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Fall 1992
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"Starting from fish-shape Paumanok where I was born..."

Walt Whitman

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We publish original studies of any aspect of Long Island history. Submit manuscripts in duplicate (no carbons) on 8 1/2" x 11" stock, double spaced, with generous margins, and written on only one side of each page. If possible, also submit an IBM or Apple MacIntosh-compatible disk. Notes should be numbered consecutively, assembled at the end of the text, and modeled on the examples given in the *Chicago Manual* or Turabian.

The Long Island Historical Journal

Cover: Anti-nuclear power plant demonstration at Shoreham, 3 June 1979. Photograph by Karl Grossman.

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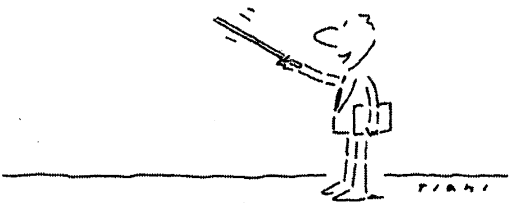

TABLE OF CONTENTS

Reviews

Contributors

Norm Dvoskin, a graduate meteorologist on the staff of News 12 Long Island, is a former president of the New York City/Long Island Branch of the American Meteorologist Society.

Karl Grossman, Professor of Journalism in the American Studies Department, SUNY College at Old Westbury, is the author of *Power Crazy: Is Lilco Turning Shoreham into America's Chernobyl?*

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Richard P. Harmond, Professor of American History at St. John's University and associate editor of the LIHJ, is the co-editor of *Long Island As America: A Documentary History to 1896.*

Secondary School Essay Contest Winners: **Wendy Futterman**, Lawrence High School; **Cherie Godfrey**, Harmony Heights School; **Jarrett Schulz** and James Piangozza, Syosset High School; and **Matt J. Villano**, Northport High School.

Long Island Studies Council

An interdisciplinary membership group of scholars, teachers, librarians, archivists, historians, and others interested in the study of Long Island and its heritage, invites readers of the Long Island Historical Journal to its dinner-lecture meetings and site visits.

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Editorial Comment

The journal is squeezed between rising costs and shrinking budgets. As we begin our fifth year, our future depends on your subscriptions. We urge all who have not done so to send in the form at the back of this issue. And, if you can obtain one other $15 subscription in addition to your own, our fiscal problems will be solved. We count on you, loyal friends and readers, to ensure our continued study of Long Island as America.

The current edition has many good features. Karl Grossman's account of the Shoreham not-to-be nuclear plant may inspire rebuttal, which we will welcome. Three scholars at the USB Institute for Waste Management, R. L. Swanson, Anne S. West-Valle, and Cynthia J. Decker, examine "Recreation vs. Waste Disposal: The Use and Management of Jamaica Bay." John M. Kochiss shares the illuminating memories of Dutch oystermen on Great South Bay, gleaned from the baymen's oral history group at Suffolk Marine Museum. Our "State of the Island" section presents the history of Apple, A Program for Life Enrichment, by Carol Parker, an executive of this key agency in the battle against addiction. Norm Dvoskin, a News 12 Long Island weathercaster, surveys the Island's climate and historic storms. Marleen Kassel analyzes two Japanese New Religions in Flushing, the Tenrikyō Mission and the Nichiren Shōshū Daihōzan Myōsetsu Temple. In our "Lost and Found" department, Richard P. Harmond recalls "An Englishman on Long Island: William Cobbett's *Year in the United States* (1818 - 1819)."

Finally, we are delighted to publish the winning essays in our "Long Island as America" contest for students of secondary schools, which we ran in conjunction with the USB Center for Excellence and Innovation in Education: "Which Came First: the Transit Line or the Neighborhood?...in Brooklyn," by Wendy Futterman, Lawrence High School; "Walt Whitman and William Heyen: the Civil War and the Holocaust," by Cherie Godfrey, Harmony Heights School; "The Grumman Corporation and Long Island" by Jarrett Schulz and James Piangozza, Syosset High School; and "Whaling: A Central Part of Long Island Indian Life,"by Matt J. Villano, Northport High School. We commend the winners, the students awarded honorable mention, and their creative and capable teachers.

All this and reviews and correspondence. Keep in touch: write, volunteer to help, and, above all, *subscribe.*

The Rise and Fall of LILCO's Nuclear Power Program

By Karl Grossman

Editor's note: we invite readers with differing points of view to respond to this provocative article.

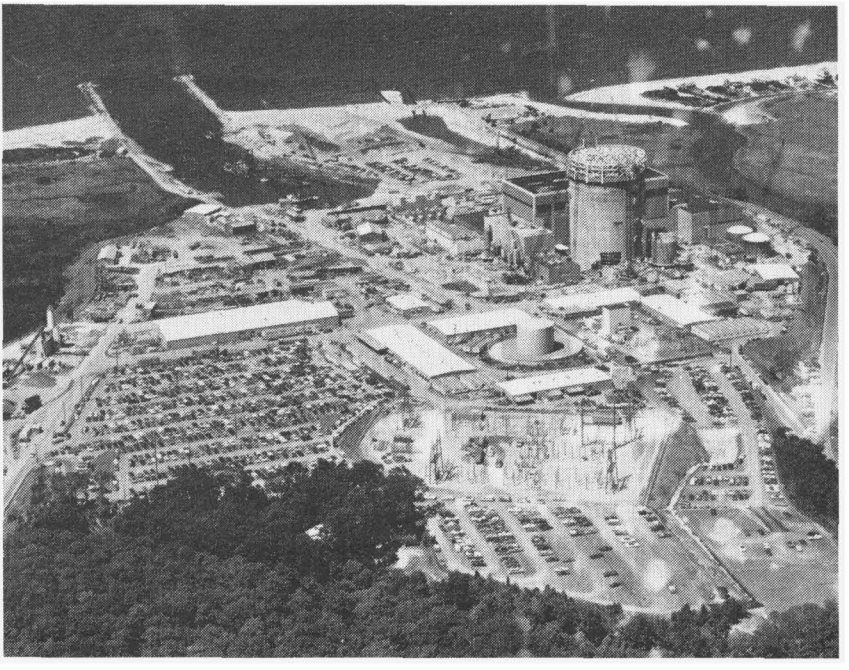
The saga of the Shoreham nuclear power plant is about more than a single facility. It involves the rise and fall of a plan by the Long Island Lighting Company (LILCO) to build a chain of nuclear plants, and, from its Long Island base, become a major producer of nuclear-generated electricity for the Northeastern United States. The stopping of Shoreham as a nuclear plant marks the end of this ambitious project.[1]

LILCO's entry into nuclear technology came in the wake of the abandonment by the Consolidated Edison Company (Con Ed), because of public and political pressure, of a plan to build a nuclear plant on the western end of Long Island. In December 1962, Con Ed applied to the Atomic Energy Commission (AEC) for a license to construct a 1,000-electric-megawatt nuclear plant of Westinghouse design in Ravenswood, Queens, located north of the Queensboro Bridge and across the East River from midtown Manhattan.

Stiff citizen opposition was focused in the New York City Council, where, in 1963, a law was introduced to ban the siting within the city of a reactor such as Con Ed planned. Former AEC chairman David E. Lilienthal told the Council that he "would not dream of living in the borough of Queens if there were a large atomic power plant in that region." Noting an AEC directive that nuclear plants should be at least 13.7 miles from any "densely populated place," the *Long Island Press* editorialized:

> Considering that the Ravenswood site is almost smack in the geographic center of New York City, with its teeming millions, and that the 13.7-mile zone overlaps even Mineola on one side and Newark on the other, opposition to it is understandable, to say the least.[2]

On 6 January 1964, Con Ed withdrew its bid. "No atoms for peace in Queens," reported the *New York Herald Tribune*'s science editor, Earl Ubell: "The Consolidated Edison Co. cancelled its plans yesterday to set a huge atomic-power plant in the backyards of New Yorkers." Ubell noted the nuclear industry's disappointment, because it looked forward to Ravenswood "as a test case for other cities." The *New York Times* quoted Joseph A. Lieberman, assistant director of nuclear safety in the AEC's Division of Reactor



Shoreham under contruction. Photography by Karl Grossman

Development, as believing that some manufacturers had "the ability to build safe reactors within city limits because they have already proposed to do it."[3]

In the former Soviet Union, officials approved siting nuclear plants in major cities. However, in the United States in the mid-1960s, the AEC, because of public resistance, encouraged the siting of nuclear plants in less-populated areas, later designated "low density zones." When LILCO entered the nuclear picture, not only were portions of its service area (Nassau, Suffolk, and the Rockaway peninsula in Queens) relatively lightly populated, but these areas also could provide the massive amount of coolant water needed by nuclear plants. The basic American nuclear plant design—a light water moderated reactor generating 1,000 megawatts of electricity—requires one million gallons of water per minute as coolant. The LILCO territory, bounded by hundreds of miles of shoreline, could furnish such volumes, and, from its base off the coastline of the densely populated Boston-to-Washington megalopolis, LILCO was in a position to provide the entire region with nuclear generated electricity.

However, LILCO, a utility with a sorry record of managing even a scattering of conventional power plants, was an unlikely firm to embark on such an ambitious undertaking. In the 1930s and 1940s, it was regularly in financial trouble, from which it sought relief by merging with three

subsidiaries and recapitalizing its debt. A 1947 New York State Public Service Commission (PSC) report cited an "extensive investigation and study," directed by PSC Chairman Milos Maltbie, which "reviewed the events that have brought the companies to their present condition." It described investments by LILCO and its subsidiaries "in the stocks of each other and associated companies [as] transactions which have turned out badly," and spoke of "intercompany loans upon which [LILCO] has slim chances of recovering anything."[4]

The PSC's 1948 annual report charged that the common stocks of LILCO and its subsidiaries "have no value [and] are not backed by assets." Indeed, in September 1948, Con Ed moved to acquire control of the troubled Long Island utility by filing a petition with the PSC. Acquisition of LILCO properties was in the public interest, the petition contended: "The reconstituted Long Island (Lighting) would be operated by responsible local management...and...would result in an improvement in Long Island's credit and facilities."[5] Con Ed mulled the LILCO takeover until 1950, and then decided against it.

In 1947, the federal government established Brookhaven National Laboratory for the purpose of research "in the peaceful aspects of nuclear science." Many scientists at the Laboratory (first owned by the AEC and then by the Department of Energy [DOE]) worked closely on nuclear power issues with LILCO, the electric utility closest at hand. The goal of both the AEC and the DOE was development of nuclear power. Some Brookhaven scientists appeared as expert witnesses in support of Shoreham and other LILCO nuclear projects at the AEC's protracted hearings on the construction permit for Shoreham.[6]

LILCO stressed its mutually advantageous link with Brookhaven Laboratory in "Atomic Power for Long Island," a booklet distributed at a press conference held in April 1966 to announce the Shoreham project:

> There was much to learn and the atmosphere at the Laboratory was a stimulating one. In return, the LILCO engineers brought a fresh point of view to bear on many difficult engineering problems with which the Laboratory was then dealing in the reactor field...[W]e sent a man to work full-time at Brookhaven...for five years—and over the years have continued to keep in close touch with the Laboratory's reactor activities.[7]

LILCO's president, John J. Tuohy, announced the initiation of proceedings with local authorities to rezone part of a 455-acre site in the town of Brookhaven, overlooking the Sound between Shoreham and Wading River, for a nuclear electric generating plant to provide electricity for Long Island. Tuohy's estimated $65-to-$75-million cost proved nearly one hundred times too low. Another hand-out at the press conference included Tuohy's statement that, "When completed, the Shoreham Project will represent the culmination of preparatory effort by LILCO in the atomic power field."[8]

A month later, *Newsday* reported LILCO's intention to build Shoreham 2,

a second nuclear plant on the same site. In 1967, LILCO announced that it would build its third nuclear plant in Lloyd Harbor, in the town of Huntington. The company was moving ahead with several nuclear projects because "nuclear plants are cleaner and do not pollute the air and water as the conventional plants do."[9]

LILCO subsequently purchased a square mile of land along the Sound in Jamesport for constructing additional nuclear plants. In the mid-1970s, at PSC hearings in Riverhead, officials of both the PSC and LILCO revealed the utility's broad plan for nuclear development on Long Island. The hearings concerned the 345,000-volt, double-circuit transmission lines that LILCO sought to build to link its nuclear facilities in Shoreham and Jamesport to its main transmission grid. During cross-examination by Thomas Twomey, the attorney for the Long Island Farm Bureau, both Howard A. Tarler, of the PSC's Audits Section, and Adam Madsen, LILCO's chief planner, acknowledged that the lines were expected to serve at least seven nuclear plants. Tarler testified that the lines were designed with extra capacity for two additional nuclear plants at Shoreham—for a total of three at that location—plus two, and then more, at Jamesport. Madsen stated that after Shoreham 1,

> We have scheduled our first two units in the early 1980s in Jamesport, our next two in the late 1980s at Shoreham West and then, in all probability the next stage in time, the next two units will be in the North Fork again...at Jamesport for example.

Meanwhile, Twomey, an opposition leader throughout LILCO's push for nuclear power, charged the targeting of eastern Long Island as a "nuclear park," the AEC's term for areas in which nuclear plants would be concentrated.[10]

LILCO aimed "to become the largest energy supplier in the Northeast grid," editorialized the *Suffolk Times* in 1976. The following year, Twomey disclosed that he had obtained an extensive report commissioned by LILCO and drawn up by Eco Systems, a subsidiary of Grumman Corporation, to evaluate eleven sites for nuclear plants on Long Island: at Shoreham; then eastward along the Sound at Baiting Hollow, Cutchogue, Mattituck, Roanoke Point, East Marion, and Jamesport; and at Sagaponack, on the South Fork. To the management of LILCO, electricity was the form of energy of the future, and nuclear power the way it would be generated. Wilfred O. Uhl was instrumental in these plans as LILCO's manager of engineering, executive vice president, and, finally, as president. In 1977, he spoke enthusiastically on the potential of nuclear power, predicting that there would be "no more oil, no more gas" by the year 2000, when "energy to heat houses, to run electric cars, to move everything and anything would come from nuclear power plants."[11]

The first order of business was clearing the way for the first plant. Not Shoreham 1, nor even Shoreham 2 or 3, initially caused difficulties for LILCO. Mayor George Beatty of Shoreham reflected the opinion of many constituents by saying that the proposed plant "would do no harm to anybody." Newsday hailed Shoreham as fitting the pattern it championed for

the development of the Island, which also included a bridge to New England and an eastern jetport. "The nuclear age is a time of excitement," declared an editorial, "Long Island is growing and change is inevitable."[12]

LILCO's move to build a nuclear plant in Lloyd Harbor created a stumbling block it could not remove. Two opponents of nuclear power, Ann and William Carl, mobilized the village against the project. Ann Carl, a biologist and former test pilot, first learned about nuclear power as an environmental writer. "She was most knowledgeable," said Irving Like, the attorney for the Lloyd Harbor Study Group formed by the Carls and other residents, "she taught the rest of us."[13] The Study Group issued a negative analysis of a nuclear plant's safety and impact on health.

Some one hundred residents, nearly all opposed to a nuclear plant, expressed their views at a 1967 meeting of the village board. Edward M. Barrett, a LILCO executive, told the meeting that, "If we find the village does not want us to build," the company would find other sites on the Island because nuclear plants "have to be built." When the board commissioned a study of the impact of such a plant on Lloyd Harbor, a survey of residents showed that most were against the project.

LILCO gave up its Lloyd Harbor project, but the Lloyd Harbor Study Group stayed in the fray by deciding to challenge Shoreham. "It was not just a `not in my backyard issue,'" recalled Like. Ultimately, the Group expanded into an Island-wide coalition of environmental and civic groups opposed to the Shoreham nuclear plant.[14]

However, the arena in which Shoreham's construction permit was argued was not an objective proceeding; the AEC, set up both to regulate and promote nuclear power, never denied a construction or operating permit to a proposed nuclear power plant. Because it supported Shoreham from the outset, the hearing's result was a foregone conclusion. AEC panelists included Dr. Hugh Paxton, of the staff of Los Alamos National Laboratory, funded by the AEC to develop military nuclear technology; Dr. A. Dixie Callahan, a physicist with the Union Carbide Corporation, which then ran Oak Ridge National Laboratory, a center for nuclear technology; and Jack Campbell, a former governor of New Mexico, the board chairman. "Here you had," said Like,

> the former governor of New Mexico—known as the playground of the AEC and nuclear industry for its extensive uranium mining and milling, Los Alamos Laboratory, other nuclear facilities and an overall close relationship with nuclear technology—and two technical members connected to the national nuclear laboratories.[15]

Motions to disqualify the panelists, because of their "vested interest in the development of atomic power," were denied. Like's strategy of "If you can't beat them, you can, at least, expose them" turned the hearing into a forum on nuclear power and helped to build the foundation for later, wide-scale public opposition to LILCO's nuclear program. After the Shoreham hearings,

opponents of nuclear plants all over the country adopted similar tactics at construction and operating license hearings conducted by the AEC and its successor, the Nuclear Regulatory Commission (NRC).

As a specialist in environmental law and the author of the New York State Conservation Bill of Rights (which became part of the state constitution in 1970), Like elucidated the strategy at a 1971 meeting of the American Bar Association and American Legal Institute, held during the hearings. The AEC, he wrote, was

> a classic example of the military-industrial research and development complex...The litigant with limited resources enters a David-and-Goliath confrontation, pitting himself against the utility, the AEC technical staff, and the titans of American industry.

Although defeat was probable, concerned conservationists should litigate, using

> the administrative arena as an educational forum to alert the public to the project's adverse effect on environmental quality...a prospective polluter may be induced to abandon its plans or at least improve upon them if it knows that its project will provoke environmental challenge.

Like described media coverage as crucial:

> The public does not attend long, drawn-out agency hearings devoted to technical details, no matter how relevant...but intelligent reporters...can make a serious attempt to grasp the essence of scientific and technical points brought out by testimony...press coverage insures that the agency's transgressions will not go unnoticed.[16]

The AEC's construction licensing hearing for Shoreham turned into a landmark trial for nuclear power—an outcome not expected by LILCO, the nuclear industry, nor proponents of nuclear power in the government. "Even though a lot of people woke up after Three Mile Island," said Richard Pollack, the former head of Critical Mass, an anti-nuclear group formed by Ralph Nader, "we regard Shoreham as the real beginning."[17]

A gamut of issues raised by the Lloyd Harbor Study Group included testimony on the connection between radioactivity and illness and death; routine emissions from nuclear facilities and their health impacts; how concentrations of radioactivity increase as they move up the food chain; how radioactivity is released at all stages in the nuclear "fuel cycle" (that starts with uranium mining, continues through nuclear plant operation, and ends with storing of spent fuel); the dangers of transporting nuclear material; and the operating records of nuclear plants.

There also was testimony on LILCO's alleged violation of construction standards, even when Shoreham was in its planning stages. The Lloyd Harbor Study Group accused the company of giving false information to the AEC concerning a nuclear steam supply system that, under a 1968 AEC

requirement, had to be "essentially 100 percent" accessible for inspection. LILCO, contended the Group, claimed that it had ordered the system a year before the rule took effect, when, in fact, the order was placed two months after the issuance of the requirement.

A central issue was accidents and their consequences, including possible loss-of-coolant "China syndrome" meltdowns, which, with a "breach" of a plant's containment, could spread radioactivity. Nearly a decade before the core-meltdown at Three Mile Island and its "mysterious" hydrogen bubble, many hours of testimony at the Shoreham hearing dealt with loss-of-coolant accidents and core meltdowns, with the probability of an explosive hydrogen bubble's forming during their early stages. Moreover, fifteen years before the Chernobyl nuclear plant erupted, sending radioactivity far and wide, extensive testimony was heard on the "nuclear runaway" or "power excursion" accident, and its potential to cause a massive explosion, non-nuclear but one that would blow apart a nuclear plant and cause radioactive material to spew out under pressure.

Like introduced the problem of evacuating traffic-clogged Long Island in case of a Shoreham accident. However, Campbell ruled that the board had no authority to consider evacuation, an issue to be confronted by the panel that would decide whether to grant an operating license for Shoreham. At the outset, Like insisted that the AEC panel abide by the 1970 National Environmental Policy Act (NEPA), requiring agencies of the government to consider all environmental aspects of, and alternatives to, a project before approving it. The panel refused. But, after the United States Second District Court of Appeals ruled that the AEC must abide by NEPA in a case involving construction of a nuclear plant in Maryland,[18] the Shoreham hearings became the first forum on nuclear power to be obliged to adhere to the act.

One of the Group's expert witnesses was James D. Watson, a winner of the 1962 Nobel Prize for physiology or medicine for his co-discovering of the DNA molecule, and the director of Cold Spring Harbor Laboratory. "The amount of research now being done on the connection between cancer and radiation is totally inconsistent with proposals for widespread introduction of nuclear plants into highly populated areas," he testified. "The idea that the atom is safe is just a public relations trick. What you want to do is to decrease man's exposure to radiation." On the subject of estimating what would be a low level of radiation, Watson said, "You are gambling with the future of not only individuals, but of our society as it exists...I don't think one has the right to say a single life necessarily need be expended."[19]

Dr. Alice Stewart, the Director of Social Medicine at Oxford University, who did early research on what were considered "acceptable" doses of radiation, came from England to testify. She told of her work establishing that children whose mothers received small amounts of radiation through X-rays during pregnancy—amounts thought not to be dangerous—ran twice the risk of developing leukemia than those whose mothers had not. She denied the AEC's claim of a "threshold dose" below which radiation would not

cause cancer, contending that any amount of radiation can do so. Dr. Ernest Sternglass, Professor of Radiation Physics at the University of Pittsburgh School of Medicine, testified that routine emissions of radiation from nuclear plants and nuclear weapons tests were causing patterns of illnesses and deaths in the United States. Fetuses and children were the first victims, because their rate of cell-multiplication was so much higher than that of adults. He cited his research showing increases of infant mortality in Suffolk County downwind (eastward) of a nuclear research reactor at Brookhaven National Laboratory, which, he said, was linked to gaseous and liquid effluents from the laboratory's reactor. In response, Andrew Hull, the secretary of Suffolk Scientists for Cleaner Power and Safer Environment, and a health physicist at the Laboratory in charge of monitoring releases of radioactivity, emphasized that the releases were within limits set by the government.

The government's first major study of accidents at nuclear plant accidents, *Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Plants*, was made in 1957 at Brookhaven National Laboratory. Known by its AEC serial number, "WASH-740," it estimated that a "worst case" accident at a 200-electric-megawatt nuclear plant would result in 3,400 deaths and 43,000 injuries, with property damage as high as seven billion dollars: "People could be killed at distances up to 15 miles, and injured at distances of about 45 miles. Land contamination could extend for greater distances." Irving Like claimed that an accident at Shoreham, a 820-megawatt plant more than four times the size of the 200-megawatt plant analyzed, could release substantially more radioactivity and be far more lethal.[20]

Richard E. Webb, a key witness on accident hazards, had served in the Navy under Admiral Hyman G. Rickover, with primary responsibility for the reactor portion of Shippingport—the first commercial nuclear plant—built near Pittsburgh under the supervision of Rickover's Division of Naval Reactors and the AEC. Webb, who became concerned with the possibility of severe nuclear plant accidents at Shippingport, stated later that the problem was neither discussed nor considered by Rickover's staff, who assumed that the dome over the reactor "would contain" any radioactivity released in a mishap. Only in his last months with Rickover did Webb "learn that reactors pose a risk to the public [and] that radioactivity could get beyond a containment system." [21]

Webb's concern with safety increased when he became an engineer at the Big Rock Point, Michigan, nuclear plant. He enrolled at Ohio State University for a doctorate in nuclear engineering "with emphasis on the theory of reactor physics" so that he could "independently evaluate the accident hazards of nuclear power plants." Having heard of his research, The Carls asked him to testify at the Shoreham proceedings, as well as assist in examining witnesses. Webb's posing of technical questions put LILCO and General Electric experts "through a ringer of questions that at times seemed to stump and baffle the men who are committed to build the utility's 820,000

kilowatt nuclear generating facility," reported the *New York Post*.[22]

To back their contention that nuclear plants could explode, the Lloyd Harbor Study Group and Webb cited the Borax experiment, in 1954, at the AEC's Nuclear Reactor Testing Station in Idaho, in which the AEC built a scale-version nuclear plant and put a control rod out of control to see if an explosion would occur. It did, ripping the reactor apart in a blast referred to in government documents, the Study Group stressed. Like pointed out that WASH-740, referring to the Borax experiment, acknowledged that a nuclear plant is not "immune to destructive runaways by deliberate introduction of a large amount of reactivity at a rapid rate."

A second event in Idaho involved a 1961 accident at a small military nuclear reactor, the SL-1. When a control rod went out of control, the reactor underwent a "nuclear runaway" or "power excursion" that killed three workers and left their bodies hot with radioactivity. "One...or a pair of the men must have raised one of the control rods in some way to the point where the system became critical," testified Richard Ireland, an AEC engineer. The Lloyd Harbor Study Group held that unlike a loss-of-coolant accident, after which there could be a few hours' delay before a release of radioactivity, the release could be immediate if a plant blew apart in a nuclear runaway.

The Shoreham hearings played a role in the beginning and end of the AEC. Lester L. Wolff, then a Long Island congressman, testified that Shoreham would "be a colossal gamble with the health of future genes." He did not approve of the AEC board's procedure: "It was clear that the culprit and the cop were the same person. These people just treated the whole question of radiation in such a cavalier fashion that this could no longer continue." During the hearings, the Lloyd Harbor Study Group joined several environmental organizations in a federal lawsuit charging the AEC with a conflict of interest because of its regulatory and promotional roles.[23]

On 12 April 1973, the AEC announced it was granting LILCO a permit to build Shoreham. The company already had spent $77 million on the plant—more than its original estimate of the total cost. A front-page photo in *Newsday* that day showed the massive steel frame of the containment building, now seventy-five feet high (the Lloyd Harbor Study Group had tried to stop construction work, but when LILCO claimed it was "site preparation" the AEC agreed).

In the 1980s, however, in the midst of intense public opposition to nuclear power on Long Island, the plant would be prevented from going into commercial operation as a nuclear facility. Heightened by the news of the Three Mile Island and Chernobyl accidents, this campaign was further galvanized by disclosures of serious problems in Shoreham's construction. In 1979, several boxes of documents from the site were found at the Southold town dump by a browsing furniture refinisher. He passed them on to a newspaper photographer, and they finally came to this writer. All of the more than 1,000 reports of the Stone & Webster Engineering Corporation, the architect/manager of Shoreham's construction, involved problems in plant

construction; in 416 reports, a box for "Nuclear Safety Related" problems was checked. The reports were analyzed by Michio Kaku, a professor of physics at the City University of New York, and by MHB Technical Associates of California, whose three principals were former supervisors in the nuclear division of the General Electric Company, the manufacturer of the Shoreham reactor. In Kaku's opinion, "The attitude through the documents was one of 'Lets's just sand it smooth and pass it on.'" In his and MHB's judgment, the documents were replete with examples of below-standard construction that deviated from engineering specifications, with the consistent remedy that the "specs" thus be changed. "These documents make you jump up and down and ask, 'What are they doing?'" said Kaku, in an interview.[24]

The "dump documents" were an issue at a 1979 trial, the first for some of the 600 persons arrested at Shoreham on charges of trespassing, on 3 June 1979, in a demonstration that drew 15,000 persons. Among the largest protests at a nuclear plant site in American history, it was one in a series of anti-Shoreham demonstrations. Using the dump papers and testimony from several workers, the defense contended that because the plant posed a threat to life there was "legal justification" for civil disobedience. One worker, John Everett, said Shoreham "was not being built to specifications," and alleged the use of defective concrete and shoddy methods of forming concrete. Jock McCrystal testified that incorrect welding materials were used routinely, where "surface appearances...became the method used for all levels of personnel to pass inspections." When he told NRC inspectors about instances of poor construction, they promptly "sabotaged" their investigation by revealing him as a source. James Conran, an NRC inspector and senior engineer, gave sharply negative testimony on Shoreham's construction.[25]

In 1984, the PSC's report on Shoreham, done over a three-year period, concluded that pervasive mismanagement was taking place. The result was a $1.4-billion penalty, a record amount imposed upon a utility by a regulatory commission. The PSC found that LILCO failed to enlarge the Shoreham reactor building after "increasing the size of Shoreham's reactor from 540 megawatts to 820 megawatts." LILCO originally intended to build a plant for a 540-electric-megawatt reactor, but later decided to buy a 820-electric-megawatt GE reactor earmarked for a canceled nuclear plant in upstate New York. Putting the larger reactor into a building meant for a smaller one resulted in a tangled, spaghetti-like mess of piping, said the PSC. The PSC also determined conflicts of interest in management. In 1967, for instance, LILCO's executive vice president, Edward Duffy, recommended Stone & Webster as the job's architect/ engineer and construction manager. The PSC was "surprised to discover" that Richard L. Forrester, a Stone & Webster marketing engineer, was Duffy's son-in-law: "The Duffy-Forrester relationship presented an obvious conflict of interest."[26] Following the PSC report, LILCO's chairman, Charles Pierce, and its president, Wilfred O. Uhl, resigned. William J. Catacosinos, a LILCO board member and former assistant director of Brookhaven National Laboratory, assumed the dual

position of LILCO's chairman and president in 1984.

The Suffolk County Legislature called a special session in 1985 to hear testimony on Shoreham's construction by two former plant inspectors, George W. Henry and Ronald Stanchfield. "No doubt about it," said Henry, "there is catastrophe ahead... Shoreham is a nuclear plant constructed without compliance to federal and industrial standards." As a quality control inspector, he encountered massive construction defects and a refusal by management to take them seriously. His examples included a defective valve—"part of a critical safety system"—that he would not approve. On a form dated 20 May 1983, his supervisor stated that the valve was approved, but dated the acceptance as of 9 November—"six months in the future." Henry testified that: "The operative philosophy here, as with so much at Shoreham, was rubber stamp it, let it go through, change the procedures, if necessary, to match the violation." Stanchfield, who had worked at six nuclear plants, reported being "with incompetent people but I've never seen incompetence en masse as goes on at Shoreham." Managers denied or sought to cover up problems. "What has happened...and what is probably still happening out at Shoreham, is a crime...And it sits there, belligerently threatening our very lives."[27]

William J. Catacosinos, LILCO's new leader, was an emphatic booster of Shoreham and nuclear power. Upon taking the helm in 1984, he announced his firm intention to put the plant into operation. He told the Long Island Association that he would conduct "guerrilla warfare" to do this, because "Long Island needs Shoreham."[28] He did not believe that safety would be a problem: "Nuclear is the cleanest, safest mode of electricity today," he said in a March 1985 interview with journalists at which the author was present; in case of an accident, radioactivity would simply go "up in the atmosphere."

After the AEC construction permit hearings, the movement to defeat Shoreham quickly moved to the streets. Lorna Salzman, the mid-Atlantic representative of Friends of the Earth, said at a 1977 anti-Shoreham demonstration that it was time for "direct action...to let the politicians know that nuclear power is not acceptable."[29] The SHAD (Sound and Hudson against Atomic Development) Alliance led many of these protests. After the Three Mile Island accident two years later, demonstrations became more frequent and larger, with strong pressure on government applied by Shoreham's opponents. The 1986 Chernobyl accident, along with expanding public and governmental opposition, a stream of disclosures of inadequacies in construction, and other safety concerns turned into the knock-out punch.

LILCO's relationship with Long Island governing bodies had been close. The firm's lobbyists, for example, attended every session of the Suffolk Legislature during the middle 1970s, working out of a room in back of the legislative chambers. Wayne Prospect, a Democratic member elected in 1980, characterized LILCO as a "classic case in which an economic power had been able to bury its long tentacles into the political process and thereby shape decisions." In Prospect's opinion, "LILCO and its conduits in the Long

Island Association and the construction trade unions—all major contributors to both political parties and to political candidates—managed to buy silence from town and county governments."[30]

"LILCO represents the antithesis of the democratic process," said Gregory Blass, then a Republican county legislator. He contended that the firm influenced elections, and had close contact with the highest levels of government "through its own activities and those of its allies. The company also maintains close relationships with the banking industry—money has been a main reason why Shoreham has been brought so far."[31]

Three Mile Island inspired the creation of such new groups as the Shoreham Opponents Coalition, which became a key network of Shoreham foes, and the People's Action Coalition, formed by individuals who had once "accepted the official viewpoint as espoused by the company." According to Leon Campo, its chairman:

> We had no connection with one another. We had the same agenda of questions, and we met at various public forums. It was an alliance of citizens that came about naturally...our inquisitiveness led to the company's stonewalling...The more we investigated, the more horrified we were."[32]

Members of the Shoreham Opponents Coalition, the People's Action Coalition, and other opposition groups attended Suffolk Legislature meetings en masse. In the election of 1979, the Republican candidate, Peter P. Cohalan, won the position of county executive on an outspokenly anti-Shoreham platform.

Meanwhile, in 1978, the NRC gave LILCO the license it sought to construct two 1,150-electric-megawatt Westinghouse nuclear plants at Jamesport (like its precursor, the AEC, The NRC has never denied a construction or operating license for a nuclear plant in the United States). But New York State, after Shoreham's construction began, established a parallel system of licensing power plants. The system, too late for Shoreham, created a five-member New York Board on Electric Generation, Siting and the Environment, whose approval was needed before any new facility was built. Opponents of Jamesport argued that its proposed 2,300 electric megawatts were not needed on Long Island, but were requested only because of LILCO's plan to sell nuclear-generated electricity elsewhere—with Long Islanders exposed to the risk. After years of hearings, the board rejected Jamesport in January 1990, a ruling that surprised LILCO because several of the board's members had ties to nuclear technology.[33]

Governor Hugh Carey, who had declared in 1978 that "Jamesport is dead,"(N.34) became involved at Thomas Twomey's behest. In the words of John Mullen, an opposition leader,

> Jamesport was a heavyweight championship fight that was won in the last seconds of the fifteenth round after a tremendous battle—a tremendous effort by many people...The governor, after vacillating, made

a decision at the last minute to back up his stand against Jamesport.[35]

Twomey stated publicly that,

> The citizens on Long Island, over a six-year period, at last got their feelings to the local political leaders and elected officials, and they, in turn, convinced Governor Carey that nuclear power was not the way to proceed.[36]

LILCO's planned chain of nuclear power plants was now reduced to a single project—Shoreham. In 1982, the Cohalan administration engaged the Washington, D.C. law firm of Kirkpatrick & Lockhart to represent Suffolk County in opposing LILCO's efforts to obtain approval for Shoreham in the nation's capitol. *Newsday* reported the

> final moves in the long chess game over the fate of Shoreham...LILCO, having lost its gamble to win the support of Suffolk County and New York State, is maneuvering in Congress and before federal agencies in a last-ditch effort to gain a license to operate Shoreham.[37]

Kirkpatrick & Lockhart's strategy centered on evacuation, which, despite federal pre-emption of most nuclear power issues, was still under local control. Suffolk County commissioned a study of the feasibility of the evacuation, in an emergency, of an Island where traffic congestion was commonplace, and bridge and tunnel connections were located far to the west of Shoreham. Experts on traffic planning, sociology, and the impact of nuclear plant accidents concluded that there could be no safe evacuation in the wake of a major mishap; it would take many hours for people to flee what the NRC termed an Emergency Planning Zone, a ten-mile ring around Shoreham.[38] Public hearings were held, and Suffolk authorities visited the Three Mile Island area to learn from local officials about their experience with evacuation after the nuclear accident.

Following Three Mile Island, the NRC ruled that no nuclear plant could operate without an in-place emergency plan, implemented by state or local governments. As Cohalan told a congressional panel in 1983:

> In February of this year, the government of Suffolk County determined that it would be impossible to protect the health, safety and welfare of the public in the event of a serious nuclear accident at the Shoreham nuclear power plant.

