OUT with the FLEET
on the Upper Mississippi, 1898-1917

ALBERTA KIRCHNER HILL

MRS. HILL, who now lives in Silver Spring, Maryland, was born in Fountain City, Wisconsin, in 1898 and spent a large share of her childhood on the Mississippi River, where her father and grandfather contracted channel improvement work for the United States government. She is a graduate of Milwaukee-Downer College and the mother of three children. It was for her family that she originally set down her reminiscences of life on the river, parts of which are here reproduced.

THE DECISION of my grandfather, Albert Kirchner, to become a contractor on the Mississippi brought me at the age of six weeks to live in a houseboat on the river. There I was to spend nineteen summers—from 1898 to 1917—growing up in the floating village that was our construction fleet and moving with it from job to job.

It would seem that Grandfather had a pioneering instinct which led him to new and vastly different business ventures. He had been a farmer before becoming a storekeeper at Fountain City, Wisconsin, but neither occupation could be considered preparation for the building of dams and shore protection and the piloting of steamboats. When, however, he formed a partnership with Jacob Richtman, also of Fountain City, and purchased the necessary equipment for river work, he had reason to expect a good financial return, for the era of sys-
tematic channel improvement by the federal government was just beginning.1

Before the Civil War and for a number of years after, steamboating on the Mississippi was difficult and hazardous. The problems encountered by pilots in navigating a river whose channel was forever changing have been vividly pictured by Mark Twain in Life on the Mississippi. With the channel here one day and there the next, any attempt to mark it was useless. The sand bars, snags, and half-submerged, rotted logs known as deadheads, were a constant menace to a steamboat, and it was often necessary to feel the way, taking repeated soundings in search of deep water.2

During the 1860s and 1870s river traffic began to suffer from competition with the steadily advancing railroad system, and there was much agitation for government assistance to improve the Mississippi’s channel and aid navigation. Until 1878 the only government activity consisted of snag removal, but in that year an appropriation for improvements was included in the rivers and harbors act, and in 1879 Congress created a Mississippi River Commission to develop an over-all plan for channel control. From that time on funds were provided regularly and the work was supervised by the corps of engineers.3

The method adopted for deepening and stabilizing the channel was to increase the force of the flowing water by decreasing the space through which it ran. Secondary channels were closed off and dams were built from the shore out into the stream, forcing the water to flow around their ends. The theory was that the stronger current thus created would carry away or push aside the sand and other materials and keep the channel deep and free. Snag boats and dredges would take care of anything which the current failed to move.

As the work progressed, pilots gradually found the channel becoming more and more dependable, and soon they were given further help with the addition of buoys, lights, and white, diamond-shaped boards (logically called “diamond boards”) to mark the course. There was deep satisfaction, when running at night, in having the searchlight pick up unlighted buoys and diamond boards exactly where you were certain they should be. By 1905 the work was nearly completed and a four-and-a-half-foot channel secured between the Twin Cities and St. Louis. The continued decline of river traffic, however, made it appear that greater depth was needed, and in 1907 Congress provided for a program to increase the channel to six feet.4

DURING THESE years construction fleets worked throughout the summer, building dams and putting in shore protection where necessary to prevent erosion. Some of the fleets were owned by the government and operated by the corps of engineers; three or four belonged to contractors like Grandfather. A fleet generally consisted of a steamboat, a variety of barges, and as many quarter boats as were needed to provide

