

NIGEL CHATTEY HAS POWER SURGES, THEN HE MACROTHINKS

His latest colossal thought is an energy island 20 miles off, but bigger than Manhattan. It would cost \$10 billion, take 10 years to build, have 50,000 permanent employees. Laugh if you must, but some very serious people are taking him very seriously

BY JOHN SEDGWICK

From New York City, the island would appear as only a narrow band on the ocean horizon, a smudge that might fade in a blink as though it were no more substantial than a mirage. Up close, however, it would be massive: a man-made honeycomb rising from the ocean floor. Its seawall, up to 1,000 feet wide at the base, would loom 150 feet high—40 feet above the ocean's surface—and be fortified by 40-ton cement blocks. Like a new Atlantis, it would hold within its borders the promise of colossal energy—energy that would help power the Northeast.

This energy island, nearly half the size of Manhattan—with its power plants, a supertanker port, waste-disposal sites, shipment facilities and refineries ("All those very necessary things," says one proponent, "that you don't want in your backyard")—would feed on coal from the Northern Plains and the Midwest. Shipments would come down the Erie Canal in northern New York, which would be deepened and widened, supplying many millions of cubic yards of fill that could be used to help create the energy island.

The project is stupendous, and the vision as mad and masterful as any dreamed up by Jules Verne for his ob-

Chattey with the model for his biggest project yet: the Island Complex Offshore New York-New Jersey.

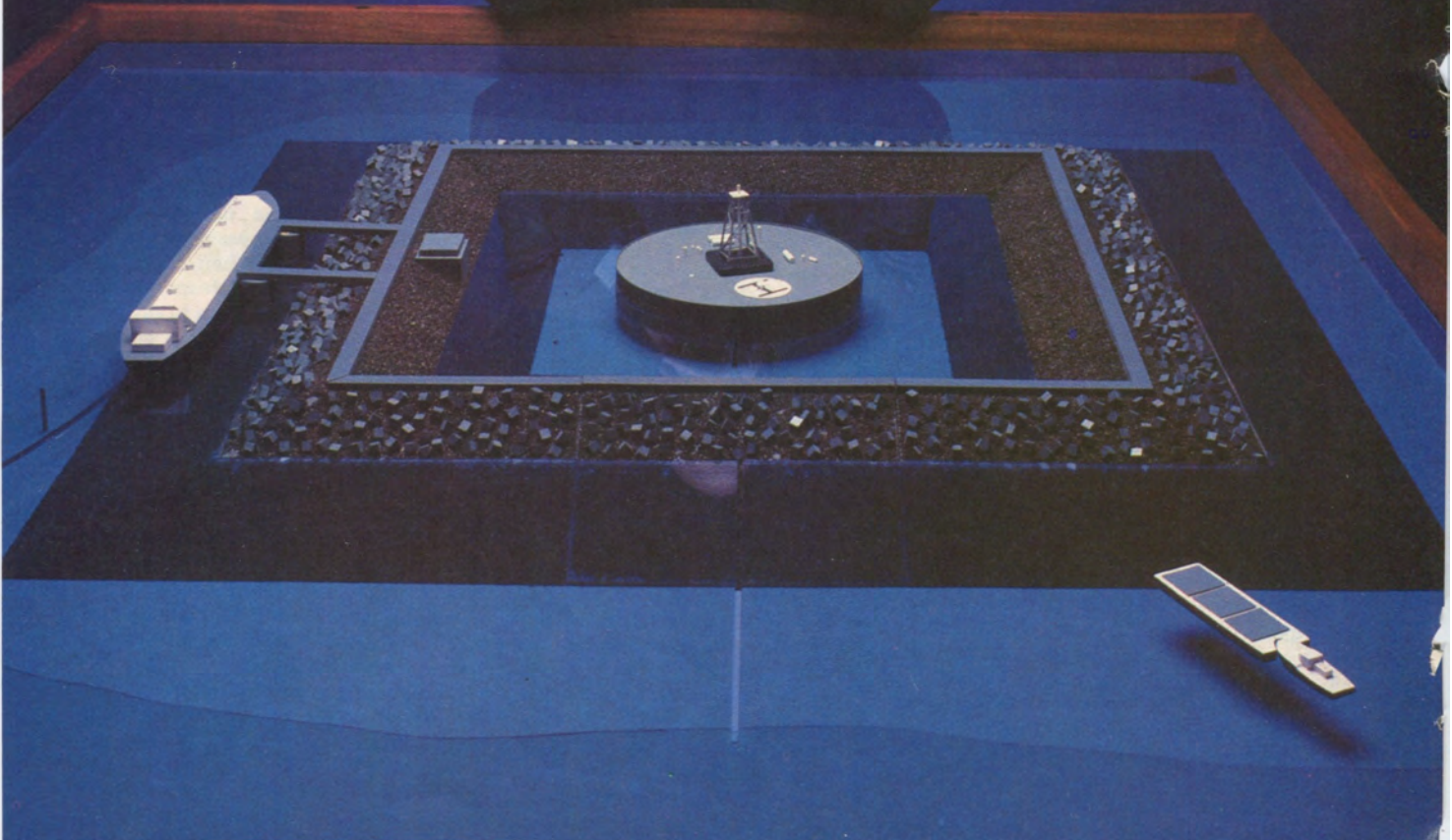
essed heroes, but it just might work. Even pollution, blown farther out to sea, would not be a problem. Such a solution is attractive, for it encourages hope that technology may be able to rescue what increasingly has begun to seem like a doomed civilization.

