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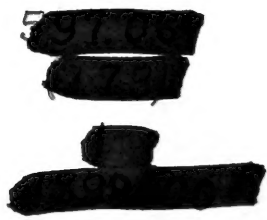
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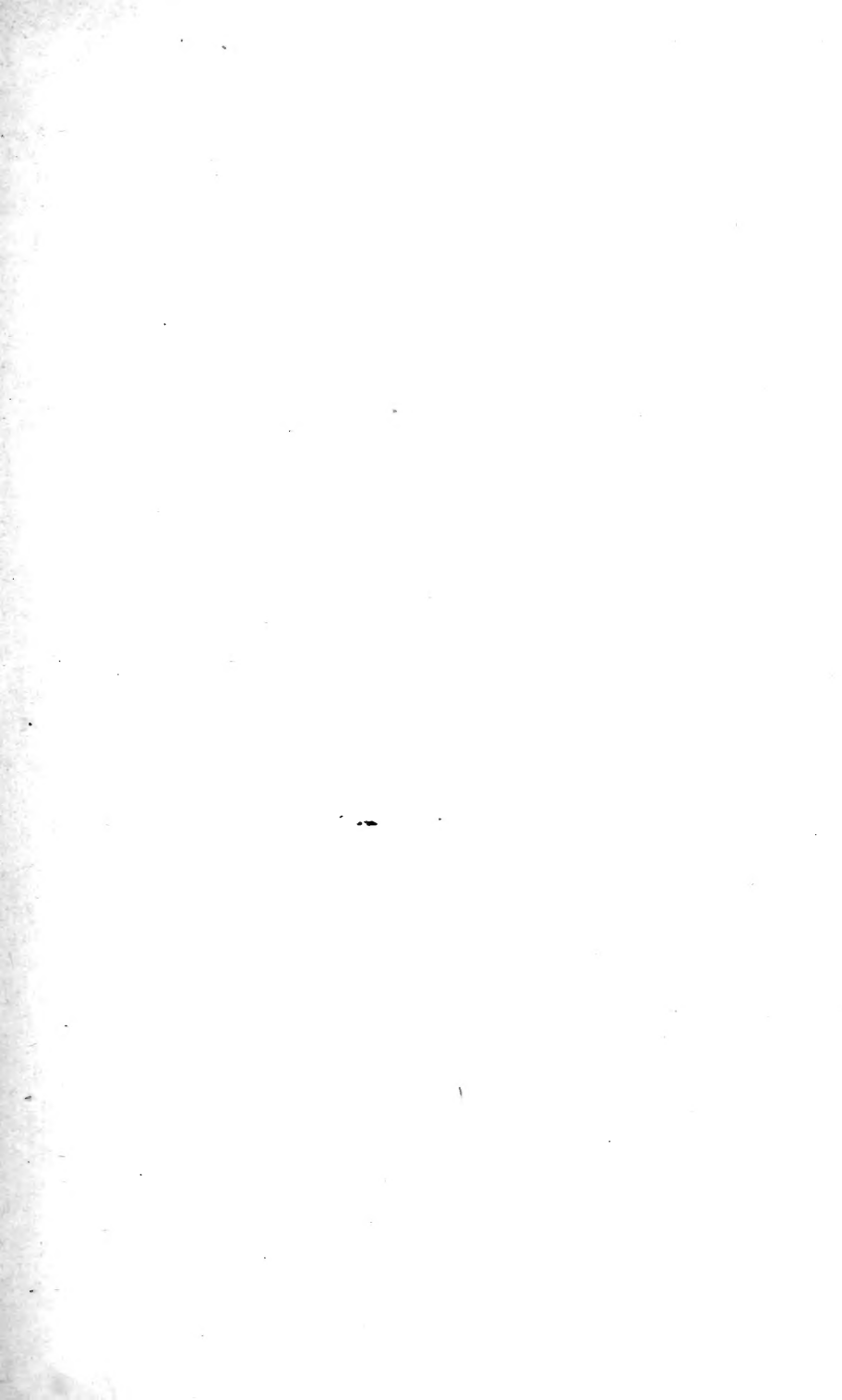
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Pickered Are Rising Again.

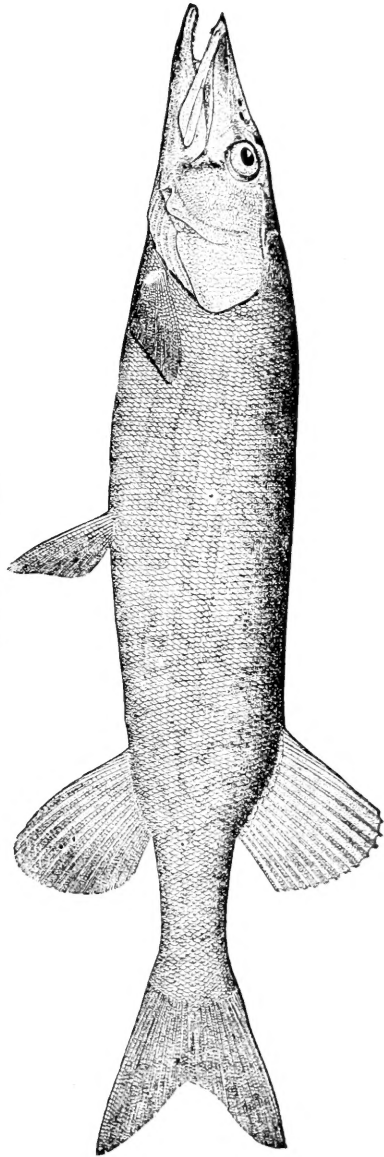
Splash!

The setting sun throws violet colored darts
Through leafless branches, where the forest parts
Shofts which fall richly, through it and beyond,
Upon the darkening surface of the pond
See, how the violet mingles with the black,
As sudden ripples make a cobweb track
How spats slip in thousands to the shore,
To touch the margin and appear no more.
How from one spot concentric circles glide,
Each with its gem-load to the water's side -

Splash!

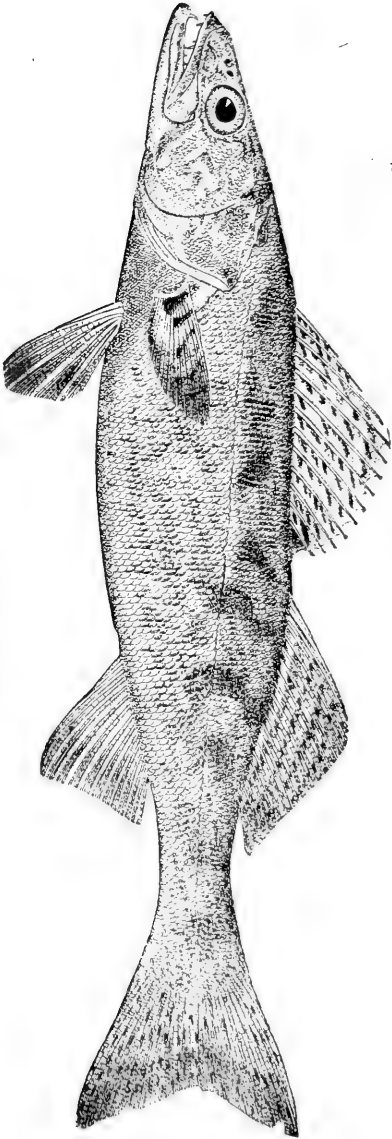
Almost there is an echo from the hill,
But the soft sound falls short. Now all is still
A pickered rose just then!

Stanley Waterloo



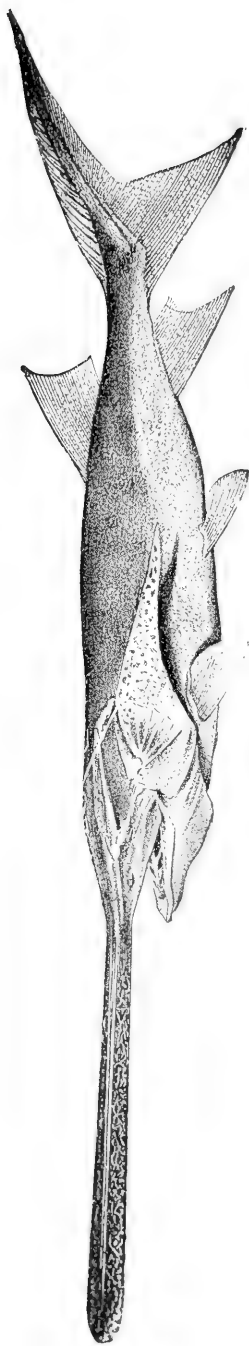
THE PICKEREL.

Esox reticulatus Le Sueur.



THE WALL-EYED PIKE.

Stizostedion vitreum,



SHOVEL FISH.

(Polyodon Spathula Whab.)

REPORT OF
State Fish Commissioners

From October 1, 1898, to September 30, 1900.