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1 For a brief biographical sketch of Jacob Richtman[n], see L[awrence] Kessinger, History of Buffalo County, Wisconsin, 576 (Alma, Wisconsin, 1888).
2 See also George B. Merrick, Old Times on the Upper Mississippi: The Recollections of a Steamboat Pilot from 1854 to 1863, 78–87, 92–95 (Cleveland, Ohio, 1909); Herbert Quick and Edward Quick, Mississippi Steamboatin': A History of Steamboating on the Mississippi and its Tributaries, 183–189 (New York, 1928).
3 Mississippi River Improvement Convention, Proceedings, 14–18 (St. Louis, 1881); Mississippi River between Missouri River and St. Paul, Minn., 2, 5 (59 Congress, 2 session, House Documents, no. 341 — serial 5153); United States, Statutes at Large, 20:154; 21:37. During the 1870s and 1880s it was widely believed that the stimulation of river traffic would help to regulate railroad rates through competition. For a general account of Mississippi River improvements see Mildred L. Hartsough, From Canoe to Steel Barge on the Upper Mississippi, 260–278 (Minneapolis, 1934).
4 Mississippi River between Missouri River and St. Paul, 2; Mississippi River between Mouth of Missouri River and Minneapolis, Minn. (Interim Report), 11 (71 Congress, 2 session, House Documents, no. 290 — serial 9256); Mississippi River from Minneapolis to Lake Pepin, 12 (69 Congress, 2 session, House Documents, no. 583 — serial 8736); Statutes at Large, v. 34, part 1, p. 1105.
living quarters for the personnel. At the time I knew it, Grandfather's fleet included the towboat, "Percy Swain," three quarter boats, two building boats, a light launch, and some eighteen barges. All were constructed entirely of wood. The large barges, which were used for hauling rock and the bundles of willows known as "brush," were about a hundred feet long, twenty feet wide, and five feet in depth from deck to bottom. Two small barges, called "hoppers," which were used in making the mats of brush, were about a third as long. Largest of all were the building boats, whose primary function was to hold the course along which a dam was built. Equipped with boilers and engines, steam and hand capstans, these building boats could propel themselves with lines anchored on shore and out in the river and could also pull barges up to position. The fleet had two sections, so that work could be carried on in different locations at the same time.

Richtman and Kirchner obtained their first federal contract in 1878. At that time their towboat was the "Belle of Bellevue." Later they owned the "City of Alma," then the "Cyclone" and, finally, the "Percy Swain." By 1893 Grandfather had become sole owner of the fleet. In that year, at the age of twenty, my father, Edward, started to work for Grandfather as a foreman, beginning a business association that was to last for twenty-five years.

As he gained experience, Father was promoted to what might be called general manager. He assumed more and more responsibility with the passing years, until he had entire charge of the construction work, of personnel (except that of the steamboat), and of purchasing supplies for the kitchens and the commissary. He was also largely responsible for placing the sealed bids for the contracts under which the firm worked for the United States government. Though Father had a pilot's license and was capable of performing the duties of captain, that station was always retained by Grandfather. That he took great pride in it was quite evident.

He was a big man, well over six feet tall and with a sturdy frame. He made an impressive figure as he stood with one foot on the low railing of the "Percy's" upper deck, shouting orders to the deck hands. The round, full, Teutonic face, with its blond, somewhat auburn-hued goatee, gave the impression of a mild and even-tempered person. He was not! When the men failed to give the swift and efficient service he wanted, pride and dignity disappeared as he stamped about and raved at the stupidity and slouchiness of all "roustabouts." He had never learned—or at least never used—the sulphurous language that was a captain's prerogative. A series of "doggone its"—as many as were needed for the occasion—could express surprise, exasperation, or anger enough to kick someone overboard.

GRANDFATHER'S earliest work was done between St. Louis, Missouri, and Quincy, Illinois, and the movement over the years was generally upstream, though not by any orderly progression. After 1905 we no longer went as far south as Quincy. In 1910 we were near Burlington, Iowa; the following year found us in the general area of Cassville, Wisconsin, and Guttenberg, Iowa. In 1912 we worked near Wabasha and also down as far as McGregor, Iowa.

Contracts for construction of dams and shore protection were usually let by the corps of engineers in the fall or early winter, the work to be done the following summer. According to the usual form, Grandfather would agree to "furnish all materials, boats, machinery, tools, and other appliances necessary to do the work, and, in accordance with the specifications hereto attached, construct dams and shore protection, of brush and rock, in the Mississippi River . . . at such points as may be selected by the Engineer Officer or his agent in charge." The contracts also set forth the prices to be paid.
for materials. In one dated 1894, covering the area between Genoa and Prairie du Chien, Wisconsin, the price for rock was listed as a dollar per cubic yard, while for brush it was thirty-nine cents. In a contract for work between Prairie du Chien and Dubuque, Iowa, let in September, 1897, rock was only ninety cents and brush a mere nineteen. During later years these rates increased considerably; by 1910 rock was in the neighborhood of $1.50 a cubic yard, and brush about sixty cents.