Wild If Not Mad

In an age of lowering expectations, the idea of an enormous energy island linked to a radically enlarged waterway may seem wild, if not downright mad. Indeed, there is considerable evidence that the cost and effort necessary for such an undertaking condemns the plan to a death of benign neglect. Yet, from Teddy Roosevelt's Panama Canal to John Kennedy's Apollo program, macroengineering, or large-scale construction, has always been the United States' special province.

The watery island would be set on the rim of the 300-foot-deep Hudson Canyon under the water, so that half-million-ton supertankers, unable to dock anywhere else on the East Coast, could glide their quarter-mile hulls into the quiet waters of the island's inner harbor and empty their tanks of Middle Eastern crude oil. American tankers could bring in Alaskan crude as well. Amid the waters inside the fortifications, a network of interior polders protected by small dike systems would contain floating refineries, safe from the wind and waves. The refineries would turn this cheap crude into gasoline and heating oil for piping to the mainland.

Refrigerated tankers bearing lique-



THE ICONN PROJECT
ISLAND COMPLEX OFFSHORE NEW YORK/NEW JERSEY
FIRST STAGE IN DEVELOPMENT OF LNG POLDER COMPLEX
CONCEPT DEVELOPED BY NIGEL CHATTEY ASSOCIATES INC - ICONN DIVISION
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'The fact that the Erie Canal runs down into the heart of the Northeastern Metropolex is absolutely remarkable'

fied natural gas, a cargo too explosive to handle near city centers, would pour their contents into sunken regasification tanks—endangering only the island workmen who, like roughnecks now out on oil rigs, would be well paid to take the risk. And barges loaded with sewage, dredge spoil and acid wastes, once dumped into the open water at a rate of 16 million cubic yards a year, would unload their stinking hauls into other polders for secure containment. (The New York Bight, as the region is called, is one of the most polluted bodies of open water in the world.)

Tens of millions of tons of coal a year would be shipped across the Great Lakes from the vast beds of the Midwest, loaded onto deep-draft barges at Buffalo and pushed by tugboats four at a time down the expanded Erie Canal, to the Hudson and out to the island. Here the fumes from the coal-burning plants and high-sulfur refineries, currently an impediment to their greater use on the mainland, would be blown out to sea by the prevailing easterly winds. The resulting acid rains would be gradually broken down by the salt water of the Atlantic.

William Hubbell



A Vision While Shaving

The man who dreamed up this scheme is Nigel Chattey, a well-known geographer and marine engineer. A tall Englishman with a high forehead and sky-blue eyes capable of the most unnerving stare, Chattey says the vision came to him in a "power surge" one morning in 1974 as he stood at his shaving mirror. Ever since, from a paneled basement office in his house in Irvington-on-Hudson, New York, and partly at his own expense, Chattey has been working full-time to make his brainstorm a reality.

As a consultant for oil and transportation companies in 20 countries, Chattey has had other such macroengineering inspirations—and seen many of them come to pass. For the Pakistani army in 1947, Chattey, then only 20 years old, charted the best military route through the Himalayas to China, a feat that won him membership in the Royal Geographic Society. (The Pakistani government never built the road, but nearly two decades later the Chinese, using their own squadron of surveyors, pushed through a highway along Chattey's exact course.)