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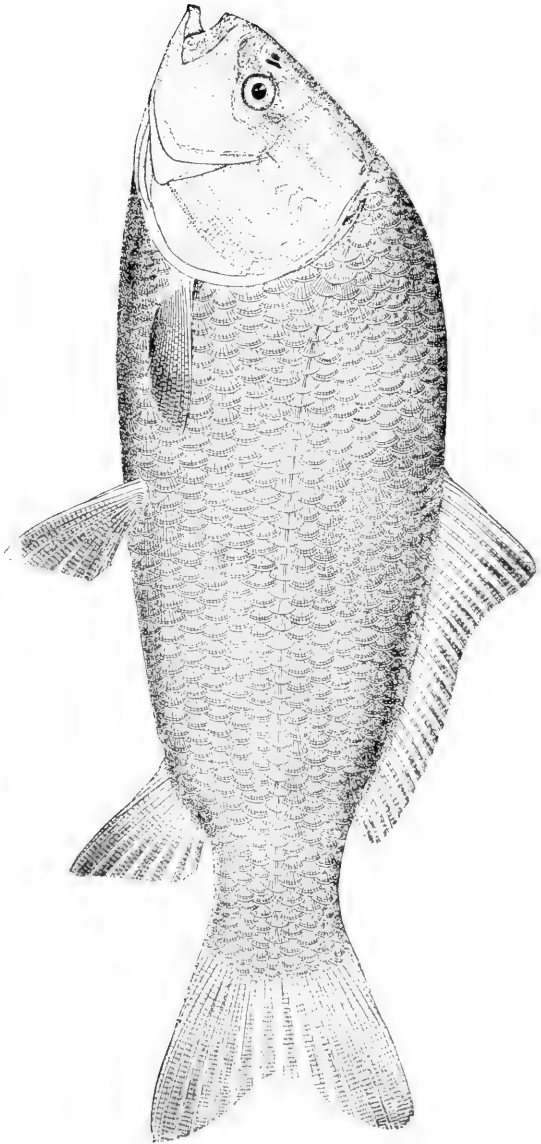
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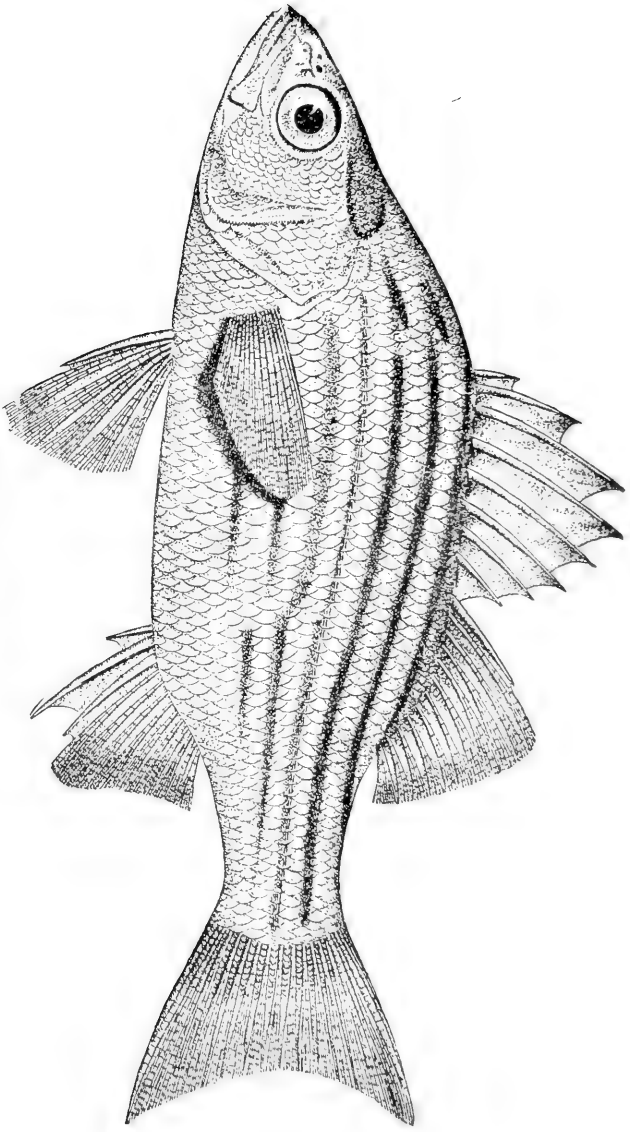
STEAMER REINDEER.



THE RED MOUTH BUFFALO-FISH.

Tetodon Cypripinella.

THE YELLOW BASS.





CARTHAGE LAKE CLUB HOUSE.



COMMISSIONERS' REPORT.

To His Excellency, JOHN R. TANNER, Governor:

We beg leave to submit herewith our report as Board of State Fish Commissioners for the two years ending September 30, 1900.

The two seasons passed since our last report have been, in some respects, the most eventful and profitable in the history of the commission. The commercial phase of the fishing industry has been wonderfully developed, and has taken its place among the larger of the legitimate business interests of the State. Large areas of water, hitherto of comparatively no value, have been leased or purchased for the purposes of fishing, and become part of the valid possessions of the fish dealer. Fish are not now, as formerly, marketed as soon as caught, but are placed in enclosures or pens and held to await a fair market price. The economy of this method has been demonstrated, as it provides against the inevitable loss following forced sales in an overstocked market.

The attention of the fishermen themselves is being drawn to the necessity of a longer close season, or at least, to the fact that seining during the hot months of July and August is unprofitable. In fact, the experience of practical men engaged in the business has demonstrated the necessity of prescribing some limit to the drain on the waters if the supply of the future is to be preserved, and they will join with the commission in a request for such legislation as will better protect the fish during the summer months as well as during the spawning season. The whole history of the enactment of laws for the protection and preservation of fish has been one of education, the outgrowth of knowledge gained by experience and experiments. For many years it has been the practice to take fish whenever or wherever they could be caught, regardless of time or condition, the theory seeming to be that today was productive of certain results, tomorrow might be doubtful. In this way tons of fish were taken because they could be easily obtained, and usually a large proportion went to waste for lack of a market, it being impossible to hold them long owing to their perishable nature. Practical business men, with foresight to realize the possibilities of this industry, have gone into it with the purpose of making the greatest possible amount of money out of it, and they have seen the importance of guarding the source of supply to an extent beyond that heretofore asked in legislation even by your board.

It is to us a matter of surprise that a business of such magnitude of so much importance to the general public, and so far-reaching in its results, dividing its proceeds as it does, between the fisherman, the dealer, and the transportation companies, should be so little known and understood. This is particularly true of the Illinois river, which, from its peculiar nature, forms one of the greatest fish producing streams in the country. Its bottom lands abound in lakes or depressions which the overflow of the river forms into lakes, and all these are filled by these frequently recurring overflows, several times a year, and these lakes, large or small, deep or shallow, afford an immense area of spawning ground which should provide a supply practically inexhaustible if properly protected. The shallow waters usually dry up during the hot weather, and the young fish so left should furnish our supply for purposes of distribution. The many deeper lakes having a continuous connection with the river form additional spawning ground and safe harborage for the fish.

In this connection it may be well to say a word on a subject which has caused much discussion; that is, the relation of the commercial and the sporting interests of the fish question. The commission is often charged with favoring the market fishermen as against the angler. We believe that, if the facts were understood, it would be seen that while we are doing everything we can to promote the increase of the coarser food fishes, we are, at the same time, increasing the supply of the gamier varieties proportionately. Let it be remembered that, of the whole product of Illinois waters, 85 per cent of the output is formed of the coarser varieties, the fish which are used for shipping throughout the State and to the East for commercial purposes. This estimate includes, in numbers according to the order in which we name them, carp, buffalo, white perch, catfish and bullpouts. The remaining 15 per cent is made up of sunfish, crappie, black bass, white bass, war-mouth bass and the pickerel family, with some yellow perch, wall-eyed pike, etc. These fish are all more or less carnivorous and subsist chiefly on live food. Minnows and the young of the carp, buffalo and sunfish form probably the greater part of their food, and were it not that nature has so nicely balanced the production of the young of the coarser varieties to provide this supply, it would only be a question of time when the streams would be depleted of all but the carnivorous varieties, when they would destroy their own young until the survival of the larger fishes only would result. This has been demonstrated by experience and observation; one instance bearing on the fact may be quoted here. In Minnesota, about fifteen miles above Alexandria, is a lake known as Vermont Lake, from which nothing but bass and pickerel were taken, and all were large fish, no small ones appearing. All were thin and gaunt, and when dressed and cooked showed by the formation of the bones, particularly the ribs, signs of extreme age. These had, undoubtedly, in the course of time destroyed all other fish, including their own young.

The carp were especially prolific, the adult female dropping from 200,000 to 600,000 eggs at spawning time, and these being adhesive, attach themselves to sticks and stones and mature and hatch very

quickly. While they form an easy prey to the carnivorous fishes, still, being produced in such numbers, a large percentage of them escape and reach maturity. Being rapid of growth, within two years the young are large enough to meet the size requirement for commercial purposes.

The buffalo can be classed with the carp as to their reproductive qualities. The sunfishes, too, are found everywhere in great numbers. The catfishes are not so plentiful as they once were, owing to the great drain upon the supply of young in former seasons by the use of what is known as fiddler baskets; however, these fishes are now increasing in numbers and we may again hope to see them as plentiful as before.

Before the passage of the size limit in our fish laws it was not unusual to see large boatloads of fish that would not average more than one and one-half to two ounces each when dressed, one of the most outrageously wasteful practices ever perpetrated by fishermen.

The increase of the coarse varieties has demonstrated beyond question that with this increase in their food supply the gamier varieties have been added to proportionately. Another feature of the question favorable to the increase of black bass is the fact that, owing to their being less tenacious of life than the coarse fishes, they do not ship so well, and consequently the market demand for them is limited and the catch of bass is very small compared to the whole amount taken.

ENFORCEMENT OF THE LAW.

The past two seasons, as in the two succeeding ones, the knotty proposition of the commission to solve has been how best to enforce the law. A rigid and exact enforcement of all the provisions of the law, as they stand upon the statutes, would be to work hardship to a great commercial industry. The waters, particularly in the Illinois river, Fox lake, Calumet lake and river and many of the smaller streams, have become thickly populated with the carp, which, from the very rapid growth and development, added to their immense powers of propagation, has filled the waters to repletion. They do not bite at the hook and line as voraciously as do the gamier varieties, and should be taken out of the water when large enough for market. With this end in view, the commission has allowed no particular restrictions to the placing of hoop and fyke nets in Illinois waters, when, in the judgment of the commission, there has been a necessity for taking the coarse fish. Then, too, in lakes which are admirably adapted to the gamier varieties of fish, where carp have increased to an extent that makes it a necessity to remove them, we have given permits to have them removed by use of seine and nets under the supervision of the warden designated by us, and paid for by the parties removing the fish, this, however, only under the condition that all interested must join in the request for such removals. In spite of all precautions and constant surveillance, men will slip to the river some place and use small mesh seines, giving as a reason for so doing, that they are undertaking to catch the bull pouts, which exist in innumerable quantities along the Illinois river. If the tak-

ing of the bull pout alone should be consummated, there would be no serious objection to such procedure, but men who will use unlawful appliances to catch fish, will not hesitate, of course, to keep everything that comes to their seines. There is, no doubt, a great deal that could be argued in favor of the smaller mesh, say, one inch and one-half to replace the present two inch mesh now in use. The bull pouts thrive everywhere, and as adults rarely ever reach the size permitted by law to be offered for sale, and there is no doubt that a two inch mesh is too large to successfully take them.