Another section of the standard contract described how the rock and willows were to be used. It stated: "the dams will consist of brush made into fascines and loaded with rock. The fascines may be laid one at a time or in mats, except in places where the water is over two feet deep, when they must be made into mats. Where only one layer of brush is laid, the covering of rock shall be one foot thick at the tips and butts, and two feet in the middle. When more than one layer of brush is used, the bottom layer shall be covered with rock six inches thick at the upper side, and eighteen inches at the lower side, if required. On this rock a second layer of brush shall be laid, ten or fifteen feet (as may be required) farther up stream than the lower layer, and this second layer shall be fastened and covered as the lower; and additional layers shall be similarly placed and covered, except that they shall be placed and laid each two feet farther up stream."

When I went out to the job with Father, he would generally leave me on the building boat, from which vantage point I could easily see every phase of the work. I could even smell the delightfully blended odor of the willows and of the creosoted marline twine with which the bundles were held together. It came to me strongly every time the men hoisted a swishing bundle of brush to their gunny-sack-protected shoulders and moved with it to the little hopper, the barge made especially for the building of the mats.

On the hopper all would be in readiness.

Trimmed willow poles would have been laid, at intervals, lengthwise of the hopper so they would be on the bottom of the mat. Other poles waiting nearby would be laid across the top. When the top and bottom poles were fastened together they would make a kind of frame to give compactness and strength to the finished mat. The long lines which would hold the mat in place while it was being loaded with rock or while it was sinking, were coiled and ready to be looped through it. Marline twine, cut in the required lengths, hung from the posts at one end of the hopper.

By the terms of the contract, the willows had to be "live" — that is recently cut. They were to be sufficiently "trimmed and choked, to form a compact mass, twenty feet long,
and from twelve to fifteen inches in diameter, and tied with bands of lath yarn or wire not more than four feet apart. When made into mats, these bundles were supposed to be closely packed and secured by at least three pairs of poles, as I have described. The finished mat was required to be from twelve to fifteen inches thick and not less than twelve feet long.

When the mat was completed, it was launched by pushing the hopper out from under it. In the old style hoppers the timbers down which the mat slid were set permanently at the proper slope. Thus at the head end the men had to lift the heavy bundles up from their shoulders. To overcome this and other problems, Father invented and had constructed a new kind of hopper. By means of ratchets and cables attached to four posts at one end of the barge, the timbers could be lowered to within six inches of the deck. When the mat was completed, they could be raised at one end so that the mat could slide off easily.

Whether the brush was more important to the structure of a dam than the rocks is a question like that concerning the chicken and the egg. Combined, layer upon layer, the two materials formed an unbelievably stout barrier against the river’s current. Neither concrete nor piling was ever used. Small rock, furnished with every bargeload of larger rock, was thrown in after the mat had sunk, filling in the hollows of the brush and settling in the spaces between the rocks. In time silt and sand also packed in to add to the strength of the dam.

Although they usually were built out from the shore on one side of the river only, these dams sometimes extended from both shores. When the current might cut around the end of a dam, an extension was built at a right angle to it, heading downstream. Another type was the “closing” dam which was built to block off a secondary channel. Closing dams were the most difficult and dangerous to build. Many a good day’s work was ruined as the water, rushing through the remaining gap, pulled up the anchors which held the building boat in place. Boat and barges would be swept aside, often taking with them the mat or a partially completed section of the dam.

Before a dam was started, the shore from which it was to extend had to be protected. If the bank were washed away, the efficiency of the dam would be reduced or destroyed altogether. With axe and pick and shovel the men labored, cutting down trees within a certain distance of the water, dynamiting or pulling stumps, and then grubbing and shoveling until there was a slope to the bank which would satisfy the inspectors as well as the foreman. At the upper edge of this slope a layer of rock was spread, and nearer the water a mat was built for extra protection. Unlike the mats used for the...
MAKING a mat for dam construction by placing bundles of willows crosswise on an old style hopper. The building boat is at the right. This picture was taken in 1885.

dams, these were made with the brush bundles laid endwise on the hopper and overlapped to make them continuous. Rocks, thrown from the barges or dumped from wheelbarrows pushed out on gangplanks, held these mats as they did on the dams.

The building boat's special function was marking the line on which the dam was to be built. Surveying to determine this line was done by the army engineers before any work was started, and they also took the soundings by which they decided how high the dam should be. Completed dams did not always show above the surface of the river. Only when the water was low could the finished product be seen.