Nigel Chattey's master plan to rescue the energy-hungry Northeast calls for widening and deepening the present Erie Canal, above. This would serve the double purpose of providing landfill to build Chattey's energy island and allowing coal from the Northern Plains a speedy route to New York harbor where, naturally, it would be burned on Chattey's energy island. The present canal is only wide enough to let one barge at a time through a lock. Chattey's canal, right, would be 200 to 300 feet wide, letting four barges, two abreast, through a lock at once. Chattey's vision links two coal-filled barges (front) to two grain-filled barges (back). The grain would be shipped overseas from—guess where—the energy island.

In 1957, to find the ideal site for what would be the world's largest ship-repair facility, Chattey determined ocean-traffic patterns by plotting the noonday position of all the tankers then on the seven seas every day for six months. (The site chosen was near Lisbon.) When Chattey's Maryland employers failed to come up with enough capital, a Swedish company moved onto the site to put up the facility. And in 1972, Chattey was selected by the Indonesian Government to determine where on the coastline of the world's largest archipelago to build a multimillion-dollar tanker port, a choice Chattey made in two weeks.

Chattey got the first inkling of the

macroengineering project that would come to be known as the Island Complex Offshore New York/New Jersey when Mobil Oil hired him in 1971 to find a place to dock supertankers on America's East Coast. After searching from Labrador to the Florida Keys, Chattey discovered that the only workable site stood on the ocean floor 20 miles off New York City beside Hudson Canyon on a place called Cholera Bank. (The spot was so named because ships bearing choleric immigrants were quarantined there.) Mobil, at the time, was not interested.

Yet Chattey kept Cholera Bank in mind. As an energy specialist, he believed that the only way for the United

