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CANAL-BOAT CHILDREN

BY

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Canal-boat Children.

By ETHEL M. SPRINGER.

EPORTS of unfavorable conditions among children living on canal boats in England,² and rumors that unfavorable conditions also existed among children living on waterways in the United States, led the Federal Children's Bureau to make an inquiry into the situation in this country. Through preliminary correspondence it was learned that probably the only canals upon which any number of families lived upon barges were the Chesapeake and Ohio Canal in Maryland, the Lehigh and the Delaware Division Canals in Pennsylvania, and the canal system in New York State.

A field inquiry was therefore made by the bureau during the year 1921 along the canals in Maryland and New York State, a similar study of the situation on the Pennsylvania canals being undertaken simultaneously by the Pennsylvania Public Education and Child Labor Association. The findings of these inquiries indicate that while the number of children living on canal boats in this country is small, the conditions under which they are living and working present unusually serious problems. School attendance is difficult, hours of work are excessively long, doctors are inaccessible, and proper

recreation is lacking.

Canal operation in the United States began early in the nineteenth century and reached the height of its activity about 1870. With the extended development of railroads, however, came a decline in the importance of canal transportation. In 1908, when the last comprehensive report on the subject was issued by the Government, 45 canals were listed as in operation and 54 as abandoned. Despite this fact, considerable attention has been given during the last decade to the development of inland waterways. In 1918 New York State opened the new State Barge Canal, having greater depth and width than the old Erie Canal which it supersedes, and modern locks capable of use by large steam-towed vessels. Gradually the canals which were constructed with so little width and depth that only small mule-drawn boats could use them have been abandoned, until now the only important canals on which mules are used are the Chesapeake and Ohio Canal and the Lehigh Canals.

In all, 354 children were found living on canal boats during the year of the study. The canals surveyed include both old and new systems and illustrate strikingly the differences and the similarities between them. On all canals the fact that the inherent nature of the work necessitates long periods away from a home on shore is an impelling motive to boatmen to take their wives and children with them. On the Chesapeake and Ohio Canal the large majority

¹ Report of a study made by the Industrial Division of the Children's Bureau, U. S. Department of Labor.

² Canal Boat Children, by Robert J. Parr, National Society for the Prevention of Cruelty to Children, London, 1910; National Society for the Prevention of Cruelty to Children, Annual Report for 1920-21, London; Great Britain Ministry of Health, Departmental Committee on Living-in on Canal Boats, Report.

* * * London, 1921.

of the captains had their wives and children with them; on the Lehigh and the Delaware Division Canals, probably because of the small size of the boat cabins, the captains usually took with them only those children who could assist in the work; on the New York canals, as on the Chesapeake and Ohio, the majority of the captains had their wives and their children with them, but because of the arrangement of the boats in fleets, there were few captains compared with the number of boats operated and consequently fewer children. The principal difference between life on the old and on the new canals, so far as the children are concerned, lies in the fact that on the older canals child labor is profitable and practically indispensable while on the newer canals there is little place for it. Except for this decrease in the work of children the newer canals have most of the evils of the old. On the new canals, to be sure, boats are being constructed with larger cabins and better sanitary arrangements, but under both systems there are the same conditions in regard to irregular school attendance, improper medical care, inadequate recreation, and exhausting hours of labor for those children who work.

While the bureau's study did not include vessels other than canal boats it can safely be assumed that similar conditions exist for

children living on other types of watercraft.3

Chesapeake and Ohio Canal.

THE Chesapeake and Ohio Canal extends from Washington, D. C., to Cumberland, Md., along the eastern bank of the Potomac River, a distance of 185 miles, with an ascent of 609 feet which is overcome by means of 75 locks. The canal varies in width at the surface from 55 to 65 feet and at the bottom from 30 to 42 feet and has a depth of 6 feet throughout. The open season lasts approximately nine months, from early March till December. During the winter months it is customary to drain the canal to prevent damage which might be caused by freezing.

The principal cargo has always been bituminous coal mined in the mountains about Cumberland, which is transported to Georgetown. Boatmen said that they averaged two round trips a month, the distance from Cumberland to Georgetown being covered in from six

to eight days, and the return trip in from four to six days.

Practically all the traffic at the time of the study was conducted by one company which owned the boats and employed captains to operate them. The policy of this company was to give preference to married men on the ground that a married man is steadier in his job than a single man, and that the presence of his wife and children on a boat raises the moral tone. For the year 1920, the company reported that all but 7 of the 66 captains on its pay roll were married men.

Of the 59 captains who were married, 41 were found who had their children with them during the season studied. The number of children found accompanying their families was 135 (70 boys and

During the course of the investigation, the attention of the bureau was called to the fact that children were aving on river and harbor boats, especially in New York Harbor, and it was also reported that children concurres lived with their parents on coastwise freight vessels. See also Monthly Labor Review, July, 1915: "New York harbor employees," by Benjamin M. Squires.

The number of locks has varied during the history of the canal from 75 to 81.

65 girls); of these, 48 were under 7 years of age. In addition to these children there were found on canal boats 7 boys who were employed as deck hands by captains to whom they were not related. One of these boys was 11 years of age, four were 14, one was 15, and one 16 years of age. It is known that not all the families were located and interviewed and it is probable that the number of independent child workers found is still less indicative of the actual number on the canal boats, inasmuch as they were even more difficult to locate than families.

Boat Work.

The operation of canal boats is an occupation handed down from father to son. Said one mother: "The children are brought up on the boat and don't know nothin' else, and that is the only reason they take up 'boating.' 5 Boys work for their fathers until they are big enough to get a boat of their own, and it's always easy to get a boat." Several men complained that they knew "nothing else" and realized that their children would have the same disadvantage. Most of the fathers had begun boating before they were 13 years of age; but since the majority had begun by helping their own fathers they did not become "captains" at an especially early age, many of them not until they were 25 years or over. Four men, however, had become captains before they were 16. The mother of one of these had died when he was 12 years of age, leaving \$2,100 in cash to each of 14 children. The boy boated for one season with an older brother, receiving as compensation for the season's work, an overcoat, a "made" (as distinguished from homemade) suit of clothes, and "made" (as distinguished from homemade) suit of clothes, and \$7.50. When he was 14 he bought his own boat and team of mules and became an independent captain. During the first season he saved \$700 and "lived like a lord." He began with practically no education, and though he had been a captain for 54 years he had never learned to read and write. Several of his sons became boatmen and at the time of the study a 16-year-old grandson was boating with him.

All the captains included in the study were native white. Seven were illiterate. Their wives also were all native white. Five of them were illiterate. One captain, who had begun boating with his father when he was 5 years of age, said that altogether he had gone to school only 29 months. By the time he reached the fourth grade the children of his own age had long since completed the grammar grades and he was ashamed to go into classes with younger boys and girls. He seemed to regret his own lack of education and said that when his little girl was all anough to go to school he should stop heating.

little girl was old enough to go to school he should stop boating.

