

APRIL 22, 1968JOHN W. PECK

Some fifteen years ago a period of enlightenment placed Ohio's minority party in control of its government, and I found myself serving the public from behind a Columbus desk. One day my head dog robber opined that if I liked he thought he could get me a Great Lakes freighter trip. I asked if he was talking about those long boats high fore and aft and low in the middle one sees skulking about on the Lakes, and when he replied in the affirmative I expressed an enthusiastic disinterest in the dirty old things. However, after he extolled their virtues on a "Don't knock it unless you've tried it" basis, I condescendingly said that if he would make all arrangements my family and I would go. He did, and we did.

Immediately upon boarding ship and viewing our quarters, I began complaining bitterly because nobody had told me about such trips sooner. Since then, I have made another half dozen trips, usually stag, and always as I descend the gangplank I begin conniving ways and means of getting back on board the following year.

My want of knowledgeability concerning these boats and their facilities was, I suspect, typical in this immediate part of the country, but folks living in any of the lake cities drool at the prospect of getting on an ore boat. I hope to indicate some reasons for that enthusiasm, and perhaps answer some questions that seeing these hulking vessels on the horizons of the Great Lakes may have brought to your minds. However, at this early point a prefatory word seems appropriate, in case anything in this paper whets an appetite. I am not trying to sell anything. In fact, these trips cannot be bought, passage being available only on invitation. The limited guest facilities exist for VIP enjoyment during the best months, but by Labor Day the important people have had enough and they take on some peasants. That's when my ship comes in!

Our initial trip was on the Harry W. Croft, even then an old boat and now, to the best of my knowledge, out of service. My last information was that she was being used for grain storage, a not uncommon final function of aging vessels. On being shown to our quarters

on the Croft I was overwhelmed by their appointments. Even advance descriptions had failed utterly to prepare me for the luxury of the passenger accommodations, and every time I go aboard a lake boat - and I suppose I have been aboard twenty-five or thirty of them - I am impressed anew.

The general layout of all of the boats is essentially the same, and, parenthetically, in spite of their giant size these Great Lake vessels are generally called "boats" rather than "ships." In each the guest or passenger suite is in the forward superstructure, and on the Croft that suite was on two levels. At the first level a comparatively small sitting room separated the two staterooms, which were on either side of the vessel. Each was beautifully furnished and had its own tile bath. Like many older homes this graying lady of the Lakes enjoyed a refinement of appointment often lacking in more modern abodes. The sitting room was handsomely paneled in oak, and a half spiral staircase led to the large salon above. That semicircular room was immediately below the bridge, and enjoyed portholes not only to port and starboard but looking forward as well. Also paneled and with wall-to-wall carpeting, it boasted luxurious sofas and easy chairs, numerous tables, a writing desk and console radio-phonograph; 1952 was a bit early for the idiot boxes which are now to be found in every form of American habitation, be they ashore or afloat.

Again typically, the guest dining room on the Croft was aft, and it too was a most attractive room with fresh cut flowers on the beautifully set table every evening. Each day a major decision was required by an inquiry as to the desired dinner menu, roast beef, trout, steak and lobster tails being among the available entrees. Dinner was always a three or four course affair, with shrimp or crab meat cocktails, soup, the main course and fine desserts.

While on this food subject, I might as well go on and tell the whole truth, which includes the fact that I never heard of anyone taking a freighter trip without gaining about ten pounds. The day usually starts with fruit juice, coffee and freshly baked doughnuts provided forward before you go aft for breakfast. Breakfast itself is a real stem-winder, with

everything from cantaloupe to codfish cakes or sauerkraut juice to sausage available. On the boat I was on last fall, no matter what else you had had for breakfast, even including waffles or flapjacks, the meal was automatically terminated by a huge platter of little dollar pancakes, sort of as a dessert. Luncheon follows the pattern, hors d'oeuvres automatically appear about four-thirty, and around ten the passenger steward shows up with a tray of sandwiches as a bedtime snack.