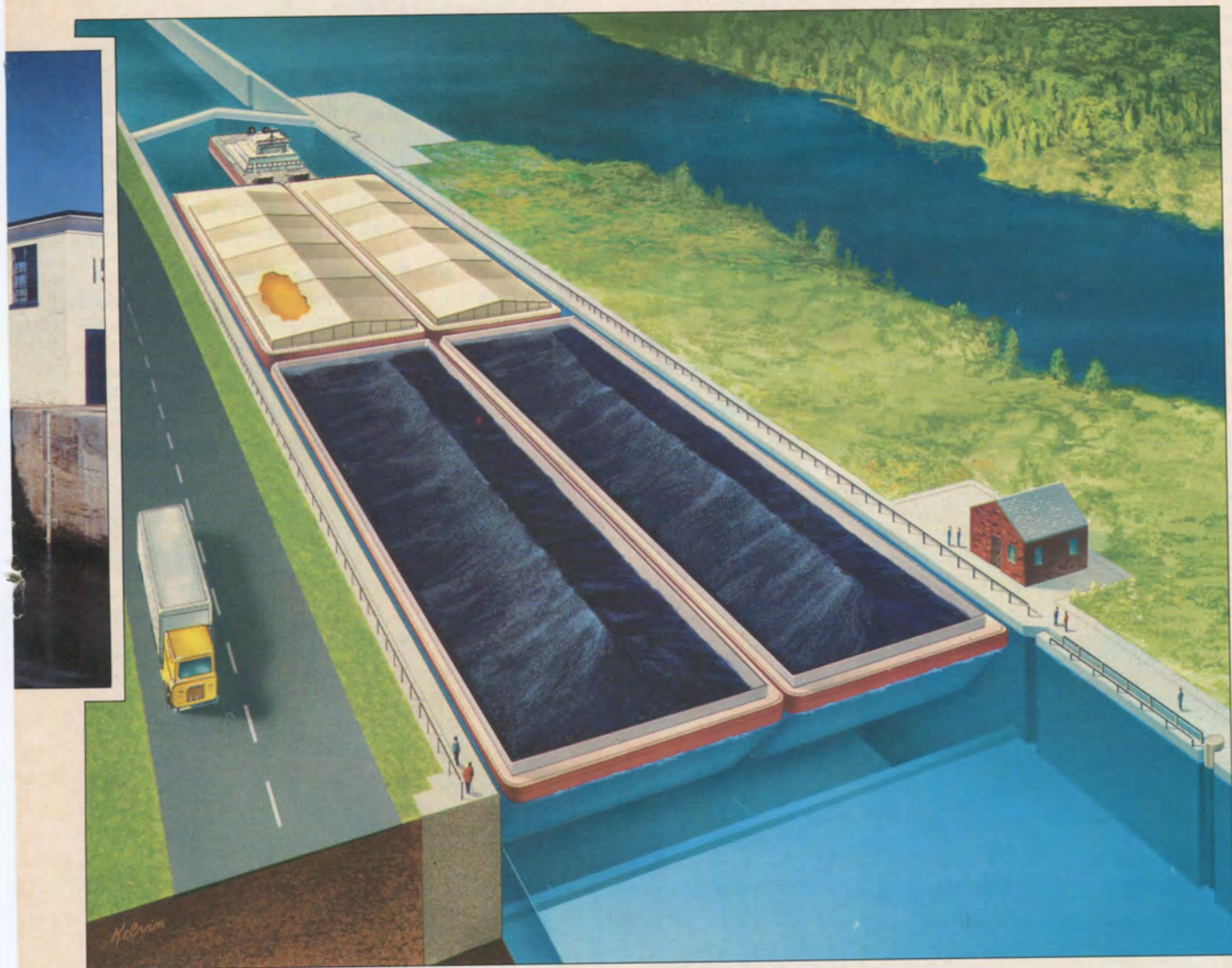


Illustration for NEXT by George Kelvin with Permission, Nigel Chattey Assoc. Inc.

States to become independent would be to tap the tremendous reserves of coal in the Great Northern Plains. There, beds 20 times thicker than most in Appalachia lie just under the plains. The latest strip-mining machinery, horrifying as it may seem to conservationists, could pull out 150 tons of coal for each hour of employee labor, compared with a scant 15 tons in the East. Hundred-car trains are already hauling fuel to the Great Lakes, where 62,000-ton colliers are lugging it as far as Detroit. But east of Buffalo, the Appalachian Mountains seal off the entire Atlantic seaboard from Maine to Georgia—with precisely one exception, that of the Mohawk Valley, which runs 100

miles from Albany to the west. That is almost identical to the route of the old Erie Canal, dug largely by immigrants between 1817 and 1825. The Erie has been in steady decline since 1959, the year the St. Lawrence Seaway opened to take the Erie's traffic straight to the Atlantic by way of Quebec.

If the shallow, outmoded Erie Canal could be made serviceable, Chattey reasoned, it would provide the critical water link to New York—and to Cholera Bank. And water is the cheapest way to haul bulk cargo such as coal. Studies have shown that while one "horsepower" moves 330 pounds by road and 1,100 pounds by rail, it can tug 8,800 pounds by inland waterway.

"The Erie is the only possible water route through the entire chain of the Appalachians," says Chattey. "The fact that it runs down into the heart of the Northeastern metroplex is absolutely remarkable." Even more remarkable is that out on the proposed island, the East Coast's prevailing winds would blow the coal's sulfur fumes out to sea 85 percent of the time, according to a recently released Environmental Impact Statement. For the other 15 percent, Chattey would switch the island's boilers onto low-sulfur coal from nearby Baltimore Canyon.

The use of Western coal would mean enormous savings for a region that pays the highest energy rates in the

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country, because it would cut raw fuel costs by an estimated 75 percent. What's more, the island could receive supertankers for whatever oil it still needs at far cheaper rates. And because the Northeast was built for water commerce, most of its cities—from Baltimore to Boston—are in a good position to receive a portion of the coal by ship or barge. Any excess could be shipped off the complex by tanker for overseas export.

The energy island, however, would not come cheap. This is often pointed out by detractors, and they cannot be denied. Building the island, after all, calls for expanding a canal that is in places only 75 feet wide and 12 feet