He referred to the Island's narrow, elongated geography, quickly shifting wind patterns, limited and confined network of roads, and other conditions to show that "neither evacuation nor sheltering would protect the public" in case of a serious Shoreham accident. Accordingly, the county would not adopt or implement a local radiological emergency response plan. He observed that a battle raged on Long Island over whether Suffolk would be permitted

> to act as the government it was constitutionally created to be, and thus

> protect the well-being of its citizens; or, instead the Long Island Lighting Company is going to get its way and try to put this local government aside by forcing the Shoreham nuclear power plant into operation against the safe interests of this county's citizens.[39]

Thus, the problem of evacuation became the key strategy against Sh oreham in the 1980s, a time when the NRC, the Department of Energy, and the White House all pushed hard for Shoreham, a symbol to them of the future of nuclear power. "The Shoreham plant must open!" declared Energy Secretary John S. Herrington, in 1985. "If it doesn't, the signals will be the low point in this [nuclear] industry's history. If it does, we are going to begin a brand new era."[40]

LILCO pulled strings in Washington. "It's crass politics. LILCO has politicized the case completely," said Herbert Brown, a Kirkpatrick & Lockhart partner. Leading the company's effort, said Brown, was chairman Catacosinos, who had been a management consultant to the AEC while he was assistant director of Brookhaven National Laboratory. LILCO hired Lyn Nofziger, a political strategist for Ronald Reagan for two decades, and a special White House assistant for political affairs in 1981 and 1982. "They went to the top because they became desperate...because of their own blunders."[41]

In February and March 1985, Cohalan switched his Shoreham position and issued "Executive Order 1—1985," providing Suffolk County's support of a LILCO plan for evacuation. Reaction from Shoreham's opponents was intense. Wayne Prospect called the move "an act of treachery," protestors picketed Cohalan's office, and his effigy was hung in his hometown of Sayville. The Suffolk Legislature won a State Supreme Court decision that the order illegally usurped Cohalan's power as county executive. After the furor, Cohalan resigned as county executive on 26 December 1986, and was elected a judge of the State Supreme Court in November 1987.

The consequences of an accident at a nuclear plant were becoming clearer. In 1982, Sandia National Laboratories did an analysis for the NRC of the impact of a core meltdown at every nuclear plant in the land, either built or under construction. It projected that a meltdown at Shoreham could leave 40,000 "early fatalities," 75,000 "early injuries," 35,000 "cancer deaths," and $157 billion in property damage. Although federal officials had long insisted that the likelihood of a major accident was infinitesimal, the NRC advised Congress, in 1985, that "the likelihood of a severe core melt accident would be 45 percent" for the hundred reactors expected to operate during the next twenty years.[42]

Low-power testing of Shoreham in 1985 was not reassuring. Four days after a chain reaction began on 7 July 1985, LILCO technicians opened the wrong valve, causing the venting of air from the reactor building. By the weekend, a malfunction of a valve controlling the water (which cools nuclear plants like Shoreham) caused the water level above the reactor's core to fall. In the following weeks, others mishaps occurred: an improperly opened valve

caused 7,000 gallons of radioactive water to spill; the manual control rod drive sequencer failed, as did instruments for showing that a key cooling system valve was closed while an inspection was in progress; the plant shut down twice when alarms indicated problems with the air and coolant systems; and, on 8 September, LILCO declared an "unusual event" when gauges monitoring the water level went off the scale. In Prospect's judgment, the series of problems "make it quite obvious that the Shoreham plant is a nuclear lemon."[43]

The 1986 Chernobyl accident demonstrated the grave consequences of a nuclear plant malfunction. "We All Live In Chernobyl," declared a banner at a demonstration near Shoreham a short time later. Nora Bredes, the executive director of the Shoreham Opponents Coalition, reminded the group that, "We said a long time ago that the answer could come blowing in the wind"—which it did, out of Ukraine. After the tragedy, commented Prospect, "Only a card-carrying fanatic in the atomic brotherhood would now deny that serious accidents can occur with commercial nuclear power plants."[44]

Several months before Chernobyl, a new proposal for stopping LILCO and Shoreham advocated the elimination of LILCO as a corporate entity by having it taken over by a public utility. In a full-page advertisement in Long Island newspapers, Citizens to Replace LILCO declared that:

> The problem isn't just whether Shoreham is safe, nor just whether thousands of men, women and children can get off Long Island quickly and safely in case of an accident...all legitimate fears. The real problem is LILCO.

The ad stressed that a Long Island Power Authority (LIPA) would protect safety:

> LILCO's life depends on opening Shoreham—and making us all pay for it...despite Shoreham's safety problems...A Long Island Power Authority would close Shoreham, keep it out of the rate base and supply dependable, safe power at far lower cost.

Maurice Barbash, the group's coordinator, commented that, "The phones are jumping off the hooks. I've never seen an issue that has generated more public response on Long Island."[45]

In 1986, the state created a Long Island Power Authority, with statutory power to take over LILCO and close Shoreham. In other words, the state prepared to use its condemnation authority to close Shoreham by eliminating LILCO. In the same year, Suffolk County sued LILCO under the federal Racketeer Influenced and Corrupt Organizations Act (RICO), charging that there was substantial evidence that, over the last 15 years,

> LILCO officials have engaged in a systematic scheme to defraud the State of New York and Long Island ratepayers by issuing false public statements and withholding critical facts regarding the Shoreham nuclear power plant.

The suit accused LILCO of a continuing cover-up of faulty design and constructing deficiencies; of making misleading statements and misrepresenting time and cost figures to the Public Service Commission, the Nuclear Regulatory Commission, and the public; of falsifying testing procedures and critical records; and of collusion and conflicts of interest in the granting of construction contracts. It concluded that LILCO's deceptive scheme was "so massive and multi-faced that the most appropriate remedy for governmental entities, ratepayers and other victims of this fraud is under the federal racketeering (RICO) statute." A federal jury found LILCO and its top executives guilty of the charges, exposing the firm to billions in penalties. After United States District Court Judge Jack Weinstein set aside the jury's verdict, appeals were filed and LILCO agreed to a $400-million settlement.[46]

LILCO continued to pull strings in Washington. In one of his last executive orders, President Ronald Reagan issued a declaration enabling utilities to implement their own evacuation plans for nuclear plants, should local or state governments refuse to do so. However, anti-Shoreham sentiment acquired too much strength for LILCO to resist any longer. Facing years of struggle and an empowered Long Island Power Authority ready not only to prevent Shoreham but to take over LILCO itself, the company agreed to discuss a deal with the state.

Governor Mario M. Cuomo, his top aides, and the Long Island Power Authority {LIPA) worked out a settlement: LILCO would turn over Shoreham to the Authority for a nominal $1, in return for a series of rate increases allowing it to pay for much of the $5.5 billion cost of the nuclear plant. The agreement was made in 1988, only days after the NRC gave LILCO the go-ahead to put Shoreham into commercial operation.[47]

In 1991, the NRC granted LILCO's request to revoke its license to operate Shoreham. In 1992, LIPA solicited proposals from the private sector for converting the Shoreham plant to run on natural gas (similar to the conversion of the Midland, Michigan, nuclear plant). Thomas Twomey is in charge of LIPA's committee on Shoreham conversion; other power authority trustees include Irving Like and Nora Bredes.

The administration of President George Bush favored Shoreham as a nuclear plant as strongly as had the Reagan administration. But, by 1992, it admitted defeat. "Shoreham's dead now," said Secretary of Energy James Watkins, a retired nuclear submarine commander and a graduate of the reactor engineering course at Oak Ridge National Laboratory. "I think the issue is closed." The reason for Shoreham's demise, he contended, was that, "Because of the scientific illiteracy that is prevalent in our nation at all levels, we allow politicians to hype things way out of proportion to the facts."[48]

But to Lorna Salzman, the persistent anti-nuclear activist, the story of Shoreham "shows the importance of citizens not giving up because the deck is stacked against them. And the most important lesson is that one does not compromise on something like nuclear power." According to Bredes, "It shows that if a community wants to organize and fight back it can succeed." A key,

she said, was "consistent, dedicated grassroots pressure." Her Shoreham Opponents Coalition "met with [public officials] in their offices, we attended their meetings," and for those who insisted on continuing to push Shoreham,

> we went door-to-door in their districts and got them thrown out of office. We turned around Suffolk government first. Political careers were made and lost on Shoreham. And then the governor was turned around.

In the opinion of Thomas Twomey,

> LILCO wanted to convert its business from retailing on Long Island to wholesaling power throughout the entire Northeast—from Boston down to Washington—through commandeering the eastern portion of Long Island. I think LILCO has been saved from its own corporate insanity. I doubt they have any plans for nuclear power any longer, period—because of more than twenty-five years of blood, sweat and tears by thousands of average citizens who used their own common sense to conclude that nuclear power made no economic or environmental sense.[49]

"As Shoreham Goes," an editorial in *The Nation*, summed up the lesson of Shoreham's closing:

> If people organize and fight back they can win, even against the formidable forces that backed Shoreham...The kind of dedicated, consistent, focused and massive grass-roots effort brought against Shoreham on Long Island, which stressed political action, civil disobedience and public education on nuclear power, can and should be duplicated elsewhere in the United States to prevent the opening of nuclear plants now under construction and to shut down the potential Chernobyls among us.[49]

NOTES

1. For nuclear energy, see Peter Pringle and James Spigelman, *The Nuclear Barons* (New York: Holt, Rinehart, and Winston, 1981); Gerard H. Clarfield and William M. Wiecek, *Nuclear America* (New York: Harper & Row, 1984); and John Berger, *The Unviable Option* (New York: Dell Publishing, 1977).

2. *New York Times*, 7 January 1964; *Long Island Press,* 15 June 1963.

3. *New York Herald Tribune*, 7 January 1964; *New York Times*, 7 January 1964.

4. New York Public Service Commission, *1947 Annual Report.*

5. Public Service Commission, *1948 Annual Report*; press release, Consolidated Edison Company, 10 December 1948.

6. AEC Construction Permit Hearing for Shoreham Nuclear Power Station, Unit 1, 1970-1972, most sessions of which were held at Holiday Inn, Centereach; for the origin and history of Brookhaven National Laboratory, see Robert P. Crease, "History of Brookhaven National Laboratory, Part One: the Graphic Reactor and the Cosmotron," *LIHJ* 3 (Spring 1991) 167-86, and "History of Brookhaven National Laboratory, Part Two: the Haworth Years," *LIHJ* 4 (Spring 1992): 138-61.

7. LILCO, "Atomic Power for Long Island," 12 April 1966.

8. LILCO press release, 12 April 1966; LILCO, "The Shoreham Project," 1966.

9. *Newsday*, 27 May 1965 and 10 October 1967.

10. *Newsday*, 16 and 14 July 1976.

11. *Suffolk Times*, 20 May 1976; *Long Island Traveler-Watchman*, 3 February 1977; Wilfred O. Uhl, interview with the author, August 1977.

12. *Newsday*, 2 April and 7 May 1966.

13. *Newsday*, 17 July 1967; Irving Like, interview with the author, October 1985. Ann Carl was the first woman to solo in a jet and to be a test pilot; William Carl was an engineer for the Grumman Corporation.

14. Like, ibid.

15. Ibid.

16. Like, paper delivered at the American Legal Institute and American Bar Association Course of Study on Environmental Law, Washington, D.C., 28-30 January 1971.

17. *Newsday*, 15 November 1981.

18. *Calvert Cliffs Coordinating Committee v. AEC*, U. S. Court of Appeals, Dist. of Columbia Circuit, 23 July 1971, 24839 and 24871; the complete opinion can be found in *Atomic Energy Clearing House Reports*, 26 July 1971, and *102 Monitor* (from the President's Council on Environmental Quality) September 1971.

19. The testimony of James D. Watson and others are from the record of the AEC's permit hearings on Shoreham (see note 6).

20. For Wash-740 see Crease, "Brookhaven National Laboratory, Part Two," 142; Like, interview with the author, October 1985.

21. Richard E. Webb, interviews with the author, 1985-1990; after the Shoreham hearings, Webb completed his Ph.D. and wrote *Accident Hazards of Nuclear Power Plants* (Boston: Univ. of Mass. Press, 1976), and other works on accidents at nuclear plants, particularly those involving explosions.

22. *New York Post*, 4 December 1970.

23. Lester L. Wolff, interview with the author, December 1985; *Conservation Society of Southern Vermont, Lloyd Harbor Study Group, et al v. AEC et al*, 558, U. S. District Court, Washington, D.C., 1971 (the case became moot when the AEC was abolished and the NRC was given a regulatory but not a promotional function).

24. Michio Kaku, interview with the author, May 1979.

25. Testimony at trial, *The People of the State of New York vs. Matthew J. Chachere*, December 1979, Suffolk County District Court, Hauppauge; James H. Conran, testimony at an NRC Atomic Safety & Licensing Board meeting in Riverhead, 6 April 1983, considering granting LILCO an operating license for Shoreham, at which Conran also stated that "LILCO truly does not understand what is required minimally for safety."

26. Investigation of the Shoreham Nuclear Power Station, New York State PSC, February 1984.

27. Testimony of George W. Henry and Ronald Stanchfield before Suffolk County Legislature, 30 January 1985.

28. *New York Times*, 9 September 1984.

29. Lorna Salzman's comments at Shoreham protest, 1977, at which the author was present.

30. Wayne Prospect, interview with the author, April 1986.

31. Gregory Blass, interview with the author, April 1986.

32. Leon Campo, interview with the author, February 1986.

33. Goldie Watkins, an AEC health physicist from 1963 to 1968, was the New York State Health Department's representative on the board, and William Seymour, who served in the Navy's

Nuclear Division, represented the New York State Commerce Department.

34. *Newsday*, 22 September 1978.

35. John Mullen, interview with the author, April 1986.

36. From *The County of Suffolk against Long Island Lighting Company, Charles Pierce, Wilfred O. Uhl, et al*, filed in Eastern District Court, 1986.

37. *Newsday*, 7 February 1982.

38. Office of County Executive Peter P. Cohalan, "County Radiological Emergency Response Plan," submitted to Suffolk County Legislature, 2 December 1982, a 777-page analysis which cost $600,000.

39. Peter P. Cohalan, at the House Committee on Interior and Insular Affairs's Subcommittee on Oversight and Investigations hearing, Suffolk Community College, Selden, 1984.

40. John S. Herrington, "The Challenge for Nuclear Power," speech of 6 May 1985, Nuclear Power Assembly, Washington, D.C.

41. Herbert Brown, interview with the author, March 1984; Nofziger's fee was $20,000 a month (ibid.).

42. "Technical Guidance for Siting Criteria Development (NUREG/CR-2239), prepared for the NRC by Sandia National Laboratories, 1982; NRC report to the House Committee on Interior and Insular Affairs's Subcommittee on Oversight and Investigations, at NRC authorization hearing, 7 April 1985.

43. Wayne Prospect, interview with the author, March 1985.

44. Nora Bredes was elected to the Suffolk County Legislature in 1992; statements at the demonstration are recalled by the author, who was present; Prospect, ibid.

45. Maurice Barbash, interview with the author, December 1985.

46. *County of Suffolk v. LILCO*, 710 F. Supp. 1387 (EDNY), aff'd 907 F2d 1285, Eastern District Court, 1986; Judge Weinstein held that the jury had gone far beyond the scope of the Rico Statute.

47. *Newsday*, 14 February 1989.

48. *Newsday*, 7 February 1992.

49. Author's interviews with Salzman and Bredes, December 1986, and with Twomey, January 1992.

50. *The Nation* 246 (11 June 1988), 811.

Recreation vs. Waste Disposal: The Use and Management of Jamaica Bay

By R. L. Swanson, Anne S. West-Valle, and Cynthia J. Decker

Jamaica Bay stands at the ocean entrance to one of the world's most urbanized waterways, the New York-New Jersey Harbor Estuary. Geographically, it fits the description of a shallow coastal bay. Except for a small area toward the eastern end, the bay and its surrounding uplands are entirely within New York City. Bordered by John F. Kennedy (JFK) International Airport on the eastern end and by Brooklyn on the northern and western sides (see figure 1), it is part of the Gateway National Recreation Area (GNRA) established in 1972 by Congress to "preserve and protect for the use and enjoyment of present and future generations an area possessing outstanding natural and recreational features..."[1] This article summarizes the physical, biological, and chemical characteristics of the bay, the uses of the bay area, and the most serious impairments to them.

Administered by the National Park Service, this 107-km^2 (26,645 acres) area consists of beaches, wetlands, dunes, forests, and a wildlife preserve. The Jamaica Bay unit contains 65 km^2 (16,000 acres), of which approximately three-fourths are water, marsh, and meadowland, and the remaining one-fourth are uplands.[2] During the past three centuries, significant, humanly-induced impairments affecting the use of the Jamaica Bay system include: the elimination of shellfish harvesting; the restriction of swimming; the restriction of recreation because of the need to protect the Wildlife Refuge (although, in 1987, ship traffic, including recreational, industrial, and commercial vessels, totalled 20,341 trips);[3] the impairment of water quality by combined sewer overflows (CSOs), storm-water runoff, sewage effluent, landfill leachate, and topographical changes; and a reduction in faunal diversity because of habitat alteration, stabilization, and destruction.

Through most of its history, Jamaica Bay has served as a source of food and a place for recreation, while its waters and wetlands have been used as areas for disposal of solid waste and sewage. By 1980, more than 1.5 million people were served by the six sewer districts that empty into the bay.[4] These uses of the area are incompatible, as witnessed by the loss of the shellfish industry and the decline in water-contact recreational use.

In spite of the changes in morphology and water quality, Jamaica Bay remains a tremendous asset to the city and the New York Bight ecosystem. To conserve and, hopefully, to rehabilitate Jamaica Bay, it is necessary to

Long Island Historical Journal, Vol. 5, No. 1 pp. 21-41

understand its ecological processes and human impacts on its ecosystem. Many of the stresses of excess population and industrialization, as measured by pollutant loadings and ecosystem impacts, can be specified in terms of use impairments with measurable social and economic relevance.

Broad categories of impairment attributed to pollution are: limitations on swimming and other water-contact recreational activities; unsafe seafood; losses of commercial and recreational fisheries; and impacts on marine animals, plants, water-dependant birds, herpetofauna, and mammals. These are generally caused by loss or modification of habitat, the presence of pathogens and toxicants, and excess nutrient loading.

A review of the history of use and management of Jamaica Bay can be helpful to those who are attempting to establish coastal zone management programs throughout the nation today. The bay experienced much of what is now occurring in other coastal areas—a change from a pastoral, productive, marine environment to an urban setting, fringed by high-population density and industrial activity. As the population spread from Manhattan, so did the need to relocate many of society's waste disposal activities. From the perspective of our forebears, the "useless, mosquito infested marshes" of Jamaica Bay seemed a logical and effective solution, yet there was also a need for readily accessible recreational facilities. These two key requirements converged in the bay, and are largely responsible for its present condition.

History

Archaeological information indicates Indian settlements during the late 16th and early 17th centuries. Remains of shellfish, fish, mammals, and birds, as well as fish hooks, canoes, and rakes for harvesting shellfish, imply an economy based on fishing and hunting. Before 1650, Dutch settlers named the area "Rustdorp"; the English renamed it "Jamaica," after the resident Jameco Indians. Historic uses of the bay and surrounding uplands include residential settlement, agriculture, industry, fishing, shipping, and other forms of transportation. The Native Americans, who relinquished their titles to the shorelands of Jamaica Bay to the Dutch between 1636-1667, had been driven almost completely away by the late 1660s.[5]

Before the mid-nineteenth century, there was little physical alteration of the lands or waters of the bay area other than some subsistence farming and several mills erected by the Dutch. Agriculture and fishing were largely for personal use, with any surplus marketed. Jamaica Bay was renowned for the "abundance, variety and quality" of its finfish and shellfish for almost three centuries. In the 1840s, approximately 60 men worked in bay-centered occupations, a number that increased when fishing in the bay became an important industry after the Civil War.

Beginning in the late 1850s, the number of companies on Barren Island, part of what is now known as the Floyd Bennett Field area (see figure 1), began to increase. Although there were never more than seven or eight industries in operation at one time between 1859 and 1934, 28 companies had

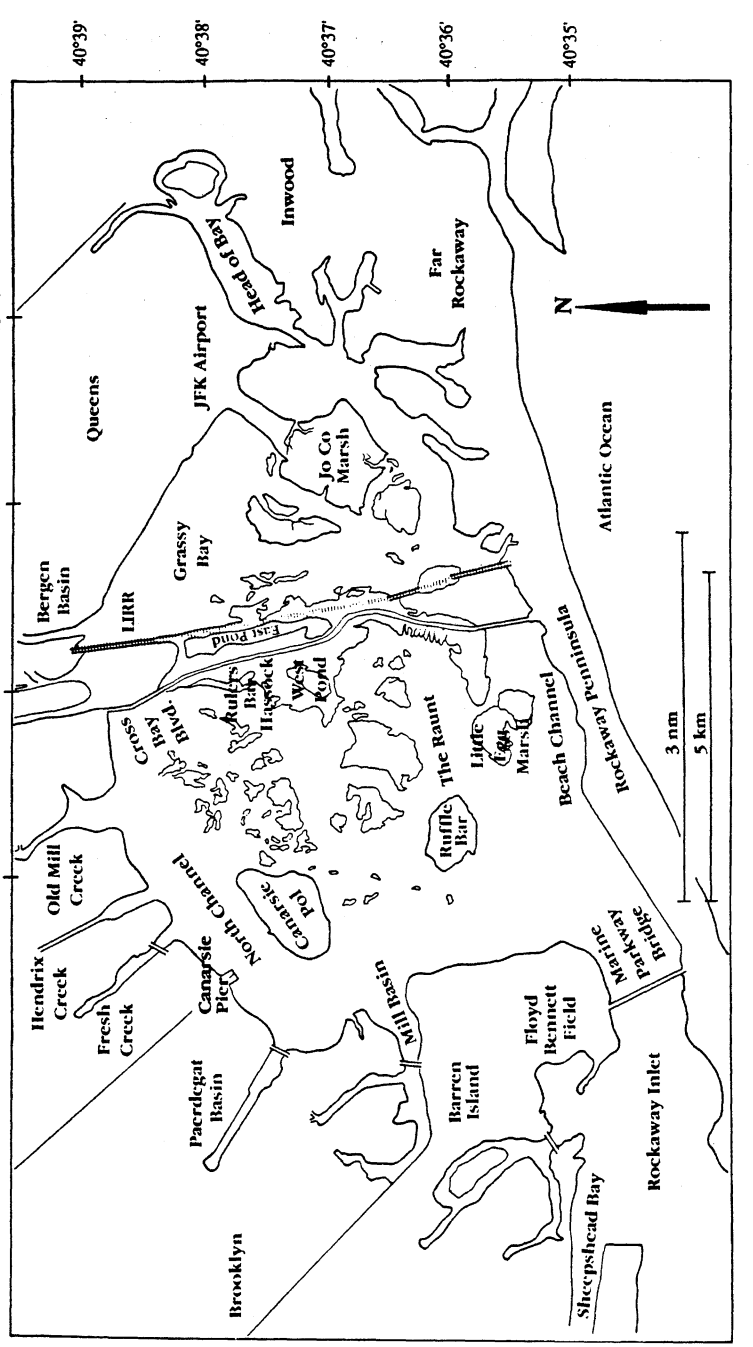


Figure 1. Map of Jamaica Bay and surrounding areas.

facilities on the island. Among the principal industries were the production of oil, fertilizer, and refuse deposition from menhaden; smelting (1890), asphalt production (1920s), and boat building. Several mills operated on the creeks that emptied into Jamaica Bay. Refuse loads of 500 to 1,000 metric tons arrived daily at Barren Island, where the three refuse disposal plants were among the largest in the world.[6] The fertilizer plants, which peaked in the early twentieth century, processed dead horses and other animals shipped from the city, with the resulting products marketed in Europe. This industry's impact on flora and fauna is unclear, but was probably not significant as the factories were not in operation for very long. The fish-oil production plants did have a severe impact on the environment, by depleting menhaden populations; by the mid-1890s, menhaden in the bay were scarce.

By the end of the nineteenth century, the uses of the bay competed with one another. The area was becoming a popular beach resort, with hotels, restaurants, entertainment, and an amusement park in Canarsie that rivaled nearby Coney Island. Train lines, ferries, and excursion boats crossed Jamaica Bay to bring visitors to the Rockaway beaches; larger vessels carried as many as 3,700 people on a single trip. It was also developing both as a fishing and an industrial area.

Canarsie (see figure 1) was the center of commercial and recreational fishing. A substantial shellfish industry developed in the 1860s and reached a peak in the early twentieth century. As early as 1904, however, water contamination reduced shellfish populations, and many Canarsie oysters and clams contained pathogens harmful to humans. Since 1921, when the New York City (NYC) Board of Health closed the industry because of sewage-related pollution, no shellfish have legally been marketed from the bay.

The new century also witnessed considerable physical alterations of the bay, which led to significant topographical changes. Before the intervention of humans, the bay consisted mostly of low-lying islands, salt marshes, and sand flats.[7] Now the area covered by water has been reduced, almost by half, to 52.5 km^2 (13,000 acres). In addition, filling and dredging caused a great reduction in the number of islands in the bay, although some 16.2 km^2 (4,000 acres) of marshland in the central core are largely intact.[8] In the early 1940s, JFK Airport (then called Idlewild) was created on land formed from sand dredged from the bottom of the bay, a process that destroyed 18 km^2 (4,500 acres) of marshland. Grassy Bay (see figure 1), the hole from which the sand was dredged, is now the deepest and possibly the most polluted open portion of Jamaica Bay.[9]

In 1905, NYC Comptroller E. M. Grout proposed an "Improvement and Development of Jamaica Bay and other Waterfront Areas" program, with Jamaica Bay as a central point for manufacturing.[10] Many areas were dredged, others filled, and some bulkheaded, and piers were built to accommodate ferries and commercial ships; eventually, major roadways, railways, and the airport now known as JFK were constructed. Some fill from dredging northern and western portions was used to create Floyd Bennett Field. Solid

waste was used to fill the north shore of the bay to such an extent that almost all the original marshland of the periphery was destroyed.[11] Industrial growth was slow, yet, in 1906, industries on Barren Island produced goods (mainly fertilizer and oils) valued at over $7.5 million.

In 1910, the NYC Department of Docks and Ferries planned Jamaica Bay's "improvement": Rockaway Inlet and a shipping channel from Jamaica Bay channel to Mill Basin were dredged; Floyd Bennett Field Municipal Airport was created; and large areas of marsh were filled to produce uplands. In 1923, Cross Bay Boulevard was finished, and two years later the first Canarsie pier was completed.[12] Many parts of the plan never came to fruition, partially because of Robert Moses's arrival, in 1930, at the helm of bay development. Moses perceived Jamaica Bay as a park, not a site for industry and commerce. In 1938, when the city's Sanitation Department proposed using it as a dumpsite for solid waste by creating large, artificial islands out of garbage, Moses had it transferred to the Department of Parks and Recreation,[13] under which it remained until the National Park Service took over management of the area in 1972.

The Jamaica Bay Wildlife Refuge (JBWR) was established in 1948, managed by the Parks Department. In 1953, East and West Ponds—large freshwater ponds on either side of Cross Bay Boulevard—were created.[14] On 12 March 1954, the Department of Parks and Recreation established a basis with the state's Conservation Department to operate the preserve according to federal regulations; since 1972, it has been managed by the National Park Service as part of the Gateway National Recreation Area (GNRA). Its remaining natural areas are in a relatively undisturbed, natural state, in accord with the long-term management goals of the refuge. Development is limited to expansion of educational and recreational facilities, and improvements in mass transit to make the park more accessible.[14]

Changes of management and jurisdiction over the years have led to conflict. The Port Authority of New York and New Jersey proposed to expand JFK Airport half-way across Jamaica Bay. This not only would have destroyed many of the bay's natural features, but also would have produced undesirable noise levels over the Rockaways and eastern Brooklyn. In 1967, the National Recreation and Parks Association, under the auspices of the NYC Planning Commission, proposed deep-dredging Jamaica Bay waters "to permit full use by all types of recreation watercraft. The fill gained from dredging or sanitary landfill could be used to create a chain of connected islands."[15] Effectively, this would have destroyed all the natural marshland, an especially attractive quality of the bay, and created artificial islands out of context with wildlife areas. Since 1972, the National Parks Service's administration of the bay has been consistent with the enabling legislation's definition of "preservation and protection."

The development plan called for the widening and deepening of a moat between the inner and outer portions of the bay, with some channels dredged to 480 m (1500 feet) wide and 12 m (40 feet) deep. The dredged material was

used to fill in the marsh area outside the moat for construction of piers and docks, and other areas were filled as a consequence of solid waste disposal. The addition of solid-waste landfills along North Channel in Brooklyn and Queens destroyed nearly all of the 49 km^2 (12,000 acres) of marshland along the periphery of the bay. As of 1970, only 52.5 km^2 (13,000 acres), with 16.2 km^2 (4,000 acres) of inner bay area, remained essentially unaltered. The creeks that once transected the marshes can still be seen, however the marshes that stood behind the beaches have been filled in with refuse, covered over with sand, and graded. The shores of the former creeks have been bulkheaded and many of them have become stagnant basins. Sewers have replaced the watercourses that once drained into the creeks from the open lands of Brooklyn and Queens. Large sewage-treatment plants now stand at the heads of several basins.[16] The Shore (Belt) Parkway, Howard Beach, and Hamilton Beach housing development projects, and the JFK International Airport are among the many constructional changes that mark the bay area.

Between 1900 and 1970, the Army Corps of Engineers issued an average of three dredging permits per year for Jamaica Bay.[17] Dredging was done to obtain fill and provide navigational routes, the maintenance of which often required re-dredging. The development of Rockaway Peninsula, Canarsie Pol, and Floyd Bennett Field, has required further dredging. A conservative estimate of sediment dredged in Jamaica Bay through the years is 70.9×10^6 m^3 (92.7×10^6 yd^3). The largest single authorized project—37×10^6 m^3 (48.4×10^6 yd^3) from what is now called Grassy Bay to provide fill for JFK Airport—left a deep pool into which the Jamaica Sewage Treatment Plant discharges about 360×10^6 liters (95 million gallons) of secondarily treated sewage per day.[18].

Eighty years of dredging have considerably altered the bathymetry of Jamaica Bay, only a small part of which retains its original depth. The earlier mean depth was nearly 1 m (3.3 ft), but now is approximately 5 m (16 ft). One effect of dredging and deepening is an increase in the residence time (or flushing time) of the basin—water now takes three times longer (35 days) to be flushed out of the bay than it did eighty to one hundred years ago (11 days).[19] From 1912 to the 1930s, a 300 m (1000 ft) wide and 10 m (30 ft) deep ship channel was dredged from Rockaway Inlet to Paerdegat Basin. By 1940, a single, contiguous stretch of land joined the previously separated islands of Goose Creek, Black Bank Marsh, Rulers Bar Hassock, Goose Pond Marsh, and Big Egg Marsh.[20]

By 1970, almost all of the marshes that once lined the bay were filled in or were above mean high tide levels, with the eastern marshes bisected by a rapid transit line and a roadway. East Pond and West Pond were created from dredging for fill to repair the rapid-transit lines. Urbanization, both through filling of low level areas and by development of related support structures, has added topographical relief to Jamaica Bay where little was present originally.

Urban development has also decreased the surface area of the bay as a result of the filling of extensive zones for residential and service-oriented activities. The 1962 extension of JFK Airport (runway 4-22L) obstructed the

natural counter-clockwise flow in Jamaica Bay. Grassy Bay was transformed into a nearly stagnant pool, in which fine-grained sediments and their associated contaminants readily precipitate.[21] The deepening of certain channels, the shoaling of others, and further natural changes suggest that the bay's configuration is normally dynamic, not stable. Hence, attempts to stabilize it require constant dredging and filling that generally cause ecological damage.

The dredge/fill process has resulted in a decreasing surface to volume ratio of the bay. In fact, it is estimated that 70 percent of the present bay water volume was added as a result of dredging. Another effect has been an increase in the tendency of the water column to become vertically stratified. The process of stratification can lead to longer residence times of pollutants, and to severe dissolved-oxygen depletion, generally in the summer. The bay's surface area still is broad enough, however, to allow for wind-driven turbulent vertical mixing, and the tidal currents are strong enough to generate considerable energy for vertical and lateral mixing most of the year.[23]

In addition to physical alterations, there probably has been a significant change in the structure of the bay's water column. This has occurred gradually with the construction and use of the six sewage treatment plants (STPs) that discharge all or part of their effluent into the bay. These plants discharge approximately 1087×10^6 liters daily (287 MGD). As the Coney Island Water Pollution Control Plant (WPCP) outfall is in Rockaway Channel, only about half (one tidal cycle) of its effluent influences the bay directly. Thus, some 894×10^6 liters per day (236 MGD) of fresh water are added to the bay by sewage effluent that can modify the water column and influence the circulation. Given that the bay's water surface is 52.5 km^2 (13,000 acres), the input of sewage effluent is equivalent to adding a 1.7 cm (0.7 in) surface film, over the entire bay every day.

Although the quantity of fresh water still added by groundwater seepage and through natural streams and rivulets is unknown, it is apparently small because of the manner in which parts of the bay have been bulkheaded, and its tributaries channelized, by storm sewers and CSOs. In 1975, Leendertse and Liu estimated that some 149 km^2 (36,700 acres) surrounding the bay are drained by storm sewers and CSOs (an anthropogenic watershed). In 1977, C. R. Zeppie estimated surface run-off to the bay to be about 1.6×10^{11} liters per year (4.0×10^{10} gal per year), or 4.7×10^8 liters (8.9×10^8 gallons) per day. This is only approximately half of the effluent discharged directly into the bay by the six sewage treatment plants—1.1×10^9 liters/day (236 MGD). Thus, sewage effluent is probably the largest source of fresh water to the bay, averaged over the year.

Parts of the shore are still lined with marshes and grasslands, and portions of the northern and western peripheral marshlands remain, although greatly reduced. Bulkheading and other forms of urbanization prevent the inland migration of the marshlands, otherwise expected under the constant sea level rise of 2.8 mm per year recorded in the New York harbor area since the 1890s.[24]

Impaired Uses: Toxic Materials

The accumulation of contaminants in the biosphere can result in changes in the structure and function of natural ecosystems. Aquatic pollution can also be a hazard to human health when some contaminants are transferred up the food chain into organisms consumed by humans. Several toxicants, such as polychlorinated biphenyls (PCBs) and dichloro-diphenyl-trichloroethane (DDT), are soluble in fats but very insoluble in water. Therefore, they are selectively retained in living tissue and can be concentrated by uptake from water and through trophic transfer from food organisms. A number of elements and compounds dispersed in the marine environment are toxic, mutagenic, teratogenic, or carcinogenic and are, therefore, causes of concern. The United States Environmental Protection Agency (USEPA) has identified 129 priority pollutants. Organo-metallic compounds of the following metals and metalloids, as well as the free metal ions, are on this list: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), silver (Ag), and zinc (Zn).[25]

Pesticides and herbicides compose a second category of priority pollutants, while PCBs, polynuclear aromatic hydrocarbons (PAHs), and oil and grease make up a third, miscellaneous category.[26] There are many more USEPA priority pollutants, especially of the volatile types, but information is scarce on their concentrations in the bay.

Pollution in the greater Jamaica Bay area has been a problem since, at least, the mid-nineteenth century. Industries, municipal facilities, and private citizens freely disposed of a wide variety of noxious substances in its waters, including dead horses (Dead Horse Point).[27] By the 1920s, after channels were dredged along the western and northern parts, it became apparent that the bay would not be used as a major seaport, although the main channel still is used by barges. Raw sewage was released directly until the 1930s. By 1927, however, the largest and most modern STP then in the region was built on Jamaica Bay.[28] Landfills and dumps were located along the perimeter in the early 1900s, some of which were closed only recently, for the disposal of garbage, street dirt, commercial waste, construction waste, demolition waste, ashes, incinerator residues, waste oil, and paint pigment wastes and solvents.[29] Ongoing pollution led to the assessment by Newburger, in 1968, of the unsuitability of the bay for recreational uses (bathing, fishing, boating).[30] Pollution, primarily by metals, pesticides and petroleum products, continues to be a problem. A 1976 report by the United States Department of the Interior indicated that within the GNRA, Jamaica Bay and Staten Island beaches were the areas most severely impacted by raw sewage, and treated municipal and industrial wastewater effluents from STPs, CSOs, stormwater runoff from separate sewer systems, and seepage through landfills and faulty septic tanks.

The main problem areas are the north and east sides of the bay, where the major basins drain densely populated areas with storm and sanitary sewer systems.[31] Dye studies show that the northern area of Jamaica Bay is affected almost uniformly by flow from the Jamaica WPCP. The Rockaway WPCP

affects Southern Winhole Channel, Broad Channel, and Eastern Grass Hassock Channel throughout the tidal cycle, and Beach Channel principally during ebb tidal flows.[32] Today, most of the Broad Channel community continues to use septic tanks which leach into Jamaica Bay.