Operation of boats.—The operation of the old-fashioned canal boat used on the Chesapeake and Ohio Canal consists in driving the mules and in steering the boat. The mules are harnessed tandem to two long ropes or "lines" attached to the bow of the boat. From two to five mules are used by "spells," two or three mules being stabled in the fore cabin at rest while the others draw. The boat hands take turns at driving, either walking beside the mules or riding the leader. Although the captains usually do some of the driving, especially if the boat travels at night, they consider it a child's job during the day. In dry weather the towpath, which is level except at the approaches

⁵⁴ Boating" is the term used by workers on canal and other boats to designate their life and occupation.

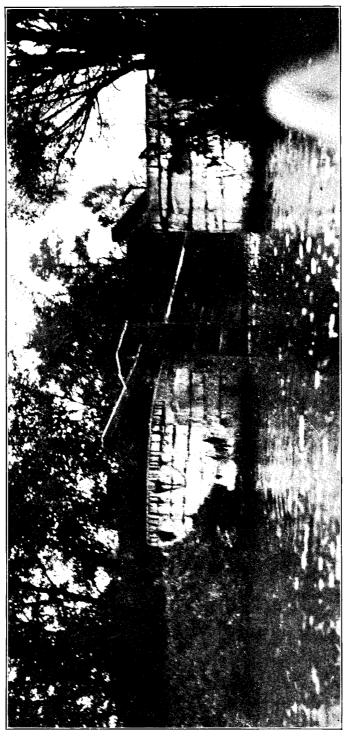
to the locks, is well beaten down and easy to walk on, but in summer the work is wearisome and hot. In wet weather the path is muddy and slippery, and consequently shoes and clothing get very hard wear. One captain considered himself the best father on the canal. because he provided his boys with rubber boots.

Steering the boat is accomplished by means of the "stick" located on the quarter-deck at the stern of the boat. This controls the rudder or "paddle," and may be guided by the pilot standing or sitting against it. As there is practically no current to change the direction of the boat, the operation is very simple and the mother of the family often steers while doing household tasks that permit. A young child can steer a light boat, as the stick moves easily, but to steer loaded boats requires strength. The only complications in steering occur at the locks or when other canal boats are passed.

Locks are 15 feet wide and approximately 100 feet long. usual method of opening and shutting them is by pushing heavy beams which extend from the swinging gates on each side. At the time of the study the lock tenders were mostly old men who were assisted by the women and children of their families; the boat workers, however, frequently helped to operate the locks as it is sometimes necessary for several persons to brace themselves against the beams of the gates. (See Fig. 3.) Boats approach the locks so slowly that the steersman has ample time to fit the boat into the lock. Careful calculation, however, is required as the locks are only one foot wider than the boats. (See Fig. 4.) A severe jolt against the wall of the lock has been known to sink a boat. When the boat is in the lock, the boatmen untie the mules and make the boat fast by wrapping ropes around heavy posts which are driven deep into the ground near the lock wall. After a lock is filled or emptied the boatmen pull in their ropes and steer the boat through. If another boat is waiting to enter a lock as one leaves it, great care must be exercised by the steersmen of both boats.

Hours of boat work.—Hours of travel on the canal were practically continuous. Fifteen hours a day was the minimum reported by any of the boat families; 18 was the number of hours most frequently reported; and several families stated they worked longer. One family had operated its boat without taking any intervals for rest. "It never rains, snows, or blows for a boatman, and a boatman never has no Sundays," explained one father. "We don't know it's Sunday," said another, "till we see some folks along the way, dressed up and a-goin' to Sunday school." One captain and his wife who reported working 15 hours a day employed no crew but depended on the assistance of two children, a girl 14 years of age and a boy of 5. The girl did almost all the driving, usually riding muleback, and the parents steered. The little boy helped with the driving, but did not drive for more than a mile or two at a time. The boat was kept moving until the girl could drive no longer, then the boat was tied up for the night. "We'd boat longer hours if the driver felt like it," said the father.

Boat work done by children.—Only the limitations of their physical strength prevented children on this canal from performing all operations connected with handling canal boats. Consequently when they reported that they had done boat work it meant that they had assisted



G. 1.--LOCK WITH SWINGING GATES.

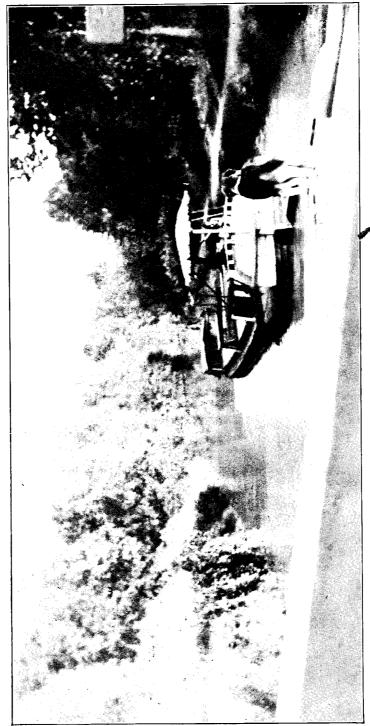
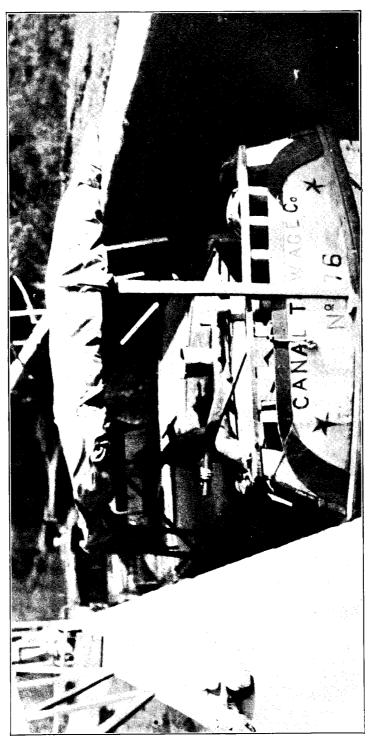


FIG. 2.—CHESAPEAKE & OHIO CANAL, WITH BOAT LEAVING LOCK. TOWPATH ON RIGHT.



FIG. 3.—CAPTAIN AND TWO BOY HELPERS OPENING LOCK GATES, BOAT HAS BEEN LOWERED AND IS READY TO LEAVE LOCK.



IG. 4.—BOY STEERING BOAT THROUGH LOCK.

in all parts of the work. The older children, of course, bore heavier burdens than the younger.

CHILDREN BOATING ON CHESAPEAKE AND OHIO CANAL, 1920, CLASSIFIED BY AGE AND NUMBER OF SEASONS WORKED.