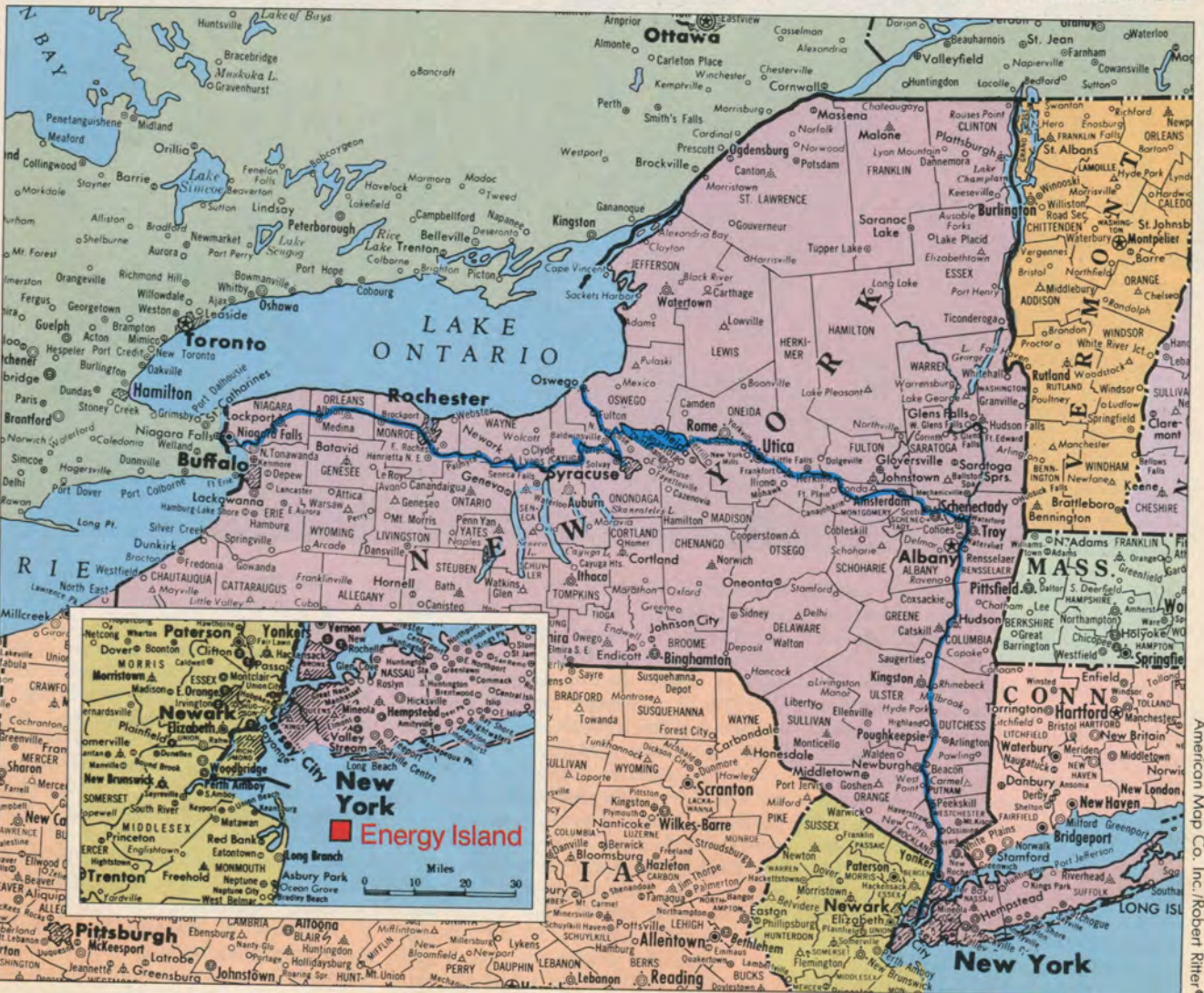
deep to a uniform size of 200 to 300 feet wide by 24 feet deep—and then piling up the dirt and stone to form an artificial, albeit watery island at least half the size of Manhattan. The project would move more sand, gravel and rock than ever before in history and require the production of so much concrete for the locks, sills, seawalls and polders that Chattey declares a factory would have to be built on the island to churn it all out. Then he stops himself: "Did I say one factory? You'd have to build a whole slew of them!"

The energy island project would cost over \$10 billion, take a decade to build and require four million man-years of labor, including the work of

50,000 permanent employees. Chattey says the project would be constructed with money from the sale of money-market bonds, similar to the ones keeping New York City solvent now. "It's just too big for private initiative to handle alone," says John Petty, president of Marine Midland Bank, and the project's chief backer. The bonds would be paid back with fees from users of the island.

It's Been Done Before

Mind-boggling as the project sounds, Chattey insists that all the necessary technology has been available for decades. The system would, in fact, mirror one already in use on the other side of the Atlantic. In Rotterdam's Eur-



American Map Co. Inc./Robert Ritter

opoort, the Dutch have built the busiest and most prosperous harbor in the world—on 5,000 acres of land reclaimed from the North Sea. There, protected by 150-foot seawalls, supertankers dock and refineries hum just as they would at the proposed energy island.