We are inclined to believe from such experience as we have had, after carefully noting the workings of the two-inch mesh all along the Illinois river, that an inch and one-half mesh should be allowed to be used during the season when it is lawful to use anything, and a vigorous prosecution made, or rather a vigorous enforcement of the law relative to size of fish which shall be offered for sale. The waters would be better for a greater reduction in the quantity of these fish, they are marketable and found everywhere in the State of Illinois. We believe there would be less illegal fishing with seines if the meshes were reduced to the size sufficient to take the bull pouts. The size limit of fish that can be legally offered for sale, has had a thorough test and has proven to be one of the most successful and practicable laws so far enacted. We have had a very large number of violators of this law all over the State, particularly in Chicago. The general impression gaining ground among the commission men there, that any fish shipped from outside of the State to the Chicago market, whether of under size or not, could be legally handled. As a result, that point has been hotly contested by the Chicago fish dealers, and the abuse has extended of course to fish shipped in from all portions of our State, and it could not be accurately determined whether they were fish from Illinois, or from states where it has been found consistent with the law to have permitted the sale of fish from other states. The ruling of the commission has been backed by good legal advice that the State of Illinois through its Legislature had the right to say what should be legally offered for sale within her own borders. Whenever under size fish have been found in the possession of the dealer, when not offered for sale, they were confiscated and turned over to the Chicago charitable institutions. This met with some opposition at first, but we are pleased to say that the better classes of dealers in Chicago have become convinced of the correctness of the opposition, and as a rule now refuse to receive consignments of fish smaller than allowed by law, and if such consignments are received and found to be mixed with larger fish and not detected until after receipt, were voluntarily turned over to our wardens for disposition named. While all parts of the State were well supplied with shipments of fish from various markets, they are, many of them, too small to be legally offered for sale, and it has required a great deal of time and patience to enforce the law in these instances, and yet not work hardships. Our wardens have been instructed, when such fish are found in the possession of dealers, to notify them that they are too small, obtain the name of the shipper and notify him also of the infraction of the law. This for the first

offense. If the offense is repeated, then in every instance to prosecute. Fish, smaller than those authorized by law that can be offered for sale, are not wanted in the markets, they are not in any sense desirable and are known among fishermen as trash. The dealers, themselves, admit that there is no profit in handling them. The last session of the Legislature enacted laws compelling shippers to label their barrels or boxes, such label expressing kind of fish, from whom and to whom. This has given us an opportunity of tracing always the shipper of small fish. The clause mentioned makes both the shipper and transportation company liable. We wish to say here in this connection that we have been greatly indebted to the transportation companies for the very prompt way in which they have notified their agents that packages of fish must not be delivered unless they are properly labeled. The companies have uniformly given us all the aid possible in enforcing this section of our law. The use of the trammel net is still kept up in some localities. From the nature of its use it can be readily handled in all the better classes of lakes along the Illinois and Mississippi rivers; quickly set and murderous in its use, a net of this description can easily be taken in the boat, it being very light, and carried into the lake and used readily in the night, then can be quickly removed and detection is impossible. Several cases, in which we have prosecuted for the use of the trammel net, have resulted in our defeat, the courts holding that the trammel net was a seine and used as such. This, while erroneous, has had its effect in making such prosecution very difficult. The use of the trammel net should be abolished entirely. In the enforcement of the fish laws, as we find them, we have been badly handicapped. In some counties conviction is almost impossible, even when cases have been clearly made against the violator, all preponderance of evidence usually being with the fisherman and seemingly easily supplied. The great difficulty we have is in getting witnesses to testify to a state of facts they are perfectly familiar with, because of their fear of some retaliation and frequently the negative support of the State's attorneys, who, for reasons of their own, do not care to prosecute.

This has been evidenced in a number of cases, where cases brought and prosecuted by the State's attorney have resulted in a verdict for the defendant. And similar cases in same localities, tried by an attorney engaged for the purpose, have resulted favorable to the prosecution. During the months when it is unlawful to use seines or nets of any description, we have maintained complete control of the Illinois river. This we have been able to do well the past two seasons by the use of our steamer Reindeer, she being very swift, enabling us to overcome long distances in the night, or a short space of time. We have had to inject into our enforcement of the law such practical methods as seemed to be to the best interest of the community as a whole, protect the fish and at the same time not work any hardship to the industry itself. The very large increase in the output of fish upon the Illinois river, particularly in the last ten years, has demonstrated what may be accomplished if we take the means within our power to rigidly enforce the law when it was necessary to do so. The commissioners should be empowered with the right to confiscate, at

all times and under all circumstances, any appliances used for fishing which are of a nature contrary to law, such as seines with too small mesh, as fyke or hook nets, that contain parts of improper mesh, or as trammel nets, fiddler baskets, wing nets or battery of nets with unreasonable leads, all so placed as to obstruct the free passage of fish contrary to the provisions of the law. This law is working with admirable effect in all of the adjoining states, and has been the means of a better enforcement of the law by a larger per cent than we have been able to show. Under the proper heads of this report we submit a synopsis of such a law as we think would meet the requirements. The time has come in the State of Illinois when the rigid enforcement of some law is a necessity, and we are free to admit that some of the provisions of our present law should be so amended as to make the enforcement of the law possible and complete without doing injustice to those legitimately engaged in the business of catching and selling fish. We note with a great deal of pleasure a large increased number of dealers and fishermen who are inclined, not only to obey the law, but to assist us in its enforcement. The Illinois Fishermen's Association has numbered amongst its membership a large number of men who inject into their business practical methods, and believe in the necessity of providing for the future, if a successful continuance and profitable outcome of their business is to be had. We are in receipt of a number of letters from the prominent fishermen and dealers along the river, asking that the close season be so lengthened as will include the hot months, taking the position that there are very many more fish ruined and wasted when caught during the months of July and August than are successfully saved and marketed. We have under advisement the proposition, and will make an exhaustive investigation of the consensus of opinion along the river, and submit to the next session of the Legislature our views as to the advisability of the measure. We would also advocate an absolutely close season in the taking of bass and kindred fishes during certain seasons of the year covering the spawning season, within a limited distance of any dam. This for the reason that more harm is done by the indiscriminate taking of spawning bass at or near the base of the dam during the spawning season while the fish are congregated there, making an effort to get up over the dam to spawning ground. It has not been an unusual sight to see large numbers of such fish taken in a single day under such conditions.

COLLECTION OF FISHES.

The collection of fishes for distribution depends always on the condition of the season, whether the water is high or low, the weather hot or cold, and the distribution must, naturally, be proportionate to the collection.

The season of 1899 was above the average, that of 1900 was curtailed on account of high water in the Illinois river, and just the contrary condition in the Mississippi river, which was very low. The water rose early in the season on the Illinois river from the usual

natural causes, the carrying off of the snows and rains, and was kept up to abnormal height by the influx of water from Lake Michigan through the drainage canal. The result to us was a great scarcity of small fish at the time when they were usually found in the low flat ponds and lakes along the Illinois river. The water was high enough early in season to allow the adult fish to go out into the shallow lakes and spawn, but the usual conditions were completely changed, and instead of having the product of the numerous temporary ponds and lakes which the falling water leaves easy of access for collection, the river kept up and out of its banks and gave the fry plenty of time to grow large enough to go out into the deeper water, the river and deep lakes, before the water receded, and then, when it did go down, the ponds were left filled mainly with adult fish, so that the work was delayed until late in the season and the greater part of the output had to be of adult fish.

This, however, has its advantages, as it will be the means of adding to the river a large number of fish that would otherwise perish in ponds and lakes so remote from the river as to make collection from them impossible, on account of the expense and loss attending the carrying of fish such distances.

Our work of collecting has been carried on on the same general lines as heretofore, except that with the steamer Reindeer we have the advantage of being able to transport larger quantities and for greater distances than before. Our earlier collection indicate a large increase in the pickerel family, large numbers of the young having been taken early in the season. For several years they have not been seen in the river in any large numbers.

We are glad to say that the young of the dog fish have not been so plentiful, partly on account of a demand for dog fish in some of the markets, and partly owing to their destruction by the market fishermen.

A large drove of hogs was fed during the whole of the season of 1899 on the dog fish which were taken and thrown out on the bank by one gang of fishermen on Clear lake, a lake owned and fished by Mr. John Schulte of Havana, Ill.

The channel catfish show an increase also, but not large. Since the size limit clause of the law was enacted fewer small ones have been taken, more, however, have been brought to market than there is any excuse for. As before stated we noted a slight increase in this variety in our collections, but not what there should have been.

Now and then we have found a specimen of lake herring in our catch, with an increase of ring perch, which would indicate that an occasional lake fish strays into the river, but the natural conditions necessary to sustain these fishes, particularly the herring, are lacking in our river and lake waters, so that we need not look for any permanent addition of this kind in sufficient quantities to excite comment.

DISTRIBUTION.

The distributon of fish after the collections are made is no easy task. They require great care in the handling so as to have them in proper condition for shipping. Any fish showing signs of bruises or injuries of any kind must be taken out and returned to the river, the remainder must be kept in water sufficiently cool to permit them to harden so that they may be ready for the next change; then the water into which they are placed when brought in by the collectors must be gradually reduced in temperature, as they are frequently taken from water whose temperature would register from 90 to 100 degrees, and the change to that of from 60 to 65 degrees, a temperature necessary for shipping them, would be apt to prove fatal if the change was not gradual. After these preliminary steps they are placed in charge of a messenger and are transported in the baggage cars on passenger trains, one messenger taking all he can care for safely, or that will be given room in the car, so that they may not interfere with the regular duties of the baggageman. It is expensive work to transport fish. They can not be carried safely without a messenger accompanying them, because frequently, in fact, nearly always, changes must be made from one line to another, occasioning delays of one or more hours, which would be fatal unless the fish had the necessary attention. The water must be disturbed so that it may become oxygenated, they must be carefully watched, and water aerated by use of a dipper if they show signs of distress. Then when the water into which they are to be placed is reached the temperature of water in can must be regulated again to bring it near that of the river or lake for the same reasons. Ice is nearly always used in shipping the fish, as they carry better in water of low temperature.