One of the few problems incident to these trips is that you never know when or from where you were going, to where you are going or to what port you will return. If you can promote an invitation you will be told, for example, that you are sailing on the Croft about June 20th, and that you will be advised of details later. From then on it is rather like being on the alert in the army, and you just sit tight and await further orders. If you are inclined to be a big spender, a week or so before the twentieth you may start buying an occasional Cleveland "Plain Dealer" from Mr. Bishow. Under "Sailings" in that paper you can get a pretty good idea as to where your boat is and thus be prepared for the telephone call that will advise you when and where she will be unloading. The vessel itself gets that information when coming south through Detroit by ship-to-shore phone, and she will be directed to Toledo, Cleveland, Ashtabula, Conneaut, Erie, Pennsylvania, or even Buffalo, depending upon the needs for ore at the moment.

If your luck holds, the call will further advise that she will be unloading through the evening hours, but if you haven't kept your fingers crossed the unloading may occur between 2 a.m. and your usual breakfast time. You must arrive in time to go aboard during the unloading, because these vessels wait for no thing or no man and particularly not for free-loaders.

The "to where" part of the travelers' quandary is less troublesome. To begin with, it really doesn't make much difference where you're going anyway, but the fact is that almost without exception the ore boats go to Silver Bay or Taconite Harbor, Minnesota, or to Duluth or the immediately adjacent Superior, Wisconsin. Round trips from Toledo or Cleveland are of about five days duration, those from the ports further east somewhat

longer. This contemplates going up light and returning laden. If you go up laden, the trip will be at least a day longer because of the reduced speed of the laden vessel, and the time required to unload the coal hauled north.

Five days on such a vessel may sound interminable, but the hours and days pass with astonishing rapidity. When you finish breakfast, you return to find that your steward has placed deck chairs in the most advantageous place from the point of view of wind, sun and scenery, and from then on you just do what comes naturally. Only on these boats have I in my entire life passed time just dozing and reading, and when these fail there are the alternatives of discourse and games. Additionally, the officers and crew are a constant source of interest and information. I initially felt that these hardworking men would harbor resentment against their fancy-pants sailing companions loafing in their luxurious quarters, but quite the opposite is true. Actually, the lowest oiler or deckhand takes pride in the fine appointments of the passenger suite, and every man from the captain on down welcomes the chance to show off his boat and his knowledge. A strange tribal custom paradoxically dictates that the guests invite the captain to be their guest at dinner the last night out, a pleasure because by that time he has gotten to be quite a good friend.

These lake boat skippers are fantastic operators. I am sure many of you have moved through salt waters on far lesser vessels which are boarded by pilots and shepherded by tugs as soon as they get within miles of port. Not so with these tremendous boats, which are handled by their masters with as little pomp and ceremony as you and I run our outboard runabouts. Time after time I have seen them run into the Soo Locks maintaining a distance of under a foot between the entire length of the vessel and the concrete sidewalls, all without belaying a line or making actual contact. One day a year or so ago when the lakes were low I was on the bridge with the skipper as we came into Toldeo. As we inched toward the pier he was making a speech to me on how the evils of unionism were making it impossible to get a day's work out of a seaman, when I felt the vessel make a soft contact. Upon inquiry, he told me he had just run the vessel aground, but that he had

first slowed it down by dropping the stern-anchor - all without a break in his diatribe! The courage required to run a \$7,000,000 boat casually into a mud bank may be different than that needed to fight Atlantic gales and tropical hurricanes, but it is none the less real.