"You cannot conceive that Euro-poort's outer walls were made by man, they are so monstrous," says Chattey. He says he would use the same floating cranes and work vessels to build the energy island. And, just as the energy island would be, Europort is linked to inland cities by a canal system running 1,500 miles to the Black Sea. The middle link, pushing the canal over a 1,500-foot spur of the Bavarian Alps, is



George V. Kelvin

How can coal and grain be moved to the Northeast economically? Why, says Chattey, simply widen the Erie Canal, which runs 360 miles from Buffalo on Lake Erie, across the Empire State to Troy just north of Albany on the Hudson River. Once the barges reach the Hudson they can speed downstream to the energy island. The coal would come from the Northern Plains and the grain from the Midwest and Canada. In addition, imports to the United States, including gas and liquid hydrocarbons, petrochemicals, chemical feedstocks, metallic ores and fertilizer, could be unloaded on the energy island, which would provide the only deep-water port in the Northeast.

now under construction. The Erie, Chattey notes, would rise only 500 feet above sea level. "But the Europeans don't sit, talk and twiddle their thumbs," he says. "They do it."

To overcome resistance in America, Chattey has joined forces with two impressive partners in his venture: John Petty and Constantine Sidamon-Eristoff, a well-connected lawyer and a New York City transportation commissioner under former Mayor John V. Lindsay. Together, says Chattey, the three form a "three-legged stool" on which the whole project rests, Chattey handling the technological aspects, Sidamon-Eristoff the legal and political and Petty the financial.

With half a million dollars from Marine Midland, Niagara Mohawk Power, General Electric, National Fuel and Gas and about 15 other corporations that Petty lined up, Chattey has completed a preliminary study to support his view that the energy island makes sense economically, technologically, environmentally and politically. Now he is ready to undertake \$30 million worth of more detailed feasibility studies to resolve the hard questions about the island's exact cost, financing, benefits, dimensions, hazards, usage, construction and operation.

Skeptics and Pessimists

Although the plan has not progressed far enough to stir up organized opposition, the energy island does not lack opponents. "Eight years ago I worked on a supertanker dock proposal not very different from the energy island," says Ernst Frankel, a professor of ocean systems at Massachusetts Institute of Technology. "It was called the Delaware Island Project, and it combined a power station with a deep-tanker terminal. After spending \$8 million studying it, the Government ended up scuttling it in 1974."

Frankel, consequently, is not very optimistic about Chattey's plan. After all, 1974 was the year after the oil embargo, when the nation needed deep-water terminals more than now. Still, environmentalists won the day, convincing the Department of Energy that hazards from the changes to the ocean topography, in altered currents and shifted marine breeding grounds, would outweigh the benefits of energy savings. Frankel believes the same fate

would befall the energy island.

Further, he questions the need for more refineries, crucial to the plan, claiming that neighboring New Jersey refineries are running at only 72 percent of capacity. And to complete his indictment, he prefers shipping the coal east in the form of a slurry to moving it by any canal, simply because he believes that, for the vast tonnage Chattey predicts, pipelines are the cheapest way to go.

Other critics raise more questions. Donald Linky, in charge of policy and planning under New Jersey Gov. Brendan Byrne, worries about possible oil spills and air pollution from the energy island. John Baldwin, senior civil engineer at the New York State Department of Transportation, wonders what is to become of all the pipes now channeling hundreds of streams under the Erie if the canal is deepened. Others fear that an expanded canal would drain away so much water as to endanger the state water supply. Or that the excavations would dredge up deadly chemicals possibly under the Erie, and cause contamination.