Impacts of increased pollution loading are exacerbated by changes to the physical structure or morphology of the bay. Dredging and artificial obstructions have substantially increased the bay's flushing time, such that previously well flushed, sandy areas now have weak current regimes resulting in the deposition of high amounts of silt, clay and organics.[33] Increases in fine materials delivered to the system from sewage effluent also contribute to increases in deposition. Grassy Bay, at the eastern end of Jamaica Bay, is a good example of an area with increased deposition. Construction of the JoCo Marsh runway extension at JFK Airport and the concurrent dredging of the basin during construction have transformed a once shallow, well flushed marsh into a deep settling pond with organic deposits containing high levels of metals and petroleum compounds.[34] Because of the deepening through dredging, constriction of the northwest end by Cross Bay Boulevard, and blockage of the southeast end by the runway extension, Grassy Bay can nearly be considered a closed system.[35]

Metals and organic pollutants in marine systems are often associated with fine particles. Decreased flushing means that fine particles are more likely to settle out of the water column. Thus, increased deposition of muds and silts may indicate increased concentrations of pollutants in the sediments. Increased flushing times also decrease the dilution of dissolved and particulate pollutants resulting in increased residence time and concentrations of these substances in the water column. The national biomonitoring program known as Mussel Watch and managed by NOAA found that levels of several PAHs figured on a dry weight basis in blue mussels exceeded the USEPA criteria of 0.00093 ppm. There is little information about the effect of these elevated levels of toxicants on the biota of Jamaica Bay, nor are there any statistically significant correlations between metal sediment loads and either benthic species richness or density.[36] The USEPA water criteria are based on acute and chronic toxicity levels which could affect marine and estuarine aquatic life and New York state has established enforceable standards. Because of the difficulties of measuring many of these chemicals in water, it is unclear whether metals concentrations in ambient water are exceeding criteria.

The United States Food and Drug Administration (USFDA) and USEPA criteria for edible fish tissue are used here for shellfish. There are no USEPA criteria for shellfish. The fish-tissue criteria are designed for protection of humans consuming seafood. Developed through the use of bioconcentration factors, they correspond to a 10^{-6} incremental cancer risk for carcinogens, or to a "no effect" level for non-carcinogens. The USFDA, in setting action limits, takes into account both the health risks to the consumer and the economic impacts of banning the product.

The extent to which metals in the bay are biologically available is

unknown. No metals examined at length (Pb, Cu, Cd, Cr, Ni, Hg, Zn) exceed tissue criteria, but arsenic (As) levels in mussel tissue (8.3 ppm) exceed the USEPA criterion of 0.0062 ppm. DDT and Chlordane in blue mussels exceed USEPA criteria[37]; and PCBs in several species of fish exceed the FDA action limits. In summary, although the threat of metals to the health of those who eat seafood from the bay is unclear, it may be significant. Chlorinated pesticides may also be dangerous, as some of these compounds found in fish and shellfish tissue exceed their criteria.

Water Quality

The health of the biological community in Jamaica Bay, and the well-being of a variety of its potential commercial and recreational uses, depend on the quality of the water. The surrounding area is densely populated, so that the inputs of nutrients and other contaminants from the sewage system have a great effect on the bay's ecology and water quality. Water quality, which is often assessed by measuring concentrations of dissolved oxygen, biological oxygen demand, nutrients and coliform bacteria, varies considerably in Jamaica Bay according to distance from its mouth, at Rockaway Inlet. In general, the quality is poorest along the northern edge, and in Grassy Bay, at the northeast end, adjacent to JFK International Airport. In part this stems from STPs and major combined sewage overflows, and in part from circulation patterns.

Impairments to use of the bay by people because of poor water quality conditions include the loss of a major shellfishery; limited use of the bay for swimming and other water sports; reduction in recreational fishing; and health risks from eating more than minimal quantities of finfish and shellfish. Most of the bay is classified by the Interstate Sanitation Commission as suitable for swimming, except the northern portion, where concentrations of total and fecal coliforms exceed state standards. However, the NYC Department of Health prohibits bathing beaches in all of Jamaica Bay. In 1970, the NYC Department of Parks had plans for developing nine beaches and seven marinas along the western and northern shores of the bay. However, the full recreational potential of these beaches will not be realized unless the major CSOs near these sites are treated.[38]

Historically, poor water quality has affected the biota of the bay. The disappearance of oysters and the closing of hard- clam beds to fishing are the most obvious losses caused by the decline in the quality of ambient water. Recent studies indicate that the diversity and abundance of plankton communities resemble those of bays on Long Island's South Shore. Those bays, however, are considered classic examples of highly eutrophic systems. One notable difference between the ecologies of Jamaica Bay and nearby South Shore bays is the absence of the sea grass *Zostera marina* in Jamaica Bay. This may be attributable to the relatively high turbidity of the waters.[39]

The periodic hypoxic or anoxic conditions found in the bottom waters of Grassy Bay probably represent the greatest impairment to the benthic animals in the bay. These conditions result in a seasonal loss of feeding habitat for

macrocrustaceans and fish, which means that the bay will support fewer of these species; therefore, it has been suggested that remedial measures include replacing fill in order to reduce the retention time of water in the basin.[40]

The timing of hypoxia—its duration and extent—determine the impairment to the biota. Unfortunately, details about the onset, length and frequency of the hypoxic episodes in Jamaica Bay are not known.

Floatable wastes do not pose a serious impairment to the biota, but reduce the attractiveness of Jamaica Bay as an area of recreational activity. The city of New York is now trying to build facilities that will capture floatables from CSOs, and, in some cases, return the combined storm and domestic effluent to a water pollution control facility for treatment. A demonstration project is now underway at Fresh Creek, which drains into the bay.

Fauna

Urban embayments like Jamaica Bay are the focus of attention and research, because many major food fisheries rely on them for survival, yet these ecosystems are extremely vulnerable to human-induced stresses and perturbations.[41] Jamaica Bay was a source of food to Native Americans, just as European settlers found its waters, marshes, and grasslands to be reliable sources of sustenance. During the nineteenth century it was the site of major commercial bivalve fisheries, as well as a major sports fishery; valuable soup turtles taken supplied lavish parties given by such figures as "Diamond Jim" Brady. However, sewage contamination forced the closure of the area to shellfishing in the early twentieth century. By 1967, fishing and crabbing were on the decline, although many species of finfish and crustaceans could still be found.[42] Currently, although the bay is the site of subsistence and recreational fishing, poor water quality, habitat destruction, and overharvesting of commercial species have just about destroyed its commercial seafood resources.

Two aspects of impairment must be considered for the fauna: impairments to use of the bay by the fauna, and limitations to its human use because of the fauna. The fauna of Jamaica Bay have been studied, on occasion, by various investigators since the 1800s. The native terrestrial communities have been radically changed by the urbanizing of the territory around Jamaica Bay. The aquatic system has also been changed and reduced, but the impacts, in terms of species diversity and density, may not be so severe. Plankton and benthic communities are possibly similar to those which existed before European settlement, although a lack of surveys before the 1970s makes confirmation impossible. The fish communities, however, have undoubtedly seen major changes as a result of overharvesting in the bay and adjacent coastal waters, and destruction of spawning and nursery grounds. This situation will improve only if sufficient restrictions are put on commercial and recreational fishing. Curbs on the discharge of toxic substances are also necessary to avoid acute and chronic contamination of many species, particularly larval and juvenile forms.

Impairments of the bay's use by people, as a result of the need to protect faunal activities, is a more difficult issue. The protection of the fauna so that they might be enjoyed for their own sake, while enhancing and preserving the health of the bay, should more than compensate for the loss of some recreational freedom. That Jamaica Bay has relatively productive and diverse aquatic communities is largely the result of its preservation as a Wildlife Refuge and National Park. Care must be taken that anthropogenic interference with the system is minimized. The bay is one of the city's few areas able to sustain at least some accessible herpetofauna and avifauna—one of the few remnants of nature that visitors may observe at close range. To the extent that the fauna are impaired, millions of people are deprived of experiencing those fragments of a natural system.

For these reasons, and because of the designation of most of the bay as a wildlife refuge, there must be restrictions on recreational use. Should commercial fishing for striped bass and other finfish or shellfish resume in the bay, strict limits would have to be placed on the location of fishing (outside the refuge) and the amounts that may be taken. Should the waters become safe for swimming, restrictions would have to be imposed to protect the fauna from that activity. Increased boating, and such associated activities as recreational fishing, waterskiing, and picnicking on islands are regulated to protect breeding and nursery grounds for finfish, crustaceans, reptiles, and amphibians; these restrictions and their enforcement may have to be tightened. In these ways, human use of the bay has been "impaired," but protecting this valuable resource may be more important than allowing unrestricted recreation.

Birds

The Atlantic Flyway, an air corridor along the east coast of North America, is an important migration route for many species of birds. Large numbers are found in this region at various times during spring and fall. The Jamaica Bay Wildlife Refuge supports a wide diversity of organisms, including at least 326 species of birds.[43] Although Long Island's south coast has many tidal bays, it is more than 140 km (75 nautical miles) by air from Jamaica Bay to the nearest significant coastal salt marsh in New Jersey, making the JBWR an important link in the Atlantic Flyway. The JBWR is the northern extreme in the range of a variety of birds such as the glossy ibis (*Plegadis falinellus*), the southern extreme of the breeding range of the great black-backed gull (*Larus marinus*), and a stronghold from which several species of herons, egrets, and ibises have colonized other areas of New England and North America. Moreover, the JBWR serves as a resting, feeding, and breeding refuge to perhaps one-fourth of Long Island's wintering waterfowl, and to several species listed by the state of New York as threatened or endangered, including osprey (*Pandion haliaetus*), piping plover (*Charadrius melodus*), and common, least, and roseate terns (*Sterna hirundo, S. albifrons and S. dougallii*).[44]

Various factors have caused changes in the avifauna of the JBWR, most of them the result of urbanization of surrounding areas. Some examples are landfills, roads, marinas, industrial and residential construction, and waste disposal facilities.

Cases of bird-related diseases transmitted from JBWR bird populations to people are probably rare. Though water quality is adversely affected by defecation of bird populations in some areas, bird feces are probably insignificant in comparison to the large volume of treated waste water, and associated high concentrations of dissolved nutrients and coliform bacteria emptied into the bay each day. Except for limiting access to some areas, birds enhance human use of the JBWR, where bird-watching is a major reason for its recreational use.

Use of the region by birds was impaired by the acts of feather hunters in the late 19th- and early 20th-centuries. Since the protection of most of these species from hunters, declines in waterfowl populations have mainly resulted from habitat alteration and destruction, local urbanization, and pollution. Use by some bird species, like terns, oystercatchers, and plovers, has probably been further impaired within the JBWR since 1975, when several landfills opened and gull populations increased. This should diminish as local landfills are closed and capped. Changes in bird populations caused by the creation of small spoil islands, dikes, and ponds are not obvious, and require further study.

Discussion of bird populations in Jamaica Bay usually focuses on decreases in numbers of species and individuals (except for the increased gull populations resulting from landfills). However, the number of birds in the annual January bird count in the JBWR, has remained fairly constant over the last ten years.[45] If damage to coastal habitats along the eastern seaboard continues, particularly in the New York Bight region, Jamaica Bay could witness an influx of a considerable number of species from these regions. Forcing more individuals into a smaller area may have a number of consequences. First, many species may be forced out of the refuge by loss of their minimal requirements for feeding and reproduction; other species may out-compete them for what may be perceived as a "degraded" habitat. More individuals in a small area may also result in an increase in local predation and avian disease outbreaks. However, because of many possible causes for fluctuations in bird populations in the New York region, reliable, standardized, and frequent assessments of habitat quality and bird population abundances are necessary to monitor the JBWR, an area vital to so many avian species, and to assess its importance in the region.

Recreation

Although it is difficult to determine any area's adequate amount, the opportunity for outdoor recreation is valuable and desirable. This is particularly true for an area close to a concentration of eight million people, most of whom would ordinarily be unable to spend much time in even vaguely natural recreational settings. Jamaica Bay's development was

affected by this need for recreation because of the popularity of the beaches of Rockaway Peninsula, and the open areas for fishing and boating. Before the Civil War, travel to beaches required taking a train to Jamaica Bay and then an uncomfortable stage-coach ride. Subsequently, the Brooklyn and Rockaway Beach Railroad (also known as the Canarsie Line) was built to facilitate transportation to and from bay-area beaches, carrying over 122,000 riders in 1867. The Long Island Railroad trestle, built in the second half of the 19th century, carried over 3.5 million passengers in 1902. Although the major recreational attraction was Rockaway Beach, Jamaica Bay itself attracted recreants in the late 19th- and early 20th centuries.[46] Improvements in public transportation gave increasing numbers of transient and permanent pleasure-seekers access to the bay-area's beaches and wetlands. The Board of Estimate designated the area as parkland in 1938; today, the bay remains the city's largest park area.[47]

Swimming had been common in the bay in the 1930s, but declining water quality curtailed this activity soon after. In the late 1960s, swimming again appeared to be a realizable goal, but non-municipal "bootleg" sewer outfalls and other inputs were still polluting the bay.[48] Twenty years ago, people would swim from piers, from boats, and near the sewage sludge storage tank on the Edgemere landfill site at the entrance to Bergen Basin, except after a rainfall, when foul-smelling floating wastes discouraged the practice. As of 1970, the quality of bathing water in the entire bay was not good enough for swimming. It was hoped that the contact-chlorination system at the 26th Ward STP and the construction of other waste-water treatment facilities would correct this condition by 1978;[49] However, chlorination and even secondary treatment of sewage effluent have not accomplished this desired water quality.

In the 1920s, more than 400 boats were available as rentals, and bait sales were twenty times (unadjusted for inflation) what they were in 1970. Broad Channel residents continued renting hundreds of boats on weekends after the banning of shellfishing; as of 1970 at Canarsie Pier, one of the more polluted areas of the bay, 70 rowboats, and bait, were still available.[50] Swimming, boating, and water skiing, especially near Island Channel, Beach Channel, Broad Channel, and Grassy Bay, were ongoing and popular as of 1967.[51] Although Jamaica Bay witnessed fewer numbers of fishermen and bathers over the years, fishermen and swimmers were still there for recreational purposes in 1970. A 1991 survey of 450 bay fishermen reported that they fished from shores or bridges of the bay an average of thirteen times a year.[52] Many privately owned power boats were used in the bay for recreation.

Pollution, filling of marshlands, and commercial development have hindered recreational use of the bay proper, but this was not the case for the Rockaway peninsula where transportation was the main hinderance. The only two major roads providing access to the beaches, Cross Bay Boulevard and the Marine Parkway, were so congested with traffic on hot beach days that the parking lot at Jacob Riis Park was never filled. Similarly, the single subway line, making infrequent trips, did not deposit nearly as many people

as wanted to recreate at the beaches.[53]

As of 1970, when Canarsie Pier Park was the only completed, accessible park, potential recreational areas were not utilized for several reasons: they were not accessible to the Shore Parkway; they were filled areas that had not been sodded; or, they were currently being used as land-fill operations. Also, park areas at Howard Beach and Canarsie Park were subjected to increased noise levels from the JFK Airport, thereby greatly diminishing their use[54]. Although technological improvements mandated by the Aviation Safety and Noise Abatement Act of 1980 have alleviated some of the volume, noise continues to have a significant impact on the area.

The potential of Jamaica Bay for recreational uses was assessed in a 1970 study by the NYC Parks, Recreation and Cultural Affairs Administration. The study reported that the development of beaches along the shores of the bay would increase usable beach frontage in the city by 60 percent and serve more than 13.5 million people. Boating activities, such as sailing, sail-boarding, canoeing, and rowing, could be enjoyed by one million people per year. Certain activities are restricted. For example, power boating, and water skiing have been eliminated from the wildlife area because they appear to be incompatible with the preservation of wildlife and fish in the bay.[55]

According to Robert McIntosh, the Superintendent of the Gateway National Recreation Area, recreational activities, particularly fishing, were very popular on the bay in 1983.[56] The number of visitors to the GNRA continued to rise through the late 1980s, reaching some 2.6 million in 1989. Nearly one million people visited the JBWR in that same year.

Bird watching is a major recreational activity in the JBWR. This is especially true during spring and fall, because the refuge is strategically located on the Atlantic Flyway, a major migration route. A survey of visitors found that 84 percent were "birders."[57] Four school classes visit the Refuge daily, a rare educational opportunity for city children who are not often able to visit wildlife areas.

Conclusions

Jamaica Bay is one of the most heavily urbanized bays in the country, lying almost entirely within the bounds of the nation's largest city. As with most other embayments on the Atlantic Coast, Jamaica Bay has a history of use and abuse by humans. It was one of the great shellfishing areas, its shores lined with summer communities, vacation homes, and places of amusement. People flocked to the bay to enjoy its natural beauty, recreational facilities, and readily available seafood, all of which were within a few miles of the city's pollution and poverty.

Nearly simultaneously, the city was discarding millions of liters of raw sewage and thousands of kilograms of solid waste into the waters and surrounding lowlands of the bay each day. Compounding the impact of waste was the effort of the NYC Department of Docks and Ferries to develop the bay as an international port and shipping center. This led to the draining, filling, and

development of peripheral marshes, the bulkheading of streams, and the dredging of channels. Disposal of sewage effluent and garbage resulted in poor water quality and contamination of shellfish with human pathogens, while physical alterations destroyed the bay's natural ability to absorb or flush out contaminants, and the use of peripheral areas resulted in habitat destruction and chemical contamination. Because many people used the resources of the bay to help feed and clothe themselves, build upon, and sell to others, the amenities which originally attracted people were lost. However, attractiveness is a relative concept. Those people who currently come to the bay today are unconcerned with its pristine condition; through partial protection and restoration, it is now a valuable natural resource for thousands of city dwellers.

Various perceptions of the bay have led to widely differing uses, but, in the end, the ecosystem itself has always suffered. Robert Moses, Commissioner of the NYC Department of Parks and Recreation from 1934 to 1960, advocated Jamaica Bay as the centerpiece for a system of parks. Unfortunately, a combination of politics and overlapping jurisdictions prevented the realization of this goal. The only portions created were the JBWR and the Shore Parkway. Ironically, with the increased reliance on automobiles for transportation, the Shore Parkway is a major source of pollution to the bay. The concept of Jamaica Bay as a park has persisted, however, and remains the guiding image for management of the system today.

Overlapping jurisdictions leading to conflicting uses remains the primary problem. Most of the bay is controlled by the National Park Service, but key features are maintained by other agencies. The Port Authority of New York and New Jersey operates JFK Airport and regulates commercial boat traffic; the Long Island Rail Road maintains the railroad trestle; the NYC Department of Transportation is responsible for the parkways and bridges; the city's Department of Environmental Protection maintains the sewerage system, including wastewater treatment facilities and CSOs, and, upon cessation of dumping garbage, the landfills. Accordingly, although the water and remaining undeveloped lowlands of Jamaica Bay are controlled by one agency, all sources of contamination and degradation are controlled by other agencies, most of which do not assign highest priority to the maintenance of a healthy aquatic ecosystem. This results in conflicts of use.

While physical alterations appear to have had the most dramatic impact on the ecological functioning of the bay, the redistribution and substantial increase of fresh water input have also been significant. There is little natural percolation of storm water into the bay; additional "fresh" water comes from a storm-sewer system that extends beyond the bay's natural drainage basin. Sewage effluent, an additional source of water not naturally added to the system, is 1.9 times that of the original annual drainage to the bay from precipitation. The additional fresh water may have altered the physics of the bay, causing it to become more estuarine in character. Water-column stratification may now be more intense, contributing to such problems as oxygen depletion in near-bottom waters.

The following broad categories of use impairment cause significant losses of the bay's ecological, economic, or social values: limited opportunities for swimming and other water-contact recreation; unsafe seafood; losses of commercial and recreational fisheries; and loss or modification of habitat. Factors contributing to these impairments are human pathogens, toxic substances, and excess nutrient loadings.

The specific subsets of the impairments examined above are listed in table 1. These impairments, which overlap throughout the bay, may be caused by various factors, often acting synergistically, which may have both direct and indirect effects. For example, contaminants may, at low levels, directly jeopardize the health of finfish or shellfish by lowering reproductive capacity, and indirectly affect the health of people who eat them.

Ecologically beneficial uses of Jamaica Bay that limit other, equally positive uses, are listed in table 2.

Use as a bird sanctuary limits some recreational uses, as would the commercial harvesting of hard clams. The depuration project once run by the state Department of Environmental Conservation is once again under consideration. However, this requires the cooperation of the National Park Service, which, thus far, believes that removal of substantial numbers of hard clams would constitute an impairment to the ecosystem. The same situation would arise should the water quality of the bay become good enough to reinstate commercial shellfishing without depuration. In these cases, it is important that the conflicts are recognized so that rehabilitation and

Table 1
Impaired Uses, and Measurements of Impairment

Impairments of Use by Humans	*Measures of impairment*
Limited opportunities for water-contact recreation	Pathogen contamination Habitat loss and modification
Unsafe seafood	Toxicants Human pathogens
Impairments of Ecosystem Health and Productivity	
Losses of commercial and recreational fisheries	Habitat loss and modification Reduced distribution and abundance
Population changes in birds, mammals, and turtles	Habitat loss and modification Human conflicts Toxicants

Source: the authors

management of this irreplaceable resource can better succeed.

The overall health of the bay's ecosystem is probably marginal, but better than that of most parts of the New York-New Jersey Harbor Estuary. Phytoplankton populations are similar to those in nearby estuaries on Long Island; benthic macrofauna are similar in distribution and abundance to New Jersey's relatively clean system; finfish, on the other hand, are not as abundant as they once were. Water quality seems marginal-to-satisfactory, and improving. However, alarming levels of contaminants in sediments in much of the bay may eventually have a negative impact on its living marine

Table 2
Present and Potential Uses, and Conflicts Among Them

Uses	*Conflicts*
Wildlife refuge	Recreation (water-contact) Commercial shellfish harvesting Commercial shipping Transportation (physical alterations, pollutants) Effluent dilution (water quality)
Recreation (water-contact)	Wildlife refuge Commercial shellfish harvesting Commercial shipping Effluent dilution (water quality)
Commercial shipping	Wildlife refuge Recreation (water-contact) Commercial shellfish harvesting
Commercial shellfish harvesting	Wildlife refuge Recreation (water-contact) Commercial shipping Transportation Effluent dilution
Transportation, by land (JFK Airport, roads, bridges, trains)	Wildlife refuge Recreation (water-contact) Commercial shellfish harvesting
Effluent dilution (sewage treatment plants, CSOs)	Wildlife refuge Recreation (water-contact) Commercial shellfish harvesting

Source: the authors

resources. As a wildlife refuge, the bay serves as an important and needed resource. Perhaps most importantly, while it cannot be considered an outstanding recreational area in terms of swimming and beaches, it nonetheless provides recreational and educational opportunities to millions of people who otherwise would have little opportunity to experience the joys and pleasures of the natural environment.

Jamaica Bay cannot serve all desired uses well. We must decide which suite of uses are most beneficial, and plan and act accordingly. The long-term commitment to such a plan, which was lacking in the past, has significantly contributed to the bay's less-than-optimum but improving state today.

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When Great South Bay Froze Over:

Gleanings from the Baymen's Oral History Group

(Part one of a two-part series)

By John M. Kochiss

Editor's note: These recollections of Sayville's baymen are culled from the author's tapings at the Suffolk Marine Museum. John M. Kochiss and the LIHJ *thank Roger B. Dunkerley, the museum's director, and David Van Popering, his assistant, for their friendly cooperation.*

This is the story of winter oystering on Great South Bay, as told by the baymen who worked at it many years ago. Their words intermingle with text based solely on what I have gleaned from them. Quotations are culled from countless hours at the Suffolk Marine Museum in West Sayville, where, since 1980, I have been meeting with Great South Bay baymen, as well as with fishermen, yachtsmen, Coast Guardsmen, ferry boat captains and crews, a New York pilot, local historians, old-time rum-runners, and other men and women who love the bay.

The baymen supplied the bulk of the information for the subject discussed in this article. Most in the group are descendants of the Dutch settlers of Tuckertown, now West Sayville. Many remember their forbears, and tell anecdotes about them. Nelson Van Wyen, our oldest Dutch bayman, knew William Tucker, the son of the man after whom Tuckertown was named.

To understand what these men say and did, a glance into the bay's oystering history might help. Well before the arrival of Europeans, the Native Americans oystered, clammed, fished, and hunted on the Bay. Following their example, the new settlers continued to enjoy the same bountiful resources. Not until this century did a steady decline in oyster production set in; by mid-century, storms, predators, disease, and pollution contributed to its lamentable extinction. As the late Oliver Locker, an articulate West Sayville Dutchman, often said, "There aren't enough oysters now in the bay to make a stew."

The industry's most productive period began after the Civil War, when the demand for oysters from markets beyond Long Island exceeded the supply, especially during the colder months. The more enterprising baymen, like those who had been shipping oysters and clams in their own vessels to the New York markets, formed partnerships and companies to fill the demand. They expanded their oyster shanties, perhaps, or built new and bigger structures, added boats to their inventory, and acquired more shellfish grounds. And, out of obvious necessity, they hired crews for the boats and men to supervise, cull, sort, open, barrel, and ship their oysters and clams.

From then until the oyster's demise, those engaged in oystering (the baymen called them "oyster shippers") were classified in two groups— independent baymen, as of old, and companies, or shippers.

As decades passed, the number of shippers increased until the early part of this century, when the trend reversed. During all this time shippers hired baymen to work in the busy, cold season. Every fall, baymen faced two main choices—to work for the shippers or for themselves. Most chose the companies, with whom they were sure of a weekly wage, small though it seemed. In Oakdale and, later, West Sayville where the companies finally settled, they could work for Jacob Ockers, Fred Ockers, William Rudolph, Wolfer Van Popering, Van Wyen Oyster Co., G. Vander Borgh & Son, Westerbeke Bros., and, finally, the Bluepoints Co. Inc., the only company there today. Others gambled on making more money on their own. Clarence Hoek, another experienced Dutch bayman, says he never starved, no matter which choice he made. Some worked at home like Clarence's father, preparing for the next season. A few, out of principle or bad experience, vowed never to work for a shipper.

All the baymen within our group worked at one time or more for the companies, especially during the cold seasons, and all either manned the ice-cutting crews or the steamer when the bay froze. From these men we obtain the record presented here.

All the baymen claim that winters are getting warmer. Since the 1935-1936 winter (the coldest they have experienced), the bay has not frozen so thick that an oyster steamer could not break through it to get to the shellfish grounds. In many winters, the bay did not freeze. As one of the baymen, Nelson Van Wyen, remarked of the recent 1991-1992 winter, "We didn't even have a skim of ice out in the bay all winter." As far as the men know, 1936 marked the last time the companies had to cut on as large a scale, using a big crew and steamers. Therefore, the techniques and skills detailed here represent a lost, probably irrelevant craft. Not only does the bay fail to freeze, but the oyster no longer lives within it.

"Dutchman's Lunch"

"Only damn fools and Dutchmen worked on the bay," claims Oliver Locker, and the others agree, with nods and gentle grins, that it was all hard work and little rest in the faraway time they remember as yesterday. Every cent they richly earned involved an oyster or clam, the succulent morsels that ruled their lives and set the rhythm of their day.

Only older people today recall oystering and the frenzied activity it spawned from Babylon to Bellport. The oyster was a hard taskmaster, but only the baymen knew how it felt to toil from sun-up to sundown year after year. When the group was asked about their work performed half a century ago, Oliver Locker was always eager to respond, in his now rarely heard West Sayville accent:

When they worked in the shanties they worked from daylight 'til dark,

> and then when they culled the oysters they scraped the shells in the floor and shoveled them onto the bench. And when it got so dark they couldn't see the oysters on the bench no more, they shoveled the shells into the wheelbarrow and took them up on the shell pile.

Don Bevelander, still a straight, trim and typical bayman, added his own experiences.

> We used to go to work around six or six-thirty. We left Monday morning for the west end of the bay and never came back until Friday afternoon. We lived right on the boat. Saturday, back home, we worked all day down the shore, cleaned the boat up, and what not. Sunday go to church. Monday start right over again. At nine o'clock every day we had our Dutchman's lunch. We dropped the tongs and ate-fifteen minutes. And then at twelve o'clock noon time and maybe three o'clock we used to have a glass of soda or a couple of cookies to hold us over till five or six o'clock when we ate at night.

Oliver confirmed this:

> Some of us went out at four o'clock in the morning. Some went out at five. We always went out at seven. When I was twelve years old and worked for William 'Windy' Rudolph (most every oysterman had a nickname) we used to get ten minutes for lunch—Dutchman's lunch...My grandfather was a foreman in the ark [one of Jake Ockers' oyster shanties that used to be a floating oyster house in New York City], and they had a bell in there and he'd sit there with a watch in his hand and he was waiting for the minute to come—Bing! Right on the second!

Mention of the bell sparked a dialogue about their bosses' unreasonably accurate timekeeping. George Van Wyen: "All those bosses lacked was a whip. They would sit there and wait for the hands to line up before they rang the bell."

Don: "And if you were out on one of those steamers and one of the captains had a big heart and he'd give you a couple of minutes extra, you were ratted on. One captain would squeal on the other."

Oliver claimed that the clock in Rudolph's shanty was rigged: "They gained ten minutes on each man. My brother John took that damn clock and throwed it in the basin."

Don, who once ran the steamer *John Keely, Jr.*, switched the topic to wages. "We got only fifty cents an hour...Us captains got only ten cents an hour more then the deck hands, and we ran the boat and had all the responsibilities."

Spike explained, "That's why they all became millionaires."

"Yeah but we didn't think about the wages, we loved to work," was Ade's final comment.

Oliver resumed talking about lunch hours.

> We got ten minutes for lunch. Now here you are cullin' oysters at the bench—Bing!—that damn bell. So you have to take the finger stalls (finger gloves) off...run to the faucet, and wash the mud off your hands. By the time you get back to your lunch box your ten minutes was up. The only thing you could do was have a pitcher (picture) taken of your food cause that's the only way you could eat—get it on a pitcher.

"Yah," said Don, "but they extended that in later years, Ollie, to fifteen minutes for lunch and thirty minutes for dinner."

Ollie: "That was lost off your time."

Don: "You worked sixty minutes an hour, not like today. They come in at eight-thirty, punch the clock, drink coffee for half an hour, and 'Well, I guess I better get goin,' that's what you get today. Believe me."

Oysters were particularly in demand at the Thanksgiving, Christmas, and New Year's holidays. Shippers met no special problems filling orders in fair weather, and took care to have stock on hand when the bay froze over. This put a heavy burden on those baymen who worked outside, especially in weather that today would close schools and halt outdoor work.

Nelson Van Wyen, an ocean fisherman and bayman:

> We never knew what wind chill factor was in those days. If it was zero it was zero...But if it was blowing 40, 50 miles an hour from the northwest, I guess it was 100 below out there some mornings. So you know what the boss said when somebody kicked a little about going out there? ""Well, we can always get plenty of Dutchmen!""

Ade Hoek "We used to take our tea in a little container with a cap on it like a tea pot...in no time that tea was frozen over solid. Why we carried that around al all, I don't know."

Oliver: "You didn't drink that tea, you chewed it."

Nelson: "There were quite a few guys that got snowblind. We didn't have colored glasses in those days."

Oliver: "Snow on top of ice is slippery as glass. Ollie Bishop, Case Zegal, and the two Tomagers went snowblind, had to stay in the house for three days to get over it. That snow blowing over that ice caused it."

Nelson: "So when you get home you sit down to eat supper. Why, you finish about half your supper and there you were asleep. Out on that bay all day did it!"

Oliver: "Your legs would be solid ice—inside your boots, were you were sweating, Only damn fools and Dutchmen done that work!"

> Ade: It was really cold out there, so they got the idea to take the pot-belly stove out one morning. We had it roaring for nine o'clock lunch. We were as close to it as we could. First thing you know, the stove went right on down below the ice! Then they got the bright idea not to bag the oysters but barrel them out there. So they had a tremendous

load of empty barrels and the wind changed to the northwest and it blew a gale and these barrels got rolling and went right over to the beach. That was the end of that project!

The cold affected baymen and sportsmen alike. Jerry Dominey told a frightening story of scootering on the bay with his brother Charles in that cold winter of 1936.

We came in and I looked at him and his eyes were white as paper and I took him to the doctor's. He said take him right back out-doors and keep him in the snow—he had frozen eyes! The liquid in his eyes froze. Boy, for about three days he couldn't open either eye. He had no permanent damage—luckily. We always wore goggles but at this time he didn't—it was a nice, quiet day, a good day to go sailin,' about fourteen below zero. So he didn't bother with glasses. Scared the hell out of me, I'll tell ya. Now they talk about this wind chill factor. Well, you take fourteen degrees and we're going out there thirty-five, forty miles per hour and it was cold! That wind chill factor was down somewhere I'll tell ya that morning.

When Oliver Locker worked on the ice in 1936, he and all the others claimed that it was the coldest winter they remembered:

One morning it was sixteen below at the dock. Kobus Kwaak says, "'Too cold today out there on the ice. You'll freeze the oysters as soon as you catch them. We'll have to wait 'til it warms up.'" At nine o'clock he says "'Well, boys, it's getting warmer.'" It was ten below. On the bay it was damn way below ten below. Out there in that gale you was out in the open, you wasn't behind no shanty.

Nelon: "Jake Ockers would say 'It's too cold for the oysters, they'll freeze,' but it wasn't too cold for Dutchmen to freeze because there was plenty of Dutchmen! They took better care of the clams and oysters then they did us."

Clarence Hoek: "You betcha."

Storing Oysters

Harsh weather affected not only the oystermen but the conduct of the industry. When fall arrived, more preparations and planning faced them that at any other season. In addition to the usual outfitting of vessels, buoying lots, and checking gear, the shippers stored oysters to be sure of filling orders throughout the winter.

In fair weather, dredged oysters arrived at the shanties directly from the bay, but when ice prevented them from going out for a fresh supply, the shippers drew from oysters stored well in advance of cold weather. If they ran out, they faced the laborious task of cutting their way to the oysters. West Sayville shippers stocked oysters in three places: "oyster cellars," aboard

boats, and in "oyster floats" (at least one company kept a good stock nearby on their "lay-down" grounds). In the early twentieth century, they boasted in trade journal ads of their ability to supply oysters, even in the severest weather. Don Bevelander explained that, "When everything was gone out of the cellar and everything out of the floats and the boats, and everything was empty, then they'd go out and cut ice. That was the last resort." He and Marinus Verschure recall the shippers' storing oysters in their "oyster cellars." Ordinarily, during the first and second weeks in October, or as late as November, about 3,000 bushels of oysters were stored in Rudolph's oyster cellar for the winter season. As Bevelander claimed, "They could be stored from the first of November 'til the end of April—some 5 or 6 months."

These cellars were not underground, but rather special sections or rooms in the oyster shanties, where oysters were keptcool. Some had cellars in separate buildings next to or attached to the shanty like a lean-to. Storage cellars were insulated with walls fourteen to eighteen inches thick, packed with seaweed—a good, cheap, and available insulation.

Oliver told how it was done:

> In July and August the men who stayed working for Rudolph used to cart the seaweed from the shore and stamp it in between these walls because it used to settle each year. There was an opening around the sides at the top and there was a catwalk around the outside where they dumped it in. The catwalk was just a two-by-twelve plank. They didn't leave it there all the time because they had to use it on the shell pile to wheel the shells off.

Don added, "They put it up like they put a roof on." Pat Abernathy, who seems content to listen and observe most of the time, spoke up: "There are a lot of old homes in Bellport that are insulated with seaweed." Jerry Dominey, a long-time resident of Bellport, confirmed this, adding that they made sure no odors were created by left-over fish or crabs in the seaweed.

The men who worked for the shippers wheelbarrowed the oysters from the steamers directly to the cellars. "The only thing we use to pick out was the sea spiders (crabs) and things. But every once in a while some of them got through. Then it would smell. There is nothing that stinks more than a rotten crab or horseshoe crab," snickered Oliver.

Most of the men had loaded oyster cellars at one time or another. "I did it day-in and day-out," Ade Hoek said in his usual terse way. Nelson described filling cellars:

> Two men on each side of an oak basket could throw oysters from the basket twenty feet. They came in two baskets to a wheelbarrow. They were oak baskets with stationary handles that wouldn't give like the steel baskets. You cut your hands on the wooden baskets because they wouldn't give.

George Van Wyen: "We filled the oyster cellar in early winter with

oysters, and when the bay froze over and you couldn't go out, they used these oysters. They fatten themselves up on their own liquor."

> According to Oliver, oysters have the unique ability to survive freezing—they stayed fresh there because it was cold: You could freeze them in a clump and let it thaw out and they won't die. But you get a little bit of ice in a clam and they're dead! I've taken frozen oysters out of Rudolph's old sloop still in bundles in April and took them out on the bay and planted them and they lived. You can't kill an oyster by freezing it. They're like gold fish. You can freeze a goldfish in a cake of ice and put it into a pan and thaw out and them gold fish will swim around.

Some skippers stored oysters for the winter aboard boats that laid to their docks. In West Sayville, they often used the Van Wyen schooner *Emma M Robinson,* and William Rudolph's *George M. Still.* Oliver Locker, as could be expected, had experience with this type of storage:

> We would dredge with the steamer—the Teddy Roosevelt—and we'd bring them in and load the *Still* up. She'd lay on the south side of the basin, they'd fill her right up to the forecastle. It had a hatchway up in the bow. And they'd put about two foot of seaweed on top of the deck...The high waist kept it from blowing overboard. I don't know why they done it because the side of the boat was open to the air.