The steam capstan of the building boat was one of the hardest working pieces of equipment on the fleet. Each time a section
Making a mat for shore protection by lapping the brush bundles endwise. At the time this picture was taken, about 1908, the new type of hopper designed by Edward Kirchner had been put into use. The bank shown here has been cleared and graded in preparation for laying the mat. A barge-load of brush appears in the background.
of dam was completed the capstan went into action, winding up the line that was attached to the anchor farther out in the river and pulling the building boat along. In reverse order, it could pull the boat back towards shore, on a line tied to the trees.

There were also eight hand-operated capstans. These were used for many jobs, but particularly for pulling the barges of rock or brush and the hopper up to the building boat. Since the making of a mat was the initial step in starting a dam, the little hopper was first pulled snugly against the downstream side of the boat. The brush barge then was pulled up against the hopper so that the bundles of brush could be carried from one to the other.

Like spokes in a rimless wheel, the heavy wooden bars stuck out from the holes in the head of the capstan. Round and round walked the men, their arms straining against the bars, their backs hunched, as they bent to the task of pulling the loaded barge against the current. The chocks at the building boat's edge squealed and groaned as the straining line ran through.

Two men hauled in the slack as the barge came nearer and the line was wound in. One of them coiled it on the deck. At a signal from the foreman, the line would be fastened to a cleat. Two turns around the oversized wooden cleat, with a half hitch over one end, would do the job. The clanking of the capstan would cease. Iron lugs would fall into slots to keep it from turning backward. The men could have a few moments of rest, or, when the pull was very heavy, there would be a change of hands. This might be necessary when drawing up a rock barge with its tremendous weight against the pull of the current.

The materials for the dams were provided by quarrymen and brush cutters whose contracts were with Grandfather. Whenever possible, the quarries and the brush camps were located within a day's towing distance from the fleet. An island full of willows, a few men equipped with good, sharp axes, and a quarter boat to house his crew, were all the brush contractor needed to be in business. The quarryman had a greater investment in equipment, and he needed a
specialist in the use of dynamite, men who could handle horses well, and hands who knew how to load the barges properly.

The rock-crowned hills along the Mississippi provided many spots that were ideal for quarries. Blasted loose in all shapes and sizes, the rock was further broken up by hand to meet the specifications of “6 inches cubed, or its equivalent, and not larger than 10 inches.” It then was loaded into heavy, two-wheeled, one-horse carts and hauled down the steep, winding road to the river. A specially constructed dock made it possible to drive onto the barge, where the load was dumped. The loading experts then had to heave and roll the rocks into one practically level mass which was lined up with the sides and ends of the deck and squared off at the corners. Thus they could be easily measured by the inspectors and the cubic yards computed.

No sooner had a barge of rocks been pulled up to the dam than the symmetry of the load was destroyed as the men began the routine of sinking a mat. You did not have to be on the building boat to know when that part of the work started. From the quarter boats you could hear the big rocks hitting each other, like a rapid-fire barrage, as the crew of thirty or more men heaved them from the barge.

The mat itself had been held in place by lines, looped through only, and not secured, so that one end could be slipped out as the mat went down under the load of rocks. A splashing began as the mat was released slowly. The sound grew in intensity as the mat sank lower and lower in the water. Comparative silence followed for a moment. Then you would hear the scraping of shovels as the deck was cleared of the smaller rock which served as filler.

When a dam was finished, we often moved to the other side of the river where the shore would need protection. This was called “riprapping.” It might extend a hundred feet along the bank or it might cover several hundred, depending on the action of the current. The dams would push the flowing water toward the opposite shore with enough force to cause erosion; if a bend in the river were present, the current would be even stronger and a larger area would need protection. The method of constructing the riprapping was the same as that used at the shore end of every dam.

Channel improvement was hard, rough, pick-and-shovel work, and its only claim to
glamour came from its uniqueness and from the way of life which was a part of it. The old dams were built for a six-foot channel and most of them are now constantly submerged by the nine-foot depth provided under the new system of navigation and flood control. They still are maintained, however, and continue to perform a useful service in helping to keep the channel clear.6

AS WE MOVED slowly northward over the years, Fountain City became the fleet's usual winter quarters. A widening of the mouth of Waumandee Creek as it joins the Mississippi forms a protective harbor at the north end of the town. There the federal government had established a boat yard, with ways and other equipment for the repair of its fleets, and mooring space was available across the bay.

When the fleet left Fountain City bay after the river was navigable in the spring, Mother and I would stand on the back porch of our home to watch the tow pass by and to wave to Father. From that day until school closed for the summer, time moved for me with tired and heavy feet. Yet, no matter what the degree of my impatience, the hour finally did come when Mother and I boarded the train, usually bound south, for the town where Father would meet us.

