are hurt, they cry to break your heart." This is rather a difficult thing to understand; a dying cow cries too, and a stuck pig raises his protesting voice piercingly and few hearts are broken by those cries. But a porpoise cries like a child in sorrow and pain. And we wonder whether the general seaman's real affection for porpoises might not be more complicated than the simple fear of hearing them cry. The nature of the animal might parallel certain traits in ourselves—the outrageous boastfulness of porpoises, their love of play, their joy in speed. We have watched them for many hours, making designs in the water, diving and rising and then seeming to turn over to see if they are watched. In bursts of speed they hump their backs and the beating tails take power from the whole body. Then they slow down and only the muscles near the tails are

strained. They break the surface, and the blow-holes, like eyes, open and gasp in air and then close like eyes before they submerge. Suddenly they seem to grow tired of playing; the bodies hump up, the incredible tails beat, and instantly they are gone.

The mist lifted from the water but the oily slickness remained, and it was like new snow for keeping the impressions of what had happened there. Near to us was the greasy mess where a school of sardines had been milling, and on it the feathers of gulls which had come to join the sardines and, having fed hugely, had sat on the water and combed themselves in comfort. A Japanese liner passed us, slipping quickly through the smooth water, and for a long time we rocked in her wake. It was a long lazy day, and when the night came we passed the lights of Los Angeles with its many little dangling towns. The searchlights of the fleet at San Pedro combed the sea constantly, and one powerful glaring beam crept several miles and lay on us so brightly that it threw our shadows on the exhaust stack.

In the early morning before daylight we came into the harbor at San Diego, in through the narrow passage, and we followed the lights on a changing course to the pier. All about us war bustled, although we had no war; steel and thunder, powder and men—the men preparing thoughtlessly, like dead men, to destroy things. The planes roared over in formation and the submarines were quiet and ominous. There is no playfulness in a submarine. The military mind must limit its thinking to be able to perform its function at all. Thus, in talking with a naval officer who had won a target competition with big naval guns, we asked, "Have you thought what happens in a little street when one of your shells explodes, of the families torn to pieces, a thousand generations influenced when you signaled *Fire?*" "Of course not," he said. "Those shells travel

Those quiet men who always stand on piers asked where we were going and when we said, "To the Gulf of California," their eyes melted with longing, they wanted to go so badly. They were like the men and women who stand about airports and railroad stations; they want to go away, and most of all they want to go away from themselves. For they do not know that they would carry their globes of boredom with them wherever they went. One man on the pier who wanted to participate made sure he would be allowed to cast us off, and he waited at the bow line for a long time. Finally he got the call and he cast off the bow line and ran back and cast off the stern line; then he stood and watched us pull away and he wanted very badly to go.

Below the Mexican border the water changes color; it takes on a deep ultramarine blue—a washtub bluing blue, intense and seeming to penetrate deep into the water; the fishermen call it "tuna water." By Friday we were off Point Baja. This is the region of the seaturtle and the flying fish. Tiny and Sparky put out the fishing lines, and they stayed out during the whole trip.

Sparky Enea and Tiny Colletto grew up together in Monterey and they were bad little boys and very happy about it. It is said lightly that the police department had a special detail to supervise the growth and development of Tiny and Sparky. They are short and strong and nearly inseparable. An impulse seems to strike both of them at once. Let Tiny make a date with a girl and Sparky make a date with another girl—it then becomes necessary for Tiny, by connivance and trickery, to get Sparky's girl. But it is all right, since Sparky has been moving mountains to get Tiny's girl.

These two shared a watch, and on their watches we often went strangely off course and no one ever knew why. The compass had a way of getting out of hand so that the course invariably arced