														=
	Number who had done boat work each specified number of seasons.												who	
Age.	1	2	3	4	5	6	7	8	9	10 or more.	Not re- port- ed.	Total.	had done no boat work.	Total.
5 years or under	1 2 1 3 1 1 2 2 1 1 2 2 1 1 1 2 2 1 1 1 1	1 3 3 2 5	1		. 1	1	1	1 1 1 1 5	1	2 1	1	3 4 6 4 4 8 7 100 9 9 9 155 9 7 3 3 7 9 9 9	1	10 7 11 10 9 16 9 7 7

As the above table shows, 94 children, or all except 7 of those over 6 years of age, were found assisting in the work. Twenty-one of the children had begun to help when they were not more than 6 years of age, and 8 of these had begun when not more than 5. The following stories illustrate the life of the boat children.

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One of the boating households consisted of four persons—the captain and his assistant "deck hand," the captain's wife, and their 11-year-old daughter. The child had been driving, steering, and doing housework about the boat for "several years," but she did not like boating and got very lonely. Her father said that she could do anything the "hand" could do, but he felt it necessary to hire a man because, as he put it, "you have to rest once in a while." "The women and children are as good as the men," he said. "If it weren't for the children the canal wouldn't run a day." The girl's school attendance for the year 1920–21 had been 89 days out of 177. school attendance for the year 1920-21 had been 89 days out of 177,

or 50 per cent of the school term.

An 11-year-old boy who had been helping his father since he was An 11-year-old boy who had been helping his father since he was 6 years old had become his father's "right-hand man." This boy was one of a family of seven children, two older than he, one a girl of 7, and the others under 6 years of age. "A boat is a poor place for little children," said the father, "for all they can do is to go in and out of the cabin." The four older children were accustomed to helping with the boat work, but the father depended especially on the 11-year-old boy. He could do any sort of work and often draws the 11-year-old boy. He could do any sort of work and often drove for long hours, and even well into the night. His school attendance in 1920-21 was only 93 days out of a possible 178. The father himself commented on this poor record and said that while he regretted it he was obliged to "boat" his children as he could not afford with his large family to hire extra help.

One 17-year-old girl boasted that she had been working on canal boats for 12 seasons. The mother of this girl had had 17 children,

8 of whom were living. Of the 9 children who had died, 8 had died in infancy. The 2 oldest living children had married and left home. The remaining 6 children, including the 17-year-old girl, 2 boys who were 15 and 12 years age, respectively, and 3 girls, aged 11, 6, and 2, traveled with their parents on the canal. All except the youngest were regular boat hands, having begun to work when 6 years of age. The mother stated that for many years it had not been necessary for them to employ a crew as they had plenty of their "own hands." During the season selected for study their boat had traveled 19 hours a day 7 days a week. While the 6-year-old girl was allowed to go to bed at 8 and presumably had lighter duties than the others, the 4 older children worked on shifts all day long, snatching a nap now and then. They went to bed at 10 p. m. and had to be up and ready to start again at 3 a. m. The oldest girl had stopped school on completing the fourth grade. The 4 other children who had been in school during 1920–21 had records which showed attendance varying from 29 per cent to 73 per cent of the term. The 15-year-old boy, with an attendance record of 29.6 per cent, had just completed the fourth grade and was not planning to return to school in the fall.

Earnings.

Earnings of fathers.—Reports of earnings showed rather low incomes as compared with the general run of wages in other industries. Captains were paid per ton per trip, receiving about \$75 or \$80 for a trip. Captains who needed more assistance than members of the family could render paid the wages of "deck hands" out of their own income, usually \$12 to \$20 a trip, although young boys got less, sometimes receiving clothing in lieu of wages or part of wages. While half the captains included in this study had paid helpers, the majority of the families having four or more children did not hire crews. Many of the captains said that without the assistance of their children they could not have made both ends meet.

In addition to the wages of hired hands, the boat captain had to meet the expense of certain equipment and repairs. The "fall board" or gangplank over which the mules were led from the boat to shore had to be replaced frequently; the price of a new board was about \$16. Troughs for the mules ranging in cost from \$2.50 to \$4.50 were supplied by some captains. Every man was expected to furnish oil for his "bow lamp," the expense varying with the number of hours that the boat was operated after dark. This expenditure averaged about \$10 per season. Some men were obliged to replace the stakes for tying up the boat at night. In every instance the boat was furnished by the company and certain necessary articles of equipment were usually provided, such as mules, feed, harness, and "lines." A few boatmen owned their mules, but in such cases the company furnished feed and made the captain a cash allowance for every trip on which his mules were used.

During 1920 most of the captains received less than \$1,250 from boat work. About two-thirds supplemented such earnings either by winter employment or by incidental work during the season. For example, one man owned towing mules which he hired out; other captains secured small loads of incidental freight consisting of general merchandise, farm products, or shipments for the pleasure parks or

summer camps. On the revenue from this incidental freight the company collected from the captains a toll of 7 cents on the dollar.

The one captain who had made more than \$1,850 during the season of 1920 was a man who was somewhat in debt at the beginning of the season. With his wife and six children and one deck hand he undertook to operate two boats. The mother and father each took charge of one boat, keeping the vessels as close together as possible. The boats practically never stopped and every member of the family except the two youngest children, 3 and 5 years of age, had a definite schedule of duties. During the season they made 13½ trips with one boat and 14 with the other. (The largest number of trips made by any one boat on the canal that season was $18\frac{1}{2}$.)

Earnings of children.—In six instances the children who "boated" with their families received pay for their work. One father had paid his 13-year-old son \$5 a trip; another father had given his son, aged 17, \$15 per trip. Two boys, 9 and 12 years of age, living under the guardianship of their older brother, had each received \$8 per trip. Two other boys, 11 and 16 years of age, working for their stepfather, received, respectively, \$7 and \$12 per trip.

The seven boys who worked as regular boat hands independently of their families reported wages ranging from \$5 to \$15 a trip, three being paid \$10 a trip. Except in the case of one boy, these wages were below the average paid to deck hands on the canal. None of these boys, except possibly one concerning whom complete information was not given, received clothing in addition to wages. All, of course, were fed and housed.

The total earnings for the children who received cash wages for boat work during the season of 1920 ranged from \$35 to \$247.50, the highest amount having been received by one of the boys who was paid by his own father. Only six reported any employment other than boating. Two of these boys had worked in "factories," two in tanneries, one as a laborer for a building contractor, and one girl as a domestic.

Living Conditions.

The average size of the cabins on the boats of the Chesapeake and Ohio Canal was 10 by 12 feet. All cabins had two bunks, one set into the inner wall of the main cabin and the other located in the so-called stateroom, which was partitioned off from the main cabin by a diagonal wall. (See Fig. 5.) These bunks were 36 inches wide, sufficient space for one person but ordinarily occupied by two. In addition to the cabin bunks, the feed box extending across the deck at the center of the boat was ordinarily used for sleeping purposes. This box was 4 feet wide and 4 feet high, and with blankets spread over the hay and other feed it provided a fairly comfortable bed, used in some cases by the deck hands and occasionally by the children. Often in hot weather the floor of the deck was used as a bed, but some mothers stated that they were afraid to let the children sleep away from the cabin.