As a rule the fish are carried free of charge, except a fee to baggagemen, but generally the messenger accompanying them pays his fare, although there are some generous exceptions to this rule. On the whole, when the per diem of messenger, his expenses enroute, telegraph service, ice and hauling are considered, a trip rounds up with a considerable expense bill.

The board has had the matter of general distribution under consideration for several seasons with a view to determining the advisability of supplying private ponds unless all the conditions relating to the probable results are made known to the commissioners, such as the nature of the pond and the water, as to size and quality, and their suitability to the requirements of the fish asked for. In fact, it has been a question in our minds whether or not only public waters should be supplied, except in cases where the applicant defrays the cost of the plant. The limited amount which we have to cover the cost of collecting and distributing must be used economically to get the public waters supplied, and while we have made a practice of supplying private applicants so far as we could, we can not supply all, that would be a physical impossibility. It is evident that many who apply do not know what they want when they ask for fish. Our greatest demand is for black bass, and there can be no greater mistake made than to undertake the cultivation of black bass in a

limited space for profit, and they should not, in any case, ever be placed in a pond by themselves. They are predaceous in their habits, and if other live food is not to be had they will devour their own young and the smaller of their species. We have tried hard to impress upon those who have ponds the necessity of supplying, as nearly as possible, all the conditions necessary to the life habits of the fish if success is to be expected, that is, to have all of the coarser varieties present with the finer fishes, so that the amount of food necessary for the latter may be provided by the former varieties, but as a rule people who make fish ponds will insist upon some one variety to the exclusion of everything else, and, also as a rule, want the "pirates" of the lot.

REARING PONDS AT URBANA.

The output of the rearing ponds at Urbana has been very satisfactory. We give in the appendix a list of fish taken from these ponds and planted in that section of the State. It has saved a great deal of transportation and demonstrated the expediency of such ponds.

The cost of maintenance has been very slight. We have in mind a project to improve these ponds, if retained, and if satisfactory arrangements can be made, to permanently locate them at this point. Crystal lake is in close proximity to the ponds, from which breeders may be taken, and the surplus of the pond used for distribution.

TRANSPORTATION.

Without the assistance of the railroads of the State our work would fall very short of a successful showing. They have as a rule favored us in every way they could consistently, carrying our fish in the baggage cars on passenger trains when such service was often a detriment to them; have stopped their trains at streams to give us time to make our plants, and frequently hauled a car over their lines to and from points we desired to make. We have had only courteous treatment from the employés, and except in rare instances have never been refused a reasonable request. We desire to express through you our thanks to the following railroad companies, from whom we have from time to time received valuable assistance: Chicago, Burlington & Quincy R. R. Co., Wabash R. R. Co., Illinois Central R. R. Co., Chicago & Eastern Illinois Ry. Co., Chicago, Rock Island & Pacific Ry. Co., Mobile & Ohio R. R. Co., Chicago & Northwestern Ry. Co., Chicago, Peoria & St. Louis R. R. Co., Iowa Central R. R. Co., Toledo, Peoria & Western Ry. Co., Peoria, Decatur & Evansville Ry. Co., Wisconsin Central Ry. Co., Wabash, Chester & Western Ry. Co., Jacksonville & St. Louis R. R. Co., Indiana, Illinois & Iowa R. R. Co., Lake Erie & Western Ry. Co., Fulton County Narrow Gauge Ry. Co., Elgin & Eastern R. R. Co., Quincy, Carrollton & St. Louis R. R. Co.

FISH WARDENS.

We give in appendix a list of the fish wardens of the State. Very many of them sought appointment because they thought there was

direct compensation for the work, and a disappointment resulted as soon as the nature of the work and the fact that they would have to depend upon such fees as were obtained from convictions as remuneration for that work became known. These fees constitute their sole compensation, except in cases where they are given special work to do by the commissioners. The whole system is wrong and should be changed. We have a large number of wardens in the State, and a glance over our reports from wardens will show that but little interest has been taken in the enforcement of the law. Few men care to risk the enmity of their neighbors by giving information, and fewer care to appear in the role of a prosecutor. In some of the river districts fear of retaliation on the part of the fishermen deters prosecution. Then again, where men are found who will vigorously prosecute offenders, they too often meet with great difficulty in obtaining convictions, and consequently have their labor for their pains. Even when convictions are obtained, it too often happens that the half of fine which should go to the warden is retained by the State's attorney as payment for fees, which seems all proper enough so far as the law governing the State's attorney's office is concerned. It is an unpleasant and thankless task, at best, to undertake to enforce the fish laws under these circumstances.

The sentiment in favor of the enforcement of the laws is growing, but not fast enough. The neglect of a proper enforcement is usually attributed to the commissioners by parties who do not take the conditions into consideration. This State is almost an empire in extent, so great in length and of such diversity of conditions that new complications in the enforcement of the law arise continually. To give proper personal attention to each individual case would be impossible; first, because it would be a physical impossibility to attend personally to all, and next because the board, serving without compensation, could not afford to devote all their time to this work, so we are compelled to depend upon wardens or persons interested to give these matters attention, and for the reasons given this has not always been successful or satisfactory in the results obtained. The interest is great enough to warrant a remedy, and we think it can be done by dividing the State into five or ten districts, appointing a good man for the work and paying him for it, not depending upon fines obtained, but making the fines payable to the Secretary of State, to be applied to a fund to pay wardens, and make the payment of such fines obligatory on the part of the courts to the Secretary of State, that is, such part of it as should go to the complainant. By this method the commissioners would be relieved of a cumbersome piece of machinery, and work would be done that would result in a saving of many thousands of pounds of good food, and it would also do away with the alleged "blood money prosecutions" occasionally complained of.

We give herewith extract from the law creating wardens and their duties, compensation, etc.

SEC. 4.—Appointment and Duty of Wardens.] The Governor, on request of the fish commissioners, shall appoint fish wardens, who shall enforce all laws relating to fishes, arrest all violators thereof, prosecute all offenses against same. They shall have power to serve processes against such offenders and

shall be allowed the same fee as constables for like service, and shall have power to arrest, without warrant, any person for violating any of the provisions of this act; but such wardens shall receive no fees, except on cases where convictions are obtained. Such fish wardens may be removed at any time by the Governor.

POLLUTION OF STREAMS.

Sometime in the future the people of the State of Illinois will awaken to the fact that a prominent cause of disease exists in the pollution of the water supply of the State. In some special instances this seems to be unavoidable, but a very large percentage of the causes could be eliminated. We are frequently in receipt of complaints of fish being killed by the introduction of refuse from different manufacturing or other establishments, which is being turned into the rivers and streams, and while we have, in every instance, given the matter personal investigation, we have found also that, no matter how flagrant the case appeared, our powers in the premises are limited to the investigation, we, as fish commissioners, having no authority further than that of any other citizen, and we could only point out the sole means of relief, a suit for damage by nuisance. But it has ever been a matter of surprise to us that water used for drinking purposes should be allowed to become so foul that it would kill fish and still be used for all purposes in the family. We have found some streams that at one time during our connection with the fish commission were ideal ones, with water almost crystal clear, and hard and sandy bottom, now always foul and with a deposit on bottom in places that is two or three feet deep, of such a character that no one seeing or smelling it could doubt for a moment its probabilities for disease, lying dormant and only kept in abeyance by the rapid current of the stream and the washings of the usual spring rises. This is a growing evil, and to us it presents the feature of destroying more fish, both mature and in embryo, than all the methods used by fishermen and anglers, and our only wonder is that these streams, the natural homes for the best of our fishes, have not become entirely depleted.

If no means of preventing the escape of such refuse into the waters could be found and the life of the various enterprises depended upon the use of our rivers as sewers, as we are often informed by the parties interested in the case, it would be another thing, but as a remedy can be had, and a sure one, it would seem to be incumbent on the people interested to demand such protection as the law can give, not alone for the future of the fish, but what is of vastly more importance, the health of the people themselves.

We have on file a large number of complaints and the findings resulting from our investigations, but deem it hardly proper to give them a place here, as it does not legally enter into our work, but we can always produce them should such showing become desirable.

EFFECT OF DRAINAGE CANAL ON ILLINOIS RIVER.

The speculation as to what would be the result of turning the water of Lake Michigan through the drainage canal into the Illinois river was wide spread, and wild statements were made as to what would be the effect. The efforts of parties to obtain an injunction against it, and the newspaper comments are matters with which the public are familiar. Anticipating such criticism, we, together with Prof. S. A. Forbes of the State University, made a trip over the river on the steamer Reindeer, taking samples of the water of the river at short intervals which were tested analytically, so that we might be prepared to note the results following the opening of the canal.

Tests of the water after the introduction of the lake water have shown an improvement rather than deterioration as a result. Opinions as to the question whether as a whole the valley has been benefited as regards navigation, etc., differ, but with this question, we as fish commissioners have but little to do. On the fishing industry it has had a temporarily unfavorable result, but it will be only temporary, as the ultimate outcome can only be good and increase the supply. The water has maintained an unusual height during the summer months, so much so that it has been difficult to use seines during the summer in the river itself. To use the fishermen's parlance "the fish were out in the woods."

The output of carp and buffalo has been reduced to some extent, but as the area of breeding ground has been naturally increased we can but believe that the future will show a very large increase in the production. The high water has enabled the gamier varieties to deposit their spawn, rear their young and go out into deep water, thus avoiding the very large loss of fish which were formerly stranded and perished in the shallow ponds. We believe the increase in the game fishes will show up large the coming season.