George, who was first-mate on his father's schooner, *Emma M. Robinson*, had a contrary experience.

> We never used seaweed in the decks. We used to cover the hatch with cloth and put battens on it so they wouldn't fall off. But I never remember putting anything on the deck. Of course they never froze down there. If they did, it wouldn't hurt them.

After filling the cellars and the boats with oysters, the shippers loaded their "floats," craft built like shallow scows but with their planks separated enough to let water flow freely over the oysters laid on the bottom. Shippers used floats in the nineteenth century, and perhaps earlier, for "drinking" or "floating" oysters, and also as storage depots. Not until the 1920s did the health authorities ban them, claiming that floating may have contributed in part to the typhoid epidemic then raging. Perhaps Nelson Van Wyen gave the most useful common reason for floating oysters: "They put them in there so that they would spit out the sand."

If the waters were brackish the shippers received an additional benefit. Apparently, any fresh water present bloated oysters, giving them a deceptively fresh and healthy appearance. Whether oysters came from the bay or storage, they sent them directly into the floats for a "drink" immediately after culling, and just before shipment. George Van Wyen did it a little differently: "When they had them in our schooner they used to shovel them right out of the schooner into the floats and then they'd cull them out

from the floats. This way they could also tell which ones were the "cluckers" (dead ones)." Shippers, therefore, maintained a fleet of floats even during freeze-up time, with surplus floats set aside for winter storage.

Shippers kept a surprisingly large number of these big floats outside their shops. Rudolph had about twenty, each holding five to six hundred bushels, which conveniently amounted to the capacity of an average steamer.

At some time in the nineteenth century, the shippers developed two types of floats—"barrels" and "spars," both of which looked like huge, low-sided, open boxes. Barrel floats carried four to six barrels on each end, for buoyancy; sparfloats had large, sailboat masts or spars for their long sides. The spar floats ranged from 75 to 80 feet long, barrel floats 40 to 50, both with widths of from 18 to 20 feet. When full, the floats sank about two to three feet "right to the tops of your hip boots." When empty, six inches of water flowed freely in and out of the bottom.

Oliver had the most to say about the barrel floats:

> Well, it's all according to if they had a lot of small oysters—they used to fill on floats with small oysters. But when they had like, say they had twenty-five barrels of half-shell, the same of medium, and two or three barrels of box oysters—they was the big ones. But they used to have a plank right under the walk where you walk down with your wheelbarrow. And they had this twelve-inch plank under there and they'd dump the oysters in there—half shells on one side, mediums on the other, and small in these bins here, and that's how they separated them. And the spar floats were longer. They used to put about, I guess, five or seven hundred bushel oysters in there. In the other floats (barrel) about four hundred bushel—about two hundred bushel in there.
>
> The barrel floats were, I should judge, about forty feet long and about eighteen wide and three feet deep. And they had five barrels on each end—vinegar barrels, or some of them had tar barrels. They never used metal barrels. They always had wooden ones at that time. You know how vinegar barrels and molasses and all that used to come in them big barrels they used to ship to Europe held four bushel. And they'd wheel them into the shop, shake them down...
>
> The oysters came from the cellar in wheelbarrow in bushel baskets so that they could throw them (easily) up on the bench...You see in Rudolph's shanty (now at the Suffolk Marine Museum) the west bench...They could put about 700 bushel on them two benches because the bench was about six feet wide (not like the bench there now).
>
> On the barrel floats they had a partition on the ends and they'd put four of them against the end—end for end (some next to each other, perhaps five or six barrels) with two slats to hold them down. And they'd always have the bung on top in case one of the barrels had a leak in it or something. They had a little bilge pump you pumped the water out

of the barrel with. A lot of times you couldn't get oil barrels and they'd get these damn cheap tar barrels. I know. I got hell from my Uncle Case, he was foreman for Windy (Rudolph), he says "Take that pump and go pump that float out." So I took that little two inch pump and put it in the bung and swoosh—full of tar! That was the end of that pump.

"God damn you! You're always breaking something," he used to say. I says, "You wanted the barrel pumped out. What do you expect? You can't pump the barrel out without the pump." He gave me hell because I ruined Windy's pump. That was like stealing a million dollars with Uncle Case or Mr. Rudolph. Case, whether he was my uncle or not, used to give me as much hell as he gave anybody else who worked there. But I pumped many a barrel out of there and forked many an oyster out of these floats.

All the West Sayville shippers used floats, which, claimed George, came from wrecks on Fire Island. When Ollie worked for Fred Ockers, he "went to Willow Free Point, east of Snug Harbor near Pepperidge Hall, and pulled off two of those spars for his floats."

Nelson corroborated this:

Those spars came from the boats that came ashore. When the boats stopped coming ashore they used barrels. In the spring they hauled them ashore, otherwise they'd get water logged. They had floats all over the South Shore before the board of health got after them. In 1928 we had a typhoid scare like now we have for clams. And that's what near took the whole oyster industry out of business because they used to have these floats in the basin. They'd pump out all them boats in there with oil in them.

The shippers kept the floats in the water from September to the end of April, or the first of May. According to Clarence, "They rolled them up at the end of Atlantic Avenue with a block and tackle."

"They used to pull them is on the shore on Willow Tree Point up to the river," added George.

Oliver remembers that, "There used to be a place there about 50-foot wide between the road and Rudolph's shanty where they pulled the floats out on rollers and put them here in the lot up north."

Most baymen in the group worked in the floats sometime in their careers. Ade seemed to be boasting when he remarked, "I worked for Rudolph. I worked for Fred Ockers, Vanderborgh. I worked for them all."

Nelson worked for Fred Ockers.

I put just a lot of hard work in them floats. That's what it was—and cold. I was a floatman for Fred Ockers and I got a dollar a week extra because I went into the floats. But anyway that was cold. First you had to cut and shovel out the three- or four-inch thick ice every morning. It's a wonder you had any hands left.

Don interjected, "Yeah, they kept it clear with an oyster fork or something because they'd use it every day."

Oliver added,

> I shoveled a good many bushels of ice in pieces and they'd take that in so they wouldn't have to spend the money to make ice for packing oysters in. They would take that damn ice and wheel it into the shanty and use it to pack the open oysters in. This salt water ice never lasted like fresh water ice.

Oysters and ice were not the only things out in the floats. Don, Walter Griek, and John Buys remember, from their boyhood, the fish swimming in the floats:

Don: "We used to have a stick with a fork on it. We'd stand there and bing! One came by and we'd spear it."

Walter: "I liked to get them with a fork. You didn't ever had to see them."

John: "They used to have frost fish that came into the floats. We'd get a bushel and a half of them."

Don: "And many times when we were kids we fell in them floats too."

Oliver explained more fully why the frost fish were in the floats:

> You see, then fish could get in them floats and they spawn there, and they'd get fat. And then, when you took out all the oysters out of the floats, them frost fish couldn't go inbetween the slots any more. And we'd get a bushel or a bushel and a half of frost fish every time we cleaned the float out.

Oliver then told how they unloaded the floats of oysters:

> When they were ready to ship oysters, they just go out and put a wheelbarrow on the plank and fill the four baskets that one man would wheel. Then he took two baskets at a time and whelled them up to the shop. One man would stand in the float with an oyster fork and he would fill those baskets up. In the meantime the planks would get slippery and you had to watch out that you didn't fall overboard. Finally, they decided to put inch pieces of wood across it so that you could get a toe hold. But they would always go into the shop and get cinders out of the stove to throw on the plank.
>
> When you forked out the oysters you get the fork full and you give it a little dip then you throw them in the basket. The fork didn't get caught in the half-inch space. You never loaded the spar float as deep as the barrel floats. The barrel floats used to have four partitions for small, half shell, medium, and box oysters.
>
> They would load them about fourteen inches thick. In one corner they didn't put any oysters there so that you could get a start to fork them. The Dutchmen worked all the time. These Dutchmen done some work.

Lay-Down Ground

Lastly, the shippers stored oysters on so-called "lay-down ground." In West Sayville, Jacob Ockers the "Oyster King," whose company eventually became the present Bluepoints Company, maintained the only lay-down grounds there. Ockers's men transplanted oysters to a lot only a few hundred feet from their oyster house. Clearly the men found it far easier to tong oysters in this nearby shallow water then to break through the vast ice fields to reach their regular offshore lots.

> Oliver: They had these big sleds here. They were about four or five feet wide and sixteen feet long. And they used to put the barrels of oyster on there and bring them in from the lay-down grounds to the shanty. They had five or six of them sleds laying on the shore and they'd take them here. They used to cart the oyster in them to the lay-down grounds. They had sails on their scows in Patchogue and they used them like a scooter. But not on the sleds here.

Jerry: "The sleds were the beginning of the scooters. Those sleds were big and heavy. They could hold 20 kids. Everybody got on the same sled."

Oliver: "The biggest part of them had brass runners. The brass was about an inch and a-half wide and about a half-inch thick. And that's what made them go like the devil."

Shipping Oysters

The subject of barreling and carting oysters out of West Sayville stirred memories of a long ago part of the oyster business. No coopers worked here within living memory. The shippers bought barrels primarily from the Virginia Barrel Co. of Sayville that made barrels on a production basis. The companies shipped their barreled oysters far and wide—Philadelphia, Chicago, New York, and most notably to Europe

The men installed "wooden heads" or taps on the barrels destined for Europe and fastened burlap to the tops of all others that they called "bag tops." Clarence Hoek began the discussion of barreling:

"Many a barrel I put heads in for Vanderbourgh—smalls for Munson over to Europe. We'd spit on, brush an 'S' on there for 'Small.' What I understand from Munson, they had a place over in Europe somewhere where they threw them for summer trade." Usually, though, the Bluepoint oysters landed on an Englishman's plate shortly after arrival.

Oliver told how he put on a barrel's wooden heads, after thoroughly shaking down the oysters inside, with a heavy weight placed on top: "Just as soon as you got the head in, then you'd tap the two hoops down. That would tighten the top up. Then you'd tack a liner on each end of the head—like a piece of shingle or lath—across there on the head."

Clarence: "And you didn't want one oyster up there by the chine, or you'd hear language that wasn't too good because that head wouldn't go in there tight."

According to Nelson, if the men packed and sealed barrels properly, the oysters survived the long passage to Europe quite well:

> You want to know how they stayed alive going to Europe? Well, they had them packed so tight in the barrel that they couldn't open their bills and they'd live on their own liquid. If they lost their liquid, they may die. Today you can get them over there in seven or eight hours, but on them boats it took a couple of weeks.

In the early years of the business, baymen shipped oysters to New York markets and elsewhere by sail—usually in large sloops. When the railroad reached the area by 1870, they soon utilized its time-saving advantage, though they continued to ship some by sloops as late as the early years of this century. The oyster shippers handled all aspects of their business except the carting of their packed oysters to the railroad station, the specialty of local carters remembered by Adrian Daane:

> Years ago before they had trucks they had to have teams out of Sayville to cart the oysters. John Newton had a team of six horses and six teamsters, and Billy Wicks and Siders DeWall—they're the ones that done all the carting of oysters around here. Vespoars's father carried more oysters than anybody in West Sayville. The Long Island Rail Road always had a train on the siding that they loaded.

But Ollie quickly remarked: "They only shipped to Europe once a week. It seems to me it was always around the middle of the week, probably to make the liner that sailed over the weekend."

Marinus smiled, and said: "They had to be in a hurry too, because the train wouldn't wait for them."

Ollie agreed, and continued:

> They used to ship at one time 1,500 barrels a week to Europe from here—some from Bluepoints, Fred Ockers, Vanderborg, and Rudolph. Rudolph used to ship a railroad car load of 115 or 120 barrels to Europe. They first had to go from here to the station, from the railroad in New York to the piers, and then load them on the boat. But when the trucks started to take them in, in the early 1930s, why all they done was wheel them out and put them on the truck and the truck took them right to the pier.

A frozen bay probably never hindered anyone from getting at least a "mess" of oysters or clams. It takes only an ax and perhaps a saw. One man can easily chop a hole in the ice and cut out a series of small cakes of ice, leaving larger areas of open water for tonging.

The individual or independent baymen have, no doubt, always done this, but not until the oyster companies came on the scene was it done on a larger and more elaborate scale. The common-sense basics of cutting ice evolved well before their emergence, but only the companies, with their larger crews

and powered boats, could use the methods described below.

Oystermen had to know not only how to cut ice, but also how to cut a design or pattern that would expose holes, or areas of water, big enough for tonging or dredging operations. The ax, ice handsaw, and "ice plow" were the basic ice-cutting tools. The handsaw was used to cut short distances, the ice plow for longer stretches. Cuts were perpendicular, except, in a certain case, when they beveled the cut. The men aligned the length of the cuts by eye, or roughed them with two stakes. One man could chop a hole in the ice with an ax, to start the handsawed cuts, but it required a horse or a gang of six to eight men to pull the ice plow. Although the plow's blade could be ten inches or more, it could cut through only about two inches on each pass. In many cases, they more easily completed the cut with the handsaw. Occasionally, someone devised a powered saw, but such schemes eventually were abandoned. They all proved to be very dangerous.

Cutting straight lines in ice was only one basic skill to master; another was knowing how to apply it to a specific purpose. The main objective was to expose water. The smallest area of exposed water, other than a small, irregularly shaped, chopped hole, resulted when they cut out a limited-sized, rectangular block of ice called a "cake." After cutting the cake, the men hid it under the adjacent body of ice, leaving an area of open water. The cake size varied, but could not be so large that four or five men standing on an edge could not sink it far enough under the water for it to be pushed or pulled under the adjoining body of ice. In practice, the cake ranged in size to a piece about eight or ten feet by sixteen. The size also depended upon the thickness of the ice. Baymen never sank a cake more than sixteen-inches thick because it would be too hefty to manage. Were a small group of baymen to tong through the ice, the size of the cake size would be governed by the length of the plank available to span the opening.

Baymen opened areas in the ice for harvesting shellfish from cake-size to many acres. Generally, they used tongs and horse-pulled dredges in the smaller openings, and the powered oyster-dredge boats in larger areas. Whatever the size of the opening, the basic starting unit was the "cake." Oliver Locker explained the cutting of a boat channel or path through the ice.

> Two lines were cut twenty feet apart, and another line between, dividing it into an eight- and a twelve-foot strip. The middle and outside strips were cut straight up and down, but the other outside strip had to have a bevel. Then they'd stand four men on this side of the cake on the bevel—and four men with shoving poles with a metal hook on the end. And then when the men on the bevel side of the cake, when the cake went below the surface, they'd say OK—that was right about to the tops of your boots. Then these guys with the shoving poles would start shoving. And the guys with no poles would shove it under with their toes. You'd walk out with that cake as it was going under. The four men would walk out to keep this cake of ice down. And just as soon as you got within two feet of cake going under, you'd jump over on the ice. There was many a wet tail

I got doing this. There were four men on one side with shoving poles and four men on the other side with hip boots on to sink it down. And then when you come to this eight-foot cake—the sixteen-foot pole had the hook on to it and you could reach out to it and hook the edge. Then you'd sink it on the side with the four men standing on it also. But you see, after you sink the first (twelve foot) cake, then this eight-foot cake was practically floating free so you didn't have to bevel it because it was over far enough so it wouldn't jam.

Strip Tonging

By applying this basic technique of cutting and hiding cakes under the ice, baymen were able to harvest shell fish when the bay froze over. Traditionally, tongs and dredges were the only tools used to catch oysters in any weather. The simplest method of tonging in the ice by a small crew was called "strip tonging." Eighty-three-year-old John Buys described one such method.

You'd dig a hole by hatchet then saw by hand. You cut out a square (or rectangle) and you push that cake under the ice. You then have your clear water. The size of the cakes depends upon the length of your board, ten, twelve, or sixteen feet long. You put the plank across and tong from that and put the stuff into the basket on the plank. When this is all tonged out you cut another cake and slide it over. You just keep doing that. You keep that open space all the time—keep sliding it over. That's all there was to it.

Another related method of strip tonging was described by Marinus Verschure, the oldest bayman in the group. Oyster companies used it on their small four-acre lots and on the lay- down grounds. A ten-to-twelve-foot-wide strip of ice was cut in one day—perhaps 100 to 120 feet, depending on how many men would tong. Cakes of ice some sixteen- to twenty-feet long were cut from this strip and pushed under the adjoining body of ice. Cakes were cut and sunk until the strip, or path, was open and clear. Two men tonged on a board placed across the opening, and emptied them into an oyster basket on the plank. After the strip was tonged out, they cut another adjacent strip of cakes, pushed them over to the original open area, and pinned or tied them together, otherwise they might float away. They eventually froze to the main body of ice. They cut additional strips and opened them up by simply pushing the cakes over to the previous open area. It was only necessary to push under and hide that initial strip of cakes.

A variation of this was to leave a space of perhaps twenty-five feet between strips. This meant that all cakes from the strips had to be sunk and pushed under the ice. Although it required extra effort, it formed a solid edge for the planks to bear upon. These untonged areas under the twenty-five-foot spaces posed no major concern, because oystermen never tonged out all the

oysters from the open strips. In any case, when the ice disappeared a steamer came in to open it all up.

Note: The second half of this article will appear in our Spring 1993 issue. To readers interested in the subject, we recommend Lawrence J. Taylor, Dutchmen on the Bay: the Ethnohistory of a Contractual Community (Philadelphia: Univ. of Pennsylvania Press, l983), and "Oystering on Long Island: A Comparative Perspective," LIHJ *2(Fall 1989):64-75.*

The History of APPLE

By Carol Parker

Editor's note: This article continues our "State of the Island" series, in which significant Long Island organizations present their purpose and problems. For more information on Apple, a nonprofit agency dedicated to helping people whose lives have been devastated by substance abuse, we encourage readers to call (516) 979-7300, or write to Apple, P.O. Box 5402, Hauppauge, NY 11788-0402.

APPLE, A Program Planned For Life Enrichment, is Long Island's leading not-for-profit substance abuse treatment agency, with residential and outpatient programs from Montauk to Queens. The commissioner of the Suffolk County Department of Alcohol and Drug Abuse Services has described APPLE as "one of the best programs that I know of anywhere in this world." In its Quality Assurance Report of September 1988, the New York State Division of Substance Abuse Services stated that "this program provides excellent services to clients."

To receive such high praise and to have so many successful programs operating across Long Island is a long way from the way it began twenty years ago. APPLE started as a small but ambitious drug rehabilitation center based in a two-room basement office in North Amityville. Irwin Quintine was the board chairman of A.C.E. (Amityville, Copaigue, East Farmingdale), a local action center offering a variety of community services. He asked Logan Lewis, who today is APPLE's president, to develop a drug rehabilitation program for A.C.E.

Logan himself was a former heroin addict from the Bronx. After overcoming his addiction, he worked as a program coordinator for DETER, a drug rehabilitation program in Mountaindale, N.Y. Because he did not have the appropriate degrees—only life experience—he could not, by law, be A.C.E.'s executive director; Chester Copemann, a behavioral psychologist, was appointed to that position. Logan and Chester were the ideal match. Chester taught Logan the traditional theories of behavioral psychology and treatment, while Logan taught Chester the realities of addiction and the therapeutic community approach to substance abuse treatment. Their mutual respect and sharing of knowledge fostered the philosophy of APPLE's current treatment approach.

A.C.E. was an outpatient program, open only on weekdays from nine to five. Soon Logan and Chester recognized a pattern: those clients who went home on weekends would return on Monday often having again used drugs, but those who spent the weekend with Logan and other staff members, participating in positive drug-free social activities, stayed clean. Dedicated to their recovery, Logan began to use his house as a meeting place for organized weekend activities, such as playing cards and listening to music. It worked. They stayed clean. From that experience, Logan's commitment to providing residential treatment was born.

Logan, Chester, and Irwin began to look for a new facility where they could furnish residential treatment; in 1972, they rented a house on the corner of Albany Avenue and Smith Street, Amityville, and began providing residential rehabilitation. Because from the beginning they looked forward to constructing a residence on the corner of Albany Avenue and Great Neck Road, the name of the program was changed to Alba-Neck Halfway House, Inc. Paula Shaw was appointed director of residential services, with Logan the director of non-residential services. Unfortunately, the dream of building a house at the Great Neck Road site was never realized, but the name "Alba-Neck" remained for nine years.

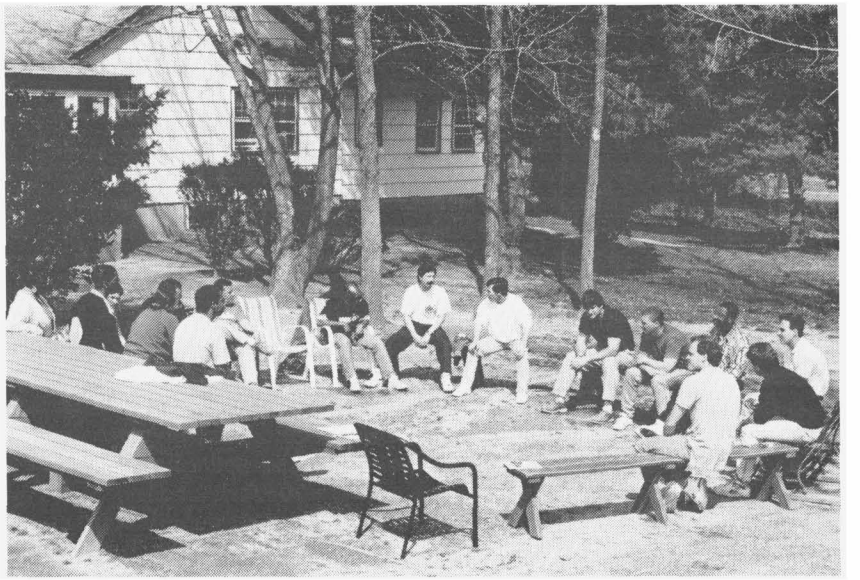
In the early seventies, the majority of clients seen at Alba-Neck were addicted to heroin, with an estimated 650 such addicts in the Amityville, Copiague, East Farmingdale area. Alba-Neck's symbol is startling by today's standards—a hangman's noose holding a needle and a syringe with blood dripping from it. But the words under that logo denote a belief still held at APPLE, that "Addicts are good people...once they have given up use of drugs."

Alba-Neck was able to secure federal and state funding, the agency's only source of income; clients were not charged fees for services which included detoxification, group and individual therapy, family counseling, court representation, medical and dental care, educational and vocational training, job development, aftercare, outpatient treatment, and, of course, a place to live.

Tough Times

The agency went through an extremely difficult period in 1972, when funding from the state fell behind and the staff went unpaid for eight weeks. At this point, the agency consisted of well-meaning people who knew how to rehabilitate drug abusers but had little knowledge of fiscal requirements, taxes, and working within government regulations. The financial difficulties during this period, when funds were lacking but the heroin problem was epidemic, taught the agency an important lesson. In 1974, Muriel Farkas joined the staff as administrative director to solve the budgetary and administrative problems plaguing Alba-Neck. For the next 17 years, she provided the financial and administrative know-how that enabled the rest of the staff to help substance abusers. Today, Muriel serves as APPLE's executive vice president.

During those formative years, Alba-Neck continued to develop its treatment methods as did rehabilitation programs throughout the country. At



A group session at the APPLE I facility at Hauppauge. Photograph courtesy APPLE, Inc.

one point, adversive counter-conditioning was used in treatment, under a therapist's supervision. A shock box device was attached to clients' wrists, after which a mild shock was delivered while they talked about their past drug use. Eventually, APPLE abandoned this type of treatment.

In 1974, Alba Neck suffered another setback—the loss of its funding contracts with the state for refusing to allow non-clinical officials to review client files. Congressman Thomas E. Downey's help was instrumental in getting the contract reinstated. Downey's intervention marked the beginning of his enduring relationship with APPLE.

APPLE's Treatment Method

APPLE's treatment approach is based on the therapeutic community model, incorporating the principles and practices of a cognitive behavioral approach known as Rational Emotive Therapy (RET). A therapeutic community is a highly structured environment, built on the theory of self-help. Residents earn status and privileges as they work their way up to the highest level within the community. Using peer pressure and community sanctions, inappropriate behavior is replaced with positive behavior. The community is a family whose members reinforce positive changes and confront negative behavior in each other.

Daily group sessions and individual counseling are important components of treatment, enabling clients to see and accept themselves as they are. RET

is based on the belief that human beings have the capacity to control their feelings and desires because they can think and reason. In other words, we control our behavior, including choosing whether or not we use drugs.

The substance abuser's belief system is irrational, reinforcing self-defeating views both of self and the world. APPLE teaches people to think and act rationally, responsibly, and positively. This differs from more traditional theories of addiction and treatment, including the most commonly held belief that addiction is an incurable disease. Instead, APPLE teaches people that they have total control over their recovery. APPLE's treatment method utilizes five psychological tools that all clients must develop: humility, truthfulness, honesty, devotion, and responsibility. As they work toward a new life, clients are also taught to utilize the "three D's": self-determination, self-direction and self-discipline.

Rational emotive therapy, the five tools, and the three D's all are in constant use in APPLE's therapeutic communities. Because the thinking and behavior that lead to substance abuse are developed over a lifetime, rehabilitation is a long-term process, with clients in treatment for an average of nine to eighteen months. However, as APPLE recognizes the individuality of addiction, the length of treatment varies according to personal needs and progress.

The Move to Melville and the Battle for Acceptance

In 1976, Chester left Alba-Neck and Paula Shaw became executive director, with Logan director of treatment services. One year later, the program moved to a larger facility in Melville and the number of residential clients expanded from eleven to thirty-five. Unfortunately, the Melville community objected to a substance abuse program in their neighborhood; pressure on elected officials eventually forced Alba-Neck to get out.

During those "battle years," significant changes in treatment occurred. Radical methods, such as the shock box and shaving heads as the consequence for inappropriate behavior, were abandoned. The program expanded its scope to provide educational and medical services to clients. The financial picture improved when the agency became a participating member of United Way, thus becoming eligible for funding from that organization. During this period, Paula Shaw departed, Dr. Angela Edwards joined as clinical director, and Logan was named president.

In 1981, after the battle to remain in Melville was lost, the agency moved to 220 Veterans Highway, Hauppauge, and changed its name to APPLE, A Program Planned For Life Enrichment. The house, a former nursing home, was in such a state of disrepair that no one else wanted it. The monumental task of renovation was undertaken by clients of the program who also happened to be skilled contractors and carpenters.

The opposition experienced in Melville was also encountered in Hauppauge. The town of Islip took APPLE to court to evict the program from its new site, but one year later a court decided in APPLE's favor, on the grounds that the property was properly zoned for such use.

After the move to Hauppauge, the outpatient program in Amityville was drastically reduced, because the distance from Hauppauge made it too difficult for the small staff to oversee. In Hauppauge, more than the name and location changed. APPLE began to refine its treatment techniques, with residents no longer moved from level to level in groups, but individually, based on personal accomplishments. Specific reponsibilities were assigned to staff members according to their positions, rather than having everyone share the same duties. APPLE became a member of the regional branch of Therapeutic Communities of America. The agency incorporated, and established two separate boards of directors, one to oversee activities, the other to raise funds.

APPLE held its first fund-raiser (to obtain $9,000 for a new boiler), published its first newsletter, and began working with the Suffolk Community Council. There was a feeling throughout the agency that finally it had become a valued member of the Long Island community. Although the battle in Melville was lost, the battle against initial opposition in Islip was won, and the even greater battle for acceptance throughout the Island was slowly on its way to victory.

Over the next several years, APPLE's acceptability and respectability continued to increase, although the program's physical growth was minimal. It remained one facility with one focus—rehabilitating adult substance abusers. As younger and younger substance abusers sought help, they were incorporated into the residential program with the adults. Logan and others saw the need for an adolescent facility, but the funds were then unavailable. It was evident that the substance abuse treatment field was rapidly changing and expanding: APPLE developed plans for the future.

Growth Begins

The late 1980s into the early 1990s was a period of "program boom" for APPLE. In 1985, the country recognized "the homeless" as a societal problem that must be addressed. APPLE responded to the appeal issued by the Division of Substance Abuse Services by establishing WIN (We're Independent Now), a program for homeless substance abusers. Thirty WIN clients were integrated into the treatment program at Hauppauge; within three years, the number dramatically increased, as the homeless problem on Long Island worsened. In 1990, the WIN program assisted seventy-two homeless substance abusers.

Professionals in the treatment field have long recognized that substance abusers can not be stereotyped. They can be rich or poor, black or white, educated or uneducated. Perhaps nowhere has this unilateralness been more obvious than with the emerging population of mentally-ill chemical abusers, known as MICA clients. Frequently, mentally-ill persons abuse substances, either prescription or illegal, to self-medicate their psychiatric disorders. Substance abuse often exacerbates their condition and counteracts the effectiveness of their prescribed medications.

The clinical staff at most psychiatric hospitals is not trained to rehabilitate

substance abusers, nor are residential substance abuse treatment programs appropriate for individuals with major mental illnesses. Out of this dilemma grew the APPLE/Kings Park Project, which provides substance abuse treatment during the acute-care phase of hospitalization, and on a long-term, outpatient basis following discharge. Established in 1987 at the request of Kings Park Psychiatric Center, the project currently services fourteen outpatient clinics in addition to the hospital-based program. Approximately 280 MICA clients and their families are served on a monthly basis.

Two years after opening the Kings Park Project, APPLE founded three more programs for mentally-ill chemical abusers. In January 1989, APPLE/Creedmoor, a MICA continuing day treatment program opened at Creedmoor Psychiatric Hospital, Queens Village, at the request of the New York State Office of Mental Health.

Four months later, APPLE launched APPLE/Springfield, a community residence for twenty mentally-ill chemical abusers in Springfield Gardens. This innovative program provides a supervised therapeutic community that enables clients to stabilize their mental illness while maintaining abstinence from non-prescribed drugs. Traditionally, these clients would receive clinical services from separate programs—one for addiction, and one for mental illness. APPLE/Springfield offers comprehensive treatment in a self-contained, supportive atmosphere.

At the end of 1989, APPLE/Queens Hospital Project (A/QHP), an assessment and referral service, was established. A/QHP provides crisis intervention, assessment, and referrals for mentally-ill chemical abusers who come to the psychiatric emergency room of Queens Hospital. The goal is to prevent inappropriate admissions and re-admissions of mentally-ill chemical abusers. The professional staff assists MICA individuals in exploring treatment alternatives and information regarding emergency services. This program recently was extended to Elmhurst Hospital's comprehensive psychiatric emergency program.

In 1990, APPLE's MICA services again expanded, with the formation of the APPLE Good Times Club, a psychosocial club for mentally-ill chemical abusers. This drop-in center in Hauppauge is open on Friday and Saturday nights and Sunday afternoons. Through various social activities, clients develop specific interests to occupy their leisure time, as well as social skills and self-acceptance.

In 1987, APPLE opened its first program unrelated to substance abuse treatment—the Long Island Resource Center (LIRC) in Hauppauge—a short-term residential program for men under New York State parole supervision. At LIRC, clients learn the same skills and behaviors taught to residents in APPLE's substance abuse treatment programs. The goal for these men is to obtain jobs and find affordable housing so that they may lead productive, successful lives and avoid future incarceration. A variety of counseling services is provided, including vocational, family, resocialization, money management, health care, substance abuse, independent living, and housing.

This program, which can service ten clients, is the only one of its kind on Long Island. LIRC was APPLE's first opportunity to demonstrate that the agency is truly "A Program Planned For Life Enrichment," for all people who need help whether or not they have an addiction. The rational thinking, coping skills, and values taught at APPLE are beneficial for everyone.

Education Is An Important Part of Treatment

APPLE always has recognized the important role played by education in helping substance abusers to stay clean by enabling them to obtain satisfying and gainful employment. Because many substance abusers do not complete their education, they have difficulty getting a job, a situation that creates unnecessary instability in their future. APPLE assists and counsels its residential clients to obtain their high school equivalency diplomas; residents who have accomplished this receive transportation to local colleges and vocational schools, to continue their education.

APPLE Responds to the AIDS Crisis

With the number of AIDS cases rising on Long Island, particularly among drug abusers, APPLE established FACT (Facilitating AIDS Awareness in Community Therapeutics) in 1988. FACT, which began as an educational and AIDS testing service solely for residential clients, has expanded to provide education, counseling, and testing to clients and staff members in all of APPLE's programs. In 1991, the FACT Project began providing education and counseling to the community through schools and HIV/AIDS organizations, both in English and Spanish.

The educational component of FACT encompasses avoiding transmission of the disease, as well as the legal, financial, medical, and psychosocial aspects of AIDS. One of the first lessons clients learn after entering APPLE is how to clean needles and other drug paraphernalia to avoid transmission of AIDS and other infectious diseases. As startling as this may seem, the reality is that some clients will not complete treatment and will return to using drugs. FACT will enable them at least to avoid contracting and transmitting this deadly disease.

For clients infected with the HIV virus, FACT provides individual counseling and numerous support groups for them and their families. It also maintains an AIDS Resource Center with news articles, videos, books, pamphlets, and newletters. The FACT program, which has received statewide recognition, was commended as an exceptionally well-designed and well-run program by the New York State Division of Substance Abuse Services.

APPLE Opens An Adolescent Facility

By 1989, the house on Veterans Highway no longer could hold the growing number of clients and the added services needed by the community. Amid much enthusiasm, ground was broken in January 1989 for an adolescent residential facility in Lake Ronkonkoma. This newly constructed fifty-five-bed house, overlooking the scenic lake, offers rehabilitation to substance

abusers from fourteen to twenty-one years of age. When the new facility was named APPLE II, the house on Veterans Highway became APPLE I.

The opening of APPLE II in November 1989 enabled the staff to focus more on the needs of adolescents, which differ from those of adults. Adult substance abusers usually acted responsibly at some point in their past—holding a job, paying bills and rent. These individuals can be rehabilitated to re-learn those responsible behaviors. However, many adolescents never had those experiences so they did not learn those behaviors. That is why the staff at APPLE II maintains that adolescents often have to be "habilitated," not rehabilitated.

High school classes are taught on site at APPLE II by BOCES instructors. By attending a daily curriculum of classes, residents can obtain diplomas from their home school districts, rather than G.E.D's. With the adolescents removed, APPLE I could accomodate one hundred adult residents. The facility expanded, with the creation of added kitchen, dining, laundry, bath, and office space.

Meeting the Needs of Minority Substance Abusers

APPLE reaffirmed its commitment to minorities, in 1989, with two programs—APPLE/Linkage and COPE. Linkage, an existing bi-lingual, bi-cultural, outpatient clinic in Brentwood for Hispanic substance abusers, "linked" with APPLE to better serve its growing number of clients. With a bi-lingual professional staff, and all reading material in Spanish, APPLE/Linkage offers substance abuse education, counseling, AIDS education, and referral services to the Hispanic community.

In 1990, APPLE/Linkage suffered from "fire and flood" when the collapse of a roof, caused by heavy rain, was followed by a devastating fire. The Linkage staff temporarily relocated to APPLE I and APPLE Outpatient, until a new facility opened at 600 Suffolk Avenue, Brentwood.

COPE (Community Outreach Prevention and Education) was the response to a basic problem—lack of transportation. Because of limited public transportation in Suffolk, many substance abusers and their families in minority communities found it difficult to reach APPLE's outpatient center in Hauppauge. At the request of local community leaders, APPLE established on-site counseling services at existing Local Action Centers (LAC's) in Amityville, Bellport, and Riverhead. Certified substance abuse counselors from APPLE visit each LAC center weekly to provide individual and family counseling, parental guidance, referrals to residential treatment at APPLE and other service agencies.

Outpatient and Intake

For nine years, the outpatient department and the intake/screening unit operated out of APPLE I. In 1990, when APPLE opened administrative offices at the Crossroads Corporate Center, Hauppuage, these services were moved to the new location. APPLE provides outpatient services to substance abusers with enough stability in their lives not to require residential treatment—people who have been able to keep a job, pay their bills, attend

school. Clients meet weekly with master's-degree-level counselors for group and/or individual sessions, with therapy available to family members as well; outpatient services are routinely provided as after care to gradutes of residential programs.

The outpatient unit at APPLE I was redesignated for medically supervised clients. An additional otpatient pogram was opened in East Hampton at the request of town officials; APPLE/East Hampton Outpatient, on Main Street, provides counseling, information, referral, and outreach services to the communities of Eastern Suffolk.

At the intake/screening unit, the first step in the rehabilitation process, individuals are assessed to determine their appropriateness for treatment at APPLE. The staff psychologist may refer the person to a more suitable treatment setting, based on that individual's history and needs. Those accepted for residential treatment return to the APPLE intake unit to begin the admission procedure.