In spite of the narrowness of the berths, the cabins were ordinarily regarded by the families as providing sleeping space for four persons. To these may be added two places in the feed box, making a maximum accommodation of six places. Of the 41 families visited, however, 10 had from 7 to 10 members, and 19, almost half,

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had more than 4 persons. Possibly the most distressing instance of congestion existed in a family of 9. The mother said she made a bed for the children on the floor, but "when you get seven down there, there ain't room left to walk around without stepping on them." The floors of the cabins were frequently left bare, although 14 families reported linoleum coverings. One family stated that it was impossible to use any sort of covering as the floors leaked and were always damp.

The accompanying plan shows that the stove occupied a place in the main cabin near the steps to the deck. Coal was ordinarily burned in these stoves and in several instances the family reported that the fire was kept through the night. One mother spoke of the heat of the cabin as being almost unendurable. Practically every boat was provided with a heavy canvas awning and in pleasant weather the boat family spent most of the day on deck. (See Fig. 6.)

Water for drinking and for cooking purposes was secured from springs along the canal and stored in barrels or kegs; for washing, the canal water was used. In no instance had it been piped into the cabin as in some of the boats on New York canals. Toilet facilities were entirely lacking. Cabin windows were not screened and in some places, especially at terminals, the families were troubled by flies. Most families complained of mosquitoes.

Food supplies could be secured at any town along the canal; but the families agreed it was better to "stock up" at Georgetown, as the stores in the smaller places charged much higher rates. No family reported the regular use of fresh milk. Most families reported that they could get milk at the locks or at farm houses, but not for daily use. None of them had refrigerators, though many were in the habit of getting small pieces of ice to cool drinking water.

Five captains lived the year round on their boats, one having lived on his boat for 18 years. All the other families visited maintained homes on land. The dwellings were chiefly small detached wooden houses, some being built of logs. None of them had modern conveniences in the way of inside plumbing. Nearly all, however, were located in or near towns along the canal within one mile of schools.

Opportunities for Education.

According to the parents' statements, 102 children, including all those of compulsory school age or over, had at one time or another attended school. Of the 14 known to have stopped school before the year of the study, one had completed the second grade; 2 had stopped upon the completion of the third grade; 5, of the fourth grade; and 1, of the sixth; 3 had finished the seventh grade; for the remaining 2, the grade attained at the close of the school history was not known. One of these children who had stopped going to school was 11 years of age; and one, 13; the others were 14 years of age or over. Over three-fourths of the children 8 years of age or over who had attended school during the year 1920–21 were one or more years retarded; over one-half were two years or more below the normal grade for their age. Every reasonable effort was made by the Children's Bureau agents to secure the attendance records of these children. Of the 52 for whom the actual record was secured, one girl of 7 years had perfect attendance. Seven children, including this girl, had attended

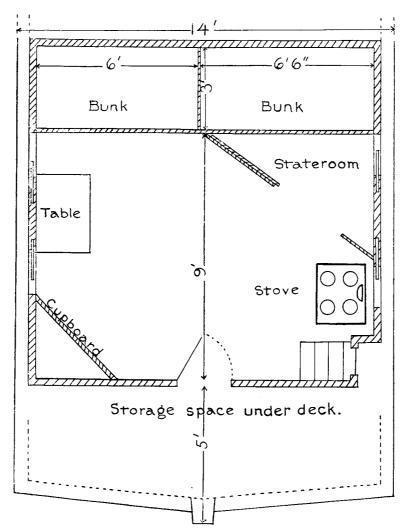
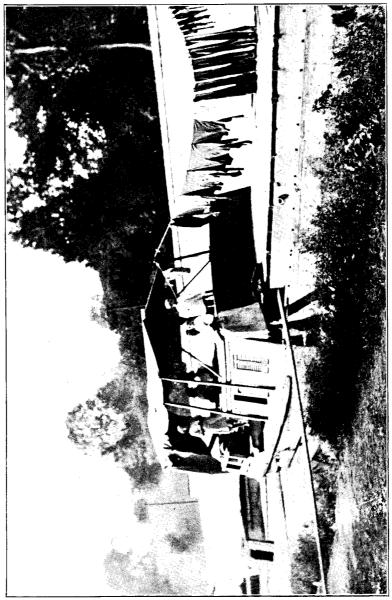


FIG. 5.—PLAN OF CABIN, CHESAPEAKE & OHIO CANAL BOAT.



G. 6.—A CANAL BOAT FAMILY.

80 per cent or more of the term; 17, three of them girls, had attended less than 50 per cent of the term. Two boys, 9 and 15 years of age, and one girl of 12, had attended less than 10 per cent of the term.

Facilities for Medical Care.

Very little use of the services of doctors had been made by the canal-boat families. A large proportion of them did not regard ordinary illness as an excuse for sending for a physician. "We never need a doctor," said one father. "We just stay sick until we get well." Among nine families who seemed to think it would be easy to get a doctor while boating, four qualified their statement with the remark that it might be necessary to go long distances. Said one of these: "You can always get a doctor in a day." Another said "Easy, if you have the money." In one family that had been obliged to search for a doctor, comment was made on the fact that the shifting of the boat necessitated having different doctors at different places, an unsatisfactory and expensive arrangement. More than half the families reported that it was difficult to get a doctor, and in the mountains at the upper end of the canal, or along the "long levels" it was practically impossible to secure medical assistance. Fifteen of the children were reported to have had serious illnesses during 1920.

Information concerning conditions at the time of their most recent confinements was secured from mothers of children born subsequent to December 31, 1915. Four children had been born on boats and 22 on land. The mothers of two of the babies born on boats had been attended at confinement by physicians. Thirteen of the 22 mothers giving birth to children on land were attended by physicians; 2 were attended by midwives; for the other 7 mothers the facts were not reported. Some children reported as having been born on land had been born at lock houses or in villages where the mother had neither hospital care, friends, nor home conveniences. One mother had had 14 children, all born on boats. She had never had a physician, but always a midwife, and had received no care after delivery. At the time of the study 7 of these children had died.

Accidents to Children.

Numerous accidents had occurred among the boat children. Forty-five children had fallen into the canal more or less frequently; 11 had been kicked by mules; 1 had been burned; 1 cut with an axe; another, dragged by a mule over a lock gate. One mother said that her four children had had many accidents. The oldest had had his nose broken by a kick from a mule. Fortunately the boat was near a town in which he secured hospital treatment. With the exception of the baby all had fallen into the canal many times, and once when the lock master, by closing the gates too soon, dragged the awning off the deck and the children with it, they were caught between the gate and the boat. In telling about these accidents, the mother seemed to consider them an inevitable part of boating.