* * * *

A number of reasons have made me a bit hesitant about presenting this rather shallow paper to this learned group. One of those reasons was the fact that I knew such a paper would entail a lot of statistics, and nothing is more boring than being inundated by numbers. Up to this point they have been rather completely avoided, but I must cite some figures because total avoidance would equate total meaninglessness. Having mentioned a \$7,000,000 boat, let me set forth some further facts with reference to that vessel as rather typical. That fifteen year old boat, which could not be reproduced today for under \$9,000,000, is the Armco. I hasten to add that in spite of her name she has no direct connection with the American Rolling Mill, anymore than our late fellow townsman had with the freighter Benjamin E. Tate. The Armco, is rather, a member of the Columbia Line operated by Oglebay Norton Company which, as is customary, named her after one of its big customers. She is 747 feet overall with a 70 foot beam, a maximum draft laden of 25 feet 7½ inches, and a 20,000 ton capacity. Built by American Ship at Lorain, Ohio, she has a diesel fuel steam turbine propulsion system which develops 7,000 horsepower. One of the faster boats on the Lakes, the Armco moves 18 miles an hour light and 16 loaded. Since time is money, these boats all move at the greatest possible speed every second, but a reduction to from 10 to 12 miles an hour is required in the rivers.

A typical run for the Armco is the 1350 mile round trip from Toledo to Silver Bay, and the 5 days this takes consist of 48 hours up, 53 hours back, plus 3½ hours for loading.

To spell such a trip out a bit further, you cross Lake Erie into the Detroit River, move past Detroit itself into Lake St. Clair and cross it to the St. Clair River, entering Lake Huron after passing under the Port Huron-Sarnia Bridge. After proceeding nearly

the full length of Lake Huron, you enter the St. Mary's River, and move through it and the locks at the Soo into Lake Superior. Silver Bay, Minnesota, is nearly at the far end of tremendous Lake Superior, the largest body of fresh water in the world, with over 31,000 square miles of water surface, and a maximum depth of about 1,300 feet. A typical day on that magnificent body of water finds you out of sight of land, surrounded only by the green, turquoise and blue of the clear waters and the sparkling sky, broken by the clear whites of cresting waves and billowing clouds.

I mentioned the passenger suite of the Harry W. Croft and the fact that it is much like those found in the other older and smaller boats. In the Armco, as in most of the newer and larger vessels, the passenger layout is also generally similar, but is on one deck, and includes four twin-bed staterooms and tile baths instead of two. When you board, canvas runners protect the carpeting from the gritty dust that accompanies loading and unloading, but the moment a boat leaves dock the firehoses come out, and every fleck of dust and grime is washed away. The canvas runners are then removed, and from that time on everything is as immaculate as a luxury liner.

The Armco is what is known as a bulk ship. Such a boat enjoys a freedom of gear on deck and a great hold capacity, but she must be unloaded at a port having unloading facilities. Such facilities are of two types, the older, slower and noisier of which involves the use of buckets. These consist simply of regular clam shell buckets suspended from cables, and part of the noise results from the banging of these buckets into the edges of the hatches, frequently causing minor damage. To unload the Armco with buckets takes from twelve to fifteen hours, but the amazing Hulett electric ore unloaders do this job in about eight hours. Such an unloader moves along steel trestles paralleling the boat with a huge car suspended on a giant arm which descends into the vessel with open jaws. These jaws shut upon some seventeen tons of ore which is lifted out and dropped into a waiting railroad car. Always a fascination to me is the fact that late in this operation a medium size Caterpillar bulldozer is dropped on cables into the hold of the vessel. There it loses the stature and dignity it normally enjoys by reason

of its mass, and deep in the hold it scurries around, looking like a toy in the dusty depths, pushing the remains of the cargo into a position available to the jaws. It is also a recurrent surprise to see the Hulett operator grabbing at myriad levers, seated within the shovel unit itself immediately above the gaping jaws, and himself descending with them into the innards of the vessel.