We have had ample opportunity of giving the matter close observation, from the frequent trips made over the river, and feel sure that the introduction of the water from Lake Michigan has been of material benefit, and in no sense detrimental to the interest we represent.

We are inclined to think that, from a sanitary standpoint, the river itself has been benefited, but doubt whether or not the localities directly connected with the canal itself have been or will be gainers by the opening of the canal. Our reasons, however, are only the result of personal observation, and could not in any sense be taken as valid against scientific examination and testimony. That the river can be polluted by turning into it the refuse of sewers and manufacturing establishments there can be no doubt, but that it may escape reasonably pure where no obstructions to a free flow exist, and a current more or less rapid is maintained after the river is reached we know by experience and thorough tests.

On the whole, as before stated, the introduction of lake water through the canal into the Illinois river has not hurt the fish interests further than temporarily reducing the catch of fish.

BOARD OF FISH COMMISSIONERS.

APPOINTMENT—DUTIES, ETC.

We are frequently called upon to take active part and give personal attention to the enforcement of the laws in remote parts of the State, and if from lack of time or any other cause, we do not go we are usually informed that we are not doing our duty or earning our salaries, and a great many times during the year are reminded that officials drawing the salaries we do should give the work more attention. In order that our position may be properly understood we herewith give the law creating the fish commission and enumerating the duties of the commissioners in full, so that there need be no further mistake regarding the question. The commissioners have never received a cent of salary, as the law distinctly provides that the work be without remuneration. The position is an honorary one, and when the board was created it was understood that their duties were to be more of a supervisory nature than otherwise, but little importance being placed upon the work. As time passed and the necessity of protecting the fish and fish interests became apparent new legislation was had and the work assumed greater magnitude and more importance. As attention was called to it, the general public seemed to take it as a matter of course that it was a salaried commission, and that the commissioners should give their entire time to the work. This is, of course, impossible under existing circumstances. While the appropriations allow compensation to wardens and persons employed by the commission in the pursuance of their duties, and the commissioners when employed in the service of the State are allowed their actual expenses, such as traveling and hotel bills, and liberal allowance for such expenditures as may be needed to carry on the work, yet no compensation, of any kind, has ever been received by any member of the commission from the date of the enactment of the law up to the present day. We make this statement, as before said, so that those who may have felt that they had reason for complaint for censuring the commissioners for seeming neglect of duty may better understand the real facts.

BOARD OF FISH COMMISSIONERS.

An act entitled "An act to establish a board of commissioners to increase the product of the fisheries, by artificial propagation and cultivation."

Approved May 13, 1879. In force July 1, 1879. L. 1879, p. 171.

Paragraph 1. Board of commissioners created.] Section 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly,* That it shall be the duty of the Governor, by and with the advice and consent of the Senate, to appoint three persons residents of this State, who shall constitute a Board of Fish Commissioners. The persons so appointed shall hold their office for the respective terms of one, two and three years, the Governor designating the term each member shall serve as said commissioner from the

time of their first appointment, and their successors to be appointed at the expiration of the several terms of office, and shall each hold their terms of office for three years.

Paragraph 2. Duties.] Section 2. It shall be the duty of the persons so appointed to select suitable locations for State fish hatching and breeding establishments, take all measures within their means for propagation and increase of the native food fishes, and also for the introduction of new varieties of food fishes into the public waters of the State, upon the best terms possible; to employ a practical and competent fish culturist as a superintendent who shall have general charge and care of such establishments, and perform all such duties as the commissioners shall direct. Said board shall not receive any compensation for their services, but shall be reimbursed their actual expenditures for traveling and hotel expenses, not to exceed in any event the sum of \$300 per annum for the entire board. *Provided*, That if no appropriation be made no expenses shall be incurred.

Paragraph 3. Expenses—how paid.] Section 3. The said commissioners or any two of them shall have authority to draw upon the State Treasurer from any appropriation made in pursuance of the purposes of this bill, as the same may be required, to defray expenses incurred, and shall report to the Governor of the State, all and singular, the items of such expenditures together with the business transacted under their commission, such report to be made on or before the commencement of each fiscal year.

FISHING ALONG THE LAKE FRONT IN CHICAGO.

For a great many years it has been a customary thing to see the piers and projections along the lake front literally filled with large dip nets, raised and lowered by winches, the net of small mesh, and tons of small fish have been so taken and distributed throughout the city.

The work was ostensibly done to catch minnows for bait, but this was mainly used as a blind, and was carried on to such an extent as to become a nuisance. In the enforcement of the law enacted at the last session of the General Assembly we caused printed notices to be served on all that it must cease, and through our very efficient warden, Mr. G. R. Ratio of Chicago, this class of violations has been nearly broken up.

REGULATING THE CATCHING, SHIPPING AND SALE OF FISH.

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly:* That it shall be unlawful for any person or persons or corporation to take, catch or kill, or attempt to take, catch or kill in any manner or by any means, whatsoever, in the waters of Lake Michigan, any white fish or lake trout, between the fourteenth day of October in each year and the succeeding thirtieth day of November. It shall be unlawful for any person to set or cause to be set or used in the water of Lake Michigan within one-quarter of a mile of the main shore thereof, any gill, pound or fish net. No dip-nets shall be used except for catching minnows for bait, said dip-nets not to exceed twenty inches in diameter.

THE USE OF SEINE.

At the last session of the General Assembly a great effort was made to enact a law to prevent the use of the seine in any of the waters of the State, of any sized mesh. While it is unlawful to use a seine or net in most of the streams of the State, yet the Illinois river has been made an exception.

Section one of the law is as follows:

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That no person or persons shall place or cause to be placed or erected, any seine, weir, net, fish, dam or other obstruction in or across any of the rivers, creeks, ponds, streams, lakes, sloughs, bayous, or other water or water courses within the jurisdiction of this State, in such a manner as will obstruct the free passage of fish up and down and through such water or water courses, and it shall be unlawful for any person to catch or take fish, except minnows for bait, with any device or means other than hook and line, within one-half mile of any dam constructed across any of the rivers or creeks or other water courses within the jurisdiction of this State.

That it shall be unlawful for any person or persons, at any time, to catch or kill any fish in any of the rivers, creeks, ponds, lakes, sloughs, bayous or other water courses within the jurisdiction of this State, by the use of lime, spear, acid, medical or chemical compound or explosives.

That it shall be unlawful for any person to catch or kill any fish in or upon any of the lakes or rivers within the jurisdiction of this State with any device or means when such waters are covered with ice.

That it shall be unlawful for any person to catch or kill or attempt to catch or kill any fish with any trammel net, seine or other devices and as a seine in or upon any of the rivers, creeks, streams, ponds, lakes, sloughs, bayous or other water courses within the jurisdiction of this State. Nor shall the meshes of any weir, seine, basket or trap of any net or seine used for catching fish, except for catching minnows for bait, be less than two inches square.

Provided, however, that seining shall be lawful and allowed between the first day of July in each year, and the fifteenth day of April the following year, with seines, the meshes of which shall not be less than two inches square, in such rivers or streams as are used for navigation within the jurisdiction of this State, and also in the navigable bays or lakes connected with such navigable streams within the jurisdiction of this State, and not extending beyond the overflowed bottoms of such rivers or streams: *Provided, also,* that it shall be lawful for the fish commissioners or persons authorized by them to take fish in any way, at any time and in any such places, as they deem best for the purpose of propagation, distribution or destroying of objectionable fish.

From facts they have been able to gain the commissioners believed it to be a necessity, that is, if the commercial phase of the question was to be considered. A glance at the table of fish taken on the Illinois river will show a very small percentage of anything other than coarse fish, also that a very large number of these coarse fish have been taken, and that each season shows a decided increase in the output. As before stated, carp particularly have increased to such an extent that if not taken out they would soon, by their rapid increase in numbers, crowd out all gamier fishes, and while this is true of the Illinois river and its adjacent lakes, it is becoming so of a large number of inland lakes as well. There is only one method of getting out the carp in sufficient quantities to be effective, and that is by the use of a seine. To entirely abolish the use of seines would be a mistake in more ways than one, as it would destroy, to a certain

extent, a very valuable industry, and deprive a large number of men of employment. What is of much importance, it would take away from the river towns especially a large part of the business upon which they subsist, and in the end would defeat the very object desired by those advocating the abolishment of the seine, viz: The increase of the game fishes for angling purposes.

A great hue and cry is raised about the immense damage the seine does on the Illinois river. I think that we can safely assert that more harm is wrought by the injudicious use of hook and line in the river itself than by the seine. We have given this matter especial attention, and note that more fish of less than prescribed market size are brought in and offered for sale by the anglers than by the fishermen who use seines of proper mesh.

We have, at various times, seen hundreds of small bass and crappie taken by an angler in a day's fishing near the dams, and many of them were thrown away as too small to use, or after being kept on a string all day they were either dead, or injured to such an extent as to make it useless to put them back in the water. There is no limit to the size of fish that can be taken with hook and line, but there should be.

The fish commissioners conceive it to be their duty to undertake to protect the fish, for the angler, but not for him alone, and do not believe it to be incumbent on them to destroy a great industry to gratify personal pleasure.

The time will come in this State, as it has already in older countries, when the waters will have to produce their full share of food, as a matter of public economy, and there will always be, as now, a necessity for the use of some means of taking the fish when of sufficient size for use, and to do it we know of no other appliance better than the seine, but that, of course, to be used under proper restraint.

We are informed that another effort will be made during the next session of the Legislature to enact a law to prevent the use of the seine. The matter should be very carefully considered, and the facts thoroughly canvassed before legislation is enacted, and it should be prompted, not by sentiment, but the consideration of the best interests of all concerned.