APPLE's Twentieth Year, A Time for Celebration and More Changes

In 1991, APPLE celebrated twenty years of providing quality substance abuse treatment. It was a year for reflection, celebration, and continued growth. In March, APPLE opened APPLE/Brentwood, a residential diagnostic and orientation unit on the grounds of Pilgrim Psychiatric Center. The intent of this program is to improve the client success rate, reduce the recidivism rate, and admit those in need of treatment within seven days. APPLE/Brentwood accomplishes this by providing in-depth evaluations of clients before determining which program will best serve their needs—APPLE I, II, East, or another type of treatment. The average length of stay at APPLE/Brentwood is thirty to sixty days, before transfer.

APPLE opened its second adult residence in November 1991— APPLE East, a forty-bed house in Wainscott. This new facility was constructed at the request of East Hampton town officials, who graciously donated the four-acre site. Now, East End communities have access to quality substance abuse treatment in both a residential and outpatient setting.

The same week that APPLE East opened, a new facility also opened in Lake Ronkonkoma, adjacent to APPLE II. Aptly named APPLE III, this fifty-two-bed house will serve as the re-entry facility for APPLE's residential programs. Re-entry, the final phase of residential treatment, allows clients to readjust to society by providing a less structured but still supervised environment. During the re-entry phase, clients must work and/or attend school, while paying rent. APPLE has always had a re-entry phase of treatment, but in the past the locations were dispersed throughout Suffolk county. Now, with the creation of APPLE III, all re-entry clients can complete the final phase of treatment in one central, supervised location.

As APPLE's twentieth year draws to a close, construction is underway for another new facility—the Mother and Child Together Residence. This innovative program, due to open later this year, is for pregnant and post-

partum substance abusing women. Their children, under five years of age, will be allowed to stay with them while they undergo treatment. Rehabilitation will focus on the needs of the women and the children. Mothers will learn parenting skills and the importance of proper nutrition, medical care, and education for their children.

Conclusion

Twenty years ago, APPLE began with two staff members and a budget of $30,000. Today, it has more than 250 staff members and a budget in excess of $9 million. What commenced as a storefront office in Amityville has grown to sixteen residential and outpatient sites in eighteen communities across Long Island.

However, the most impressive number is the number of people helped by APPLE. Ten years ago, the agency was able to provide services to only one hundred clients. Today, it provides treatment services to more than seven hundred clients every month.

It is estimated that more than 5,000 people have been served, a number that does not include the families of substance abusers who also found counseling and support, nor the hundreds of young children who may have refused drugs because an APPLE resident came to their school to share a personal story of drug abuse. It is impossible to number the people whose lives have been touched or changed by APPLE.

The successes that we can count are enough. Every spring, dozens of men and women walk across the stage at APPLE's annual graduation ceremony and grasp their diploma, which reads:

> ...has successfully fulfilled the requirements for graduation from A Program Planned For Life Enrichment, Inc.and is recognized for outstanding courage and determination in conquering substance abuse. This certificate not only represents the ability to superbly eliminate drug use, but is also symbolic of the acceptance of responsibility that accompanies being a productive and useful citizen. Having successfully reached the goal of rehabilitation, any rationally determined goal is obtainable and no one is better equipped for such achievement than you.

There is no way to measure that kind of success. It cannot be recorded and calculated. It can only be seen in the faces of APPLE's graduates. It is the peaceful look in their eyes, the warm smile that reveals a unique appreciation of life. That is the success that is APPLE, A Program Planned For Life Enrichment.

A Weathercaster's Survey of Long Island's Climate and Historic Storms

By Norm Dvoskin

This article addresses the history of tracking Long Island's weather, with emphasis on the principal hurricanes, blizzards, and northeasters that have marred its usual tranquility. My perspective is that of a meteorologist and weathercaster for television channel News 12 Long Island.

The relatively warm water of the ocean keeps Long Island winters mild compared to places north and west. From May through September, when the Atlantic is relatively cool, sea breezes keep Long Island cooler than points north and west. However, these refreshing breezes do not penetrate very far north; for example, Northport and Setauket are often warmer during the day than Freeport and Bay Shore. Air masses and weather disturbances moving generally eastward from the interior of North America also affect Long Island's weather, although hot and cold extremes are usually moderated by the time they reach the coast. Annual rainfall, evenly distributed through the year, averages forty-five to fifty inches.

The Island has always been subject to long- and short-term temperature trends. Looking back a century and more, it appears that the average winter was more severe than at present. In the extremely cold winter of 1779-1780, the waters surrounding Manhattan Island were frozen solid by mid-January, the only time they were closed to navigation for five consecutive weeks. Frost was reported in every month of 1816, when "the Fourth of July was celebrated by citizens wearing mittens and great coats." The phenomenon of four consecutive mild winters with light snow, from 1752 through 1756, was considered remarkable at the time.[1]

Indirect evidence of past temperatures along the Atlantic seaboard has been drawn from pollen deposits, ocean bed cores, ice layers, tree rings, and glacial behavior. All demonstrate that nineteenth-century atmospheric conditions were cooler (and growing seasons correspondingly shorter) than those of the current period. I confirmed this trend by progressively comparing three South Fork communities with almost identical climates:[2]

Average Annual Temperature (Fahrenheit)

East Hampton	*Southampton*	*Bridgehampton*
1827-43	*1901-1915*	*1950-81*
48.8	49.9	50.8

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In suburban and formerly rural areas, the trend toward warmer temperatures in the modern era may be the result of the increase in density of the numbers of houses and automobiles, paved areas, and the concomitant loss of trees. Characteristic urban warmth arises from artificial heat from buildings and cars, and the "greenhouse effect" of layers of carbon dioxide and other pollutants which trap heat energy near the surface.[3]

Long before the establishment of the Army Signal Corps's "Weather Service" (now the National Weather Service) in February 1870, many Long Islanders recorded the weather from day to day, mostly in diaries kept by farmers. In her diary, Mary Cooper noted the wind and temperature on her farm in Oyster Bay every day from 1768 to 1773. She also referred to specific storms: "March 2, 1769, Thirsday [sic], A storme [sic] of snow and rain and hail all day long." Various members of the Dominy family, in East Hampton, kept track of the weather from 1755 to 1845, 1850 to 1859, and 1887 to 1909. Among the many other keepers of daily records were Daniel Roe, of Brookhaven, from 24 February 1806 to 2 January 1808, and Amos Platt Conklin, a Huntington storekeeper, from January 1863 through December 1863.[4]

Local newspapers featured accounts of storms. On 18 August 1859, the *Sag Harbor Express* reported a destructive tornado at Noyack,

> about one and a half miles in width, laying waste everything in its way. As the wind crossed Peconic Bay...it was wonderful to behold. Ploughing through the water with such fury as to send the spray between twenty and thirty feet in the air...accompanied by thunder and lightning together with a complete deluge of rain.[5]

The first coordinated weather measurements began in the early 1800s, with a network of sixty-two observers at academies throughout New York, under the auspices of the state school system. Readings were taken at Erasmus Hall, Brooklyn, from 1826 to 1873, Union Hall, Queens, from 1826 to 1864, Clinton Academy, East Hampton, from 1827 to 1852, and Oyster Bay Academy for 1834 and 1837. In 1849, Joseph Henry, the secretary of the Smithsonian Institution, persuaded telegraph companies to allot free time for transmission of weather reports to the Smithsonian. By the end of the year volunteers around the country reported regularly. On Long Island, Smithsonian volunteers were at Bellport from August 1857 to June 1862, Blackwell's Island (Suffolk County) from November 1855 to November 1857, Farmingdale from March 1864 to June 1872, Hempstead (Storage Reservoir) from August 1872 to December 1873, Moriches from March 1864 to May 1882, and Sag Harbor from March 1849 to December 1858. From these reports, Henry made a daily pictorial weather map which he mounted for public inspection on a wall of the Smithsonian.[6]

The Strong family of Setauket has operated Long Island's longest continuous weather station. Selah Brewster Strong began keeping records for the United States Weather Bureau in July 1885. After he died in 1931 at the age of ninety, his daughter Kate Wheeler Strong took his place, using her

father's thermometer. When she died in 1977, at the age of ninety-eight, her nephew William Strong, a civil engineer, continued the tradition; the National Weather Service provided him with new instruments after those used by Selah and Kate were given to the Smithsonian. Since William's death in 1983, his widow Sylvia takes the readings. Every afternoon at five she walks out to her instrument shelter to note maximum and minimum temperatures for the past twenty-four hours, the temperature at the time of the reading, and the amount of precipitation. At the end of every month she forwards her observations to the National Weather Service. In 1991, Sylvia Strong received a Department of Agriculture award for "Continuing a Century of Excellence as a Cooperative Observer at A Centennial Cooperative Weather Station."[7]

Richard G. Hendrickson, of Bridgehampton, another dedicated observer, started on his family's farm in 1930 at the age of seventeen. The site, which was recognized by the Weather Bureau on 1 August 1930, was moved to Water Mill during 1942 and 1943; after the station was deactivated in 1944, Hendrickson carted the instruments back to his farm, where they have been ever since. A National Weather Service Cooperative Station operated by Bruce Rosenberg, of Dix Hills, made Long Island weather history on 28 November 1989, when rainfall for the year reached a total of 71.40 inches, exceeding the 71.38 inches recorded in Brookhaven in 1869.[8]

There are now nearly one dozen National Weather Service cooperative observers, scattered from Brooklyn to Bridgehampton, part of the proud corps of more than 12,000 citizen volunteers who take observations in all 50 states, Puerto Rico, the Virgin Islands, and the Pacific Trust Islands. Their data are logged and forwarded to the National Climatic Data Center, in Asheville, North Carolina, where they are stored in computer memory banks, processed, and published into climatic summaries.

A valuable tool for defining the climate of central Long Island is the daily record of high and low temperature, precipitation, and other environmental data taken since January 1949 at Brookhaven National Laboratory. This evolved from the initial function of Brookhaven's Meteorology Group to meet the Atomic Energy Commission's requirement of collecting meteorological data for the evaluation of radiational hazards. The Long Island Weather Observers, founded in 1985, is a private organization of weather buffs and hobbyists, now more than eighty strong. At monthly meetings, they compare readings and engage in discussion. The group's telephone hotline, updated twice each day, provides callers with recorded weather information. Members also send observations taken at their separate homes to radio stations WBAZ, WALK, and WGSM, the National Weather Service, *Newsday*, private research organizations, as well as to News 12 Long Island.

News 12 Long Island, which started broadcasting on 15 December 1986, is the first round-the-clock television station to concentrate on news for a particular region. Carried by all of Long Island's cable companies, it reaches nearly seven of every ten households in Nassau and Suffolk. As a meteorologist on News 12 since its inception, my job is providing forecasts

and weather information tailored to the needs of viewers. News 12's format lends itself to the use of at-home volunteer weather observers, who subject themselves to rain, snow, and cold to make their recordings and call them in. Some have only window-mounted thermometers, others have instrument shelters, recording barometers, rain gauges, and anemometers.

The only official weather reporting station in Nassau or Suffolk, operating twenty-four hours a day and seven days a week, is at Islip MacArthur Airport. The airfields at Westhampton and Farmingdale operate only part-time; because Kennedy International and LaGuardia airports are in Queens, their readings often do not represent the Nassau and Suffolk region. To rely solely on airport information during extreme conditions results in gaps or omissions in reporting significant developments. For example, on 24 and 25 February 1990, light snow was recorded in Nassau and New York City, while a blizzard hit eastern Long Island. The only references to this—it was not mentioned in National Weather Service forecasts—were News 12's reports of deep snow at Noyack, Montauk, Shelter Island, and elsewhere, phoned in by volunteers.

On 19 August 1990, a sudden, fast-moving series of thunderstorms dumped tremendous amounts of rain on portions of eastern Nassau and western Suffolk. Flooding shut segments of the Southern State Parkway, the Seaford-Oyster Bay Expressway, and the Sunrise Highway, with water on the Wantagh State Parkway three feet deep in places. Numerous calls from observers reported from one inch or less—not enough for the flooding reported by motorists—to more than five inches in certain locations. With this data, we prepared a map for the ten p.m. news showing areas with the most intense rainfall.

Even on uneventful weather days, changes in elevation, vegetation, and distance from the shoreline can produce subtle differences. The interior of the Island has the hottest daytime summer temperatures. It also has most pronounced radiational cooling (loss of heat by the ground on calm, clear nights, which cools the air immediately above it), which can cause early-morning air temperatures to be normally as many as fifteen degrees colder than places near the shore or in western Nassau.[9] Observers' reports have shown extreme differences of from twenty-five to thirty degrees between places like Yaphank and Mineola, a meaningful finding for landscapers and gardeners who plant and protect tender vegetation in the spring and the fall.

Television forecasting for a particular region, using volunteer observers to supplement official readings, has proven extremely popular. Between thirty and forty weather watchers call in each week-day morning between four and nine o'clock. Long Islanders want to know the weather in their communities, not at airports. A 1988 News 12 survey revealed that almost three of every four people polled regarded weather as their main reason for watching.

The hurricane season in the Atlantic, Caribbean, and Gulf of Mexico lasts from June through November. The strongest storms usually make their run toward Long Island from early August through October, when the ocean waters south of the region, from which they draw their energy, are warmest.

View of Oak Beach from Coast guard tower, 22 September 1938. Photograph courtesy of Van R. Field

The Island's first major recorded disturbance was "The Colonial Hurricane" of 15 August 1635, the principal meteorological event of the colonial period. After crossing the Island, it cut across southeast Rhode Island and Massachusetts with tides of fourteen feet, drowning many Native Americans, destroying houses, and even leveling forests. An eclipse of the moon two days later suggests that a close-to-maximum astronomical tide reinforced the hurricane's storm tide. "The Acomac (Delmarva Peninsula) Hurricane" of 1693 fully opened the Fire Island inlet and closed other inlets.[10]

The "Great September Gale of 1815" made landfall near Center Moriches on 23 September. In Sag Harbor, east of the storm's track, "a tide six feet higher than ever known before" was reported, with "trees strewn in every direction about our streets." Montauk Lighthouse was damaged, and at Gardiner's Island the landing wharf was washed away and orchards were stripped of fruit. Six years later, when a hurricane made landfall near Jamaica Bay, traversed the Island, and entered the Sound at Oyster Bay, an observer in Woodbury noted that, "In the year 1821 September 3rd...a mighty wind indeed blue down House Barns & Hovels on Long Island—Fences Trees and number of my aquainies Drowned some on Rockaway Beach 2 sloops lost in sound."[11]

Except for a small but intense storm over the Island's eastern tip in early September 1869, no major hurricane occurred from 1821 to 1938. Accordingly, residents were unprepared for the hurricane of 21 September 1938. The consensus was that such a storm was "impossible...nothing approaching it in severity had occurred within living memory of the oldest inhabitants." In terms of devastation and deaths, it was the worst natural disaster ever to befall Long Island. On the morning of 21 September the storm

was located off Cape Hatteras, took a severe track directly north, and struck the South Shore between Babylon and Patchogue at 3:30 that afternoon. Most hurricanes move at rates of from 10 to 25 miles per hour, but this one's velocity was 60 miles per hour. Of the 179 houses on Westhampton Beach, 153 vanished and most of the rest were too battered to be used again. On Fire Island, 265 homes were destroyed, 90 at Saltaire, 70 at Fair Harbor, 65 at Cherry Grove, 22 at Kismet, 14 at Lonelyville, and 4 at Ocean Beach. The hurricane created 8 inlets, of which only Shinnecock remains open; after 1938, the area was stabilized by the construction of stone jetties. The barometer reading of 27.94 inches at the Bellport Coast Guard Station, at 2:45 PM, is the lowest official reading ever made on land in the Northeast.[12]

A Westhampton Beach survivor, Norman Hubbard, of hurricane-prone Dune Road, described the ferocity of the storm:

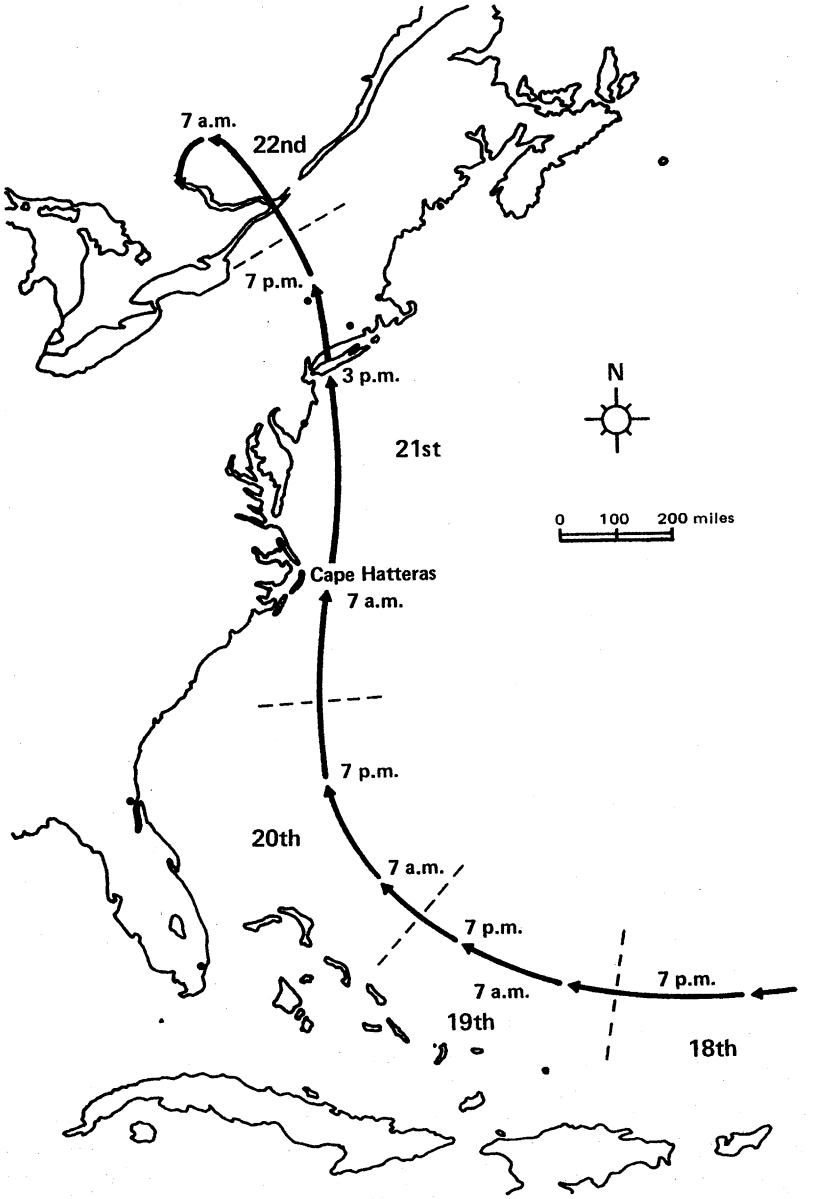
> Houses from the beach were floating over the meadow. People and animals were clinging to their roofs...the water was so full of lumber from broken up houses, that you could see no water. Some of the buildings came down, hit the [Beach Lane] bridge and broke up, some going under the bridge, some roofs flying over...day turned into night....The eye of the storm passed over and we could...see the sun. The storm began again, worse than before. I was dodging flying wood, when ...a canoe came flying by. It landed on the road about seventy-five feet from where I was. I thought if I could get it, we could at least have a chance of getting off the bridge. I couldn't stand up, the wind was so strong, so I got down on my knees and started toward the canoe. I was about fifteen feet away from it when I looked, and it was gone. "Gone with the wind." I crawled back to the railing and hung on. The sea gulls were headed out into the wind, and they were going backwards at about 30 miles an hour![13]

The storm was named "The Great New England Hurricane," because it flooded and flattened portions of New England after crossing Long Island Sound. The Red Cross reported 700 people killed, 1,754 injured, and 63,000 who lost their homes. The Island's death toll of 45 would have been much worse if most summer vacationers had not left earlier in the month.[14]

On 14 September 1944, the "Great Atlantic Hurricane" cut through the East End between Westhampton and Southampton, then moved across Peconic Bay. At Fishers Island the barometer dropped to 28.41 inches, with a sustained wind of seventy-eight miles per hour. Thousands of Long Islanders lost power for at least ten days. Kate Wheeler Strong wrote in her journal that "At East Setauket the front yards of houses were a tangle of boats and fallen trees. The big floating dock was carried up into the yard."[15] The storm left considerable destruction and 16 dead along the east coast.

Until 1953 hurricanes were unnamed, identified by locations visited or an event of that day. On 19 August 1856, a disorganized tropical low with southeasterly gales moved across the shoreline near Quogue and into New

September 1938 Hurricane



Drawing by Norm Dvoskin

England. It was named "The Charter Oak Storm" because it snapped in half Hartford's famous tree that had stood for 300 years. In 1949, the second storm of the season was labeled "Hurricane Harry" because it hit central Florida while President Harry S. Truman was touring the state.

In 1953, the weather services abandoned as confusing a three-year-old plan to identify storms phonetically and alphabetically, beginning with "A"—Able, Baker, Charlie, and so on—and started using female names. Selected at meetings of the World Meteorological Organization in Geneva, Switzerland, the names reflected the flavor of countries in the Atlantic and Caribbean. A new list was used each year.

Long Island received the nickname "Hurricane Alley" after a rapid succession of "female" storms moved through the region; Carol, Edna, and Hazel in 1954, Connie and Diane in 1955, Donna in 1960, Esther in 1961, and Belle in 1976. In 1979, the method was revised to alternate men and women's names. The first with a masculine name to impact Long Island was tropical storm David, on 6 September 1979. Hurricane Gloria, which passed through on 27 September 1985 with hundred-mile winds, resulted in eleven deaths, $285 million in damages, and forty-eight homes destroyed on Fire Island.

When, in 1991, Long Island was struck by hurricane Bob—the only storm to do so since News 12 began to broadcast—its track and intensity were followed precisely, aided by calls from local observers. The western portion of Bob's eye crossed Montauk Point on 19 August with winds of 101 miles per hour.[16] More than seven inches of rain was reported at Bridgehampton. Two deaths were attributed to the storm, and approximately 380,000 LILCO customers lost power. News 12 provided hourly updates from noon on 18 August until 3 p.m. the next day, when the storm finally crossed Rhode Island and entered eastern Massachusetts.

Presently, the lists of names are recycled every six years, with the name of any storm causing fatalities or destruction replaced and not used again. For example, the 1985 set was repeated in 1991, with Grace instead of Gloria.

"The Great Storm of November 25, 1950," although not of tropical origin, compares in terms of destructive force with the great hurricanes of 1938 and 1944. A ferocious combination of heavy rains, storm tides, flash floods and tremendous winds, it reached Long Island in the early morning of 25 November. Near hurricane force winds blew all day, with gusts of ninety-four miles per hour at New York International Airport; high tides covered LaGuardia Airport, and planes were blown over at Fitzmaurice Field, near Massapequa. Thirty-eight deaths and hundreds of injuries were reported in the metropolitan area. Trees and telephone and electric poles were blown down, buildings unroofed and demolished, windows broken, and radio towers knocked over. New York City was put on an emergency basis for seven hours.[17]

In recent years, a succession of extratropical coastal storms has been compared to hurricanes in terms of destructive force. Storms of this type are often referred to as northeasters because of the direction of the damaging winds. The following summary describes some that have hammered Long Island.

Dune Road, Westhampton Beach, after the 1991 "Halloween Storm.' Photograph, 2 November 1991, by Robert Chartuk, National Weather Service.

6-7 March 1962: An intense, slow-moving low-pressure system moved up the coast from the Carolinas with a combination of high winds and nine-foot tides, causing extensive flooding on Long Island and washing away numerous homes on Fire Island, many of which had survived the 1938 hurricane.

12 November 1968: Near hurricane force winds, seven-foot tides, and torrential rain caused severe beach erosion in the Hamptons, and collapsed an elementary school in Bayville.Thousands of trees were blown down, and homes were evacuated in Freeport, Westhampton, and Orient.

24-27 March 1973: This storm produced three consecutive days of gale force winds accompanied by high tides. Seventy percent of Gilgo Beach was destroyed, and waves washing up over Ocean Parkway almost caused an inlet;

29 March 1984: A brutal storm moved up the East Coast, killing sixty people in the Carolinas and wrecking the boardwalk in Atlantic City. It reached Long Island with two inches of rain and seventy-mile-per-hour winds; the North Fork was flooded and hundreds of homes had to be evacuated in Jamesport.

2 December 1986: A northeaster, with gale force winds, caused extensive beach erosion at Westhampton Beach and Fire Island.

2 January 1987: Widespread flooding in Long Beach, Baldwin and Freeport was caused by a combination of forty-mile-per-hour winds, two inches of rain, and high storm and astronomical tides. Beach erosion was

recorded at Tobay Beach and Hither Hills, and homes were destroyed on Westhampton Beach.

31 October 1991: A unique and ferocious "Halloween Storm" lashed Long Island with 60-mile-per-hour winds. Waves as high as fifteen feet were so powerful they were detected by Cornell University's seismograph in Ithaca, New York.[18] The configuration of the North Shore shoreline was permanently changed; nineteen homes on Dune Road, Westhampton, were washed away, and seventeen others irreparably damaged. Record-breaking tides were reported along the Northeast Coast.

Long Island averages only twenty-five to thirty inches of snow each winter, but some major snowstorms have paralyzed the region. The "Great Snow" of 27 February - 7 March 1717, the most celebrated colonial blizzard, consisted of two major and two minor snowfalls over a nine-day period. On 24 March 1765, heavy snow, accompanied by high winds and bitter cold, blanketed the area from Pennsylvania to Massachusetts, as did the "Hessian Storm" of 26 December 1778. The "Long Storm" of 19-20 November 1798, the heaviest November snowstorm in the history of the coastal northeast, dropped twenty inches in New York City.

Snow fell for forty-eight hours from 26 to 28 January 1805, with accumulation of some two feet. The "Christmas blizzard" of 1811 began on the evening of December 22, on a northwest gale and temperatures near zero. By daybreak tremendous drifts of snow blocked the roads of the Island. The storm destroyed more lives and vessels off the North Shore than any before or since. The 18-19 January 1857 "Cold Storm" possessed all the elements of a true eastern blizzard—heavy snow, temperatures below ten degrees, and strong northeasterly gales. The winter of 1857 was notorious for snow: the Long Island Railroad was shut down from 22 December 1856 until 13 February 1857, and the *Sag Harbor Corrector*, desperate for newsprint from the city, was reduced to printing its issue on brown paper.[19]

Most renowned was the "Blizzard of '88," the benchmark by which winter storms are measured. Meteorologists categorize the occurrence of such a storm as a 500-year event. Over a three-day period, 12 to 14 March 1888, the storm pummeled the northeastern states with heavy snow, powerful winds, and bitter cold. Parts of central and eastern New York had more than fifty inches, with drifts reaching the second floor of buildings. Most of Long Island had more than twenty inches, some communities more than 30–Babylon had 36, Glen Cove and Patchogue thirty-three each. With transportation and communications frozen, it took almost a week for conditions to return to normal. Four hundred people perished, two-hundred in New York City alone. Dead people were found weeks later, frozen under mountainous snow banks. An eleven-year-old girl in West Neck (Lloyd Harbor), described the storm in a letter:

> The drifts in the front were about ten feet high...It began Sunday night. Monday morning there was about ten inches on the ground and still snowing. It snowed all day Monday and Tuesday some of Wednesday

> and Thursday...The roads were so blocked up that until Wednesday nothing could be done to clear them off...Main Street in Huntington was filled up for ten or fifteen feet.[20]

Charles Dudley Warner had this much discussed storm in mind when, years later, he tossed off his famous epigram: "Everyone talks about the weather but no one does anything about it."[21] When the quip was attributed to Mark Twain, his friend and former collaborator, Warner became the last casualty of the Blizzard of '88.

From 11 to 13 February 1899, a snowstorm enveloped Long Island for forty-five hours, with East End accumulations of up to thirty inches, and drifts twelve feet high. The Christmas night storm of 1909 produced heavy snow, high winds, and high tides throughout the Northeast. On 1 and 2 March 1914, a storm brought near hurricane force winds and fifteen inches of snow. One of the worst storms was in 1934, during the coldest February on record, with some twenty inches of snow, strong winds, and temperatures below zero. On the day after Christmas 1947, a surprise storm dropped 26.4 inches of snow, the most ever reported officially in New York City.

On 1956's last day of winter, more than two feet of snow paralyzed transportation on Long Island. Suffolk County was declared a "natural disaster area"; four deaths were attributed to the storm.

The "Lindsay blizzard" of 9 February 1969 produced sixty-mile per hour winds, sub-freezing temperatures, and more than twenty inches of snow at New York International Airport. It was named for the mayor of New York City, John V. Lindsay, who directed most of the city's snowplows to Manhattan while eastern Queens remained snowbound for days. The "second worst snowstorm of the century," 6 February 1978, which deposited twenty-six inches of snow at Lake Ronkonkoma and collapsed eleven houses, followed one week after an ice storm that caused 300,000 LILCO customers to lose electricity. On 11 February 1983 Islip had twenty-two inches of snow and Long Beach had twenty-four, halting land and air travel and causing the abandonment of thousands of cars on the Long Island Expressway. Five people died shoveling snow.[22]

Most deaths from hurricanes are from drowning attributed to the storm surge—the giant dome of water, sometimes fifty miles wide, that sweeps across a coastline like a giant bulldozer, washing away everything in its path. The surge can combine with normal astronomical high tide and wind-generated waves to produce up to a twenty-five-foot rise in water level. Much of the Long Island coastline lies less than ten feet above sea level. Because of beach erosion and a gradual rise in sea level over the last century, many homes built back from the shore years ago now protrude into the water. The most endangered areas are the intensively developed barrier islands, like Long Beach, Fire Island, and Westhampton Beach. Evacuation, the only course of action, will be extremely difficult with a full-blown hurricane bearing down, especially during a weekend in July or August.

Using a sophisticated computer model called "SLOSH" (Sea, Lake, and Overland Surge from Hurricane), developed by the National Hurricane Center and the Army Corps of Engineers, scientists can predict the storm surge of a hypothetical hurricane at any place. Inputs to the model are the location's topographical profile, the storm's wind speed, forward speed, and the radius of the eye. SLOSH predicted Hugo's swath of destruction on the South Carolina shore in 1989.

Using the model, scientists from an eleven-member advisory committee of the New York State Office of Parks, Recreation and Historic Preservation, developed a map of the Long Island area predicting the flooding from a Hugo-class storm. According to the model, Kennedy International Airport would be under twenty-six feet of water, Fire Island would be pushed 100-to-150 feet toward the mainland, and a three-story wall of water with 140 mile per hour winds would crush houses and high rise apartments in Long Beach. According to the *New York Times*, "A storm of that size would basically wipe out Freeport, Merrick, Bellmore, Wantagh, and many other villages along the South Shore." Everyone south of Sunrise Highway would have to be evacuated, and in some areas (such as those near the Carmans River, in Brookhaven) water would be pushed up over the Southern State Parkway almost up to the Long Island Expressway.[23]

Crowded Long Island is more vulnerable to storms today than it was years ago. Even a minor snowfall or summer cloudburst can disrupt traffic along the Long Island Expressway, Southern and Northern State Parkways, and other heavily traveled arteries. Every few years, another northeaster erodes beaches and destroys homes along the South Shore.

A law of nature is that there will always be a natural disaster greater than any previous one. Eventually, just as California will suffer an earthquake stronger than the one that demolished San Francisco in 1906, Long Island will be hit by a storm even more ferocious than the 1938 hurricane. This statistically certain event can happen next year, the year after, or twenty years from now. With excellent weather tracking using radar, satellites, and aircraft, together with coverage by the news media, it will come as no surprise. Lives will be lost and property ruined; the question that remains is when?

NOTES

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2. James Truslow Adams, *History of The Town of Southampton* (Bridgehampton: Hampton

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4. *The Diary of Mary Cooper, Life On a Long Island Farm, 1768-1773*, Field Horne, ed. (Oyster Bay: Oyster Bay Historical Society, 1981), 9; "Register of Wind, Weather and Doings By Nathaniel Dominy Jr.," Long Island Collection, East Hampton Free Library; *The Diary of Captain Daniel Roe, Brookhaven, Long Island, During Portions of 1806-7-8* (Worcester, MA: Blanchard Press, 1904); Amos Platt Conklin Diary, collection of Huntington Historical Society, Huntington.

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7. Author's interview with Sylvia Strong, May 1992.

8. Author's interviews with Richard G. Hendrickson, and with Bruce Rosenberg, May 1992.

9. Phil Mintz, "Elusive Legend of Icy Hollow," *Newsday*, 3 May 1989, 6.

10. Ludlum, *Weather Factor*, 14; Bayard Webster, "Scientists Find Severe Loss of Coastline," *New York Times*, 21 June 1983, section C, 1. Water slicing through sections of Westhampton Beach created inlets in the storms of 1938, 1954, and 1962. There was an opening into Quantuck Bay from 1755 to 1829, and again between 1848 and 1886. Moriches Inlet was opened by heavy waves and high tides during a coastal storm on 4 March 1931. If it were not for attempts to dredge this opening at various times, it probably would have been filled in by sand carried by the currents.

11. Ludlum, *Early American Hurricanes*, 1492-1870 (Boston: American Meteorological Society, 1963), 78, 81; "Account Book of Darling Whitney & Daniel Darling Whitney of Woodbury, Long Island, New York, 1808-1848" (Huntington: Huntington American Revolution Bicentennial Committee, 1977, in collection of Huntington Historical Society).