Recreation.

Opportunities for recreation were very meager. Several families when asked about their pleasures and recreation, replied that they had none. Nearly all said that their only friends were the other boating families. Some complained that the children got lonely and restless. One father who was musical was teaching his children to sing and to play on the banjo and the mandolin. Some of the children spoke of good times swimming in the canal, especially when they reached the lower levels, or were detained for a number of days at the terminal. Unfortunately at this point, the water of the canal was much polluted; the towpath, which furnished almost the only playground for the children, was littered with manure and refuse, and children were obliged to find play spaces between the mules standing along the path.

The Lehigh and the Delaware Division Canals.6

THE history of the Pennsylvania canals shows decline in traffic that has occurred on other systems. Expensive constructions undertaken by the State in the early half of the nineteenth century were later bought up by railroads and gradually allowed to go into disuse as steam transportation became more popular. At present only two canals are in operation in Pennsylvania, both under the control of one company. These two, the Lehigh and the Delaware Division Canals, are used in transporting anthracite from Coalport, near Mauch Chunk, to points on the Delaware River. The Lehigh Canal, located along the Lehigh River, extends from Mauch Chunk to Easton; the Delaware Division Canal, supplementing the Lehigh, extends along the Delaware River from Easton to Bristol, the total length of the two canals being 108 miles. The round trip from Mauch Chunk to Easton requires about four days; the trip to Bristol, about eight. The open season for these canals is eight or nine months. The boats used on these canals were smaller than those used on the Chesapeake and Ohio Canal. In fact the cabine on these boats were small that it was established that the cabins on these boats were so small that it was astonishing that any family attempted to keep house in them. The long hours, however, constrained the captains to have living quarters on the boats and, as at least one assistant was necessary for the operation of a vessel, it was not strange that men with families took one or more members of their households with them. Sixteen captains were found who had had children on the canals during the season of 1920-in 13 instances their own or step-children, in one instance a young nephew, and in two others, boys who were not related to them.

Boat Work.

Earnings of boatmen.—As was the case on the Chesapeake and Ohio Canal the company controlling the canal owned the boats and employed captains to operate them. The captains secured such help as they found necessary. Captains were paid on a ton-mile basis, the rate for carrying one ton of coal from Coalport to Bristol being \$1 and the rates for intermediate stations being in proportion to the distance. Each boat carried from 90 to 95 tons. Assistant boatmen were paid by trip or by the day or week. Although the

⁶ The information on which this section is based was secured through the cooperation of the Pennsylvania Public Education and Child Labor Association.

⁷ Chesapeake and Ohio boats carried about 110 tons and New York boats about 240.

conditions of employment were similar to those on the Chesapeake and Ohio the working expenses of the captains on these canals were Whereas on the Chesapeake and Ohio Canal the company usually furnished not only the boat but the mules, their feed, harness, and "lines," on the Pennsylvania canals the captains were required to supply the mules and their upkeep. Mules were furnished by the company to those who did not own them, the terms being an installment payment on the purchase of the animals, usually \$5 a trip; this was deducted from the captain's pay and at the close of the season interest was charged on the amount remaining unpaid. The captains also had to meet other expenses, such as feed, "lines," and other equipment. Frequently a man's working expenses amounted to

one-third or more of his gross receipts.

Earnings from boating alone did not constitute a sufficient income for men with families. Every captain interviewed had had other sources of income; all of them had had some occupation during the winter and some had had positions which they had kept during the entire 12 months. For example, several of the men were lock tenders and by depending on the services of other members of their families they were able to keep these positions while operating boats. Earnings for boat work for the season studied in no case exceeded \$1,250. The additional earnings from winter employment raised the general average of the men's earnings for the year between \$300 and \$400. The largest annual income reported by any captain for the year in question was \$1,977. In six families the father's earnings had been supplemented by the wages of other members of the family; in this group the largest family income reported for the year was

Boat work done by children.—Probably because of the small size of the cabins the fathers usually took with them only those children who could be of service in operating the boat. A total of 33 children were reported by the 16 families as having made canal trips during 1920. Of the 33 children, 25 were boys and 8 were girls. None of the girls had assisted on the boat during the 1920 season, but 21 of the boys had done so. Of the boys who had helped with the boat work, 4 were between 5 and 10 years of age, 6 between 11 and 13 years, and 11 between 14 and 17 years, inclusive.

Although few in number, proportionately more of the children on these canals than on any of the other canals included in the study were violating State laws, inasmuch as Pennsylvania forbids the employment on boats of children under 16 years of age. Every child over 10 years of age on the boats was assisting with the work, and 5

of them were receiving pay.

The terms on which these children worked were interesting. One 14-year-old lad who worked for a man not related to him, had been engaged to drive mules at \$7 per trip. The captain paid the boy's wages to his father who allowed the child to keep \$2 a trip. One 15-year-old boy who was ordinarily his father's assistant, was given a temporary position as captain. For 27 days this boy had full responsibility for a boat. He hired an older boy as deck hand, met all the incidental expenses of his trips, and received pay from the company at regular rates. One captain employed his two sons to operate the boat while he himself remained on shore as a lock tender. In this case the older of the two boys, who was over 18 years of age

and therefore not included in this study, received wages. The younger boy, 15 years of age, worked with his brother for 6 months without pay. According to the father's statement, the boat was operated 6 days a week, 18 hours a day, usually from 3.30 a. m. to 9.30 p. m. The boy said he got up at any time in the morning between 3.30 and 6 o'clock and went to bed between 9.30 and 11 at night.

Living Conditions.

Cabins on the boats of the Lehigh and the Delaware Division Canals were smaller than those on the boats of any of the other canals visited. They measured only 8 by 10 feet and were entered by means of a ladder. Two wooden bunks, one above the other, were built into the side of the cabin; a cupboard was constructed across one corner; a folding shelf or table also constituted a part of the stationary equipment. Such other articles as were needed were provided by the boatmen. Several families managed without chairs. The coal or oil stoves were kept in the cabin during the cool weather but were set up on deck when it was hot. Some of the families explained their lack of a washtub by stating that the washing was done at home on shore. Normally the two bunks in the cabin provided a sleeping space for two persons; yet with one exception the boating groups were made up of three or more persons. Two captains each had their wives and five children with them. One captain had constructed an extension to the lower bunk to accommodate himself, his wife, and 8-year-old daughter. The man who helped him with the work slept in the upper bunk. Another family reported that they made up beds for the children on the floor. This does not, on the whole, represent any greater congestion than on the Chesapeake and Ohio Canal. There were, however, no partitions in these cabins as there were on the Chesapeake and Ohio boats, and no attempts at privacy. Toilet facilities, as on the boats of other canals, were entirely lacking

Although supplies were easily procurable men said that living on the boat was more expensive than living on land for the reason that much of the food had to be purchased in prepared form. Baking was not attempted on the boats, and the cupboards were not large enough to store considerable quantities.