A second type steamer, easily identified in profile, is the crane boat, which has two cranes on deck. These cranes unload by the use of cable suspended buckets, but these boats have serious disadvantages. Of greater utility is the so-called self-unloader. This boat is also easily identified in profile, since a large bridge-like structure is pivoted near the forward superstructure and extends aft parallel to the deck nearly to the after structure. In operation, this bridgelike affair is extended inland at right angles to the boat and the vessel's cargo is carried over it on a conveyor belt. In cross section amidships, the bottom of this vessel resembles the letter "W". At each of the lower points there are conveyor belts conveying the cargo forward to screw lifts, which take it up to the conveyor belt I mentioned first. This vessel has the obvious advantage of not being restricted to ports possessing unloading facilities. Instead, it can move to any point having relatively deep water immediately offshore, and there unload either into waiting vehicles, to another conveyor, or to stockpile.

One factor should be singled out as the greatest single modern benefaction to lake boat transportation, as it has been to all other surface as well as aerial navigation. I refer, of course, to radar. A mysterious device to the uninitiated, ten minutes' instruction can give a basic working knowledge of this astounding apparatus. On open water, using a forty or eighty mile diameter screen, land as well as other vessels can be instantly picked up, their distance read as easily as the mileage figures on your automobile odometer, and comparative speeds readily calculated. The range may be changed with as little effort as you change channels on a television set, and on a two-mile range not only are small pleasure craft readily discernible, even a floating coffee can a hundred or two yards away will in smooth waters show up as a blip.

Without pretending to expertise in the use of radar which can come only with experience, having spent hours watching these screens in daytime and darkness, in bright sunshine and deep fog, I have trouble understanding how collisions occur. Yet they do, as you know from the recurrent news stories of lake disasters. Like the accidents on our highways, these collisions result usually from a combination of human error and heavy traffic. When out of sight of land on the vast wilderness of Superior, it is not unusual to see as many as seven or eight other boats at one time, and there is always a race to be the first into the channels, where the same phenomenon that bunches vehicular traffic operates. When it is considered that for the solid eight months of the shipping season one of these boats passes any point in the lower rivers (that is, the Detroit River, Lake St. Clair and the St. Clair River) every seventeen minutes, and it is remembered that this constitutes only a small fraction of the traffic numerically, it is perhaps not too surprising that accidents happen.

Awhile back I said something about the ready maneuverability of the lake boats, and the conventional boats like the Armco possess this attribute. However, for maneuverability they cannot approach a vessel equipped with what is known as a "bow thruster." This consists, in effect, of a transverse tunnel through the vessel near the bow. In the center of this tunnel is a propeller with blades of variable pitch. By appropriate variance of those blades it is possible to move, or "thrust", the bow of the vessel sharply to either port or starboard, and by maintenance of position by use of the main screw it is even possible to turn the vessel completely around in its own length. The device can also be used when the vessel is moving backwards. Only under the most extreme conditions is it ever necessary for a boat equipped with a bow thruster to make use of a tug.

A word about the crew might be of interest to the personnel minded employers among you. Forward, except for the skipper, there are three of everything, one per shift. Thus there are three mates, first, second and third, three wheelmen, watchmen, deck watches, and deck hands. Aft, under the chief and assistant chief engineer there are three engineers, three oilers and one

wiper, while the galley is manned by a steward, second cook and three porters. The passenger steward makes a total of thirty-one. This is about standard, but some variance results from the degree of the boat's engine room automation.

Two factors are responsible for the ore lake boat traffic as we know it today, although there is a vast difference in their relative significance. The first, which is an absolute essential to this entire transportation system, is the Soo Locks. Off and on for over a hundred and seventy years shippers have taxed the maximum length and breadth dimensions which could be accommodated by the locks existing at that moment in history. The vertical dimension is no less significant, and the larger vessels are loaded to a point that leaves only inches between their keels and the lock floor. When it is noted that loading one hundred tons of ore into the Armco takes her down one inch it is easy to see why hundreds of thousands of dollars in cargo tariffs were lost a few years ago when the lakes were low and the keels had to be kept higher by reduced loadings.