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Two Japanese New Religions in Flushing:
The Tenrikyō Mission and the Nichiren Shōshū Daihōzan Myōsetsu Temple

By Marleen Kassel

Flushing's tradition of religious diversity began early in colonial times when the Quaker, John Bowne, won the right of "freedom of conscience." In 1662, Peter Stuyvesant, the director-general of New Netherland, exiled Bowne for refusing to pay a fine for holding services in his home. Bowne languished in an Amsterdam jail until, in 1663, the directors of the Dutch West India Company not only released him but informed Stuyvesant that, in spite of his and the company's shared antipathy for Quakers, he should "not force people's consciences, but allow everyone to have his own belief, as long as he behaves quietly and legally, gives no offense to his neighbors and does not oppose the government." The Bowne case was an important step toward religious toleration, secured finally by the state constitution of 1777. As time went on, other than Quaker and Episcopal denominations appeared in Flushing: a Methodist congregation in 1811, Roman Catholic in 1826, and Baptist, Presbyterian, Lutheran, and Jewish in the mid-19th-century.[1]

Today, Flushing's religious diversity is apparent on almost every block. Within a 10-block semicircle northeast of Main Street are the Indian Sikh Center of Greater New York; the Indian Hindu Temple; the Jewish Temple, Gates of Prayer; a Unitarian Universalist church; the Korean Won Buddhist Temple; the Ebenezer Baptist Church; a number of smaller Chinese Christian denominations intermingled with larger and newly-built Korean Protestant churches; and a center for the Unification Church. This article explores the historical framework and world view of two other sects in Flushing—the Tenrikyō Mission at 42-19 147th Street, and the Nichiren Shōshū Daihōzan Myōsetsu Temple at 143-63 Beech Street, two faiths conceived and gestated in Japan and exported to the United States.[2]

Both Tenrikyō and Nichiren Shōshū are designated Japanese New Religions. This often disparaging label refers to the fifty or so religious groups which arose in Japan in the 19th-century, outside the mainstream Shinto and Buddhist groups existing before that date, but which trace their roots to these mainstream faiths. These New Religions, utopian, millenarian, messianic, or nativistic in orientation and founded by charismatic leaders, are popular among common folk with little hope for other sources of life improvement. Claiming to be fully organized, legitimate religions, the New Religions differ from older faiths because of their relatively recent dates of

development, style of leadership and rituals, view of the self in relation to family, society, and the world, and patterns of thought, action, and emotion resulting from their view of the world.[3]

The short-lived Japanese residential colony in Flushing began in the 1970s and peaked in the 1980s. In the 1970s, the native Japanese population in Flushing, Bayside, Forest Hills, and Elmhurst numbered 3,995, consisting of employees (and their families) of Japanese firms assigned to three-to-five-year stints in America. In 1975, the Japanese Ministry of Education established a school to teach the standardized educational curriculum to Japanese nationals in the United States. By means of a government subsidy and gifts of about one-million dollars from Mitsui, Mitsubishi, and the Bank of Tokyo, the ministry purchased the former Parkway School building, at 187-30 Grand Central Parkway, and established the Japanese School of New York. Most students lived in Queens, but some commuted from Westchester and New Jersey.[4]

In 1980, when its shrinking elementary-school-age population forced Queens County School District 26 to close P.S. 179, at 196-25 Peck Avenue, the Japanese Ministry of Education met its expanding needs by renting the building, moving its academic facility there, and converting the Parkway building to offices. The 250-strong student body in grades three through nine grew to 300 students in grades five through nine, with a waiting list of 100, commuting from Queens, Westchester, New Jersey, Nassau, and Connecticut. By 1983, the student body increased to 450, where it has stabilized.[5]

In 1979, with the termination of the lease on P.S. 179 one year off and no offer of renewal forthcoming, the Japanese School bought property in Greenwich, Connecticut, and prepared to move. Political dickering over renovations led the school to lease a temporary site in Yonkers, in 1989; the Connecticut facilities will probably open in 1993. Students commute from the same areas as in 1975, but are primarily from Westchester County, followed by New Jersey, Queens, other parts of Long Island, and, finally, Connecticut. This reflects the shifting demographics of Japanese residents of Queens, who presently number 4,037, up from 3,995 in 1970 but down from 5,487 in 1980.[6]

The Tenrikyō mission, established in 1979, and the Nichiren Shōshū Temple, established in 1981, built when the Japanese population in Flushing was at its peak, continue to attract worshippers from throughout the metropolitan area. Both are Japanese in origin, but are distinct from one another. Tenrikyō is a modern evolution of Shinto, Japan's indigenous religion, developed in the earliest period of Japanese history and revived in the eighteenth century as State Shinto, Japan's ideological impetus in the years leading up to the Second World War. Tenrikyō most resembles Shinto in its earliest formulation.[7]

Nichiren Shōshū, however, is a modern outgrowth of Nichiren Buddhism, a Japanese formulation of the Buddhist tradition imported from India through China. Nichiren Shōshū doctrine is based on the teachings of Nichiren Daishōnin (1222-1282), a charismatic, aggressive, thirteenth-century Buddhist leader. Partly because of the influence of Sōkagakkai, the largest

lay organization under its aegis, Nichiren Shōshū became a vigorous political organization in Japan and overseas. In 1991, the priesthood excommunicated the lay organization, Sōkagakkai; since the schism, Nichiren Shōshū has turned toward religious purity while Sōkagakkai continues its traditionally aggressive action. Recently, the Sōkagakkai purchased desirable property in Malibu, California (which the state Parks Department had earmarked as a potential preserve) for the stated goal of building a Sōka school. This action earned the Sōkagakkai the dubious distinction of being called the "Japanese cult of land acquisition."[8]

Founded in 1837 in a village near present-day Tenri City, Tenrikyō is one of the oldest and best known New Religions of Japan. The founder, a woman named Nakayama Miki, was a devout lay Buddhist of the Pure Land Sect. When a Buddhist priest was summoned to perform a ritual cure of a family member's pain, Miki suddenly entered a trance. Her body became the medium through which the "Divine Parent" and origin of the world, Tenri-O-no-Mikoto, announced, "I am the Creator, the true and real God. There is preordination in this Residence. At this time I have descended here to save all mankind. I wish to receive Miki as the Shrine of God." The group surrounding Miki demanded that the deity depart, but not until they stopped demanding and began to accept its presence could she withdraw from the trance. From then on her behavior changed; she began to perform acts of charity and salvation for the poor and suffering masses, work she continued for the fifty years until the time she hid her physical appearance from the people.[9]

Faith in the parent deity, with whom Nakayama Miki is identified by her role as his mediator, is the basic teaching of Tenrikyō. A life of altruism is exemplified by her daily acts, divine models on which her followers base their conduct. Such behavior, they believe, will effectuate the primary goal of Tenrikyō to eliminate the impure dust that covers the world and makes it a place of suffering, thereby to recapture the state of joy that existed at the time of creation.[10]

Of Tenrikyō's approximately three million members, the largest number are in Japan. When the New York Mission was opened in 1977 by four Japanese families, it included some 30 American and Japanese families. By 1992, the total rose to more than 300, including 200 Japanese nationals, most of whom will return to Japan after a few years of study of work in the metropolitan area; 50 Americans; and 50 members representing 13 nationalities, including Korean and Chinese.[11]

The quiet, unobtrusive temple complex consists of two neighboring houses, the facade of one reconstructed in traditional Japanese Shinto architectural style. The houses serve both as residences for up to four small families of temple priests and officials, and as rooms of worship. Services, held the first Sunday of every month, attract up to 100 followers from the New York, New Jersey, Connecticut, Boston, and Washington, D.C. areas.[12]

Early Shinto influences are evident in many aspects of Tenrikyō, including the understated simplicity of architectural style in the temple's facade and room

used for worship. This room, offset by Japanese paper door screens (*shoji*), has white walls, polished blonde wooden beams, and a polished wooden floor. Other than a three-tier wooden altar, it is empty and devoid of decoration.[13]

The service is based on that of traditional Shinto, an animistic religion in which the main object of worship was the *kami*. *Kami* were awe-inspiring natural phenomena, determined by what was available in the vicinity of the community—a striking waterfall, a curious tree, a mountain, an interesting configuration of stones or rocks, or even the sun. Later, under the influence of the Chinese Confucian concept of ancestor worship, the *kami* evolved from awe-inspiring natural phenomena to a person—a local hero or renowned ancestor—who became the tutelary deity. In the case of Tenrikyō, Nakayama Miki is such a deity; she is referred to as the "Divine Parent," known in Japanese as Tenri-O-no-Mikoto (but not as a *kami*).[14]

As early Shinto services were held in the sacred space of the *kami*, so the location of the Tenrikyō service, symbolizing the place Nakayama Miki identified as the center of human creation, is its most important element. Shinto ceremonies for supplication, thanksgiving, appeasement, offering, or purification evolved into a set format which Tenrikyō services follow: after priests attracted the *kami*'s attention, offered food and entertainment, and recited prayers (*norito*), the community joined in eating the food offerings, symbolizing a communal feast with the *kami*.[15]

Tenrikyō services fall into two major parts which together encompass all aspects of early Shinto ceremonies. The first part commences with music on Japanese flutes, drums, and string and wind instruments, played by male and female members in traditional Shinto priestly dress. Offerings of rice wine, rice, vegetables, and fruits, passed in a designated order and ritual fashion from one practitioner to another, are placed on the simple, three-tier altar until it is full. The second part, the ritualized singing and dancing, symbolically enacts the Tenri concept of world joy which existed at the time of creation. The leaders, three women and three men, chant the refrain, "Sweeping away evils, please save us, Tenri-O-no-Mikoto," and dance with traditional hand gestures and foot movements in sets of three movements. The melodious Tenrikyō prayer resembles the so-called prayer of early Shinto, which was not liturgical but rather chants recited as much for the wondrous effects of their sounds as for the meanings of the words.[16]

After the chanting and dancing at a service I attended, the Reverend Toshihiko Okui preached the doctrine of cleanliness and purity, urging members to rid themselves of bad habits, follow the teachings of Tenrikyō, and spread them through daily contact; he also discussed the American visit of the Shinbashira, the main leader from the Grand Church in Japan. The sermon concluded the three-hour service, after which the congregation joined in a meal that symbolized its union with the divine. The architectural simplicity, similarity in main object of worship, style of petition, ritualized dances, traditional music, prayer format, communal feast, and shared religious terminology illustrate the continuity between early Shinto and

Tenrikyō. Impurity in Shinto is meliorated through ritual purification, much as the Tenrikyō service aims to sweep away the dust cover which clouds the joy of creation from shining on the world.[17]

Unlike the unobtrusive Tenrikyō center, the nearby Japanese Nichiren Shōshū Daihōzan Myosetsuji has a commanding presence. A white, two-tier, windowless, cement rectangle, sealed by a roll-down aluminum gate, it occupies almost all of a residential block. Unlike the five other Nichiren temples in the United States, the Flushing temple neither resembles a traditional Japanese temple nor blends with its neighborhood's prewar architecture.[18]

The original temple opened in 1981 in the house next door, now the minister's home. The new building was completed in 1984, when the congregation had grown from 750 to 2,500 members in the New York-New Jersey metropolitan area. Of these, only 5 to 10 percent are Japanese nationals; fully 90 percent are American, with a scattering of Chinese, Koreans and other nationalities.[19]

Nichiren Shōshū is a modern evolution of orthodox Nichiren Buddhism, a Japanese sect established by Nichiren Daishōnin, a contentious thirteenth-century priest. Like many religious leaders of his time, he studied at the eclectic monastic center of Japanese Buddhism, Mt. Hiei, near present-day Kyoto. The sect he founded diverged from the practice of his time, but not from earlier Japanese Buddhism. Nichiren distinguished himself, in part, by his militant efforts to eradicate all other sects. In 1271, because of his outspoken admonitions regarding foreign policy, the Japanese government banished him, for two and a half years, to the distant island of Sado. There he came to regard himself as the reincarnation of the Bodhisattva of Supreme Action, and continued to voice his political views. When summoned back to the capital, he exhibited a dramatic personality shift, became a recluse, and lived as a hermit at Minobu until his death in 1282.[20]

Nichiren's message, based on the Buddhist holy book, the *Lotus Sutra*, is that the final teaching of the Buddha Shakayamuni is the unity of the three forms of the Buddha, and that all who accept this have an exclusive path to salvation, the realization of their innate Buddha-nature. Nichiren's method of attaining salvation is focused on the Three Mysteries, the first of which, the *honzon*, is the main object of worship. The *honzon*, or *mandala* (holy picture), is a scroll on which the title and first verse of the *Lotus Sutra* are written in Japanese calligraphy. A single look at the *honzon* in good faith by a practitioner may be sufficient to evoke his or her Buddha nature. In the second mystery, the *daimoku*, practitioners chant the title of the *Lotus Sutra*, "Namu myōhō rengekyō" (Praise Be to the Sutra of the Lotus of the Perfect Truth) as often as possible during the day. To chant this in good faith may also evoke one's innate Buddha nature. The third mystery, the *kaidan* (ordination platform) implies the two-fold meaning that the place to begin to receive and practice Buddhist morality is in the practitioner's physical body, and that the central platforms from which Buddhist truth will radiate are first that body, and then, Japan.[21]

Working the three mysteries by means of intensive concentration (*honzon*) and chanting (*daimoku*) creates in the physical body (*kaidan*) of the practitioner an inner resonance, which emerges and unites with the resonance created by the Buddha and existing in the cosmos. Thus, the finite boundaries of individual egos are eliminated, and enlightenment or salvation—unity with the Buddha—will be attained for humankind. At that point, the Buddhist truth will be established on earth and the golden age ushered in.

Nichiren Shōshū, grounded in orthodox Nichiren Buddhism, has evolved a significantly different world view, most notably in the definition of salvation or enlightenment. The traditional Buddhist concept is a process of abolishing suffering by eliminating the passions and desires which cause a person to cling to life on earth. Meditation, chanting, doing good works, and reading and writing sutras are used singly or in combination to facilitate this. The result is the same: to snuff out the finite bounds of individual ego and so attain unity with the ultimate truth and purity of the Buddha.[22]

However, Nichiren Shōshū describes salvation as universal happiness in the form of economic and materialistic gain. True belief and faithful practice of his three mysteries will bring about beauty, gain, and good, which, in turn, will ease economic distress, relieve material deprivation, cure ill health, ameliorate domestic discord, and contribute to the collective good. Faithful practice by each person, combined with the divine benefits of the Buddha, will lead to material gain, or salvation, for all on earth. Since none can attain salvation until all do, dedicated Nichiren Shōshū followers actively attempt to convert others.

The circumstances which produced the movement explain its world view. Often characterized as a lower-class, urban movement, Nichiren Shōshū emerged in Japan in the 1950s as a militant, millenarian movement of lay believers. It attracted the poor, uneducated, lower-status people who had little social mobility but wanted a higher standard of living. Members were recruited at discussion meetings that presented happiness, defined as economic gain, as the solution to their problems. The movement spread through carefully nurtured and well-developed peer associations for men, women, and youth.

Unlike other New Religions, Nichiren Shōshū encompasses smaller, but sometimes significant organizations of lay worshipers, such as Hokkeko, the oldest, and Sōkagakkai, the most politically prominent in modern times. Sōkagakkai was founded in 1946 by Makiguchi Tsunesaburō, whose treatise, *Theory of Value*, merged with the doctrine of Nichiren Shōshū. Since then, Sōkagakkai grew into an especially powerful lay organization, with a membership that overshadows the sectarian practitioners of Nichiren Shōshū in numbers and political power. Sōkagakkai has greatly benefitted by the activities of its third leader, Ikeda Daisaku, who took office in 1960. Among his many accomplishments are: establishing Sōka schools in Japan and abroad; establishing the Sōka University; erecting many great buildings and temples in Japan and abroad; and, most important, the formation of the Clean Government

Party (*Komeito*) in 1964. By the 1970s, the *Komeito* was Japan's third-strongest political party, holding some 2,000 seats in local and national assemblies.[23]

In December 1990, a rift developed between the Nichiren Shōshū priesthood and Sōkagakkai members over unsanctioned actions taken by the Sōkagakkai leadership. Perhaps the most offensive of these was Ikeda Daisaku's authorizing lay members to duplicate the *honzon*, a prerogative of the priesthood. Not only did Sōkagakkai officials refuse to apologize to the priesthood for this and other actions, but they encouraged their members throughout the world to withdraw from Nichiren Shōshū. In return, at the end of November 1991, the priesthood excommunicated the entire Sōkagakkai organization from Nichiren Shōshū, a dramatic action with global significance.

Before the excommunication, Nichiren Shōshū, including its lay organizations, boasted the largest membership of all Japanese New Religions: eight million members worldwide, and two thousand active members in the New York area. After the excommunication, the bulk of the membership opted to remain with Sōkagakkai, substantially reducing worldwide temple membership.

These historical vicissitudes are reflected in the Nichiren Shōshū Daihozan Myōsetsuji, in Flushing. This previously bustling center of religious activity is muted since the excommunication of Sōkagakkai. Its current membership is a mere 300 families, compared with 2,500 in 1984. Because the main practice of chanting the *daimoku* can be done anywhere, regular temple attendance is not required. For economic considerations, the services formerly held twice a week are now held about once or twice a month. The eight annual ceremonial services associated with the life cycle, such as New Year celebrations, memorial services for the deceased, or events in the life of Nichiren Daishōnin, attract the largest attendance.

The striking interior of the temple shows no indication of straitened circumstances. The entryway, in traditional Japanese style, provides a bench to sit on while removing shoes and shelves on which to store them. In the sanctuary, a big, almost empty rectangular room with white walls and a beige carpet, twenty black folding chairs are set up facing a large, ornate altar. The altar, in contrast with the simplicity of the Tenrikyō mission altar, is gold gilt and black, crowded with Japanese-style drums, lanterns, bells, urns with incense, plants, flowers, offerings of food, and microphones. Above it hangs the *honzon*, the calligraphic scroll containing the title and first clause of the *Lotus Sutra*. Two members, seated facing the altar, chant the *daimoku*.

In these difficult economic times, Myōsetsuji officials confront the problems of diminished membership and uncertainty of Sōkagakkai's direction now that it lacks the moderating influence of the priesthood. Choosing to emphasize traditional Buddhist goals of spiritual enlightenment and religious ritual as their future path, these officials label Sōkagakkai a cult in which brainwashed people follow Ikeda, a self-deified, charismatic leader.[25]

Although members of the Tenrikyō Mission are aware of the undercurrent of activity at the Myōsetsuji, they have neither knowledge of, nor great interest in, the details of the recent schism. The two institutions, which share

only proximity in Flushing and nation of origin, are involved in unrelated doctrines and rituals. Moreover, neither has made a substantial impact on its immediate neighborhood. Both serve members residing in the Greater New York-New Jersey-Connecticut metropolitan area. The membership of Tenrikyo continues to be predominantly Japanese nationals who, like the temple's staff, are stationed in the United States for three years of work or study. Nichiren Shōshū cultivates membership among Japanese and non-Japanese, alike. Other than the Reverend Nakazaka, sent from Japan for a five-year assignment, whose children attend a Japanese school, most of the Myosetsuji's staff and members are converts of assorted nationalities.

In summary, there is a significant difference in the religious doctrine and world view of Tenrikyō and Nichiren Shōshū. Tenrikyō, grounded in the Shinto tradition, concentrates on eliminating impurity through ritual song and dance, and regaining the state of joy which existed at the time of creation. Nichiren Shōshū, based on the Nichiren Buddhist tradition, focuses on proselytizing so that the ultimate goal of salvation, defined as material gain, may come to all on earth. The schism between the Nichiren Shōshū priesthood and its lay organization, Sōkagakkai, is an intriguing historical development that merits further study. Questions yet to be answered concern the direction the religious doctrine of Nichiren Shōshū will take without the weighty influence of Sōkagakkai, and whether Sōkagakkai will, in its past aggressive fashion, exacerbate the tension between the United States and Japan.

To those with limited knowledge of the subject, the Asian religious institutions of Flushing may as well be branches of one another. Even those who are aware that Indian Sikh and Hindu centers are unrelated to Korean Buddhist and Christian centers, which, in turn, are unrelated to Japanese Buddhist centers, may perceive the Tenrikyō Mission and the Nichiren Shōshū Daihōzan Myōsetsu Temple as sister institutions. It requires further investigation to learn that they represent divergent intellectual traditions. Flushing, noted for religious diversity since John Bowne defied Governor Stuyvesant, is a microcosm of the United States, a nation offering the seeds of multicultural understanding so necessary to the world on the eve of the twenty-first century.

NOTES

For Japanese New Religions, see Helen Hardacre, *Kurzumikyō and the New Religions of Japan* (Princeton: Princeton Univ. Press, 1986); H. Bryon Earhart, *The New Religions of Japan: A Bibliography of Western Language Materials* (Tokyo: Sophia Univ., 1970); H. Neil McFarland, *The Rush Hour of the Gods* (New York; Macmillan, 1967); and Harry Thomsen, *The New Religions of Japan* (Rutland, VT: Charles E. Tuttle, 1963).

1. Michael Kammen, *Colonial New York: A History* (1975; reprint, White Plains, New York: KTO Press, 1989), 62; Henry H. Kessler and Eugene Rachlis, *Peter Stuyvesant and his New York: A Biography of a Man and a City* (New York: Random House, 1959) 169-96; Peter Ross, *A History of Long Island from its Earliest Settlement to the Present Time*, 3 vols. (New York: Lewis Publishing Company, 1903)1:169-70, 529-32; see also Christopher Densmore, "The Samuel Bownas Case: Religious Toleration and the Independence of Juries in Colonial New York, 1703-1704," *LIHJ* 2 (Spring 1990):251-64.

2. For the Asian population in Queens to 1965, see Roger Sanjek, "The People of Queens from Then Till Now" (Flushing: Asian/American Center Working Papers, Queens College Conference on 350 Years of Life in Queens, 16 April 1988, Queens College). For world view as a person's conception of self, see Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973), 127; for world view in the New Religions, see Hardacre, *Kurzumikyo and the New Religions*, 3-36.

3. Hardacre, ibid., 7.

4. Statistics provided by Frank Vardy, Ethnic Demographer, New York City Planning Commission; *Long Island Press*, 7 September 1975; information on bus routes provided by Tomiko Okajima, administrator of the Japanese School of New York, telephone interview with the author, 3 March 1992.

5. Japanese School Principle Noboru Isogai, quoted by Edward B. Fiske, *New York Times*, 13 December 1983, confirmed in Okajima interview, ibid.

6. Okajima, ibid.; 1980 and 1990 statistics from census, New York State Data Center, Department of Economic Development; 1970 statistics from Frank Vardy, Ethnic Demographer, New York City Planning Commission.

7. See Ono Sokyo, *Shinto: The Kami Way* (Tokyo: Bridgeway Press, 1962); Helen Hardacre, *Shinto and the State*, 1868-1988 (Princeton: Princeton Univ. Press, 1989); Ryusaku Tsunoda, et. al., comp., *Sources of Japanese Tradition* (New York: Columbia Univ. Press, 1958); Anesaki Masaharu, *History of Japanese Religion* (Rutland, Vt.: Charles E. Tuttle, 1980); and Joseph M. Kitagawa, *Religion in Japanese History* (New York: Columbia Univ. Press, 1966).

8. Television program, *Inside Edition*, February 1992; David Smith, administrator of the Daihōzan Myōsetsu Temple, Flushing, interview with the author, 15 February 1992.

9. The Life of Oyasama, Foundress of Tenrikyo (Tenri, Japan: Tenrikyō Church Headquarters, 1988), 1; for Tenrikyō, see also Nishiyama Teruo, *Tenrikyō no bunmeironteki kosatsu* [A study of the doctrine of Tenrikyō] (Tokyo: Zenponsha, 1983); Yabu Keizo Dainichi ni sasu hikari: Tenrikyō oyasama Nakayama Miki [Members of Tenrikyō since the founder, Nakayama Miki] (Tokyo: Gakushu Kenkyusha, 1986); and Thomsen, New Religions of Japan; for Pure Land Buddhism, popular with commoners in Japan after the Kamakura period (1192-1336), see Kitagawa, *Religion in Japanese History*, 86-131.

10. Recapturing the state of joy which existed at the time of creation is called attaining *yōkigurashi* (the joyful life).

11. The Reverend Toshihiko Okui, Tenrikyo Mission, New York Center, interviews with the author, 3 August 1991 and 22 February 1992.

12. Tenrikyō does not proselytize but services are open and visitors welcome; members are friendly and readily offer explanations. In addition to cited works, I was instructed during the service by Shigeru Matsumoto, Professor of Human Relations, Univ. of the Sacred Heart, Tokyo, and afterward by Ronnie Nyogetsu Seldin, who played the *Shakuhachi* during the service.

13. The service is focused on the altar (*kanrodai*), an eight-foot column of thirteen tiers of hexagonal wooden blocks of varying sizes, in the center of the room.

14. *Kami* has no English counterpart, and therefore is usually untranslated; the Tokugawa-period scholar, Shigeru Matsumoto, a practitioner of Tenrikyō, guided me through the service I attended and gave me his book, *In Quest of the Fundamental; Tenrikyō Way to Salvation* (Tenri City, Japan: Tenri Overseas Mission Department, 1976), on which I have relied for this article.

15. Miki's designated center of creation, the *jiba*, is the main sanctuary at Tenrikyō headquarters; services elsewhere are held in specially designated spaces, such as the Mission in Flushing; Shinto ceremonies are called *matsuri*, from the word which means "to wait on," or "to attend"; for the Tenrikyō service see Matsumoto, ibid., 36-42.

16. The first part of the service (*Kagura*) is carried out at the altar (*kanrodai*), the symbolic center of creation. The second part (*Teodori*), the dancing and singing symbolic of the *yōkigurashi* (joy) which existed at the time of creation, is conducted by five men and five women

dancers, wearing different masks, and three singers and nine instrumentalists, male and female. The equal sexual division of the dancers is unique to Tenrikyō; Japanese musical instruments at the service I witnessed were fue, *champon, hyoshigi, taiko, surigane, kotsuzume, koto, shamisen,* and *kokyu.* Prayers are read from the Book of Revelation (Ofudesaki), *Songs for the Service (Mikagurauta)* by Nakayama Miki, and *Divine Directions* (Osashizu), by Master Iburi, Miki's successor; the Tenrikyo community takes pride in the preservation of these compilations, photocopies of which are often used in ceremonies.

17. Shinto, a pre-literate religion in its most basic form, does not conceive of sin as evil; the concepts of *tsumi, kegare,* or *wazawai* imply impurity which must be washed, swept, or starved away.

18. The main American temple is in Los Angeles, the oldest is in Hawaii, and others are in San Francisco, Chicago, and Washington, D.C.

19. David Smith, administrator, and the Reverend Nakazaka, priest of the Myōsetsuji, interviews with the author, 19 August 1991 and 15 February 1992.

20. See Anesaki Masaharu, *Nichiren the Buddhist Prophet* (Cambridge, MA: Harvard Univ. Press, 1916) and History of Japanese Religion; Kitagawa, *Religion in Japanese History*; and Nakamura Hajime, "Nichiren, the Prophet of the Degenerate Age," East 11:4 (June 1975):11-16; a *bodhisattva,* a person prepared for enlightenment, delays his entry until all sentient beings are equally prepared (for this and Buddhism, see Kenneth K.S. Ch'en, *Buddhism: The Light of Asia* (Princeton: Barron's Educational Series, 1968).

21. In the *Lotus Sutra,* the Buddha Shakayamuni delivers the message of the true and eternal nature of the Buddha, who, because he appears in countless numbers and forms, has been able to save human beings in all ages. The lotus, a Buddhist symbol, represents, among other things, the rise of purity and truth above evil, and the innumerable realms of the Buddha. The three bodies of the Buddha are Eternal Body of the Buddha (*Nirmonakāya*), the Universal Body (*Sambhogakāya*), and the Transformation Body (*Dharmakōya*); other Buddhist sects in Nichiren's day tended to emphasize one form of the Buddha over the other two.

22. For Nichiren Shoshu, see Thomsen, *New Religions of Japan,* and Nichiren Shoshu International Center, *Buddhism and the Nichiren Shōshū Tradition* (Japan, 1968); Philip Yampolsky, *Selected Writings of Nichiren Daishonin* (New York: Columbia Univ. Press, 1990); Tsunoda et. al., *Sources of Japanese Tradition* 1:213-26; *The Major Writings of Nichiren Daishōnin* (Tokyo: Nichiren Shōshū International Center, 1979); N. Ehara, trans., *Nichiren, The Awakening to the Truth or Kaimokusho* (Tokyo, 1941); Pier P. Del Campana, "Nichiren, Sandaihiko-sho" [Essay on the Three Great Mysteries] in *Monumenta Nipponica,* 26:1, 2:205-224; and William Theodore de Bary, ed., *Sources of Japanese Tradition* (New York: Columbia Univ. Press) 1:222-24.

23. For Sōkagakkai, see James E. White, *The Sōkagakkai and Mass Society* (Palo Alto, CA: Stanford Univ. Press, 1970), and Murakami Shigeyoshi, *Nihon hyakunen no shukyu—haibutsu kishaku kara sōka gakkai made* (One Hundred Years of Japanese Religion from the Anti-Buddhist Movements of the Meiji Era, 1869-1912 to Sōka Gakkai) {Tokyo, 1968}.

24. David Smith, interview with the author, 15 February 1992.

Secondary School Essay Contest

The LIHJ is pleased to publish the winning papers of the "Long Island as America" essay contest for students of secondary schools, which we sponsored in conjunction with the Center for Excellence and Innovation in Education, SUNY at Stony Brook, Eli Seifman, director.

First Place

Which Came First: the Transit Line or the Neighborhood? The Relationship Between Transportation and Neighborhood Settlement in Brooklyn

By Wendy Futterman
(Lawrence High School: Steven Sullivan, teacher)

The urban historian Kenneth T. Jackson states that the five basic characteristics of a nineteenth-century "walking city" were: congestion, small lot sizes, and narrow streets; distinction between country and city; mixture of functions—no distinct commercial, business, residential districts; short distance between home and work (less than one-half mile); and "fashionable" addresses close to the center of town, and vice versa.[1] Until the development of rapid transit systems in the late 1800s, Brooklyn was exactly what Jackson described, a walking city. However, with the improvement of transportation, the walking city and most of its characteristics disappeared. In some cases the introduction of transit lines caused neighborhood development, while in others the growth of neighborhoods forced the construction of new lines. Before analyzing the impact of transit lines on certain neighborhoods, it will be useful to summarize the chronology and impact of transportation development in Brooklyn.

From the time ferries began regular service in the 1860s to the time subways became a means of rapid transit in the early 1900s, the city of Brooklyn experienced many changes and developments. The two major developments were suburbanization and consolidation, first into the city of Brooklyn and later into Greater New York. Affected most severely by changes in transit were land-use patterns and developments, commuting as a daily routine, and class and occupational distribution. Transit growth and suburban development were clearly interrelated. For people to live in one part of a city and work in another they must have a means of getting from place to place. Brooklyn's proximity to New York and the eventually easy access between

the two were factors in the consolidation of Greater New York, in 1898.[2]

In 1814, the first steam-powered ferry began running on the East River. By 1860, the Fulton Ferry established a fixed route between Brooklyn and Manhattan, and ran every five minutes. The fare was approximately four to five cents for each ride. Kenneth T. Jackson defines a mass transit, or "rapid transit" system, as the operation along a fixed route, according to an established schedule, for a single fare. The ferry was not the only system that began to provide rapid transit. The Brooklyn City Railroad (BCRR) laid tracks for horsecars on Fulton Street, originating at the Ferry. Horsecars were carriages pulled by a team of horses, driven by one man. They opened the neighborhoods of Bedford and Clinton Hill for people who worked in New York and downtown Brooklyn. This new means of transit represented an improvement over the mid-nineteenth-century omnibus. Its primary disadvantage, besides being unsanitary, was its relatively expensive five-cent fare, which prevented minimally paid unskilled workers from using it to commute to work. However, workers could use rapid transit on weekends to attend recreational activities throughout the city. The horsecar ushered in a new era in transportation developments.[3]

More than a decade later, several men began proposing ideas for a "single-span bridge" across the East River, In the early 1860s, John A. Roebling submitted plans for building the Brooklyn Bridge, connecting lower Manhattan to Brooklyn Heights; construction began in 1869. Roebling was injured during an inspection of the construction site in July, and died a few months later. His son Washington A. Roebling, who himself was crippled in the process, became chief engineer and completed the work.[4]

Advertisements in the 1880s read, "Live in the country in Brooklyn and work in the city." Attention was given to better transit facilities because of the business district in lower New York and the residential district just across the East River. In 1906, a New York State Chamber of Commerce article stated that,

> the real work [the bridge] has accomplished can best be ascertained by an examination of the sections of Brooklyn, formerly waste spaces, that are now covered with the homes of people, a large portion of whom resort daily to New York.[5]

Park Slope was advertised as "an aristocratic and stylish location." By 1886, five thousand new buildings had been erected in Ft. Greene, Clinton Hill, Park Slope, and Flatbush, probably because of the combination of the bridge and the horsecar lines that ran from the bridge to these communities. A five-minute walk across the bridge connected the downtown business and civic centers of two of the country's largest cities.[6]

Had transit developments ended with the ferries, the horsecars, and the bridge, Brooklyn today might still be an independent city. The improvements before 1883 encouraged people to live in Brooklyn and work elsewhere, as no real rapid-transit systems ran crosstown within it. Brooklyn not only

would have remained a suburb, but the most densely populated regions would probably have been those close to the East River's coastline, near both the ferry lines and the bridge.

However, in 1885 a new, controversial form of transit appeared—the elevated railroad, built by the Brooklyn Elevated Railroad Company. The first five miles of steam-powered "el" ran from Brooklyn Bridge to the corner of Broadway and Gates Avenue, in Bushwick. The new means of transit was faster than the horsecars. The maximum travel time from Bushwick to Brooklyn Heights was thirty minutes, one hour to lower Manhattan.[7] Although its primary purpose was to link Williamsburgh with the downtown business district, it also served to link residential south and west Williamsburgh to industrial Bushwick, thus forming the first transit line between two outlying Brooklyn neighborhoods. It was now possible for people to live and work in two different locations within Brooklyn.

In spite of these two major benefits, most of Brooklyn's residents found the el to be noisy, dirty, and unattractive. Electrification, completed in 1900, virtually eliminated the smokestacks of the earlier el. The smokestacks left trails of ashes and cinder which not only marred the streets, but became a serious health problem. The elimination of smokestacks did not completely solve the problem, for the population still objected to the unsightly elevated railways passing through the city.[8]

Less offensive were the electric trolley cars developed between 1890 and 1895, soon after the el began its short-lived appearance. These "surface cars," faster and more sanitary than horsecars, were constructed because the horsecars and the el no longer met Brooklyn's needs. As with the developments that preceded it, the trolley had its share of disadvantages. Most new lines were not direct, requiring passengers to change cars in transit, which often caused delays. The raised gratings on the streets were not only unattractive, but also the cause of vehicular accidents. The trolley's final and best known problem was the speed at which it traveled, without adequate braking mechanisms.[9] So hazardous were trolleys to pedestrians that the local professional baseball team was named the Brooklyn Trolley Dodgers, later simplified to the Dodgers, in honor of the city's most prevalent activity—avoiding the speeding trolleys.

Every improvement in transportation and every step in the urbanization of Brooklyn contributed to the eventual consolidation of all neighborhoods of Kings County into the city of Brooklyn. Each community in Kings was annexed by Brooklyn at some point during the nineteenth century. The majority of these communities had one thing in common—they could not maintain their independence in the shadow of Brooklyn, the most populous as well as the wealthiest section. In 1883, the city of Brooklyn included the northern third of Kings, with a population of 600,000, while the remaining five towns—Flatbush, New Lots, New Utrecht, Flatlands, and Gravesend—shared a population of 33,000. With the completion of the Brooklyn Bridge, regional distinctions began to fade; formerly remote areas became more

accessible, both within Brooklyn and to New York. By 1894, after several failed attempts, the city of Brooklyn had absorbed all but one of the remaining towns; two years later, with the annexation of Flatlands, the boundaries of Brooklyn and Kings became coterminous.[10]

At about the same time, a parallel campaign to annex Brooklyn to New York was underway. In the 1870s, a Manhattan-based lawyer, Andrew Haswell Green, began a campaign for the creation of Greater New York, which, he contended, would lead to widespread, orderly, economic growth. His focus was that public improvements would become more successful and productive if they were for both New York and Brooklyn. For example, maintenance of water and sewage systems would be simpler and make more sense. By 1883, the physical barrier of the East River no longer was an issue: a slogan of the times was, "What the bridge has joined, let not the politicians keep asunder." The census of 1890 showed that Brooklyn had half of New York's population but only one-fourth of its taxable property; Brooklyn's revenue was clearly not proportional to New York's. Therefore, it was argued, consolidation was economically advantageous to Brooklyn.[11]

The anti-consolidation movement, equally widespread but less vocal, feared Brooklyn's subjection to New York, "a city of Tammany Hall and crime government." To them, a crime-ridden government meant higher taxes; "if tied to New York, Brooklyn would be a Tammany suburb, to be kicked, looted, and bossed as such."[12]

The well-organized proconsolidation committee was more effective and outspoken. Its major points included reduction of taxes by half, lower interest rates on mortgages, increased prestige for commercial and financial institutions, and a comprehensive system of public improvements. In the plebiscite of 1894, the citizens of the proposed Greater New York voted for consolidation by a slim margin. The close vote in Brooklyn was more surprising than the victory, which was by "277 out of 129,211" votes cast; consolidation won in New York by an overwhelming majority.[13]

After weeks of public debate and legislative maneuvering, a joint committee of the state legislature was set up to deal with consolidation, chaired by the pro-consolidationist Senator Clarence Lexow. He asked the legislature to provide for the creation of a charter commission to organize the new government, economy, and other facets of consolidation. In 1896, Governor Levi P. Morton, an anticonsolidationist, signed the bill to consolidate Greater New York and set up the commission. A charter was sent to the legislature in February 1897 for taxes and valuations to be equalized for the entire territory. The final, completely revised charter allowed for a single legislative chamber, one police commissioner, a separate Board of Elections, and a mayor with unrestricted power of removal. On 1 January 1898 the charter was passed and Brooklyn was unified with New York, Queens, the Bronx, and Staten Island.[14] This monumental change, which owed a great deal to developments in transportation, was by no means the end of improvement in the transit system; improvements already were being

planned to service the population of the newly-formed borough of Brooklyn.

Virtually all lines ran from Manhattan or downtown Brooklyn to outlying neighborhoods, but less than 10 percent of the miles of els and subway lines ran between these areas. Trolley lines, like modern buses, covered more crosstown milage (approximately 20 percent). The transit system served two purposes: to tie outlying areas of Brooklyn to the downtown business and civic center, and to Manhattan; and to serve commuter passengers. Horsecars, els, and trolleys no longer met the needs of the growing population [15]

Accordingly, the subway was put forward as the newest and best form of transportation. An important advantage was its speed, which was faster than that of the el or the trolley. As an underground method of transit, it no longer endangered pedestrians, and was not as unsightly as the elevated railroad. Not only was the subway an advantage within Brooklyn, but throughout Greater New York as well. Time saved on the subway allowed people to live farther south in Brooklyn, and still commute to Manhattan in a reasonable amount of time.