All except one of the captains maintained homes on land. Six families owned houses which they had occupied for several years; three lived at the locks in houses provided by the company; the four captains who rented their houses paid from \$5 to \$13 a month rental. In none of the houses they occupied was there any plumbing.

Opportunities for Education.

Although when in winter quarters all except one family lived within one mile of a school, the school attendance of the canal-boat children was seriously affected by the fact that boating began in April and closed in November. Two who claimed to be "still in school" had not attended at all during the year of the study. Reports showed that more than half were below normal grade. Among those who had stopped school only one had completed the seventh grade; three had failed to complete the sixth grade.

Facilities for Medical Care and Recreation.

Proportionately more sickness was reported among these children than among the children on the other canals; on the other hand, medical care was much more accessible. A physician attended the birth of the one child who was reported as having been born on a boat. Falling into the water was a common occurrence among the children here, as on the other canals, and seemed to be taken as a matter of course. Hours of sleep, though in some instances unduly short, averaged longer than for the children on the Chesapeake and Ohio Canal.

Recreation for these children was entirely lacking. Sometimes they mingled with other children when the boats stopped to load or unload. "We never boated Sunday," said one mother, "but we didn't go to church because we have no Sunday clothes." Resting on Sunday seemed to be the greatest pleasure known to the families.

New York Canals.

WHILE the Chesapeake and Ohio and the Pennsylvania canals are still operated according to the methods of the early days of canal transportation, New York has revolutionized its system by abandoning the mules and towpaths and introducing the use of steam power. Utilizing the old canals in some sections, constructing entirely new waterways in others, the State of New York has enlarged and improved its system in the expectation that the increased facilities will enable the canals to become an integral part of the transportation system. The State canal system, completed in 1918, comprises a number of waterways, the main thoroughfares being the Erie Canal, now known as the State Barge Canal, and the Champlain Canal. The depth of the old canals has been increased from 5 feet on the Champlain and 7 feet on the Erie to a minimum depth of 12 feet throughout. The locks have also been greatly enlarged so as to accommodate boats 300 feet long.

The State Barge Canal extends from Troy to Buffalo, connecting Lake Erie with the Hudson River and New York Harbor. The total distance from Buffalo to the New York terminal is 507 miles. The trip, which took 5 weeks when mules were used, can now be made by steam-towed barges in about 10 days. The Champlain Canal provides the inland water route from New York to Quebec. From the New York terminals to the Canadian line is 321½ miles. On sections of this route in Canada mule towage is still necessary. The trip from Quebec to New York usually takes from 3 to 5 weeks. The season

for these canals is from about May 1 to December 1.

Among the important cargoes carried on the New York canals are coal, lumber, wood pulp, grain, flaxseed, sugar, salt, petroleum, sand, cement, and general merchandise. Grains travel from the west via Buffalo and the canal to New York. Among the boatmen on the Champlain Division, the report was common, "We carried coal up and lumber down," referring to the traffic of lumber and wood pulp towards New York and the transportation of coal to Canada. Sand and cement were handled to a considerable extent in the vicinity of Syracuse. Not only the greater volume of traffic, but also the diversity of cargoes, differentiate the situation in New York from that in

Maryland and in Pennsylvania, where coal is the one important cargo. Moreover, while the history of the latter canals shows a steady decrease in tonnage, the traffic on the New York system has increased every year since 1918, when the improved canals went into operation.

Whereas the Chesapeake and Ohio, the Lehigh, and the Delaware Division Canals were privately owned and in each case the company operating the canal owned most, if not all, the boats, in New York the canals are owned and operated by the State and navigation is free. While the State has furnished some towing facilities in order to bridge the period of change from the use of mules to the use of steam, it has not handled freight. All traffic has been carried on by transportation companies or by individual boat owners.

With the change to steam power have come changes in arrangements of boats and in the personnel of crews. Whereas, on the old systems, mule-towed boats traveled separately, the steam-towed barges are propelled in fleets consisting of the "steamer" and several, usually five or six, barges called "consorts." In this arrangement it is unnecessary for every vessel to carry a full crew. The "steamer," which may be a tug or a steam-propelled barge, carries the pilot or captain with a crew of five or six men. The "consorts" are considered adequately manned if one individual is on them.

This coupling up of the boats has also had its effect on the system of ownership. Owners of boats or barges which are not self-propelled must secure motive power. Those who own two or more barges can carry large enough cargoes to afford towage charges or may find it profitable to invest in a "steamer" of their own; but for the man who owns but one barge, the expense of towage has been so serious a matter that many have dropped out of the business. According to the report of the State superintendent of public works, for 1920: "No doubt exists in the mind of anyone that the day of the individual operator has passed."

During 1920, a large part of the canal traffic was handled by companies operating from 10 to 100 boats each. Some individual boat owners chartered their boats to these companies, attaching them to the company fleets and being paid by the companies on a time basis. In such cases the owner could not control his working conditions as he did when boating independently. His working hours and the type and size of the cargo were regulated by the company. "When we come to a town," complained the wife of one of these men, "the pilot does not give me time to go to market. The only safe way for me to manage is to lay up supplies for the trip and it is not always convenient for me to do that."

Besides losing his independence the boat owner or captain who is working for a company may have to endure living conditions on the boat which he would not tolerate if the situation were within his control. The difference between the cabins of independent owners and of company employees was as great as that between the homes of the independent merchant and of the average wage earner ashore. The immaculate, neatly painted cabins of some of the independent boatmen, with attractive curtains at the windows, spotless linen on the bunks, good lamps, and stationary washstands, were in marked contrast with company cabins that bore no evidence of interest on the part of the company and little sense of responsibility on the part of the employee.

Boat Work.

Families on boats.—Grouping boats in fleets has greatly reduced the number of captains and consequently decreased the number of families living on boats. Formerly every boat had its captain, and most captains took their families with them; at present, however, there is one captain for the fleet, and usually only the captain's boat, and possibly the first consort, have families aboard. During 1920 the total number of boats operated on the New York canals was 798; but this number must be divided by six or seven to estimate, roughly, the number of fleets. Not all the boat families could be located and interviewed, but 71 were visited who had taken with them 179 children on canal boats in 1920. Of these children, 61 of whom were under 6 years of age, 92 were boys and 87 were girls.

All the boatmen were American born and all were able to read and write. Of their wives, 10 were foreign born, 7 being French Canadians. One of these Canadian women could not speak English, and one could not read or write any language. With the boat families on the New York canals, as on other canals, boating was a family occupation handed down from father to son. Among the fathers of the 71 families visited, 62 had begun their industrial life as boat workers assisting their fathers, most of them before they were 12 years of age. At the time of the study, 47 of the men owned their boats, 8 of them operating under charter to companies; 23 were operating for companies on a salary basis. The remaining father was below the rank of captain and he was the son of a captain, traveling with

his young wife and baby in his father's fleet.