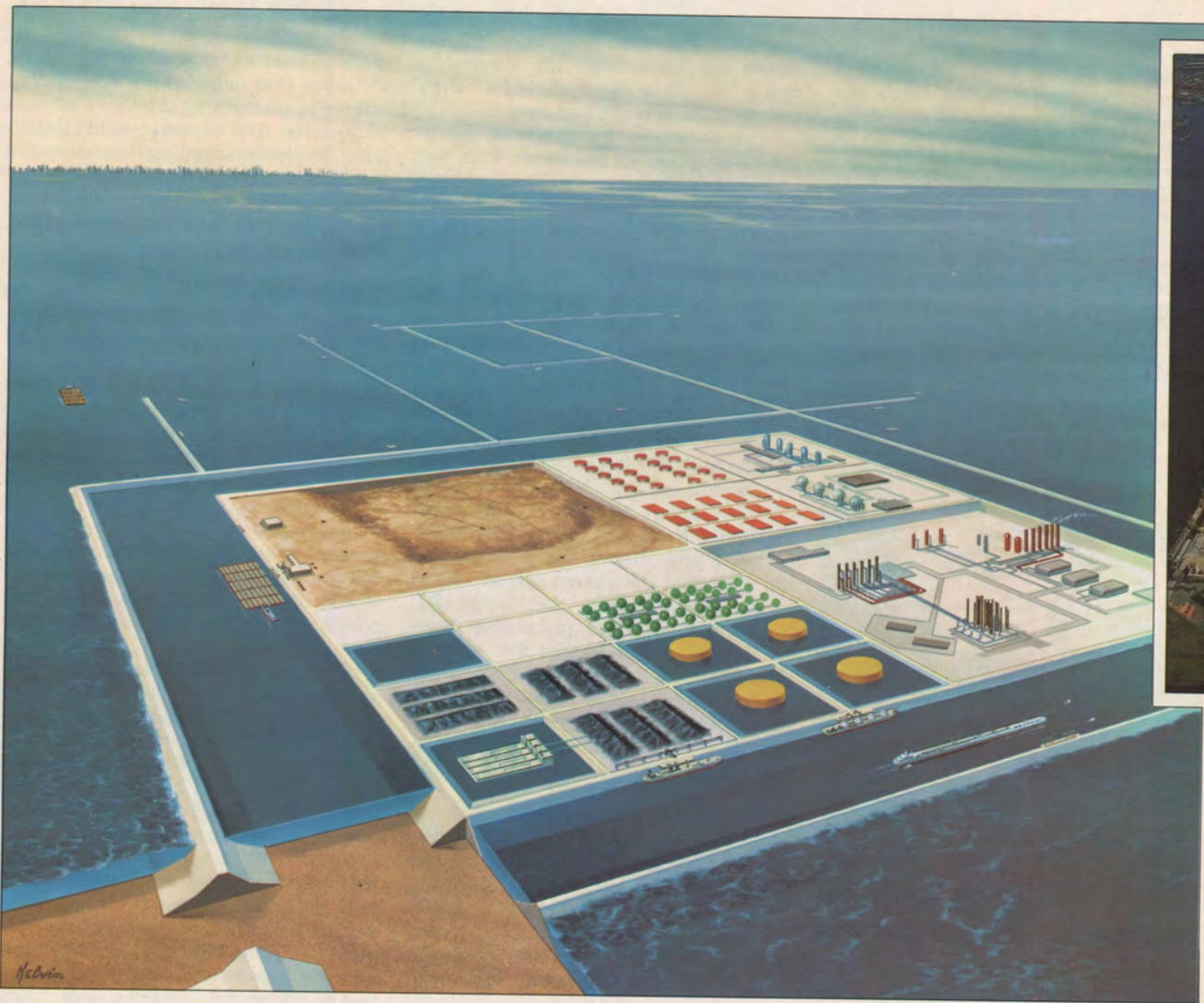
Confident of the merits of his proposal, Chattey takes these complaints one at a time. To counter Frankel's assertion about excess refinery capacity, Chattey pulls out a sheaf of petroleum-import figures that he says show New Jersey refineries are underused because they lack convenient supertanker ports. Moreover, the New Jersey refineries are prohibited, for environmental reasons, from burning the dirtier, high-sulfur crudes that are now both cheap and plentiful. "The Northeast has the most inefficient petroleum distribution system in the world," Chattey says. "And we're really paying for it." Combine the deep-water terminal with a range of low- and high-sulfur refineries and, Chattey estimates, the Northeast would save anywhere between \$2.50 and \$10 a barrel. With a current annual consumption of 600 million barrels, that's a savings of \$3 billion a year.

Chattey does concede that pipelines may well carry coal more efficiently, but he argues that while a coal pipeline can handle only coal, a canal can haul bulk cargoes from iron ore to fertilizer.

Finally, on the question of sufficient water to fill the canal year in and year out, Chattey says that's precisely the kind of issue the studies have to

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Illustration for NEXT by George Kelvin with Permission, Nigel Chattey Assoc. Inc.



resolve: "Nobody on this planet knows enough about the water resources of the middle tier of New York State to answer that one right now." Special chambers to pump escaping water back up the system could be installed if the studies indicate a future water shortage. Chattey, however, believes that despite the dry spell last summer, the canal is more likely to face floods than droughts. And the canal would already be ideally suited to handle any overflow. "With this system you'd solve, once and for all, the water resource problems across the whole of northern New York," he says. "The segments of the canal would act as a series of holding basins to absorb any floodwater.