The Williamsburg Bridge was finished in 1903, followed by the Manhattan Bridge in 1908, the year in which the Interborough Rapid Transit (IRT) subway line to Borough Hall made its first run. In 1915, the subway link over the Manhattan Bridge opened, completing the Brooklyn Rapid Transit Fourth Avenue line connecting Park Slope, Sunset Park, and Bay Ridge to downtown Brooklyn and New York. The Fourth Avenue line was a major asset in Brooklyn's growth, as people as far west as Fort Hamilton could commute to work in downtown Brooklyn, and even Manhattan. All communities affected by this line developed rapidly after its introduction.[16]

By the 1920s, Williamsburgh, East New York, Park Slope, Sunset Park, and Bay Ridge were served by subways and bridges. The original el, from Brooklyn Bridge to Broadway and Gates Avenue, was eventually extended as a subway line to Grant Avenue, in East New York. The Fourth Avenue line ran the length of western Brooklyn, from Brooklyn Bridge to Fort Hamilton. The people of Brooklyn could be more flexible about where to live; it now was easier for them to reside further away from their work places. To indicate the impact these developments had on population, the census of 1930 reported 2,560,401 people in Brooklyn, making it the most populous borough in New York City. By the early 1930s, there were subway lines to Flatbush, Queens, and along Fulton Street.[17]

In his study of Boston, the urban historian Sam Bass Warner argued that the emergence of an urban transit system created a "city divided" into the middle and upper classes. Because these people were anxious to escape from the boundaries of crowd and factory, they moved to "streetcar suburbs." Brooklyn demonstrated the same type of movement in the period after the Civil War. By 1870, nearly one-fifth of its merchants, professionals, and similar occupational segments lived in exclusive "commuter" areas, like Park Slope. Lower status, white-collar workers settled in more distant areas, along with higher status blue-collar workers and civil service employees. This

movement and migration preceded or occurred simultaneously with fast-paced developments in rapid transit.[18]

However, the out-migration of Brooklyn's more successful "elite" would take until the end of the century to complete. A significant proportion of the mercantile and professional classes—two-fifths in 1870 and one-fourth in 1880—continued to reside in the more fashionable areas near the downtown business district. Such areas as Brooklyn Heights and "The Hill" appealed especially to the upper class, because of their easy access to both downtown business districts—Manhattan's City Hall was a short walk over Brooklyn Bridge, and Brooklyn's downtown district was only a few blocks away.

One may look at the chronology of transit in Brooklyn and say that it went from above the surface to on the surface to below the surface. Not so obvious was the order of progress in the development and organization of neighborhoods. By examining the times and places of transit development in particular neighborhoods, one can describe its impact on the local economy, housing pattern, and social structure.

Park Slope, Bay Ridge, Williamsburgh, Flatbush, and Flatlands were affected by the growth of rapid transit, with an interrelationship between proximity to transit lines and class settlement. For example, the class of people living within one block of a subway station was not necessarily the same as that of people six blocks away. Comparing real estate advertisements, census schedules, and transit line locations reveals the relationships and simultaneous growth patterns of transportation and community expansion.

Residential Park Slope sprouted in the early 1850s, when Edwin Litchfield, a prominent railroad manager, bought and sold the area between Prospect Park West and the Gowanus Canal, and between First and Ninth Streets. Developers who bought the land built large brownstones, beautiful mansions, and single-family homes. By 1880, advertisers called Park Slope an "elegant" or a "strictly first class" district. To upper-middle-class English and German first settlers the location was perfect, close to work in downtown Brooklyn but far enough away to make it exclusive and "healthful." Proximity to Prospect Park made it desirable for homes.[19]

In 1912, a real estate advertisement described prospective homes four blocks from the Fourth Avenue BMT as "surrounded by beautiful residences and near the most important clubs—The Montauk, the Calumet." The Montauk Club, built in 1891 as a men's-only private club, still stands—it now admits women—as a reminder of upper-class residents during the late nineteenth century. Similarly, Prospect Park was a selling point for landowners and speculators. The lake, meadows, and natural wooded areas that constitute the 526-acre park, designed by Frederick Law Olmstead and Calvert Vaux, were selling points to patrician buyers. The Montauk Club and the park may have been the reason that exclusive residential areas flourished within a few blocks of a noisy subway station. As late as 1917, fancy apartments were advertised on Union Street, between Second and Third Avenues. This location, only two blocks from the station, remained exclusive

and residential. Fourth Avenue itself was a commercial main strip, but the area immediately south of the station was not filled with the lower-class housing and commercial establishments one might expect.[20]

During the same period, transit lines appeared in the same area of Park Slope. Horsecar service, which eventually became trolley service, extended along Seventh Avenue and Prospect Park West and connected with a line that ran south on Flatbush Avenue; this provided frequent service to downtown Brooklyn and Manhattan, as did the Fourth Avenue subway, after 1910.

"The Slope," as it was called, initially attracted members of the growing English and German upper-middle-class. Why, then, did it change after 1910 and begin to cater to families of more modest means, whose breadwinners wanted to work downtown or in New York but could afford to live elsewhere? The Fourth Avenue subway line was extended to Park Slope at about this time. The area Litchfield bought and sold was within two blocks of the line toward the Gowanus Canal, and five blocks of the line toward Prospect Park. To accommodate immigrant workers employed on the waterfront, in downtown Brooklyn, and in Manhattan, more modest dwellings were built in this neighborhood.[21]

The state census of 1920 indicates settlement patterns close to subway stations. The Fourth Avenue and Union Street Station, for example, was on a street that was more commercial and industrial than residential. Within one block north of the station was a mixture of 10 percent skilled and 80 percent unskilled workers; within six blocks north of the station, unskilled workers made up 40 percent, skilled workers the same 10 percent. This is understandable, because the docks were north of the station. Laborers, who could not afford to commute, lived near their places of employment. However, six blocks south of the station the mixture was 40 percent high white-collar and 50 percent low white-collar. The reason was proximity to Prospect Park, the fashionable part of Park Slope.[23]

Bay Ridge followed a similar pattern. The main difference was that Park Slope began as a largely residential community, whereas Bay Ridge started as a resort or vacation community. Before 1880, horsecar lines existed mainly for beach-goers, running along the East River and often on to Coney Island. Before 1915, the New York and Manhattan Beach lines ran more frequently in the spring and summer than in the winter. During the colder months, they ran one round trip daily from Greenpoint to Bay Ridge, and Bay Ridge to Manhattan Beach; this indicates that these lines catered to summertime, beach-going riders. Because the transit lines skirted the heart of the neighborhood, it remained a mostly suburban, almost rural, community until the Fourth Avenue Subway line reached it in 1915.[24]

As with Park Slope's, Bay Ridge's population changed when the Fourth Avenue Line was extended to Fort Hamilton. By 1920, the combination of the Fourth Avenue line and the connection to the Ferry stimulated growth of a commuting population. It now was faster and easier to commute to downtown and Manhattan. There was a simultaneous growth of apartment

buildings and multi-family dwellings.[25]

The census of 1920 shows Bay Ridge as largely commercial and residential. Mostly low white-collar and skilled workers lived within one block of the Fourth Avenue and 75th Street subway station, and as far as six blocks east, because of the area's commercial and mercantile nature. However, six blocks west of the station was a mixture of high and low white-collar workers. This was clearly because of the waterfront property where large mansions were built for an upper-class "elite."[26]

With the extension of horsecar and trolley lines, Bay Ridge began as a vacation home for many, or at least as a stopover before continuing to Coney Island. Twenty years later, when the subway lines reached it, it became a largely commuting neighborhood. This chronology indicates the pronounced influence of transit lines on the growth of Bay Ridge.

The city of Williamsburgh was closer to the heart of downtown Brooklyn, with which it merged in 1854. Along with Park Slope and Bay Ridge, it developed side-by-side with transit improvements. By the late nineteenth century, Williamsburgh was an industrial center noted for glass and pottery production, printing, and cast-iron manufacture. The products of Williamsburgh alone helped make Brooklyn the fourth-largest producer of goods in the nation by 1890. At the same time, it was the home of more than fifty oil refining companies, including the Pratt Astral Oil Works, then the largest oil refinery in New York.[27]

The census of 1890 shows that there were shops and working-class housing within one block of the Myrtle Avenue and Broadway Subway Station; within six blocks north and south of the station there was a mix of low level white-collar and skilled workers. The percentage of white-collar workers south of the station (25) was higher than that to the north (10), because the prevalence of industry increased as one moved north. After the opening of the Williamsburg Bridge in 1903, Williamsburgh was transformed from a middle-class German and Irish neighborhood to one of working-class, primarily Jewish immigrants, who "overflowed" from the tenements of the Lower East Side. Many brownstones and single-family homes were quickly converted to multiple dwellings.[28]

Flatbush also was strongly affected by rapid transit developments. Located in the center of Brooklyn, Flatbush was a little late in its growth, partly because of the time it took for subway lines to reach it. In 1920, developers and speculators were just beginning to buy lots and advertise them. The area surrounding the Sixteenth Street subway line was advertised as a "plaza"; it was an early shopping mall, using the term loosely. Residents were mostly skilled and low white-collar working people, with the most desireable housing between the Sixteenth Street and McDonald lines. Single-family, semiattached housing began to dominate this area.[29]

Unlike the other communities, Flatbush was not an early success; the development of advanced transit lines came relatively late. Because of the appeal of these lines to most workers, the real estate speculators found it

difficult to sell lots in areas that did not offer rapid transit to New York. Therefore, the late arrival of subway lines delayed the growth of Flatbush.

The Flatlands area emphasizes the importance of transit lines in neighborhood development and settlement. As late as 1930, the subway was nonexistent in Flatlands, where the nearest trolley line was Flatbush and Nostrand Avenue. Thus, a walk of several blocks preceded a trolley trip to the subway—hardly an ideal commute. No line extended farther south. Flatlands, in 1920, consisted primarily of empty lots, proving that a community could not develop or flourish without the means to commute to places of work, or even to vacation spots. Interestingly, Flatlands came to be dominated by white-collar civil servants, who were among the few New Yorkers with incomes stable enough to buy homes in the Great Depression.[30]

Several changes took place in the city of Brooklyn and its neighborhoods from the 1860s to the 1930s. Transportation advanced from horsecars to bridges to subways. Neighborhoods grew from "walking cities" to commuter suburbs. Transit lines, for the most part, preceded residential and industrial development. However, there were exceptions.

Park Slope and Bay Ridge developed according to the locations of the final subway lines, from the organization of class settlement to the locations of residential vs. industrial neighborhoods. For example, the area near the waterfront was industrial in Park Slope, but residential in Bay Ridge, where real estate speculators bought the land before the industrial giants did. Williamsburgh was almost entirely industrial, except for sections close to the subway where residents easily could commute to work. Flatbush and Flatlands provided the largest exceptions to the "transit before neighborhood" rule. Transportation found its way to Flatbush much later than to other areas, making it difficult to sell property to land developers before 1910 or 1920. Flatbush developed within ten years of the other communities, but Flatlands took twenty years more, at least. Without its transit lines, Brooklyn today might be the same as it was in 1860, a series of unsold lots.

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Second Place

Walt Whitman and William Heyen: Two Long Island Poets View the Civil War and the Holocaust

By Cherie Godfrey
(Harmony Heights School: Shari Coopersmith, teacher)

Two Long Island poets, Walt Whitman and William Heyen, made accessible to a nation two historic events: the Civil War and the Holocaust. As poets, they did more than merely capture the facts and images of war. War became a battle between human beings and their consciences, rather than between states or countries. As Long Islanders, Whitman and Heyen made war personal and brought it home to us.

Both poets spent significant time as children on Long Island. Whitman was born in 1819 on a farm in the West Hills section of Huntington, from which he moved when he was four with his family to Brooklyn. At the tender age of ten, while in class, he heard the explosion of the steam frigate Fulton that killed forty-three sailors. He attended public school until he was twelve, and then worked part-time as a printer's assistant. He learned to spell and punctuate by setting type at the printer's. At the age of seventeen, Whitman taught in several public schools on Long Island, and when he was twenty he founded the newspaper, the *Long Islander*, in Huntington, near his birthplace. This paper is still published.[1]

Whitman gained most of his knowledge by reading current, romantic, oriental, and classical literature. According to Wilson Gay Allen, his interests included opera, carpentry, the Bible, and languages: "From early boyhood he became a devotee of the Italian opera. In Brooklyn he had also became intimate with painters and sculptors."[2]

William Heyen was born in Brooklyn in 1940, and raised in Nesconset, in Suffolk County. In *Long Island Light: Poems and a Memoir*, he describes a serious illness contracted when he was sixteen:

> The summer after my last year of high school, I developed a strain of encephalitis. At first, my parents thought I'd contracted polio, then were relieved that I hadn't, and then, when they became aware of what encephalitis could do, they became frightened again. In the beginning I couldn'tmove my legs, and I lost hope quickly. But my legs came back to life.

He recovered, and went on to college:

> When sixteen, I first left Long Island for the State University of New York College at Brockport. I did not, could not know that if there is no going back, neither is it possible for me to forget the Island. Eliot asks:"What are the roots that clutch, what branches grow?"

Heyen received his Ph.D. from Ohio University in 1967, and since then, except for a year as a Senior Fulbright Lecturer in American Literature to Germany, has taught at his undergraduate alma mater, the SUNY College at Brockport, where he is now Professor of English.[3]

Both Whitman and Heyen developed an attachment to the windy, sandy beaches and farms of Long Island, an affection for their homeland that permeated their future writings. Howard Mansfield quotes Whitman as an old man, sick, paralyzed, and remembering his boyhood on Long Island:

> I went regularly every week in the mild season down to Coney Island, at that time a long, bare unfrequented shore, which I had all to myself, and where I loved, after bathing, to race up and down the hard sand and declaim Homer or Shakespeare to the surf and theseagull by the hour.[4]

In *Long Island Light: Poems and a Memoir*, Heyen also lovingly describes the setting that gave him inspiration for poems such as "This Island":

> Low tides, early mornings,
> I'd walk the mud flats for nothing,
> saying, as reeds bowed, straightened,
> and bowed again in the brine wind,
> or an eel or flounder startled
> a cloudy trail through low water,
> *know you have forever, now,*
> *know you have forever.*
>
> The Sound fallen back, this Island
> risen, I kneel, touch my head
> like a reed to the mud home of the crab,
> wash my face in a gull's shadow,
> *knowing I have forever, now,*
> *knowing I have forever.*[5]

Heyen compares his mother and the Island he loves in "Mother And Son":

> The failing Long Island light
> filters through catalpas along our driveway.
> It must be May—the trees' white blossoms
> do drift down around her, petal after petal
> catching a glint of sun before
> dying into the ground-shadow. My mother,
> now younger than I ever knew her,
> looks toward me. I am not there
> in body, but somehow as an eye
> among the blossoms and heart-shaped leaves.
> I have never seen such longing before.

She could fall dead petals here,
after her moment of light, and disappear
before I'm born...worry that thought
and think to speak to her. What could I say,
if I could? This is up to her.[6]

Though deeply affected by their beloved Island, Whitman and Heyen would leave it, both physically and poetically, to explore new ground. Each poet had relatives involved in wars, and each became obsessed with seeking answers to questions concerning his family history, as well as the nature of humankind. After his brother George was mistakenly listed as missing in the Battle of Fredericksburg (December 1862), Whitman left Brooklyn to search for him among the sick and wounded.[7] This experience, which led him to become a nurse to soldiers in Washington hospitals, greatly influenced Whitman's poetry. In "The Wound-Dresser" he recalls how,

Bearing the bandages, water and sponge,
Straight and swift to my wounded I go,
Where they lie on the ground after battle brought in...

I dress the perforated shoulder, the foot with the
bullet-wound,
Cleanse the one with a gnawing and putrid gangrene, so sickening,
so offensive...

The hurt and wounded I pacify with soothing hand.
I sit by the restless all the dark night...[8]

Heyen, the son of German immigrants, addresses the uncle he never met, a German soldier killed in World War II:

"For Wilhelm Heyen*(d. 1940, buried in Holland)*"

Wilhelm, your face, a shadow
under your helmet,

fades from the gray air
of newsreels. You cannot hear

your nephew try to understand your name,
I've seen you move your arm,

a scythe, a pendulum,
seen your hands cupped full with blood.

These are all your wars.
Asia trembles, you are never dead.[9]

While Whitman searched for his brother on foot, Heyen's search was through family albums, reminiscences, and old newsreels. Both poets were drawn into the war by the strong force of family ties. However, their familial search led them to a broader one, an answer to the question, What is man? The horrors of war that Whitman and Heyen discovered clashed with the harmony they found in nature, in the beaches and fields of Long Island. In "Year That Trembled and Reel'd Beneath Me," Whitman writes:

Your summer wind was warm enough, yet the air I breathed froze me,
A thick gloom fell through the sunshine and darken'd me,
Must I change my triumphant songs? said I to myself,
Must I indeed learn to chant the cold dirges of the baffled?
And sullen hymns of defeat?[10]

Heyen, as well, realized all too clearly the extent of man's inhumanity to man. In "Simple Truths," he declares that,

When a man has grown a body,
a body to carry with him
through nature for as long as he can,
when this body is taken from him
by other men-and women who happen to be,
this time, in uniform,
then it is clear he had experienced
an act of barbarism,

and when a man has a wife,
a wife to love for as long as he lives,
when this wife is marked with a yellow star
and driven into a chamber she will never leave alive,
then this is murder,
so much is clear...[11]

Growing up on Long Island infused Walt Whitman and William Heyen with a love of nature; the Civil War and the Holocaust forced upon them the knowledge that man can turn a wheat field into a battle field and a pasture into a graveyard. Both poets tried to come to terms with the puzzling actions of man, and his connection to nature. Heyen begins *Long Island Light: Poems and a Memoir* with a statement by Sherwood Anderson that reflects what both Whitman and Heyen discovered from their experiences with the natural beauty of Long Island and the seemingly senseless violence of war:

> It was the first time in my life I ever understood something, and I am far from sure now that I can put down what I understood and felt that night—I mean something about the connection between certain people and the earth.[12]

Walt Whitman and William Heyen were people connected to the earth. They discovered that human beings, like nature, are capable of both harmony and discord. They were Long Island poets who served as beacons to a nation and a world embroiled in historic events that epitomized man's inhumanity to man.

NOTES

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Second Place (tie)

The Grumman Corporation and Long Island: A Cooperative Future

By Jarrett Schulz and James Piangozza
(Syosset High School: Martin Rogoff, teacher)

Long Island is known as the cradle of aviation. Charles A. Lindbergh's transatlantic flight began at Roosevelt Field. Planes were launched from the Hempstead Plains, MacArthur Airport in Islip, and Mitchel Field in Garden City. During World War II, such corporations as Grumman and Fairchild built thousands of aircraft on the Island. Long Island industries had a hand in placing the first man on the moon; the Project Apollo Lunar Module was built by Grumman Aerospace Industries.[1]

After years of prosperity, Long Island, with the rest of the country, suffers from the national recession that lingers despite signs of bottoming out. The Island is experiencing increased costs for health care, education, housing, and energy. Slow growth plagues its industries, which were forced to lay off 28,000 workers in the past year. As of last spring, some 96,000 Long Islanders were out of work, almost twice more than three years ago. Building contracts have dropped by nearly one-third, and vacant corporate office space is at an all-time high. The state's economic activity index for Long Island, which has fallen since 1990, remains static.[2]

Long Island's strongest corporations, most of which are defense contractors, are hard hit by cuts in the Pentagon's budget. Grumman Corporation, a defense contractor since the 1930s, has lost half of its 30,000-strong workforce during the past five years. AIL systems, a major producer of military electronics, was forced to lay off 1,000 people last year and plans to cut 200 more. Raytheon Corporation, the producer of the Patriot missiles used in Operation Desert Storm, was forced to cut 250 jobs from its Long Island divisions.(N.3) Manufacturing is in a lengthy slide which can have a permanent impact. Unless heavy industry gets further investment capital from the federal government, or creates new means for expansion in other areas, Long Island can lose its status as one of the country's prime locations for business.

The Grumman Corporation

The Grumman Corporation was formed in 1930 by Leroy Grumman, a former Navy pilot who played a key role in the development of the FF-1. The FF-1, the company's first aircraft to be purchased by the federal government, went into service in 1932. An improved version became the F4F Wildcat, the first fighter with folding wings. This enabled many more planes to be deployed on an aircraft carrier, and roughly doubled the number of planes the Navy was able to field.[4]

During World War II, Grumman's F6F Hellcat proved a match to the vaunted Japanese Zero, and its TBF Avenger torpedo plane was the Navy's most potent weapon against Japanese naval forces.[5] By the end of the war, Grumman had produced over 17,000 aircraft. The firm continued to serve the military in the Korean conflict, when its first jet fighters—the F9F Panther and F10F Jaguar—entered service with the Navy. Of the 826 Navy and Marine Corps jet aircraft deployed in the Korean theatre, 733 were built by Grumman.[6]

Grumman built amphibious aircraft in the years following the Korean conflict, of which the Mallard and Albatross were the most noteworthy. Although during the Vietnam war it produced the Intruder bomber, perhaps the most important development of the post-Korean war era for Grumman was its diversification into such new lines as aluminum truck bodies, canoes, and small boats. In 1962, the company created Grumman Allied, a subsidiary in charge of non-aeronautical business.[7]

NASA, when charged with landing a man on the moon in the 1960s, turned to Grumman for the lunar lander; the twelve lunar modules built by Grumman

performed flawlessly. Not surprisingly, NASA contracted with Grumman again to produce the six-foot-thick wings of the agency's Space Shuttle.[8]

Grumman worked closely with the Pentagon throughout the 1950s and 1960s. However, despite the continued success of its aircraft, including the A-6 Intruder and F-14 Tomcat, Grumman and the Defense Department were at odds concerning delivery of the company's naval interceptor. The F-14 program, a victim of cost overruns, lost one million dollars for every aircraft delivered. However, the Defense Department covered the overruns, a policy it still maintains.[9] The F-14 Tomcat entered fleet service in 1973, becoming the standard fleet defense interceptor. With its powerful radar system, this fighter can track up to twenty-four targets at ranges of over one hundred miles; it is the only fighter capable of using the AIM-54 Phoenix missile, capable of destroying an aircraft one hundred miles away. This capability made the F-14 the most powerful naval interceptor in the world; only recently was it decided to replace the aging aircraft, after two decades of service.[10]

In addition to the F-14, Grumman manufactures the E-2C Hawkeye, an Airborne Early Warning Command Center, and the new JSTARS command and control aircraft which performed in Operation Desert Storm. Grumman also remanufactured the General Dynamics F-111 Fighter Bomber, designated EF-111 in recognition of its role in electronic warfare, and builds the EA-6 for the Navy, a similar aircraft based on its A-6 Intruder.[11]

Grumman also has experience in the civilian sector. In 1978, it acquired the Flxible Bus Company from Rohr Industries. However, these buses developed structural problems, forcing many customers to cease using them. After a $200-million loss, the firm sold Flxible Bus to General Automotive for $41 million, in 1983. Other diversification efforts have failed. When its Dormavac freight refrigerators failed to generate demand, Grumman took a $46-million loss. Most recently, when its Ecosystems environmental management program did not generate profits, Grumman suffered another loss, this one of some $50 million. Despite these failures, the technology gained can lay the groundwork for future diversification into products for the civilian sector.

Grumman today

Grumman aircraft make up the bulk of the Navy's carrier air wings. The "D" variant of the F-14 Tomcat, with more powerful engines and a digital radar system, continues to defend American carriers at sea. The A-6 Intruder performed well in Operation Desert Storm. The EA-6 serves as the Navy's standard radar jamming aircraft, and the E-2C Hawkeye remains a potent airborne radar aircraft. The E-8 JSTARS command and control aircraft performed efficiently in the Persian Gulf, and the Air Force has ordered twenty.[12]

However, recent moves by the Defense Department may signal the end of Grumman's role as the nation's prime naval aircraft producer. The aging A-6 was about to be replaced by the A-12 Avenger attack aircraft built by the team of McDonnell Douglas and General Dynamics, but cost overruns forced

Defense Secretary Dick Cheney to cut the program. The replacement aircraft, the "AX," will not enter production before the turn of the century. Although Grumman aircraft would be cheaper to produce and easier to develop, the McDonnell Douglas/Northrop F/A-18E won the proposal and is due to enter service in 1993.[13]

The F-14 Tomcat is slated to be replaced by a naval variant of the new Lockheed F-23 Advanced Tactical Fighter. The F-14D will continue on carrier groups, but no new aircraft will be produced. The end of F-14 and A-6 purchases is a severe blow to Grumman. While it hopes to produce an aircraft to compete in the AX competition, General Dynamics and McDonnell Douglas have substantial leads, with construction of the A-12 prototype already under way. It is clear that the Navy does not wish to purchase additional F-14 or A-6 aircraft, preferring high-tech stealth designs to the older Grumman airframes. Since these two aircraft constitute the bulk of its sales, Grumman's future ability to operate is threatened.[14]

The EA-6B and the E-8 JSTARS, the only Grumman aircraft still in demand by the Pentagon, are less needed because of their specialized roles. Nor have Grumman aircraft found many foreign customers, except for the sale of E-2C Hawkeye to Israel and South Korea, and the F-14 Tomcat to Iran under the Shah. Because Grumman aircraft are designed to be launched and retrieved by aircraft carriers, their only market is the American Navy. As naval aircraft sacrifice range, payload, and maneuverability in exchange for the ability to land on carriers, foreign buyers prefer more capable, land-based aircraft like the General Dynamics F-16 and the McDonnell Douglas/Northrop F-18.[15]

Because of the federal budget crisis and the post Cold War cuts in military spending, Grumman receives fewer contracts from the Pentagon with a resulting reduction of its work force. Nearly half of its workers have been laid off since the company peaked in the mid-1980s.[16] Despite this, the company generates profits by cutting expenses; in 1991, net income of $99.3 million was up 16 percent from the previous year. As long as Grumman continues to profit, there will be capital available both to diversify and to improve its offerings.[17]

Grumman continues to move into other fields, including a $15-million contract to modernize Korea's public safety telephone system, and a $157-million Air Force contract to design a nuclear propulsion system for spacecraft. Most recently, Grumman received $28 million to research MAGLEV (magnetic levitation) for the government. This technology uses powerful magnetics to lift large objects; its most direct application would be in high-speed trains. Grumman also has hired more experts in computers, seeking to expand its data systems division. The company is trying to move away from defense contracting and into the civilian market.[18]

Grumman and Long Island: the Calverton Airport

The Naval Weapons Industrial Reserve Plant at Calverton presents a unique opportunity for expansion and growth of Long Island's economy. The

seven-thousand-acre site, which is currently used by Grumman for final assembly and delivery of aircraft, currently has two runways, one of which can service any commercial or industrial aircraft. The site is accessible, close to the Long Island Expressway (LIE), Route 25A, and the William Floyd Parkway, and with railroad service to the airport. To Governor Mario M. Cuomo, these points are prime reasons why the facility should be developed into a jet cargoport.[19]

The benefits are obvious. The cargoport would relieve congestion at Kennedy and La Guardia airports by diverting some cargo traffic and connecting passengers to Calverton, as well as creating a small airline hub facility with its own originating and connecting flights. The biggest benefits are the estimated 20,000 jobs the development would bring to eastern Long Island, and the correspondingly substantial influx of capital.

Controversy surrounds the proposal, focused on the cargoport's repercussion on the surrounding environment. While Cuomo characterizes the need to preserve the environment of the region as "critical," such groups as the Long Island Pine Barrens Association remain unconvinced. The Calverton area is designated by the federal government as a sole-source aquifer, by New York State as a Special Groundwater Protection Area, and by Suffolk County as a Critical Environmental Area. Construction of a jet cargoport would disrupt the environment, with serious effects on the ecosystem. Surrounding communities protest against potential sound pollution. Finally, considerable air pollution will result from the massive numbers of trucks needed to carry cargo to and from the airport.[20]

As with any major metropolitan region, New York City and its surrounding suburbs have transportation problems—there are too many vehicles for the limited road space available. In his proposal supporting the cargoport, Governor Cuomo acknowledges that the LIE already has the reputation of the longest parking lot in the world. The governor, who estimates that existing highways are now 56 percent beyond capacity, seeks to relieve congestion by building a fourth, car-pool lane on the LIE. One such lane, now under construction from Melville to Hauppauge, is scheduled to open in August 1994, with further expansion planned in both directions.[21] However, this plan may not work. First, two-thirds of automobile commuters prefer to drive alone, and it is uncertain that a fourth lane reserved for vehicles with more than one person will create enough incentive for significant use. Second, the Island has little room for new roads, and community action groups have successfully halted past expansion projects. With the LIE the only major route legally accessible to commercial trucking, the efficacy of Calverton as a commercial distribution center is open to question.

It is unlikely that plans to expand existing roadways will succeed. Without the efficient means for the transportation of goods from the cargoport to suppliers and consumers, the feasibility of the plan is doubtful. Other methods of transport are equally inaccessible to commercial interests. Although the Long Island Rail Road runs through the Calverton facility, all

rail freight to Long Island has to be shipped through the Bronx, sharing tracks every day with 450 commuter trains en route to New York.

The railroad is not an alternative to commercial trucking. Rail service accounts for only 3.5 percent of Long Island freight movement but 27.8 percent of the nation's; this wide discrepancy shows the reluctance of shippers to transport goods to and from Long Island by rail.[22] However, Cuomo proposes to relieve railway congestion and improve the infrastructure by creating a separate rail service for freight trains.

Plans to renovate the infrastructure face the additional obstacle of New York's budget crisis. It is unlikely that the state's beleaguered economy could finance the additional ventures needed to make the Calverton project viable. The existing infrastructure cannot handle the resulting increase in traffic, neither now nor in the foreseeable future. There is also considerable doubt concerning the cargoport's economic benefits. To begin with, the estimate of twenty thousand new jobs may be inflated; two nearby airfields, Republic and Islip—each of which resembles the Calverton proposal—employ only 863 and 1,600 workers, respectively. Second, because 60 percent of airborne cargo is carried by scheduled passenger aircraft, the main role of the cargoport is debatable. Calverton's success depends on passenger operations, which would require even greater expansion of existing facilities.[23] For these reasons, the expansion of Calverton airport might exacerbate rather than solve Long Island's problems.

Grumman and Florida: the Melbourne Facility

The possible loss of the Calverton test center prompted Grumman to consider moving its aeronautics division to its small facility in Melbourne, Florida. The site offers lower operating costs and proximity both to the Kennedy Space Center and the Naval Air Station at Pensacola. The area abounds in aviation and defense contracting companies, including General Dynamics, Boeing, General Electric, Lockheed, McDonnell Douglas, and Rockwell Avionics.[24] Grumman looks upon it as a profitable location to continue its defense contracting business.

In our judgment, for Grumman to move its testing facilities would show a lack of foresight. It is apparent that the company no longer will play a large role in military aviation. Moving its facility is a waste of resources and capital, and expenses incurred will only add to the losses from dwindling defense contracts. While expansion at Melbourne is practical for joint projects with NASA, Grumman has no reason to move its entire aerospace division; the aeronautics section has no direct link with NASA programs.

Long Island, despite economic problems, remains one of the country's most pleasant living environments. Public education ranks among the best, with one of the highest percentages of graduates who go on to higher learning. Considering that Grumman's future is in high technology programs, the presence of a highly educated work force is essential for its success. Comparative surveys found that Nassau County school districts reached

acceptability ratings of more than 90 percent, while Los Angeles and Chicago rated 65 and 71, respectively. Fifty-six percent of Long Island high school graduates attend four-year colleges, equal to the percentage of Florida students pursuing any post-high school education. If the number of Long Island students who continue in part-time or two-year educational programs is taken into account, this figure would be substantially higher .[25]

Grumman and Long Island: A Cooperative Future

Grumman can take several paths to ensure its future success. Research in MAGLEV could play a crucial role in the high-speed trains of the future. As Long Island needs a larger and more efficient train system, both for passengers and freight, the technology and products created by Grumman would have a convenient and viable market. In addition, there is a need for transportation off of the Island. If Grumman allocates resources into developing boats and high-speed ferries, as recommended in Cuomo's report, these products can make for profitable future operations. One of Long Island's major concerns is its overburdened road infrastructure. If Grumman refocuses its energy on improving and expanding the Island's roadways, both the company and Long Island will benefit. Better transportation systems will result in more capital investment, thus boosting the economic setting of which Grumman is an integral part.

The trend is to move federal funds toward domestic concerns and away from military programs. Thus, contrary to its agenda during the 1980s, Grumman's increased allotment of resources to the civilian sector is a rational long-term plan. Globally, the trend among manufacturers is toward high-technology products. Grumman can have a place in this expanding field. In the 1950s and 1960s, the firm ensured a profitable future by creating airplanes well ahead of their time. The F-14 and A-6 generated revenue for Grumman and protected the United States for three decades. If the company shows the same foresight now and becomes a leader in such fields as MAGLEV or superconductors, it can establish itself as a revitalized and growing concern for decades to come.

Long Island needs Grumman, its largest employer. Rather than waste its efforts and resources on military avionics, which today is dominated by larger companies and conglomerates, Grumman should see the opportunities right outside its front door. Long Island's need for improved transportation is a market capable of generating huge profits. Grumman and Long Islanders working together can have a mutually beneficial relationship. If Grumman continues to ignore the opportunities present on Long Island and tries to salvage its military aeronautics division, it will continue its slide towards collapse, as well as impede Long Island's growth.

NOTES

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"Grumman vs. Republic: Success and Failure in the Aircraft Industry on Long Island, *LIHJ* 1 (Spring 1989):113-27.

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4. Richard A. Thruelsen, *The Grumman Story* (New York: Praeger, 1976), 18-20, 103-4).

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6. Thruelsen, *Grumman*, 251.

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16. "5-Year $50B Cut Perils F-14D, E-2C," *Newsday*, 30 January 1992, 5, 18.

17. "Grumman's Profits Up 16 Percent," *Newsday*, 28 January 1992.

18. "Grumman's Korean Contract," *Newsday*, 15 January 1992; "Sweet and Sour," ibid., 30 January 1992, 5.

19. Gov. Mario M. Cuomo, "Long Island in the New New York: Building Long Island's Fiscal and Economic Future," 1991, 13-14.

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21. Adam Z. Horvath, "Work Starts on LIE Car-Pool Lane," *Newsday*, 28 April 1992, 8.

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23. "Foundation of Fiction or Truth?" *Suffolk Life*, 26 February 1992, 5.

24. Barbara Lafreniere and Edward Lafreniere, *Complete Guide to Life in Florida* (Sarasota: Pineapple Press, 1991), 70.

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Third Place

Whaling: A Central Part of Long Island Indian Life

By Matt J. Villano
(Northport High School: William Ingui, teacher)

Whaling was a central factor in Long Island Indian life from the 1500s to the end of the colonial period. The industry brought a sense of pride and community to many shore-dwelling groups, especially to the South Fork

Shinnecock and Montauk people. Whaling warriors served as determined hunters of the Leviathans of the deep, and, after the European migration, shared their knowledge with the settlers and became vital members of whaling crews. The Indians' development of whaling techniques laid the foundation on which the whale fishery, during its glory years in the 1830s and 1840s, became one of the most profitable industries in Long Island history.[1]

The Indians who first engaged in whaling came upon a cornucopia of goods each time a whale was captured. These products—whale meat, blubber, baleen, and bone—were used as barter with other Long Island Indian groups whose primary occupation was farming. As the industry matured, the Indian culture became less dependent on rural life and more entwined with the growing whaling business.

As early as the 1500s, many Long Island Indian groupings hunted what they referred to as "powdawe."[2] These included the Shinnecock, Montauk, Quogue, Mecox, and Matinecock in Suffolk County, and the Merrick, Massapequa, Canarsie, and Rockaways in Queens and what is now Nassau. Early Indian hunting techniques—drift, shore, and offshore whaling—were for the sole purpose of subsistence. They were primitive, yet highly effective, and greatly influenced Long Island life.

"Drift" whaling was the harvesting of carcasses washed up on the beach, in the name of a local group. The finder was given a reward from the sachem for his auspicious find. Drift whales were especially abundant during the winter, when storms were prevalent and whales were stranded on beaches in water too shallow for them to survive. The Shinnecock saw these beached whales as the "gift of Moshup...an ancient culture hero [who] sent whales ashore to feed his people."[3]

Shore whaling, the next step in the evolution of whaling, entailed the harvesting of whales from directly off the shoreline. Using this method, whales swimming and feeding close to the shore were captured with a barrage of arrows shot from beyond the dunes of the beach. The arrows drove the whale into shallow water, where it would beach itself. The hunters then came out from behind the dunes to stab the creature to death with lances and harpoons.

However, the whales became wise to the shore whaling method and altered their migratory routes; new cetacean trails avoided the Island's close-in shores to enable the whales to stay alive. The Indians adapted to this change by developing primitive off shore whaling techniques, centered around the use of the canoe, umiak, or sampan, usually made of oak or hard pine.

The first offshore whaling voyages took the whalemen no more than ten miles off the coastline. A hunting party surrounded "powdawe" with canoes and attacked it with harpoons, spears, and arrows. The points of these weapons were sharpened stone, the shafts were constructed of tree saplings. Attached to each harpoon was a line made of vines or rawhide, with inflated pieces of animal skin tied to it to slow the whale's attempted escape. These primitive buoys created enough drag to tire the whale after it violently and helplessly swam about, sometimes for more than three hours. Once the whale

gave up, it passed out from exhaustion, died from loss of blood, or was finished off by a harpoon in its lung.