Hours of boat work.—Where an independent owner had full control of the situation, as on stretches of lake and river, he ran his boat 24 hours a day, for speed in transit meant more trips, more freight carried, and greater returns. The length of the workday on the canal, however, that is in the artificial sections of the waterways between the locks, was ordinarily 10 or 12 hours. The superintendent of public works stated in his report that agreements with chartered towboats restricted the working-day to 12 hours; this he regretted as it doubled the time required for a trip. In general boats were operated for as many hours and as nearly continuously as possible.

Earnings.

Earnings of fathers.—The income of men operating for themselves was based on the tonnage of their cargoes. From their gross income, which was often several thousand dollars, they had to deduct heavy expenses for towage, equipment, repairs, wages of a crew if they had no boys or young men in their own families, and other charges such as taxes, insurance, registration, clearance, fees, and dockage. One captain who ran two boats from New York to Quebec said he expected to clear \$1,000 a trip, making two and sometimes three trips in a season. The expenses of towing, he said, just about "ate up" the returns on one boat.

Men on a salary basis were sure of their pay and were subject to very little if any expense connected with boating. Company rates of pay ranged from \$110 a month for the captain of a consort to \$165 for the master pilot. Mates received \$90 a month. In addition to the monthly wage, a per diem allowance of from 90 cents to \$1 per day for food was made by some companies and was ordinarily paid over to the ship's cook. Since she was usually the captain's wife and the mother of the family she tried to procure provisions for the

entire family out of this per diem allowance.

The majority of men whose boat earnings for the season of 1920 were reported earned \$1,250 or over, showing much better financial returns from their work than were found on other canals. Proportionately fewer had supplemented their boat earnings by winter employment. Among the captains interviewed were men who owned and operated several boats and whose net returns amounted to several thousand dollars; others had had a bad season and had hardly been able to make ends meet.

Earnings of children.—Whereas on both the Chesapeake and Ohio and the Pennsylvania canals the great majority of the children helped with the boat work, very few assisted in operating the boats on the New York canals. The reason for this was that the operations performed by children on the mule-drawn vessels were not called for in operating steam-towed barges. There were no mules to drive and the boats were much too heavy for a child to steer. Out of a total of 179 children living on the New York boats only 19 reported that they

had done boat work during the season.

Ten of these 19 boys were reported by their fathers as helping with the boat work without pay. The other 9 boys had been employed as deck hands at regular rates; 1 at \$80 a month, 5 at \$90 a month, and 1 at \$100. These boys, from whom the full work of an adult was expected, were employed in the fleets of which their fathers were the captains, but they were paid by the company operating the boats. The youngest of them was 12 years of age, another was 15, and the others were 16 and 17. The 12-year-old worked one month during the school vacation; the 17-year-old who received \$80 was employed only one month; the others worked during the entire canal season. The season's earnings for some of these boys amounted to \$700 or \$800.

The child labor laws in New York State at the time of the study made no reference to boat employees, but no child under 14 years of age was allowed to undertake any kind of work during school hours. Only three children living on canal boats reported work other than that connected with the boats. One 17-year-old girl, while her father's boat was docked in New York Harbor, had been employed at \$20 a week as an inspector in a sweater factory; one boy had been a salesman in a dry goods store at \$10 a week; and one of the boys who had been a paid deck hand during the summer had worked for two weeks in the winter in a box factory.

Living Conditions.

Because boat owners have regarded the operation of the improved New York canals as more or less of an experiment they have been somewhat slow to construct new boats, and although a number of large steel barges have been built, the predominating type of canal boat in use in 1920 was still the old-fashioned 240-ton wooden barge. The cabins on these boats were located at the stern and usually measured 12 by 14 or 10 by 12 feet. To this floor space a few more inches were added by shelves, cupboards, and chests of drawers.

Bunks and beds also were frequently built into the wall of the boat. The best cabins had one side partitioned off with sliding doors, making altogether three compartments—one large enough to accommodate a double bed or bunk, another containing the cook stove and cupboard, while the main cabin was utilized as living room and additional sleeping space. Here was a folding table, which could be opened at mealtime, and along the wall a bunk also folded to half dimensions or shut into the wall under the deck. In some cabins cretonne curtains concealed the bunk. The partitions insured privacy which was entirely lacking in more simply constructed cabins. No toilet facilities were found on any of the canal boats visited, though it was reported that some of the newer barges provided them.

Water for washing was usually drawn from the canal or river, but the more intelligent families secured their drinking water from city hydrants at the terminals. All who traveled over the Champlain route, however, said that the lake water was very clear and suitable for drinking purposes. The best cabins had stationary basins supplied with water from a tank on the deck above. Others had a barrel of water on the deck or in the cabin, from which the water was dipped

with pails.

Three families had cabins fitted with electric lights. These were families which lived on "steamers" and could utilize power generated by the engine. All others used oil lamps, which were more or less ornamental according to the taste and income of the family.

Sleeping accommodations were in many cases inadequate. Among the 68 families whose sleeping arrangements were reported, 35 had sleeping places for every member of the household, while 33 had fewer places than there were persons to be accommodated. The worst condition found in respect to sleeping space was the case of a family consisting of father, mother, and four children living on a boat having sleeping space for only two persons. During extreme hot weather, when some could lie out on the upper deck under an awning the lack of bunks was not much of a problem, but for families that remained on the boats throughout the winter, as 35 of the 68 reporting did, the crowded conditions were serious.

Space on the upper deck was frequently utilized by mothers who did their washing there and hung the clothes on lines stretched the full length or part length of the boat. Some boats were provided during the winter with storm or winter cabins, rough caps or cupolas of boards covered with tarred paper. These served to keep the inside cabins warmer and provided a storage space for such articles as wash tubs and pails. On the whole, although some cabins were attractive and comfortable, others were greatly congested, dirty, and without

adequate ceiling or furniture.

The boats of recently formed companies are built along modern and sanitary lines, but inasmuch as companies operating these boats do not permit employees to take their families with them, the cabin improvements in the newest barges do not benefit the children living on the canals.

Food supplies could be secured at the various stopping places along the routes, though many families who could afford it made a practice of stocking up at the terminals. A few boatmen reported that the company supplied ice. Fresh milk was one of the most difficult articles to secure and only 13 families reported that they had been able to have it every day. Five families made no attempt to have fresh milk; others purchased it when they could and supplemented the supply with canned milk. Considering the fact that in the small group studied there were 76 children 6 years of age and under, the lack of fresh milk constituted a serious disadvantage of canal-boat life.