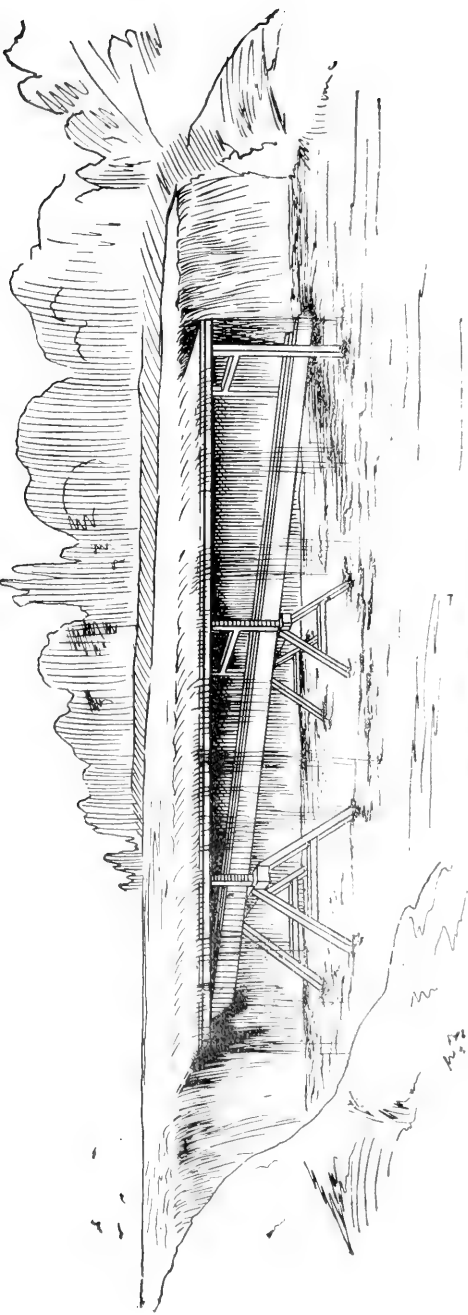
FISHWAYS.

But few fishways have been put in during the past two seasons. Several have been ordered repaired, and but little complaint has been received on this account.

In appendix we give illustration of the plans of fishing in use in this State.

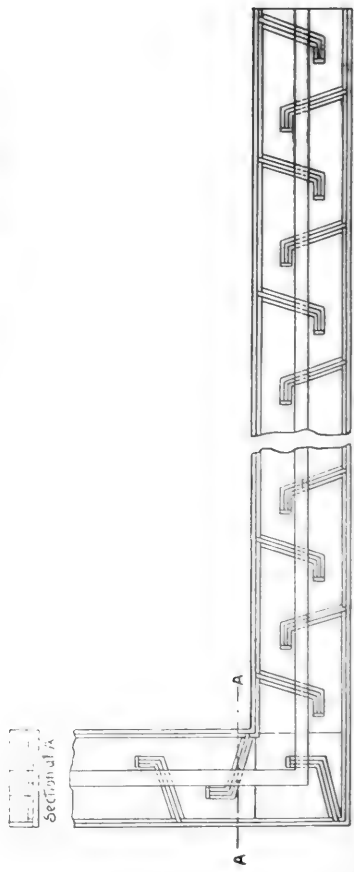
CARP.

We can not omit mention of the carp. As a money producer the Illinois waters have never had its equal, and while there are many objectionable features resulting from its introduction into parts of the State, etc., as a whole it has to the mass of the people been of

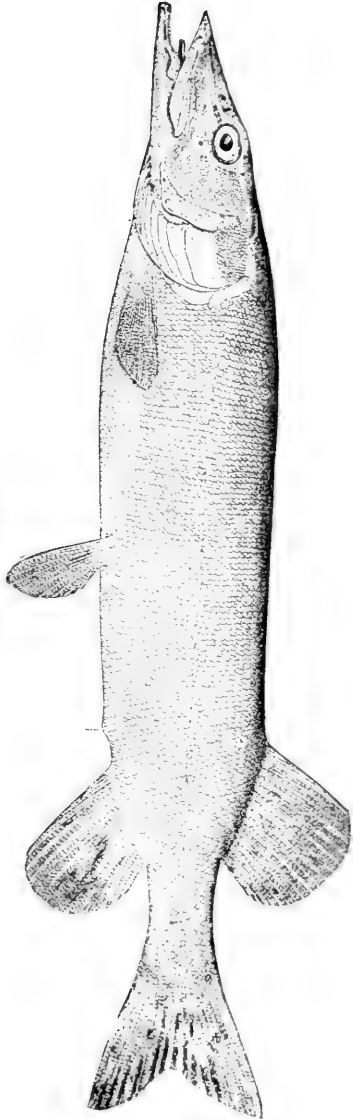


PLANS OF FISHWAY.

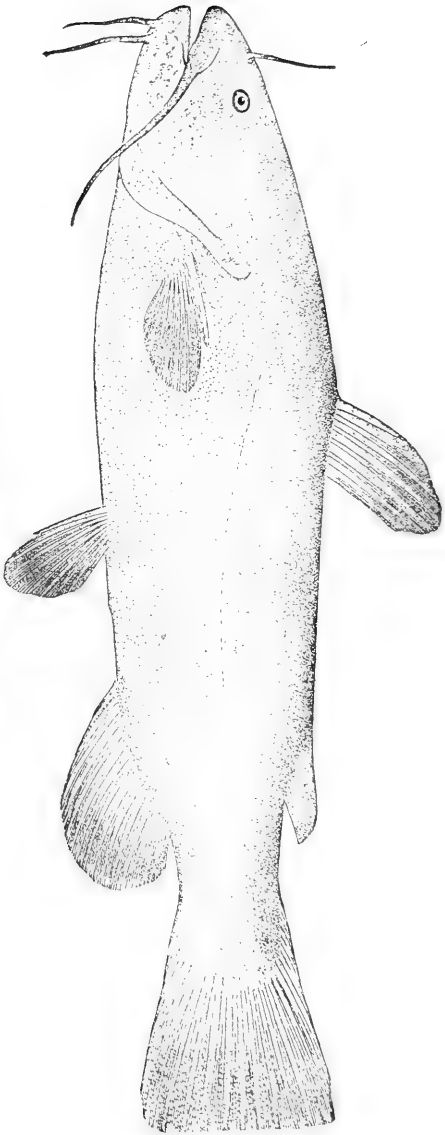
- PERSPECTIVE VIEW OF FISHWAY
- SHOWING ITS POSITION WITH
- REFERENCE TO DAM WHEN ERECTED,
- RISE ONE FOOT IN FOUR FEET.



• PLAN OF FISHWAY.
SCALE $\cdot \frac{1}{4} = 1$

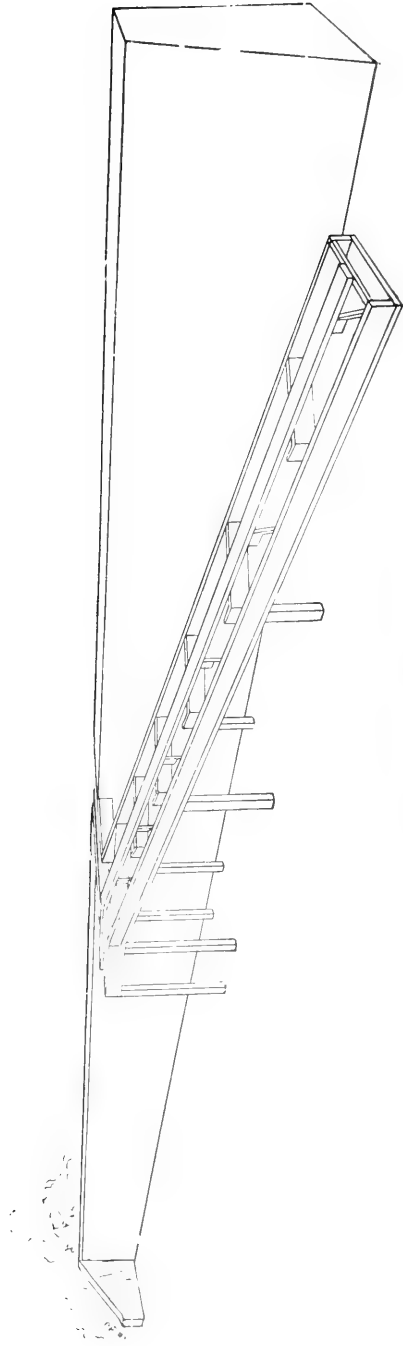


THE PIKE.
Esox lucius.



THE CHANNEL CAT FISH.

Ictalurus albicus.



PLANS OF FISHWAY.

vital importance. In spring lakes where the percentage of game fishes run high, natural breeding grounds for the basses, it has probably worked some harm. Not on account of destruction to the spawn and other fish as alleged, by its combative tendencies, but from the fact that as a vegetable feeder they destroy, to some extent, vegetation and keep the water stirred up. This objection however, can not be made in the greater portion of Illinois waters.

Great flat lakes, with muddy bottoms line both sides of the Illinois river for a greater part of its length. The Illinois river itself, from its character, is a natural home for them and a proper proportion of bass, and crappie are always found everywhere, and as constantly increasing as are the carp. There is and can be no reason to regret their introduction in such waters. We have no need to defend them or their usefulness, the figures and facts show for themselves. A glance at report of Illinois River Fishermen Association will show the results.

Some criticism has been made as to the act of the commission in introducing them into our waters, but mainly from the anglers' standpoint. In fact we have been told that the carp have so depleted the wild grass of some of the lakes that it has caused the wild ducks to change their breeding grounds. And intimations have been made that not even the corn fields adjacent to the river were safe from their invasion. Be that as it may, as stated before, while in some few localities the carp may not be just what people want, but the fact remains that the carp are giving to the people of the State more employment, more money, and more food than all other of our native fish combined, and the prejudice early existing is fast giving way, and almost every hotel table in the State, carp on bill of fare, can occasionally be found.

It may be a matter of interest to note what they have accomplished. In 1885 the first plant was made in our public waters by the United States commission and we give here the itinerary of the trip and location of plants.