The technique of Native American whale hunters was described by an English observer in 1605:

> one especial thing is their manner of killing the whale, which they call powdawe...and that he is twelve fathoms long; and that they go...with a multitude of their boats; and strike him with a bone, made in fashion of a harping iron fastened to a rope, which they make great and strong of the bark of trees...; then all their boats come about him as he riseth above water, with their arrows they shoot him to death; when they have killed him and dragged him to shore, they call their chief lords together and sing a song of joy; and those...sagamores, divide the spoil and give to every man a share, which pieces so distributed, they hang up about their houses for provisions; and when they boil them they blow off the fat and put to their pease, maize, and other pulse which they eat.[4]

Before European colonists set foot on Long Island, whaling was the basis for Montauk and Shinnecock village life. The aboriginal economy, like the inflated animal skins tied to the harpoon line, was tethered to whaling from December to the following April. After a whale was killed it was hauled to the village, where a religious festival was held in which "The most savory sacrifice made to their great deity was the tail or fin of the whale, which they roasted."[5]

The Shinnecock foretold the value of whale baleen, and sent strips of it as gifts or trading pieces to nearby groups and villages. Although commonly called whalebone, baleen is actually a series of thin, hairlike strips formed by cutin, the same material that constitutes human fingernails and hair. These cutin bristles form a sievelike structure in the mouths of mysticete (baleen) whales. The purpose of baleen is to strain krill, the small, shrimplike crustacean that is the staple of the mysticete diet. According to Heathcote Williams, "whalebone has been referred to as `the plastic of the eighteenth and nineteenth centuries,' as it had so many and various uses."[6]

By trying (boiling) the blubber (the foot-thick layer of fat separating the whale's vital organs from its skin), the Indians rendered oil out of the mighty whales. Blubber was used as a liquid base for their peas and corn, as well as to preserve and waterproof the leather of their moccasins and leggings. Whaling was also a major source of food. The Indians smoked whale muscle (they called it "meat") for food, often cooking it with their maize. After the useless pieces of carcass and other unneeded parts were left to decay on the shore, the remains of the mightiest mammals became carrion for hungry sea gulls.[7]

As English and Dutch settlers arrived in the mid-1600s, they perceived the value of whale oil and bone and offered to purchase those parts of the carcass for which the Indians had no use. When they started to hunt the great whale themselves, these colonists greatly benefitted from the assistance of the Indians. The English immigrants to eastern Long Island, unlike settlers on the mainland and elsewhere along the east coast, established friendly relations

with the Indians. Native Americans showed them their techniques and tools of the whaling trade, and Indian crews took selected colonists on offshore voyages to teach them about the creature they pursued. The new settlers quickly became adroit at catching whales, and, after years of training by Indians, became hunters of the mighty creature themselves.

They began, much like the Indians, by capturing stranded whales and towing the immense floating carcasses to shore. A beached whale found by a resident was claimed in the name of the town, and the finder received a reward in money or oil. This practice resembled the Indian method of harvesting a cetacean in the name of a tribe. Following in the shore-whaling footsteps of their predecessors, colonial settlers also chased whales along the shore and forced them to beach themselves.

The early settlers' drift- and shore-whaling methods were as primitive as those of the Indians, but much more profitable. This was the result of an increase in the size and number of whale pods that frequented Long Island's South Shore throughout the mid-1600s. Indian whalemen, who often contracted to work for colonial whaling entrepreneurs, also experienced a slight increase in profits, augmented by a sudden change in the migratory paths of Atlantic cetaceans.[8]

Soon after they began drift- and shore-whaling, the settlers recognized the potential of whale oil both as a source of illumination and as a lubricant for the moveable parts of machinery, two uses overlooked by the Indians. This rapidly made the whale fishery one of the most alluring trades to Long Islanders. Because of the creature's newly discovered value, there were frequent disputes over which residents were entitled to what parts of beached whales, often involving assimilated Indians. In 1644, the government of Southampton divided the beach front in four wards to solve this problem.[9] All residents of a ward shared in the profits, oil, and bone from whales found on its beaches. There were always arguments over parts, but the ward method curbed disputes between Indian and white settlers. The system was the first instance of organized government's involvement in Long Island whaling. It also marked the beginning of the end of the Indian whaling industry; as towns grew, populations became predominantly white, and the Indian share of parts of harvested whales diminished.

The new colonial whalemen extended the Indian whaling season to one that was year-round. Although summer was less profitable than winter and autumn, the colonists thrived on the business. Whaling crews in Southampton, Easthampton, and other South Shore towns were always ready to seize a whale spotted from one of the many huts and watchtowers built for that purpose along the beaches. Indians often were included in these early crews to provide added experience and expertise. The white owners of whaling vessels paid them wages, generally tendered in goods or in shares of the proceeds, and offered benefits; one of the earliest workman's compensation plans was John Cooper's promised equal share to any Indian injured on the job.[10]

After they became dependent on employment by English whalemen late in the 1680s, labor became one of the Indians' only sources of income. Because of their expertise, Indians on colonial crews were known as "exact sailors," with some of them holding positions as prestigious as captain of a whaler.[11]

Crews composed both of Indians and second generation European settlers took an average number of thirteen whales in one season. As the numbers of whales killed increased, the number of whalemen and whaling crews also rose steadily. This booming trend in the Long Island whaling industry resulted in the blossoming of Sag Harbor, Greenport, Cold Spring Harbor and other Long Island whaling ports.

However, as whaling ports grew and profits expanded in decimal places, there were fewer opportunities for Indians to participate. Once the settlers mastered the trade they had learned from their Indian predecessors, they reduced the Indians' role in the business. Second-generation settlers took whaling jobs away from the Native people. Discrimination against Indians began to rise, with the formation of many whaling crews based solely on color. From the Montauks to the Massapequas, Indians faced a precarious future, forced either to assimilate into the rapidly developing white culture and acquiesce to ethnic subjugation, or to move to one of the few uninhabited areas left on Long Island and start anew without the help of the colonial society on which they had become so dependent.

Choosing to remain silent, the Long Island Indians yielded to white discrimination and subjugation. Although many challenges arose, the Native American culture that once was dominant on Long Island was subordinated to the omnipresent customs of the English and Dutch immigrants, who had settled on the Island only one hundred years earlier. Indians were gradually excised from whaling crews until, after the Revolution, crews consisted mainly of white men. The Native Long Islanders started new lives as part of a predominantly white persons' culture. Although some remained in whaling, principally as harpooners, many early blubber hunters went on to thrive in fishing and agriculture.[12] By 1780, the era of Long Island Native whaling was over.

Long Island Indians, however, were instrumental in setting the stage for the whaling enterprise that developed after the establishment of the deep-water port of Sag Harbor, about 1760, and peaked in the boom decades of the 1830s and 1840s. Sag Harbor, built upon the foundation of whaling laid by Long Island Indians, became the third largest whaling port in the world, exceeded only by Nantucket and New Bedford. The knowledge of whaling first obtained from the Montauk and Shinnecock Indians enabled colonial entrepreneurs to make Sag Harbor, Greenport, and Cold Spring Harbor the home ports of a fleet that roamed the seven seas and changed the shape of "fish-shape Paumanok" to that of a mighty whale.

NOTES

1. For Long Island Indian whaling, see John A. Strong, "Shinnecock and Montauk Whalemen," *LIHJ* 2 (Fall 1989):29-40; see also Frederick P. Schmitt, *Mark Well the Whale* (Port Washington: Kennikat Press, 1971); Everett Edwards and Jeanette Rattray, *Whale-Off!: The Story of American*

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5. David Gardiner, *Chronicles of the Town of Easthampton, County of Suffolk*, New York (written 1840, published 1871; reprint, Sag Harbor: I. G. Mairs, 1973), 3.

6. Heathcote Williams, *Whale Nation* (New York: Harmony, 1989), 148.

7. Strong, "Sharecropping the Sea," 231; William R. Palmer, "The Whaling Port of Sag Harbor," thesis, Columbia Univ., 1959, 4.

8. See Strong, "Shinnecock and Montauk Whalemen."

9. Bernie Bookbinder, *Long Island: People and Places, Past and Present* (New York: Harry N. Abrams, 1983), 90.

10. Schmitt, *Mark Well the Whale*, 134; Strong, "Shinnecock and Montauk Whalemen," 34.

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12. Strong, "Evolution of Shinnecock Culture," 69.

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Honorable mention:

Amityville Memorial High School, Charles F. Howlett, teacher:

Isa Abdullah, "The Thirteen Tribes of Long Island."

Adrian S. Ali, "Montauk Point."

Jenifer Appold, Joshua Kefer, Ray Novales, and Eric Postal," South Oaks: the Long Island Home."

Paige Bade, "Comparative News in Amityville, 1892 and 1992."

Clemene Belzer, LaWanda Rice, and Morgan Tucker, "A History of the Bethel African Methodist Episcopalian Church of Amityville."

Joy Brewster, "The Brewster Family."

Joshua Burkholder, "Long Island Ship Wrecks."

Leticia Edlow, "The Development and Contributions of the Long Island Railroad."

Bernard Gay, "Brookhaven National Laboratory."

Adwoa Hendrick, "Grumman during the Depression and World War II."

Tecoa N. Isabell, "The Church under the Command of God— Commanding People to God (Holy Trinity Baptist Church, Amityville)."

Sue Norse, "The Thirteen Tribes of Long Island."

Allen Wirtensone, "The Ketcham Family."

Northport High School, William Ingui, teacher:

Michael Boyd, "Grumman Changed the Economy of Long Island."

Adam Dodge, "Aviation."

Douglas Roberts, "The Ku Klux Klan on Long Island."

Lost and Found

An Englishman on Long Island:

William Cobbett's Year in the U.S. (1818—1819)

By Richard P. Harmond

Editor's note: "Lost and Found" is an ongoing series of reviews of worthwhile but all-but-forgotten novels, memoirs, and other works about Long Island and Long Islanders.

Of the many British visitors to the United States between 1780 and 1860, more than three hundred wrote books about their sojourns in this country.[1] Of these literary travelers, apparently only William Cobbett (1762-1835) chose to live on Long Island. Cobbett, an influential journalist, publisher, politician, and agriculturalist, operated a farm in Queens county between 1817 and 1819. He recorded his impressions of Long Island agriculture—and much more—in his book, *A Year's Residence in the United States of America.*[2]

Precisely why he elected to live on Long Island is not altogether clear. Cobbett knew a good deal about the United States, as he had lived in Wilmington, Philadelphia, and New York City over an eight-year span from 1792 to 1800. At that time he showed his conservative sympathies by opposing the Jeffersonian Republicans and taking the Federalist part in American politics.

Cobbett changed after going back to his homeland. By 1805, he had become an advocate of political reform. His increasingly radical writings, however, did not endear him to the British establishment; in 1810 he was found guilty of seditious libel, and sentenced to two years in Newgate Prison. Subsequently, fearful of a second imprisonment for criminal libel, Cobbett decided to return to America. With two of his sons, he sailed from London late in March 1817 and reached our shores early in May.[3]

Perhaps he had temporarily tired of political controversy, and sought some peace and quiet. At any rate, in May 1817, Cobbett leased for a year a three- to four-hundred-acre run-down farm at Hyde Park (now New Hyde Park), in the town of North Hempstead, some eighteen miles from the city. He settled into a simple routine, rising before the sun, eating, for the most part, vegetables he raised himself, and drinking water and milk.[4]

A plain, rustic style of living appealed to Cobbett, who took singular pleasure in farming. "During my whole life, I have been a gardener," he announced proudly in the Preface of A Year's Residence:

> There is no part of the business, which, first or last I have not

> performed with my own hands...I was bred at the plough-tail, and in the Hop-Gardens of Farnham in Surrey...I have had, besides, great experience in farming for several years of late.[5]

Cobbett's interest in and knowledge of farming are clear enough from the book, at least half of which is devoted to climate, crops, land, and related concerns. Thus, after a day-by-day account of Long Island's weather between May 1817 and April 1818 (useful data to students of the Island's climate), Cobbett proceeded to discuss the cultivation of various food crops. He expounded at length (and tediously, to modern taste) on raising, harvesting, and consuming the rutabaga, or Swedish turnip.[6] He also gave considerable attention to the cultivation of cauliflower, cabbage, Indian corn, and potatoes—a food for which he had little use, calling it a "worse than useless root."

Next, he considered the price of land and labor on Long Island. Cobbett estimated that a typical farm, from thirty to sixty miles from New York City, with a decent house and out-buildings, would cost "*sixty dollars an acre*, or *thirteen pounds sterling*; of course, a farm of a hundred acres would cost one thousand three hundred pounds" (about $6,000). As for the cost of labor, he estimated that a good farm-laborer would earn $115 a year, plus room and board. Cobbett, it should be added, was struck by the industriousness, skill, and versatility of American farm hands, whom he judged "*the best that I ever saw*."[7]

These summary remarks little more than hint at the wealth of information in *A Year's Residence* on seeds, fertilizer, planting schedules, crop yields, farm animals, and other matters of an agricultural and rustic nature. Cobbett even included a short chapter on the expenses of house keeping for farm families. Needless to say, historians of Long Island rural life will benefit from cultivating his book.

Having concluded his discussion of climate, crops, land, and so forth, Cobbett turned his attention to a number of nonagricultural subjects, including manners, customs, religion, and law. His remarks were brief and pointed. In general, aside from the heavy drinking he witnessed, and deplored, Cobbett was favorably impressed with early nineteenth-century American—and Long Island—society. For instance, "that a*nxious eagerness to get on*...so great a sourer of the temper, is a stranger to America." Consequently, he observed, "intercourse" within and between families "became easy and pleasant." America, Cobbett insisted, was a land of "universal civility." Again, he found that there were "very few really *ignorant* men in America of native growth." He applauded the low taxes paid by Americans, and was equally pleased by the lack of an established church (and mandatory tithes). And, he asserted, there was much less pauperism than in England.[8]

Remarking on the "absence of crimes" as compared to England, he declared that, "I have not heard of a man being hanged in the whole of the United States since my arrival." In his view, Americans were "the most orderly, sensible, and least criminal people in the whole world."[9] There is considerably more of such acclaim; of the pre-1860 British literary visitors to

America, Cobbett, in *A Year's Residence*, was among the most well-disposed toward the United States. Of course, more than a few times his praise of America was also intended as criticism of his own country.

Cobbett was English at heart, and at the right time planned to return to his homeland. That time came in late October 1819, when, two-and-a-half years after his arrival in America, Cobbett took a ship for England. Revealingly, he brought back with him the remains of the great English radical, Thomas Paine, who died in Greenwich Village in 1809. Once home, Cobbett resumed his crusade for reform and, eventually, was elected to Parliament in 1832. He died in 1835 at his farm in Guilford, the site of his latest planting experiment.[10]

William Cobbett was an astonishingly productive writer,credited with more than 120 volumes, amounting to something in excess of twenty million words.[12] He wrote books on grammar, gardening, politics, government, personal behavior, and history. But, of course, the volume Long Islanders ever will cherish is *A Year's Residence in the United States of America*. In its colorful, vigorous pages we encounter another age and a long-vanished Paumanok. Now, perhaps some publisher will provide an inexpensive paperback edition of this minor classic.

NOTES

1. Calculated from bibliographies in Jane Louise Mesick, *The English Traveller In America*, 1785-1835 (1922; reprint, Westport, CT: Greenwood Press, 1970), and Max Berger, *The British Traveller In America 1836-1860* (New York: Columbia Univ. Press, 1943).

2. *A Year's Residence in the United States of America. Treating of the Face of the Country, the Climate, the Soil, the Products, The Mode of Cultivating the Land...* (1818-1819; reprint, Carbondale, IL: South Illinois Univ. Press, 1964); the book is in three parts, the first two of which deal principally with Long Island.

3. George Spater, *William Cobbett: The Poor Man's Friend* 2 vols. (New York: Cambridge Univ. Press, 1982), 1:195-206, 239-44; 2:355, 357.

4. Henry Bradshaw Fearon, *Sketches of America: A Narrative Of A Journey Of Five Thousand Miles Through The Eastern And Western States Of America* (1818; reprint, New York: August M. Kelly, 1970), 64; Spater, William Cobbett, 2:356, 375-376. In May 1819, the house burned down and thereafter Cobbett lived in a tent.

5. Cobbett, *A Year's Residence*, 17.

6. Actually, Cobbett's enthusiastic endorsement of the "Ruta Baga," as he called it, led to widespread acceptance of its cultivation from Canada to the Gulf of Mexico (Spater, *William Cobbett*, 2:431).

7. Cobbett, *A Year's Residence*, 177-79.

8. Ibid., 192, 195, 223-24, 227.

9. Ibid., 230. Cobbett's evidence was anecdotal, but other British visitors also noted the lack of crime in America in the early nineteenth century (Mesick, *English Traveller*, 114-15, 313).

10. Spater, *William Cobbett*, 2:376.

11. Ibid, 1:2; 2:433-46.

Reviews

Elizabeth L. Watson. *Houses for Science: A Pictorial History of Cold Spring Harbor Laboratory, with James D. Watson, Landmarks in Twentieth Century Genetics*. Cold Spring Harbor: Cold Spring Harbor Press, 1991. 167 color and 103 black and white photographs, 37 illustrations. Pp. 346. $75.00.

In 1890, the Brooklyn Institute of Arts and Sciences established a Biological Laboratory on a parcel of land along Cold Spring Harbor's western shore. *Houses for Science*, by Elizabeth L. Watson, chronicles the evolution of this single laboratory facility into the present 100-acre, world-class scientific complex known today as Cold Spring Harbor Laboratory (CSHL). Watson's thoroughly researched and clearly written book presents a multifaceted story.

On one level, it touches on the relationship between the community of Cold Spring Harbor and the scientists. The Prologue concisely describes the ecological and economic conditions at Cold Spring Harbor that encouraged the establishment of a center for science. In the ensuing years, community residents housed researchers, students, and teachers; local philanthropists gave generously of time and money, driven by a desire to make the advancement of science a reality. Early in its history, CSHL offered educational programs to school children, a tradition enhanced in recent times with the 1988 opening of the DNA Learning Center in the village of Cold Spring Harbor, and an expanded program of scientific instruction for high school students and their teachers. The facilities at CSHL are often used for lectures on art, history, and architecture, and other community-oriented programs, open to the public. Applicable to both past and present is the admirable exchange between the village of Cold Spring Harbor and the "village of science."

The book is also an account of achievement in science. The text appropriately contains frequent reference to research activities and triumphs by CSHL scientists. The annual "Symposia," begun in 1933, continue to attract an international consortium of the finest minds in science, with the proceedings published and available in educational centers around the world. Watson offers a memorable account of Barbara McClintock's presentation at a 1951 Symposium of her "jumping genes" research, which was not entirely accepted by the scientific community for three decades. In 1983, Dr. McClintock's important contribution was recognized with the Nobel prize in physiology or medicine "for her discovery of mobile genetic elements."

Another Nobel laureate (1962), the noted DNA specialist, James D. Watson, also contributes to the book with *Landmarks in Twentieth Century Science*, comprised of eight essays, among them: "Marine Biology: Following Darwin's Footsteps"; "Molecular Biology: Finding Out How Genes Work"; and "Recombinant DNA: The Key to Gene Cloning." Each of these clearly-written articles presents a "primer" for students and general audiences, addressing scientific achievements that have significantly changed the way we understand life and the world around us.

Using a wealth of visual material, Elizabeth Watson documents the pursuit of science and dedication of the organization's leadership, its most visible form the expansion and transformation of the "village of science" during the nineteenth and twentieth centuries. Reproductions of nineteenth-century works of art and historic photographs define past faces and places during the years preceding the scientists' arrival. The majority of photographs document CSHL's rich and stylistically varied architectural heritage. The earliest buildings in the complex date from around 1800, the latest from 1991. The architectural styles (nicely diagrammed on the endpapers) encompass Colonial and Federal, Italianate, Victorian, Colonial Revival, Renaissance Revival, Georgian Revival, and "Long Island" Colonial (all the rage on the Island during the first half of the nineteenth century), Modernist, and Post-Modern.

It is evident to the reader that CSHL, in recent decades, has undergone an ambitious program of preservation, improvement, and expansion of the physical plant. Because the interiors of these "houses of science" must function as places where science is done, buildings such as Jones Laboratory (1893) have been renovated (1975) into state-of-the-art scientific facilities, while maintaining the historic apperance of the exterior of the buildings. This program of adaptive use, as opposed to demolition, is commendable.

Jones Laboratory, among the jewels of the complex, serves as a tangible symbol of CSHL's origins. Likewise, anyone who has passed CSHL on Route 25A has seen Davenport House, which dates from 1884. By the late 1970s, this house's desperate need of attention prompted a sensitive restoration of the exterior, completed in 1980. Today's Davenport House, resplendent in its Victorian details and original colors, graces the entrance to the Lab. From 1981 to 1991, areas of the complex were frequently under construction, because the leading role in molecular biology achieved by CSHL necessitated additional facilities. Grace Auditorium, completed in 1986, is one of the most striking and intriguing examples of architecture erected on Long Island in recent memory. Although the facade is geometric in form and detail, the surface rhythmically undulates because of the staggered placement of architectural elements, and the contrast of the textures and colors of the finishing materials. The interior design is functional yet dramatic. This building received an ARCHI award from the Long Island chapter of the American Institute of Architects.

Sammis Hall, designed by Moore Grove Harper, and completed in 1981, is another of this reviewer's favorites. The exterior was inspired by Palladio,

but the architectural vocabulary is Post-Modern. The photographs of the inside of Sammis Hall are breathtaking: the elegantly proportioned interior is exciting in the play of form, space, and light. A pictorial glossary assists readers to identify architectural elements. Other appendices are: an organizational chart establishing CSHL's somewhat involved history of governance, and the identification of directors; a chronological listing of the topics for each Cold Spring Harbor Symposium, beginning with 1933; and an annotated Further Reading list.

Houses for Science combines Elizabeth Watson's thoughtful survey of the origin and growth of Cold Spring Harbor Laboratory with the informative essays by her colleague and husband, James D. Watson. Their book is a valuable contribution to the history of Long Island.

Deborah Johnson
Museums at Stony Brook

Dorothy Ingersoll Zaykowski. *Sag Harbor: The Story of an American Beauty*. Sag Harbor: Sag Harbor Historical Society, 1991. Pp.394. Photographs, illustrations, maps and diagrams, bibliography, index, appendix. $50.00 (add $5.00 for postage and handling).

Sag Harbor deserves the sobriquet of "American Beauty" bestowed upon it by Wilfred Sheed in his foreword to this book. Sag Harbor is not a village of "ye olde shoppes" nor of manicured bungalows of the rich; its Historic District presents an extraordinary concentration of architectural gems, the churches, public buildings, and homes of the merchants, tradesmen, and mariners who built, equipped, and sailed a fleet of whaling ships exceeded only by those of Nantucket and New Bedford. Today's Sag Harbor retains an abundance of charm but is neither cute nor quaint, a reflection of the community's unpretentious, industrious history.

Dorothy Ingersoll Zaykowski, of the John Jermain Memorial Library, has compiled a comprehensive assortment of events, biographical sketches, memoirs, letters, and maps, from 1707 to 1940. Her narrative and extended appendix furnish valuable data on early inhabitants; schools and students; churches, pastors, priests; the organization of Temple Adas Israel; the men and ships of the whaling fleet; sloops, packets, schooners, and steamers; the fate of the whaling fleet after the industry's decline; the coming of the railroad; a wealth of business and industrial data; postmasters, firemen, and fires, among them the devastating conflagrations of 1817, 1845, and 1877; and Sag Harbor's veterans and casualties of the nation's wars. Thirty-two pages of photographs enhance the written material.

The author draws on the longest tradition of newspaper publishing on Long Island, including the Island's first paper, *Frothingham's Long Island Herald*, published in Sag Harbor in 1791, and the *Sag Harbor Express*, a current weekly established in 1859. Also cited are the Sag Harbor

Algonquinist, William Wallace Tooker, and the local historians Henry P. Hedges, Harry D. Sleight, and Russela J. Hazard. Effective use is made of anecdotal and oral accounts; for example, a woman recalls the wreck of the sloop *David Porter* in 1827 (230), and a Sag Harbor salt remembers his three-year voyage on board the whaler *Henry Lee* toward the end of the 1840s (99). Unlike John Steinbeck's treatment of Sag Harbor in his novel, *The Winter of Our Discontent* (see Frances Kestler, "John Steinbeck as a Long Islander, *LIHJ* 4 [Spring 1992]: 213-24), Zaykowski's work will not raise the hackles of local readers. Nonetheless, class and racial bias are faced, including descriptions of slavery (216-18), the slave trade (103-5), and segregation (165-66). Referring to nineteenth-century prejudice, the author reminds us that, "Many in the village, who were predominantly Protestant, didn't look too charitably upon a Catholic Church in Sag Harbor" (179). She recalls the Ku Klux Klan rally, in December 1923, at which not all of the 1,500 people present—"not only Protestants but many Catholics, Jews, and Negroes"—were sympathetic.(300)

Although the book is redolent with nostalgic appeal, the author could have done more to integrate Sag Harbor within the framework of American history. There is no indication that the religious revival of 1790, the Temperance Society formed in 1829, or the immigration of Irish between 1824 and 1845, were parts of significant national movements. Nor is the generosity of Mrs. Russell (Margaret) Sage, the village's chief "benefactress ...affectionately known as Lady Bountiful" (277), placed within the context of her remarkable contribution to social causes during the Progressive Era. One wishes for more discussion of the role of women in addition to the civic-minded Ladies Improvement Society, Mrs. Sage, Polly Sweet—who became a western pioneer (101-3)—and "Miss Genevieve French, [who] became Sag Harbor's first postmistress" in 1890 (130). Bibliographical references by chapter, rather than numbered notes, make it difficult to substantiate dates and sources.

These objections aside, the book is an excellent source for all concerned with the Long Island story in general and Sag Harbor in particular. One of its major contributions is to follow the development of the village beyond the heyday of whaling. After ropewalks, cooperages, and shipwrights were gone from the wharf, factories and mills were built, and thriving inns and hotels proved that the place some call "the un-Hampton" could prosper as an attractive resort. Dorothy Zaykowski's work on historic Sag Harbor, one of the nation's first ports of entry, a center of the whale fishery, and an architectural showcase, will stimulate further research on this unique American Beauty.

Steven R. Coleman
Columbia University

Roger Wunderlich. *Low Living and High Thinking at Modern Times, New York.* Syracuse: Syracuse University Press, 1992. Illustrations, notes, index,

bibliography. $34.95.

Josiah Warren (1798-1874), Yankee pragmatist, prototypical philosophical anarchist, and libertarian political economist, was the founder of the Long Island alternative community Modern Times (1851-1864). This community was designed to secure the natural and revolutionary rights—"life, liberty, and the pursuit of happiness"—of its inhabitants in blissful absence of government, codified laws, and institutional interference in personal concerns and private lives.

Roger Wunderlich, in his book, *Low Living and High Thinking at Modern Times, New York*, has provided us with the most meticulous and thorough assessment to date of the village and its "individual sovereigns." One of the primary strengths of Wunderlich's treatment is the concrete contextualization of the community. He exhibits a firm sense of both the abstract or general context of Modern Times—the intellectual evolution of Warren's concepts of "sovereignty of the individual," "cost the limit of price," the "labor-time" system of exchange, and "equitable commerce"—as well as the physicality of the community—its geography and topography—as a specific place located on central Long Island. His portraits of individual associates like Thomas Low and Mary Gove Nichols, William Metcalf, Henry Edger, and Stephen Pearl Andrews provide flesh for the skeletal structure of the community's intellectual antecedents and physical setting. He makes substantial and effective use of documentary evidence—chiefly the manuscript census, property deeds, and minutes of school district and town meetings. As a consequence, Wunderlich's book may be read with equal interest and profit by historians of American social experiments, local historians, or the general reader.

While the book is generally well-written, and Wunderlich displays a refreshing intellectual playfulness toward his subject, it is somewhat diffuse in overall organization. The crazy-quilt cast characters who comprised the population of Modern Times has not always been successfully integrated into the broader discussion of the history of the community. Ironically, for an anarchistic community composed of "Individualities," as Warren styled them, we encounter mainly the leading figures of the community in these pages. There is little discussion of the lives of the average individuals of Modern Times, those who had been, in their pre-community life, in Warren's terms, "victims of the present social state [of] civilized cannibalism" ("Important Points Illustrated," *Equitable Commerce* [1852]).

The absence of consideration of those who evolved from consumed to consumers by casting their lot with the Modern Timers is, however, only apparently ironic. Although the community was conceived in anarchic liberty and dedicated to the proposition of "Individual Sovereignty," it had an informal leadership elite. This aspect of Modern Times remains largely unexplained in Wunderlich's discussion, and therefore the biographical focus *seems* incongruous. In fact, Warren readily admitted the need for leadership in community and clearly saw himself in a leadership role. Following the lead

of Charles A. Codman, the first historian of Modern Times, however, Wunderlich argues that "the concept of 'leader' was foreign to Warren" (22). Given the quintessential principle of Sovereignty in *every individual*, at *all times and in all conditions*," Warren argued, "one will not attempt to govern (but only to guide or lead) another; but we shall trust to principle or *purpose* for a general and voluntary coincidence and co-operation" (*True Civilization* [1863], 22).

More to the purpose, Warren perceived that leadership, like all abstract concepts, must be periodically divided, disconnected, and disunited; there must be flexibility and revolution in direction for any society. As he expressed it, "the most perfect lead would be that which was best adapted to the *particular* occasion for it; and as every occasion may be peculiar in itself, no one personal lead may be equally adapted to various occasions." Furthermore, "the most effectual lead is not necessarily *always* a person. It may be a thing, an idea, or a principle" (*True Civilization* [1863], 132.) By his own lights, then, Warren, who had established the fundamental principles of Modern Times, was one of its primary and most effective leaders. In other circumstances, Thomas Low and Mary Gove Nichols, who promoted free love doctrines, took the lead as did Henry Edger as the prophet of Comtean positivism and the Religion of Humanity.

Although Warren would not have admitted it, there was an inherent contradiction between "Individual Sovereignty" and his concept of leadership. It came out most clearly in his report on his educational and childrearing experiences. In raising his daughter, he introduced the principle of equitable exchange—labor for labor. If her parents put in six hours of labor to clothe and feed her, she must be brought to "rationally" understand that she owes six hours of labor in return. The seven-year old child is then admonished:

> And whenever you do not do your part of this necessary labor, it is but reasonable to conclude that you cannot have the benefit of it, and your income or supplies must necessarily stop. And, remember, that this would not be done in anger, or for punishment, but, because if no labor was performed, there would be nothing to live upon, and they who do not do their share, must not expect to live on the labor of others. (*Equitable Commerce*, 112).

This gives us a rather different picture of Warren from Wunderlich's—more authoritarian and conservative (this childrearing pattern suggests Puritan techniques of breaking the will). In the end his libertarianism may be more conservative than radical—he objects to communism because it opposes both "individual ownership and *individual* responsibilities" (*True Civilization* [1863], 126). The nub of the conflict between Stephen Pearl Andrews and Warren seems to have lain in the disjunction between libertarian anarchy and socialist anarchy. Wunderlich's treatment of Warren rather understates the complexity of the man.

While the local historical element of *Low Living and High Thinking* is one of its attractions, that focus occasionally betrays Wunderlich into questionable judgments. In the single passage dealing with social life at Modern Times, he idealizes the recreational conviviality of the community in contrast to other communitarian societies like Oneida or the various Shaker communities. In fact, communistic as well as individualistic communities had vivacious social lives and enjoyed virtually the same kinds of lectures, discussions, dances, and socials.

The assumption that the "easy-going life-style" (174) of Islip was congenial to the anarchistic, radical counterculture of Modern Times also seems a bit misleading. Those who had advocated and practiced free love (the most notoriously offensive aspect of community life to the surrounding community), were gone by 1864, as was the chief "Individual Sovereign" and anarchist philosopher, Josiah Warren himself. Those who remained had established roots in the community and had made their peace with their neighbors. Modern Times's countercultural past was behind it.

Taken as a whole, though, Wunderlich's book provides the most comprehensive modern account of Modern Times. It is sympathetic to the aspirations of Josiah Warren while conscious of their incongruence with the future direction of national growth—corporate capitalism and the market economy. It touches on a number of issues significant to students of alternative communities—the role of anarchism, individualism, and competition as opposed to socialism and cooperative organization; gender roles and sexuality; relations of communities with surrounding, conventional society; and questions related to the ultimate success or failure of these social experiments. *Low Living and High Thinking* is a solid contribution to the literature on alternative societies in America, and should spark a renewed interest both in Modern Times and in anarchistic communities in general.

Louis J. Kern
Hofstra University

To be reviewed, Spring 1993:

The Dynamic Genome: Barbara NcClintock's Ideas on the Century of Genetics. Nina Federoff and David Botstein, eds. Cold Spring Harbor: Cold Spring Harbor Laboratory Press, 1992. Illustrations, indexes. Pp. 375. $65.

Patricia Hansell Sisler and Robert Sisler. *The Seven Hills of Port.* Port Jefferson: the authors, 1992. Photographs, notes, bibliography, index. Pp. 146. $18.00 (paper) postpaid, from Robert Sisler, 105 Laurel Lane, Port Jefferson, NY 11777.

BOOK NOTES

Luise Weiss and Doris Halowitch. *The Chronicle of Centereach.* Centereach:

Middle Country Library, 1989. Illustrations, notes, bibliography. Pp. 36 (paper). The well-told history of a rural community, founded in 1730 along Middle Country Road, through its long, quiet era of market gardening into its recent, vibrant expansion. For information, write to Heritage Collection, Middle Country Library, 101 Eastwood Blvd., Centereach, NY 11720.

Catherine W. Currie. *Anna Smith Strong and the Setauket Spy Ring*. Port Jefferson Station: the author, 1992. Drawings by Audrey Swanson Marlow. Pp.15. $7.00 (paper). This interesting summary of the deeds of Setauket patriots during the Revolutionary War is available from the author, Catherine W. Currie, 460 Old Town Road, Port Jefferson Station, NY 11776.

Communications

The following excerpts from New York State Senator Owen H. Johnson's letters to Mr. Stan Rubenstein and to Senator Johnson's colleagues pertain to Mr. Rubenstein's article, "Henry George: America's All-But-Forgotten Economist and His Relevance to Long Island," *LIHJ* 4 (Fall 1991):106-118.

February 3, 1992
Stan Rubenstein, Director
Henry George School of Long Island
Box 553
Cutchogue, NY 11935

Dear Mr. Rubenstein,

I enjoyed reading your historical account of George the economist and how his analysis of the relationship between population and land values evidenced itself in the development of Levittown and other areas of post-World War II Long Island. But, it is his canons of taxation to which I subscribe most; thus, my advocacy of land-based taxation over traditional real estate tax policy...Please send me 100 copies so I can assist you in raising the consciousness of the Legislature with regard to land-value taxation. Keep up the good work.

Owen H. Johnson
Member of the Senate

February 28, 1992
To: Senate Colleagues
From: Senator Owen H. Johnson
Re: Two-Rate Real Property Tax System

Enclosed is an article about Henry George which appeared in the *Long Island Historical Journal* last fall.

I'm sure you will enjoy reading this historical account of George the economist and how his analysis of the relationship between population and land values evidenced itself in the development of Levittown and other areas of post-World War II Long Island. But, it is his canons of taxation to which most of us would subscribe; thus, my advocacy of two-rate property taxation over traditional real estate tax policy.

I plan to introduce legislation soon to provide local governments the option of implementing a two-rate property tax system as a way to enhance revenues and promote economic growth. The measure will be circulated to you for cosponsorship shortly...

Dear Editor,

I am from Nephi, Utah...from which I journeyed to the Siena Spirituality Center, Southampton, to study my Indian heritage at the April Elderhostel class on Long Island Native American artists and writers. The teachers were marvelous and the hospitality of the Sisters was outstanding.

My first Dutch ancestor, who arrived here about 1625, married the daughter of Wyandanch, the Montauk sachem. Their only son, Cornelius Jansen Van Tassel, Jr., married a Dutch woman...

I am looking for information on Mongotocksee and his four symbolic "sons"—the "brothers" Poggaticut (the Manhansett sachem), Momoweta (the Corchauge sachem), Wyandanch, and Nowedonah (the Shinnecock sachem)—and their respective wives; Quashawam (the daughter of Wyandanch), also called Catoneras and Heather Flower; and Sassocus, the Pequot sachem, and his son Wuch-i-kit-tau-but. I will greatly appreciate any information your readers can give to a Western friend of Long Island.

David Stauffer Van Tassel
400 N. 9th East, Nephi, Utah, 84648

Dear Editor,

Concerning what name to call the American Indian...It has long been a pet peeve of mine that they are referred to as "Native Americans," to the exclusion of myself, being every bit as much a native as are the Indians. I have always felt that they should be called exactly what they always have been: ORIGINAL AMERICANS.

Ron Ziel, Bridgehampton

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