"We live on a houseboat, but we call it a quarter boat," was the explanation which we invariably had to make when telling people about our summers on the river. They seldom knew what a quarter boat was. Though No. 3, where Father, Mother, and I lived, was a complete and very livable house on a barge, we preferred calling it a

6 Vernon W. Pinkey, District Engineer, Rock Island District, to the author, January 14, 1959. A survey authorized in 1927 found that changes in the nature and requirements of river traffic had made obsolete the six-foot channel, which was still incomplete at that time. It was recommended that the old technique of deepening the channel by narrowing it with wing dams and shore protection be abandoned, and that a nine-foot slack-water channel be established by constructing an extended series of locks and dams. This plan was adopted in 1930. See Mississippi River between Mouth of Missouri and Minneapolis, 3-49; Statutes at Large, v. 4, part 1, p. 927.

ENGINE room of the steamer "Cyclone"
quarter boat, since “houseboat” seemed to carry a touch of undesired snobbishness. Its cabin was approximately fifty feet long and seventeen feet wide and was divided into four rooms. At one end was the commissary, where were kept supplies for the men and some staple groceries for the big quarter boats, the brush contractors, and the “Percy.” At the other end was our kitchen and a small bedroom, while in the center was a combination sitting room, bedroom, dining area, and office. The interior was rough, much like the average lake cottage.

The other two quarter boats, numbered 1 and 2, were shorter than No. 3, but had two decks. Their cabins were set down in the hull, the upper level being devoted to sleeping quarters for the crew, while down below and in the center was the large dining room with a good-sized kitchen and a bedroom for the cooks at one end. Here, also, was the icebox, large enough to hold several quarters of beef, crates of eggs, firkins of margarine, and other perishables. At the opposite end were two bedrooms for the foreman, the building boat engineer, the commissary clerk, and the watchman. The commissary end of our boat was always tied to this end of No. 1, while hitched to the kitchen end was the tiny, white-painted, government-owned quarter boat used by the two United States Army engineers assigned to the fleet.

GIRLS never could understand or appreciate my keen enjoyment of life on the Mississippi. My friends often asked, “But what do you do all summer by yourself?” To them it was incredible that fishing, launching, rowing, catching clams, or taking trips on a steamboat could be anything but boring—and to have no companionship seemed the last straw. I do admit to frequently wishing for a companion of my own age with whom I could share my pleasures. There were times when I was lonely—but bored, never! I adapted to my surroundings in the only possible way: by becoming a tomboy.

Mother never objected to my boyish interests and activities so long as I did not completely forget to be a lady. Good manners were expected; boisterous behavior was frowned upon. She was constantly alert to the influence on me of the rougher elements of life aboard the fleet. I had to learn to ignore the profanity of the men—often hoboes, ex-convicts, or drifters—who used rough language with abandon. They lived close to us, and though they were usually
thoughtful, polite neighbors, they could not be expected to watch their words or lower their voices because I might hear them.

The rules for living on the river were taught me as soon as I was old enough to understand them. As a small child, I had to curb my urge to run. Wild playing and dashing about anywhere aboard the fleet were heartily frowned upon. I was trained to look and to think before I took a step, and eventually I learned to move about with a practiced ease that was as involuntary and natural as breathing. When that time came, Father felt free to take me with him to look over the work at the dam, even though it was a dangerous place, with the water rushing wildly around the finished end of the dam and sweeping like a mill-race under the barges.

It would seem that I would have been taught to swim before anything else, but I never got beyond the beginner’s stage. Beaches were infrequent and usually treacherous. Father seldom had time to explore every foot of them — as would have been necessary for safe swimming. My bathing outfit was the cut off top of a dress worn under bib overalls, which were shortened to the knees, and I did more sinking than swimming as my clothes became waterlogged. This combination of difficulties dampened my desire to learn, and I concentrated instead on staying safely on top of the water. In my nineteen summers on the river I fell overboard only once.

I often helped the watchman in his daily chores of cleaning the lanterns and lamps, and cutting firewood with the two-handled crosscut saw, but to my disappointment I was definitely barred from the job of bedbug eradication. This was done twice a month — or more often if necessary — when some old pans would be filled with sulphur and set to burn and smolder throughout the day in the tightly closed upper cabin of No. 1. It always seemed to me that it would be as hard on the men as on the bedbugs until the big room was completely aired out again.