Forty-two families had winter quarters on shore. Small settlements of boatmen's families are located at Whitehall and at Champlain in northern New York, another cluster near Buffalo, and another in the central part of the State to the west of Syracuse. Many families who have made boating their principal occupation live at Champlain and Whitehall, and the homes of retired boatmen are among the finest in these communities. In the group studied, most of the families having homes on shore had the advantage of city conveniences, were located within one mile of schools, and on the whole represented a higher economic level than the boat families found on other canals.

Opportunities for Education.

All the children of school age were attending school. Children who had permanent winter homes showed fairly good attendance, while those who remained all winter on the canal boats showed low percentages of attendance. More than half the children for whom full facts were reported, however, were below the normal grade for their age. The children of families on canal boats moored in the basins or to piers in New York Harbor attended schools in New York City, Brooklyn, and in New Jersey. Though the distance from the piers to the schools was not great, children at Erie Basin had almost a mile to go, across dumps and unpaved streets and paths. Moreover, those who were back of the first tier of boats had to jump from one deck to another to get ashore. The boats were fastened as closely together as was practicable, but the levels of the decks varied with the rise and fall of the tide and the loading and unloading of the holds, and at times there was considerable risk in jumping from boat to boat or from the boats to the shore. Children living on boats moored at the Shadyside and Edgewater Basins, on the Jersey bank of the Hudson, were in a still more hazardous position because of the wreckage that obstructed the space between the boats and the shore. Numbers of sunken canal boats cluttered these basins and families had to cross these wrecks to get to land. The school at Edgewater was at the top of the Palisades so that a steep climb up the embankment was necessary in order to reach it. One mother located at Edgewater said she never went ashore because of the difficulties of getting from boat to boat. Her little son, however, was attending the school at the top of the bluff.

Facilities for Medical Care.

Among the families that had required the services of physicians some had found that it was very difficult to get a doctor; it was universally conceded that in an emergency arising while the boats were crossing the lakes (Lake Oneida or Lake Champlain) it would be impossible to secure medical aid. Some said that it was not easy to get a doctor while on the Hudson. Most of the families agreed

that on the canals doctors were fairly accessible and that the pilots were considerate in stopping the boats if anyone was ill enough to need a physician. Forty-six children in 29 families had been ill during the year of the study. Whenever possible, a sick child was left on shore. One mother who reported that her children were never very healthy said she always planned to have "a lot of medicine

on board."

Fifty-eight children were reported as having been born on boats. Detailed information was secured regarding the conditions at time of the birth of the youngest child born subsequent to December 31. 1915. In most cases it was reported that the boat had docked during the mother's confinement and more frequently than not the services of a physician had been secured. One father said that his boat dropped out of the fleet when the time for his wife's confinement arrived. The boat had been delayed two days and had then been attached to another tow. Boatmen's wives who could reach New York City at the time of a childbirth were especially fortunate because of the fact that the canal terminals at Piers 5 and 6, East River, are almost directly opposite a well-equipped city hospital. One mother who had been confined there said that the doctors and nurses frequently came over to the boats to see her babies. Several women had had the care and advice of physicians, both before and after confinement. While other women had not been so fortunate the reports as a whole showed more favorable confinement conditions than those found among canal families elsewhere.

Accidents to Children.

Decks of canal boats make a picturesque but somewhat restricted playground. A baby tethered on a sunny day to the flat, smooth top of a closed hatch is probably as well off as any baby need be, certainly infinitely better off than most city babies shut within four walls. The children, however, who attempt to play ball or hide-and-seek on the narrow decks run great hazards. It was a common occurrence for a child to tumble off a boat. One mother of seven children laughed at the question and said, "Why yes, they are always falling in." Five families reported the loss of one or more children through drowning.

One mother had lost four children while on canal boats. The oldest child had died of "sunstroke"; the second, 5 years of age, had been drowned; another had been burned to death by an explosion of oil on the barge; another, a baby, had died of spinal meningitis after being dropped on the deck of the boat and injured. One of the surviving children had been injured by the oil explosion which killed

the third child.

Another mother had lost a little girl by the explosion of a rifle in the cabin of the canal boat. It was two hours before the boat could reach port and then it was some time before a doctor could be secured. After this experience the mother was unwilling to accompany her husband and permitted only one of the children, an 18-year-old boy, to go with the father. She thought that women and children should be prohibited by law from going on the boats.

Recreation.

Social life among these families as among those on other canals is necessarily restricted. No families mentioned the attractions of

towns except those who made a practice of wintering in New York Harbor. Even among such families those docking at the Manhattan piers had a great advantage over those docking in Brooklyn or on the Jersey side, as far as accessibility to the city was concerned. One harbor boatman who was interviewed in a Brooklyn basin said that he hardly dared to go ashore alone at night because of the stories he had heard of holdups. The usual reply to the inquiry regarding social pleasures was a reference to other boat families, and sometimes this reference was deprecatory. One mother said: "You don't like to mix with the other boat people. You don't know anything about them."

Harbor Conditions.

More than one-third of the families included in the study of the New York canals were interviewed in New York Harbor. Inasmuch as many of the canal boatmen bring their boats to New York at the close of the canal season and become harbor workers for the winter months the conditions in New York Harbor have an important bear-

ing upon the lives of the canal-boat families.

The vastness of the activities of this largest port of the United States is suggested by the fact that over 6,000 vessels are registered at the New York customhouse. Many of these, of course, are passenger or freight steamers engaged in foreign or coastwise trade; but it is estimated that more than 3,000 boats, including both registered and unregistered vessels, are used for purely local traffic. As the canal boatmen come down to the harbor they pick up cargoes wherever they can find them and thus come, for the time being, into close contact with the life of the harbor.

Harbor conditions necessitate the presence of someone on the boats at all times of day and night. As piracy is reported to be common and the danger from fire is great, it is customary for the boat owners and operators either to employ captains who are willing to remain on board all 24 hours of the day or to employ watchmen in addition to the day workers. The irregularities, however, which exist under a system in which some boats are manned by one person for 24 hours and other boats are operated on a 10 to 12 hour day with a watchman at night give rise to dissatisfaction on the part of both employers and employees. A boatman who lives on board his vessel with his family may be, from some points of view, an advantage to the employing company; but many of the boatmen feel keenly that conditions on the boats are not favorable for women and children, giving the following as the principal reasons for their attitude: Congestion in cabins and lack of sanitary facilities, fostering immorality and disease; inaccessibility of schools and doctors; lack of opportunities for recreation; and dangers from fire.

Unsuccessful attempts were made both in 1920 and 1921 to secure legislation forbidding the presence of women and children on boats. While the proposed laws were intended to regulate conditions in New York Harbor they were not restricted in their application and would, if passed, affect all waterways in the State. Already a number of the more progressive transportation companies, both on the canals and in the harbor, have forbidden employees to have women and children with them on the boats; and it is noteworthy that leaders among the

boat employees are in accord with this decision.