The first navigation lock at the Soo, thirty-eight feet in length, was constructed by the Northwest Fur Company on the Canadian side of the river in 1797. American troops destroyed this lock during the War of 1812, and portaging around the rapids was again necessary until the first ship canal, known as the Sault Canal, was built with Congressional aid in 1855. It had two tandem locks each 350 feet long. It was originally owned and operated by the State of Michigan, and a toll of four cents per ton was charged.

The national importance of the traffic and the limitations on Michigan funds caused a transfer of the Canal to the United States government in 1881. It was placed under the jurisdiction of the United States Army Corps of Engineers, which has operated the locks toll free since that time. Several locks were subsequently constructed and destroyed as inadequate, and those in existence now are the Sabin and Davis Locks in the north channel, and the New Poe and McArthur Locks in the south channel. The Davis and Sabin Locks, built in 1914 and 1919 respectively, are both thirteen hundred fifty feet in length, while the 1943 McArthur Lock is only

eight hundred. All have, however, a limiting breadth of eighty feet. Many of the larger vessels have a seventy-five foot beam, which makes their entrance a needle threading operation. In spite of the greater lengths of the Davis and Sabin Locks, the shorter McArthur Lock controls the maximum length of the deep-draft vessels, since it is the only lock capable of passing ships drawing more than twenty-two feet. Again using the Armco as an example, while light she may go up through Davis or Sabin, laden she must come down through McArthur. The absolute control on size imposed by the locks will be readily seen from the fact that there are now in operation some fifty boats having a seventy-five beam and lengths of from six hundred sixty to seven hundred thirty feet - the maximum permitted by McArthur.

To extend these limitations construction of another lock, to be known as the New Poe Lock, began in 1964. Its cost will be about \$40,000,000, and it is of some interest to note a Canadian concern was low bidder on the job. Construction work was completed last September, and formal dedication of the new facility is scheduled for June. This lock is twelve hundred feet in length, a hundred ten feet wide and has a depth of thirty-one feet.

In keeping with the practice of utilizing every inch of lock space, announcement of the dedication plans of the New Poe Lock was followed immediately by a contract under which American Shipbuilding of Lorain will build an eight hundred fifty-eight foot boat with a one hundred five foot beam, again leaving only sixty inches of leeway. Already under construction, the new vessel will cost between eighteen and twenty million dollars. It will be powered by a single engine giving speeds up to seventeen miles an hour, and will be equipped with a bow thruster. A self-unloader, it will be capable of discharging its forty-five thousand ton cargo at a rate of ten thousand tons per hour.

ftj
Meanwhile, Litton Industries, Inc. is readying its shipyards at Erie, Pennsylvania, to produce boats with a beam of a hundred five feet, a length of eight hundred fifty-six feet and a forty-three thousand two hundred gross ton capacity. However, this vessel is constructed of separate segments between the fore and

aft sections, and by the insertion of three forty-eight foot modules is capable of expansion to one thousand feet, the maximum that the new lock can accommodate. The Litton boat will boast a new type unloading device capable of discharging at a rate of twenty thousand tons per hour.

Returning to the Soo itself, we encounter a body of facts and statistics which is nothing less than staggering. For openers, in its eight months season the Soo handles more than the combined annual tonnage passing through the Panama and the Suez Canals. Some seven hundred different vessels combine to make an average total of about seventeen thousand passages a year through the Soo. Amazingly, it only takes an average of thirty minutes for a vessel to enter the lock chamber, be raised or lowered the twenty-one feet which represents the elevation difference between Superior and the lower lakes, and to leave the lock. Perhaps the importance of the locks to the nation's economy is best indicated by the fact that two-thirds of the iron ore produced in the United States and Canada passes through this facility.