Our “company store,” or commissary, was a fascinating place to a child. My apprenticeship there started at an early age, when I first was allowed to burrow into the boxes which held the bars of Fels Naphtha, Ivory, or Packer’s Tar soap and hand them, one by one, to the clerk as he piled them on the shelf. Next I was allowed to do the piling and arranging by myself, and finally came the time when I was the clerk’s assistant. By then I was selling every item — weighing coffee, tea, and dried fruits as I filled the orders of the brush contractors — and making entries in the account books.

When you went in the door of the commissary, the clothing section was to your left and the tobacco, soaps, and foods to your right. The rear wall was lined with shelves, and heavy tables stood along the sides. Clothing was laid out on a table near the left wall, work pants and shirts piled neatly, according to size. The heavy work shoes in their oversized boxes were set on the shelves at the same side of the room. There, also, were the long-legged drawers,
made of heavy, coarse cotton, and undershirts of the same material. A box each of red and blue bandana handkerchiefs and a large bundle of heavy-duty shoelaces completed the stock of clothing, except for one incongruous item on the very top shelf. This was an assortment of sporty, brightly figured dress shirts with separate collars of the same material and pattern. The few men who bought these shirts wore them without the collars. Perhaps it was because they found collars too uncomfortable, but I think the main reason was that they did not own the button which was needed to keep the band closed and the collar attached. Most of the time they even refused to take them when they bought a shirt, so the clerk was left with an accumulation of shirtless collars, which Mother eventually pieced together into an attractive quilt.

Chewing tobacco was great fun to sell. Since the men seldom bought more than a plug of it at a time, each plug had to be cut from a strip, or slab. Lining up the blade of the cutter with the indentation on the slab, you pushed down on the handle. A perfect square of tobacco resulted. You also released a most pleasing molasses-like aroma. I had, however, a deeper interest in these squares of tobacco than the mere fun of working the cutter. Pressed into each square, or plug, was a little tin tag — a miniature horseshoe on the Horseshoe brand, and a little star on the Star brand — which had a trade-in value like present-day trading stamps. The men, having no use for the tags, gave them to me generously. I collected enough to keep me in fishing tackle, to get a catcher’s mitt, and even to acquire a rubber-lined fur lap robe for use when I drove my horse in Fountain City during the winter.

WHEN EXTENSIVE rains caused the river to rise above a certain stage, it was impossible to do any work on dams or shore protection. There would then be an indefinite and irksome “lay-up” period, during which the only men kept on the payroll were the watchman, one cook, the ship’s carpenter, the clerk, the two or three “steadies” who came back year after year and stayed through the season, and sometimes the engineer of No. 1 building boat and the two foremen. There always was some repair work for these men to do.

While high water kept the fleet in idleness, Father would often take a short-term towing contract for the “Percy,” so that she, at least, could be earning her keep. One summer Father, Mother, and I lived aboard the steamboat when she was towing wood for a few weeks. With Grandfather Kirchner in Fountain City and the pilot at home with his family, Father was both captain and pilot. I had a wonderful time helping him in the pilothouse and getting lessons in handling the boat. He was a good teacher — calm and patient. At first he kept his hands on the wheel, but eventually he just stood at my side and then, occasionally, went to sit on the bench at the rear of the pilothouse.
I never expected, though, that he would leave me all alone as he did one day.

He had checked more carefully than usual my knowledge of the channel at this point — a fact which surprised me, for it was an easy spot and one which we passed often on this run. I was even more surprised when, apparently satisfied that it would be safe for me to take over, he walked out of the pilothouse and down to the main deck. I am sure that he watched our progress from there, but I was not aware of it. I felt the thrill of sole responsibility for the puffing, vibrating “Percy.” My eyes watched the approaching buoy and judged the safe distance from the end of the dam which it marked. It was my hands, feeling warm and wonderful on the big wheel, that turned the bow of the boat gently toward the far shore until my eyes could line up the jack staff with the diamond board standing there, its whiteness making it easy to see against the green willows. Though the magic moment lasted no longer than, perhaps, ten minutes, the deep thrill of it and the good feeling of handling the wheel come brightly to life in my memories.