They'd expand and contract like bellows. You'd end up with an optimal control system."

Only the matter of the pipe channels seems to him to be a serious problem, one that he hopes to see resolved in the feasibility studies. He says, "One of the things we are required to do by law in the studies is to examine the alternatives to our proposal. If the studies show the coal should go by pogo stick, it will go by pogo stick."

Too "Buck Rogers"

It might have to. After nearly 200 presentations to organizations as diverse as New York's Urban Development Corporation and the Liberian

Tanker Owners Association, Chattey admits that government and private industry have been slow to give the project the endorsement it needs to attract the \$10 million for the studies. Still, there is hope.

The governors of New York and New Jersey, the mayor of New York City, the commissioners of the New York and New Jersey Port Authority and several Congressmen have said that the program merits further study. Speaking cautiously before a press conference this past September, Gov. Hugh Carey of New York said that "what has been referred to as a 'wild idea' has suddenly become well worth study and, perhaps, implementation." Mayor



The energy island, left, would be a truly complicated complex. In the harbor at the far left is a tug pushing barges filled with dredge-spoil to be emptied into the spoil area to the right. In the bottom harbor are a supertanker and two smaller boats. The one to the left is unloading coal into storage areas; to the left of the coal piles are barges converting the coal to electric power. The other boat is unloading liquefied natural gas into four floating storage and re-gasification tanks. To the far right are petroleum refining and petrochemical plants providing petroleum products and chemical feedstocks to the Northeast. Europoort in Rotterdam, above, was built on 5,000 acres reclaimed from the North Sea, and is linked to an inland-canal system.

Edward I. Koch of New York City has written Chattey to say "there should be further studies to determine the project's feasibility and potential benefits to the City of New York." And New Jersey's Governor Byrne wrote Chattey, "I support the commencement of further studies."

But only organized labor, excited by the prospect of four million man-years of work, is genuinely enthusiastic. "We're talking jobs throughout the state," says Jay Butler, spokesman for the New York A.F.L.-C.I.O., "not just in construction, but in spin-off industries up and down the waterway as well. Now, we're not put off by the size of the project. As far as we're concerned, the

bigger, the better." Along with the state labor union, the International Longshoreman's Union and the Building and Construction Trades Council of New York have pledged to support the project. Now, political endorsements in hand, Chattey is ready for the hard part, that is, soliciting from private and state sources the \$2 million he needs in order to get matching funds for the studies from the Federal Government.

The big problem is that most government agencies, accustomed to processing tidy bureaucratic packages, don't know what to make of the energy island. To use the phrase of one Chattey associate, it's "too Buck Rogers" for them. As John Baldwin of the New

York State Department of Transportation explains, "The idea looks good on paper, but the thing is, it's such a vision that in this day and age, with all the little bureaucracies and state agencies involved, each with its own specific rules and regulations, getting the money for such a project is practically impossible." And this, ironically, from an agency designed "to promote usage of the Erie Canal."

It is a token of bureaucratic confusion that the department from which Chattey has received the most encouragement has nothing to do with either transportation or energy. It's the Department of Housing and Urban Development in Washington, which sees the energy island as a community redevelopment project.

Yet Chattey has also recognized that the energy island's scale, so boggling to most bureaucrats, may be its greatest strength. He is convinced that the logic of this grand design is irresistible: a waterway reaching precisely the nation's cities most in need of help, and an island to bring in what they need the most. "From everything I have seen," says Chattey, "I believe that we've got the only project in town that addresses the problem of the economic revitalization of the Northeast in anywhere near the scope that it merits." Stretching from Montana to New York Harbor, the energy island concept certainly has scope. But does it really have a chance?

Chattey notes that De Witt Clinton, former Governor of New York, faced the same great problems back in 1815 when he introduced legislation proposing the original Erie Canal. Nothing like it had ever been done before in America. When New Yorkers discovered the canal would cost half as much as the entire Louisiana Purchase, they derided the project. "Clinton's Ditch," they called it. Clinton then had to turn to Europe for financing. And, of course, it was his ditch that linked a lowly port of New York with the American heartland to make the port the richest in the world. Nigel Chattey believes that if the huge seawalls go up to shelter the generators and refineries of the energy island, the Northeast will rise again. ■

John Sedgwick is a NEXT correspondent based in Boston.