To this point I have been, with the exception of one casual reference to coal, talking loosely about ore as the principal cargo. Before going into that as a concluding topic, it should be mentioned that wheat is an important and not infrequent cargo, and that sulphur, salt, pig iron, steel and scrap are also transported via these lake steamers.

Prior to the early 1950's, iron ore was transported just as it came from the ground. It clanged and rattled aboard from the loading facilities at Superior and Duluth in clouds of red dust which settled on every surface and which permeated all but the most tightly sealed areas. This rich ore came essentially from the Mesabi Range and as it filled hulls, coffers were filled with gold. However, the source was not unlimited, and the dwindling of the supply was reflected in the reduction of ship movements. Then a new cargo, or more accurately a new form of the old cargo, was developed. It was to this product that I had reference earlier when I said that two factors were responsible for today's ore boat traffic. Although dwarfed in significance by the Soo Locks, it was the development

of this new cargo - the taconite pellet - which revitalized the industry and caused the big upsurge in lake steamer movement.

Taconite is the mother ore from which deposits of high-grade iron ores were formed by nature, including those now largely depleted. The iron formation of the Mesabi Range is about 95% taconite, one of the hardest of rocks. One vast deposit of magnetic taconite on the eastern tip of the Mesabi Range is about nine miles long, twenty-eight hundred feet wide and a hundred seventy-five feet deep at the thickest point. It is virtually free of glacial overburden and is known to contain about two billion tons of magnetic taconite available by open pit mining methods. Geological studies indicate that substantial additional tonnages are highly probable. While the existence of this taconite mass had long been known, it awaited development by Professor E. W. Davis, then head of the University of Minnesota's Mines Experiment Station, to spearhead the development of a means of making taconite a marketable commodity. To over-simplify, it should suffice for present purposes to say that that process does to the mother load in hours what nature does in a million years.

In its marketable form, the taconite pellet appears as a small round sphere, about the size of the marbles we played with as kids. These pellets possess many endearing attributes, including cleanliness. Before a boat is fully belaid at Silver Bay, the pellets start tumbling aboard by the millions, being deposited in the holds by drops from conveyor belts. Even such rough handling raises only a relatively insignificant amount of dust, and their form permits the round pellets to completely fill the hold to the desired maximum. The Silver Bay pellets contain a minimum of 61% iron, which means that the percentage of the cargo represented by useless slag is only a tiny portion of that wastefully transported in a cargo of iron ore. Unloading by Huletts is also vastly simplified, and crude ore is not capable of being unloaded by self-unloaders. From this fact alone it will readily be seen that the new big boats now on the drawing boards and ways are being planned around the pellet trade. It is small wonder that Dr. Davis is regarded as the Great White Father of the industry.

Silver Bay itself is a surprising municipality. This entire community, boasting a shopping center, bowling alleys, churches and other miscellaneous establishments, was carved out of the woodlands. The site was selected because it was opposite a small island in Lake Superior behind which a harbor would be - and has been - built. Of local interest is the fact that the town was constructed lock, stock, and barrel by John W. Galbraith of Mt. Sterling and Columbus, patron of Senator Bricker, the Pittsburgh Pirates and many fine race horses. The initial cost of the mining and processing facilities, which began in 1951, was about \$190,000,000 - all private capital. Most of these funds were borrowed from life insurance companies and the balance was advanced by Armco and Republic Steel.

Throughout the entire operation of the giant ore boats there is a beguiling outward lethargy and atmosphere of casual calm. Beneath all this, however, because the demands of interest on the capital invested in these boats is as relentless as the demands of the elements on their hulls, they fight the clock every minute. The second the last pellet is taken aboard or put ashore the skipper, with visions of his annual bonus guiding his hand, moves the telegraph as quickly as possible to "Full Ahead." The uncertainties of the shore hours have passed, and days of serene sailing lie ahead. A bit like him, I have been fighting the clock through the troubled waters of these many pages and having read, now look forward to the serenity of the months of listening which lie ahead.

John W. Peck