DURING MY TIME on the Mississippi there was still considerable activity on the upper river. The side-wheel packets “Quincy,” “St. Paul,” and “Morning Star,” and the big stern-wheeler “Dubuque,” carried passengers and freight on regular schedules between St. Louis and St. Paul. Boats like the “Helen Blair” and the “Silver Crescent,” which were stern-wheelers and about the size of the “Percy,” operated in smaller districts where they made a round trip every two days. The small, side-wheel steamer “Robert Harris,” and, in later years, the steamer “Ideal,” which carried passengers and freight the seven or eight miles between Fountain City and Winona, were among many such boats which gave daily service between towns.

Beautiful excursion boats of the time included the “J.S.”, the “Columbia,” the “W.W.” (which had to carry a barge alongside because it was so top-heavy), and the “Capital.” Many smaller boats took out excursions near their home ports. Ferries were an active transportation link between across-the-river neighbors. Some were large and luxurious, like the “Davenport,” which ran between Rock Island, Illinois, and Davenport, Iowa. Less pretentious ones, some of them powered by horses on treadmills, carried people and horse-drawn vehicles between small towns or between towns and farm communities.

These boats were like old friends to me and to everyone aboard the fleet. It was exciting to see them again at the beginning of a summer on the river. I would try to recognize the whistles; watch for a special detail in the design of the smokestacks; or look for some other particular characteristic,
as a gilded eagle atop the pilothouse, which would identify an oncoming steamer. Sometimes we knew what boat was scheduled to be going up the river or down, but often we could only make a guess. There was no guesswork, though, as to whether she was a stern-wheeler or a side-wheeler.

For as long as I can remember, I have known that the sound made by a side-wheeler differed from that of a stern-wheeler. It had never occurred to me to analyze the difference until I had to explain to a friend how I could tell which was which.

When you paid attention to it, the difference was easy to hear. The sound of a stern-wheeler was steady—sort of a 1-2-3 rhythm. With a side-wheeler, there was a surge of sound as the wheels pounded the water, then a short period in which only the splashing and hissing of the water that had been thrown up was noticeable. The rhythm of the side-wheeler was more like a 1-2-3-4-5-6—1-2-3 count.

In the stern-wheeler, the power was applied without interruption, as first one arm and then the other was pushed out of the piston to turn the wheel. The wheels of the side-wheeler worked independently. One could be backed while the other came ahead. I often have seen one of the huge boats practically "turn on a dime" with this maneuver. If, however, first one wheel and then the other had been used in the forward or backward motion, the boat would have zigzagged through the water, like a skiff being rowed first with one oar, then the other. Thus when the boat was going ahead or backing, the two arms, though working independently, had to push their wheels at the same time or as close to it as possible. This was accompanied by an explosive burst of noise from the exhaust pipes. As I remember the sound, it usually was a double "whum-WHUM!" very, very close, but not quite together. The turning of the wheels as the boat moved along brought the arms back, and the piston rods into the pistons. This was the period of quiet after the forceful push.

The stern-wheelers waltzed over the water, sometimes with a great hustle and bustle, but seldom seeming unduly strained by the effort. The side-wheelers, in contrast, plodded along, snorting like prehistoric monsters. The water thrown up by their wheels cascaded from the wheelhouses with a tremendous splashing and hissing. These big, lumbering, yet beautiful boats seemed grimly determined to get where they were going.

With the beginning of river improvement work, fleets of barges, building boats, and quarter boats were added to the river scene. The "David Tipton," a government-owned side-wheeler equipped with hoists and tackle, often passed on her routine job of removing snags and deadheads. With the opening of navigation in the spring, the "Tipton," (previously the "General Barnard") and other boats like them, each working a section of the river, replaced buoys which had been picked up in the fall.

All through the summer they maintained these, as well as the lights and the diamond boards on shore. Sand bars were removed by dipper dredges and in later years by hydraulic dredges which were owned and operated by the government.

The coming of World War I brought to a close this era in the history of Mississippi River transportation. It also meant an end to my days with the fleet. When, in the summer of 1917, I returned after my first year away at college, my usual contentment with the river life was not marred by any premonition that the war could have a direct effect on it. Father and Grandfather knew that with our country involved in the conflict, there would be no money available for further river improvement work. They said nothing, however, and when I left in September, I did not know that I would see the fleet as a unit no longer, but only as separate barges, quarter boats, the steamboat, the launch—disappearing one by one as they were sold. It was better not to have known.

ALL PICTURES used in this article were given by Mrs. Hill to the Minnesota Historical Society.

September 1961