Copied from Report of 1886:

Last season the first experiment was made of stocking the rivers of Illinois with carp. The United States Fish Commission gave the State a carload of carp, and sent their car No. 3 in charge of J. F. Ellis to this State to distribute them under the direction of the State Fish Commission, which was accomplished, by placing them as follows:

Okaw River.....	3,000
Saline River.....	2,000
Little Wabash River.....	2,000
Big Muddy River.....	2,000
Sangamon River.....	2,000
Clear Lake.....	500
Illinois River.....	5,000
Rock River.....	2,000
Fox River.....	2,000
Kankakee River.....	3,000
Lincoln Park Lakes, Chicago.....	1,000
South Park Lakes, Chicago.....	1,000

Des Plaines River.....	1,000
Reservoir Illinois Central Railway, Clinton.....	200
C., B. & Q. reservoir, Mendota.....	200
Edwards River.....	1,000
Quincy Bay.....	2,000

This with a supplementary shipment, was the gift of the United States Commission to the State of Illinois, as well as the expense of the car and crew, engaged in the distribution. Car came into the State over the Indianapolis & St. Louis Railway to Vandalia, from which point fish for Okaw, Big Muddy, Saline and Little Wabash Rivers were sent by express. Car came over Illinois Central Railway to Springfield, where the Sangamon River and Clear Lake were stocked, car laying over there one day. From Springfield via Illinois Central Railway to Clinton, where the reservoir was stocked; thence to LaSalle, where plant for Illinois River was made. From there to Mendota, stocking the Chicago, Burlington & Quincy Railway reservoir. From Mendota the fish for Rock River were sent to Dixon. Car then went over Chicago, Burlington & Quincy Railway to Aurora, planting Fox River; then to Naperville for the DesPlaines River, reaching Chicago at night. From Chicago fish were sent to Kankakee River. Lakes in Lincoln and South Parks were supplied from Chicago.

Copied from Report of 1838:

On November 13, 1887, car No. 2, United States Fish Commission, in charge of Mr. George H. H. Moore, arrived at Quincy with a load of carp for distribution in the public waters of the State. Leaving Quincy at 5 o'clock same day, on Wabash Railway, 1,500 blue carp were planted in Illinois River, 500 in lake at Jacksonville, 1,000 in ponds on State Encampment grounds, at Springfield. Car left Springfield at 4:30 p. m. of 14th, on Illinois Central Railway, planting 500 at Clinton, Illinois Central reservoir, arriving at Kankakee at 4 o'clock on morning of 15th. Planted in Kankakee River, at Kankakee, 5,000. Left Kankakee at 7 o'clock same morning. Ran to Centralia, where carp were left for the following points:

Crooked Creek, 250; Clear River, 250; Little Wabash River, 250; Big Muddy River, 250; Okaw River, 250. Leaving Centralia at 8:50 morning of 16th, ran to Decatur, where 1,000 carp were deposited in Sangamon River. Left Decatur at 4:30 p. m., on Wabash Railway, for Quincy, arriving at 12 o'clock at night. Left Quincy on Chicago, Burlington & Quincy Railway, on morning of 18th. Left 250 carp in ponds of Chicago, Burlington & Quincy Railway, at Galesburg. Arrived at Meredosia at 12 o'clock, sending 1,000 carp by messenger to Rock River, at Dixon, and leaving 1,000 at Mendota, for Mendota Lake. Arrived at Aurora at 1:15, planted 2,000 in Fox River, and sent 500 by messenger to Naperville, for DesPlaines River. Arrived at Chicago at 2:45, from there 250 carp were sent to Rockford, for Rock River, and 400 to Richmond, for lakes in McHenry county. Car left for Washington on the night of November 18.

Carp were distributed to private applicants two years previous to first plant in public waters. Many of the ponds were destroyed by fshet of 1884-5, which carried down into the rivers the fish from the ponds. A very large number of large carp were taken the first year of the plant in public waters, and must have been the fish so escaping.

To quote from the report of 1886 again:

Of this planting we have not as yet had any report, but that carp will thrive in our rivers, has, we think, been demonstrated beyond a question. About September 10, 1886, Messrs. Schroll and Boles, of Meredosia, telegraphed to the writer, at Quincy, that they had caught a large carp in the Illinois river near Meredosia, that it was alive and if we wanted it to send for it. I at once sent a messenger and case for it. On its arrival I found it to be a mirror carp, measuring 30 $\frac{1}{4}$ inches in length and weighing 15 $\frac{1}{2}$ pounds. The week following another telegram arrived from the same source, telling of another large carp, which, upon arrival here, proved to be almost

identically of the same size and weight as the other, weighing one-half pound more and about same length. Both fish are now in the basin of the park fountain at Quincy, and have grown perceptibly since their arrival. These fish, no doubt, had escaped from some ponds connected with some stream tributary to the Illinois river, and perhaps by the carrying away of the dam to carp pond during a freshet, the fish become liberated and found their way to the river. From Smith & Co., of Beardstown, and fishermen at Havana, Peoria, Peoria, and various points on the Illinois river, reports come to us of the catching now and then, of carp, all quite large. On the Mississippi river carp are frequently taken, both the old and young, showing that they not only grow in the rivers, but increase as well. In the Sny Ecarte, in Pike county, we are informed that some seine fishermen caught at one haul of the seine about 100 carp, averaging in weight about three pounds each. This catch was reported to us by the fishermen themselves. We did not see the fish, and the statement may be erroneous, but enough has been learned in regard to the matter to demonstrate to our satisfaction that the carp can be successfully introduced into our rivers, and with that end in view we shall undertake to propagate a supply, which, together with those furnished from time to time by the United States fish commission, shall be adequate to people all the streams in the State with them.

THE FISHING INDUSTRY.

The extent and value of the fish industry of the State is so little known and understood that it may be worth while to call attention to some of its features. Few people, in the State at large, know anything about it, and so that they can now and then obtain good fish at fair prices, care for little else regarding it.

Chicago is one of the great fish markets of the world. There are probably more concerns dealing in fish there than of any other one commodity, drawing as they do not only from the State, but from all other states, its supply. We intended, in this report, to give the statistics of the extent of the trade in Chicago, but owing to some cause clearly beyond our control, figures were not ready.

We give herewith a copy of an article from New York Fishing Gazette which will give an idea of the trade in our locality, and its importance as a food, particularly for the working classes.

We also give herewith report of Illinois River Fishermen's Association for the year ending December 31, 1899.

This report covers twenty towns on Illinois river, and only includes the fish bought, caught and handled by members of the association, which comprises only a part of those engaged in market fishing for a livelihood.

	Pounds.	Value.
Carp.....	6,332,990	\$189,980 70
Buffalo.....	3,143,154	94,294 62
Cat-fish.....	241,000	9,640 00
Bull pouts.....	499,100	19,964 00
Sun-fish and ring perch.....	252,050	7,561 50
Striped Bass.....	92,931	4,646 55
White perch.....	459,580	13,787 40
Crappie.....	114,490	6,869 40
Black bass.....	70,221	7,022 10
Number of turtles, 202,900.....		8,471 50
Total.....	11,205,516	\$362,246 77

Grand total: Pounds, 11,205,516; value, \$362,246.77.

M. D. HURLEY, President,
 JOHN A. SCHULTE, Treasurer,
 ALEX SARGEANT, Secretary, Peoria, Ill.

THE FISH MARKET OF CHICAGO.

The City of Chicago is unique in many ways, but it stands alone in one thing, viz., the Jewish fish market, where the Bohemians, Poles and Hebrews go to buy their fish. There is nothing like it in the United States. South Jefferson street, from Twelfth to Maxwell street, on one side of the street is lined with small, dingy buildings one story high, in which the retail fish merchant displays his stock of fresh water fish. On the outside is a stand on which the fish of all kinds are piled and mixed indiscriminately—black bass, black fins, bullheads, crappies, herring, mullet, pike, pickerel, perch, rock bass, suckers, sheepsheads, sunfish, trout, whitefish, and white bass. On the inside of the store are tanks, where the live buffalo, carp and dogfish are displayed, and the customer selects the fish, it is caught in a net, then wrapped in newspapers (a large pile being always on hand), and given to the customer, who takes the live carp and walks out of the store feeling sure of its being fresh. After the fish is wrapped in the paper it is perfectly quiet, although just previously it may prove highly pugnacious in its efforts to escape from its captor with the net. Possibly its new surroundings may numb its faculties or maybe it is smothered in the close wrapping of the paper. This is all the more strange as the carp will live longer out of the water than any other fish. Its tenacity is proverbial. The buyers are of all kinds, from the poor woman that takes two or three small suckers, to the prosperous merchant's wife, who brings her basket for a mess of black bass at 14 cents a pound or live carp at from 8 to 10 cents.

All go through the same routine of buying, selecting the live fish or taking up the dead fish in their fingers, examining it, smelling it to test its freshness, then handing over to the salesman the quantity of fish selected, who wraps it up in old newspapers and hands the fish over to the customer, taking pay for the same invariably in silver. The whole transaction is free from wrangling, for the customer selects his own fish and is to blame if it is not satisfactory.

Many stands are located on the curb along the street, where only dead fish are sold. The side streets in the neighborhood have also their stands. The fish are usually bought from the West Side Fish Company at a uniform price and sold for one price by all the dealers. The small dealers mix up several kinds of fish in one lot and cry out the price—three, four, or five cents a pound, as the case may be. The dealer that has the strongest voice usually sells the most fish. The stores handle the best quality, some of them selling live fish, the quality being graded down to the poorest as the small dealer is reached, who only has a pushcart to sell from.

In the season some of the retail merchants handle cured herrings, including Scotch and Holland. They display the fish in a barrel on the sidewalk, as in fresh fish. They are also subject to examination. Thousands of barrels are sold annually.

There are more fresh water fish sold in this market than in any other place in the United States. During the holidays it is not unusual to see ten thousand people buying fish. They always pay cash and take their purchases with them. Every one interested in the fishing industry should visit this market. It is one of the sights of Chicago.

REMOVING THE COARSE FISHES.

The commissioners have adopted the plan of permitting the removal of the surplus of coarse fishes from the lakes and streams, when done under the direct supervision of a warden, whose per diem and expenses must be paid by the parties interested in the removal of the fish.

In many of the lakes that are fed wholly, or in part, by springs, such as Fox lake, for example, carp have increased in great numbers, as they can not well be kept down with hook and line. Citizens and owners of property on the lake petitioned to have a warden appointed under whose supervision they might remove the gars and dogfish, and, at the same time, the surplus carp. This arrangement was made and we sent Mr. G. R. Ratto, one of our best wardens, to Fox lake to attend to this work. This was accomplished, and over 60,000 pounds of carp were taken out. We were much surprised to find carp of such large size and in such great numbers where the water was of such low temperature. A number of the carp weighed forty pounds or over, and one was taken that weighed fifty-five pounds. While taking out the carp, a muskalonge weighing forty-nine pounds was caught. This specimen was preserved and mounted, and is now in the possession of Mr. Cohen.

From Calumet lake and river nearly 100,000 pounds of carp have been taken during the past two years. From the Sni Ecarte Club preserves in Adams and Pike counties, nearly 100,000 pounds of carp and spoonbills were taken. From Eagle Lake Club grounds, opposite Burlington, a large number of carp were taken out, and from

drying pools thousands of all kinds of fish were taken and put into deeper water near. (See appendix for report.) All this work was done under the direct supervision of a warden selected by us, and their reports were sent to us.

THE STEAMER REINDEER.

The boat formerly owned by the State, which we used in our work, having become, by age, unfit to go through another season, besides being too small and slow to accomplish our purposes, we were forced to look for another and better boat. Upon consultation with Governor Tanner, it was arranged that if the Legislature would make a proper appropriation, he would approve it. This was in the month of December, 1898. We advertised for a boat and after looking over a number which were offered for sale, we found one that suited us. It was the property of the Mississippi River Packet and Towing Co., of Clinton, Iowa. After an unsuccessful season they had concluded to sell out. We took an option on the steamer, called the Reindeer, for \$3,900, for sixty days, believing we could tell by that time what would be the probability of the necessary appropriation. The boat cost to build nearly or quite \$12,000, but was twelve years old, though perfectly sound, except the hull, which we knew would need renewing in a few years. As the upper works and machinery was in every way perfect, we realized that we had a bargain, but by the time the option had expired we were in no better position than at the start, so far as knowing what could be expected from the Legislature. Committees had hardly been organized, and no one could tell what the probabilities for an appropriation would be. As half a dozen others stood ready to pay a thousand dollars advance on our option should we not perfect purchase, we concluded to take the risk and buy the boat, and hold it until we knew what the Legislature would do.

Immediately after the purchase we were offered a substantial advance on our cost price for the boat. The Legislature very generously made the appropriation, and the boat was refitted and placed in commission, and used by the commissioners until the appropriation was available, when we were reimbursed for the purchase money.

The Reindeer is 127 feet long, 28 feet beam, full cabin, and has seven state rooms and offices for the commissioners. The machinery is very powerful, and of the latest improvements, and the boat has electric search light, and is fully equipped. It is one of the swiftest boats on the river, and when we get a new hull under her will be one of the staunchest, and would readily bring double the amount of her cost to the State. She is equipped with a complete circulating apparatus, large galvanized iron tanks, and can hold 10,000 young fish on board for several days with safety.

With her we are able to do good service patrolling the rivers, and with her great speed we can cover long distances quickly. Her presence on the Illinois river has done much to bring about better enforcement of the law, and while illegal fishing has not been entirely abolished, it has been materially diminished and kept in check.

There will always be more or less illegal fishing so long as unlawful tackle exists, and there is but one sure plan to stamp it out, and that is to give the commission power to confiscate and destroy all unlawful tackle when and wherever found. With the Reindeer and such a law in force, we could clear up the rivers of the State, otherwise the enforcement must necessarily be, to some extent, ineffectual, as some men will always take the opportunity offered by night and absence of authorities to use unlawful tackle.

We give in appendix, log of the boat for seasons of 1899 and 1900, covering a mileage of nearly twelve thousand miles during the season.

RIVERS AND STREAMS OF ILLINOIS.

By request of a number who are interested in our water ways, we give in the appendix the list of the rivers and their tributaries in this State, nearly all of which are tributary to the Mississippi river, and this list will give an idea of the possibilities afforded the fishes of the great Mississippi for finding their way to almost every part of the State, if all the streams gave a free course to them, or were properly provided with fishways. This list was prepared several years ago for the convenience of the commission themselves. With its aid we were able to become familiar with the several water ways of the State, and give them intelligent personal inspection, and note the existing conditions and needs. Most of them have been visited either by boat or on foot by the commissioners for that purpose.

If all streams were provided with fishways, and perfect enforcement of the law could be had, a few years would give to every part of the State an abundance of fish in every stream, where sufficient depth of water could be maintained all the year round. But fishways are not all in, or in working order. The laws are not perfectly enforced, and the commissioners at best can only keep, in part, the proper balance, by constantly adding to the depleted streams by distribution, and with as rigorous enforcement of the laws as the limited means at their command will permit.

We are often met with the complaint that fish are not so plentiful in certain streams as they used to be years ago. There is little to wonder at in this state of things when all the causes which combined to produce it are considered. In the first place, conditions themselves have greatly changed. Cultivation has done away with the timber and the waste lands of the bottoms and woods have been cleared and taken up, subjecting the streams themselves to varied changes.

Then, along the entire length of almost every one can be found, on every log or shady bank, an angler or a party of them, almost every day in the week for the entire season, taking everything that will take the bait. Here, in Quincy, we are often asked why it is that our adjacent lakes, once so plentifully supplied with the best of our game fishes, now offer so little to the angler. Men do not stop to consider that where, a few years ago, two or three anglers a day on any of the lakes would be the limit, now, on any Sunday particu-

larly, from the opening to the closing of the season it is safe to assume that one thousand men, women and children will go out into the bottoms above and below the city for a day's fishing, and all take some fish from the waters. Once each year these lakes are filled by the overflow from the Mississippi river, but after a few weeks, at most, the fishing is poor. If the fish taken from them could be accounted for, few would ever ask why there were none left in the lakes. The amount of fish taken from the Illinois waters with hook and line during the season would seem fabulous if it could be ascertained. Everything, large or small, that will take a hook, is kept and strung and brought home, if only to be thrown away.

The work of the seine, under proper regulation, is not nearly so fatal to the increase of the game fishes as is the promiscuous taking with hook and line. To this we refer in another part of this report.

RECOMMENDATIONS.

We would respectfully recommend that the law creating wardens be so amended as to divide the State into large districts, appoint wardens to each, and compensate them for their work; that all fines collected be turned over to the Secretary of State and be applied to a fund to pay the salaries of the wardens, and that proper provision be made to insure the collection and remittance of fines when imposed.

We would also respectfully recommend that the fish laws be so amended as to make it the duty of the Fish Commissioners, or persons authorized by them, to confiscate and destroy all illegal fishing tackle, wherever found, and make the possession of such illegal tackle a violation of the law. Also that a close season be made to cover the spawning season of fish, and prohibit their being taken by any device whatever during such close season.

We would also recommend that the size limit, as applied to those varieties mentioned in the body of this report, be reduced to correspond with the adult size of these fishes.

ACKNOWLEDGMENTS.

We desire to acknowledge our indebtedness to the railroad managements of the State. In our work we have had no better friends than they have been. They have proven their interest in our work in a very practical way, and have placed us under repeated obligations.

To the press of the State we are indebted for full accounts of our work, and descriptions of our methods, etc. Public attention has been frequently called to our distributions of fish, and the movements of the cars and boat. Very much of the increased public interest in the protection of fish is due to the influence of the newspapers.

To the various clubs throughout the State we are deeply indebted for valuable assistance.

To Colonel J. R. B. Van Cleave, we are under obligations for assistance in the purchase of our new boat, and for the interest shown by assisting us in the making of valuable collections.

We wish to acknowledge our obligations to Governor John R. Tanner and his secretary, Colonel J. Mack Tanner, for their uniformly courteous treatment, and the interest they have manifested in our work.

APPENDIX.

In the appendix will be found the following:

Financial statement of disbursements for the two years ending September 30, 1900.

The list of public waters supplied with fish.

The list of private applicants supplied with fish.

The list of Fish Wardens.

Reports of Fish Wardens.

Reports on fish removed under permits.

Copy of the fish laws as they now stand.

We also give, by request of those using our report, the list of the fishes of Illinois, by permission of Prof. S. A. Forbes, under whose direction the list was made from collections made by him and his associates. Prof. Forbes is not only a man of national reputation, but is considered an authority in every part of the world where his work is known, and hence we have not only availed ourselves of the use of the valuable paper published with our report, but feel much favored in being able to do so.

SUMMARY.

In concluding our report we wish to say that taking all the circumstances into consideration, we believe we have done the best we could.

We have been very generously dealt with by former Legislatures, and have always received courteous and careful attention from the individual members.

For reasons previously stated, it has been impossible for us to give our entire time to the work, and we have had to depend largely upon the wardens for the enforcement of the laws. Our warden system can never reach the desired efficiency until such changes as we have suggested, or similar ones, have been made.

That we have been greatly censured for the existence of flagrant violations we have no doubt, and also because we have not promptly responded to every call made upon us; this we could not help, although we have given our personal attention to every case of any kind when it has been possible to do so. The work has grown from one of merely honorary supervision to one that is of great commercial importance, and it has required careful management to do justice to all concerned and accomplish the greatest benefit to the

greatest number. Our aim has been to produce the greatest possible amount of food as the result of our work. Our methods may be criticised, perhaps they are, but the results must have demonstrated that these methods are not all faulty. We have had to stand between the angler and the market fisherman, and we have tried to do equal justice to both, since each is equally entitled to our consideration. As we see it, we can but believe that in increasing the supply of coarse fishes we must increase the game varieties proportionately. Still, we are accused by the angler of favoring the market fishermen, and some of the latter see, in every law that is enacted, only a blow at their industry. It is necessary that each should make some concession if the future of the fish is to be considered.

Again we repeat, we have done the best we could, and respectfully submit to you this account of our stewardship.

Respectfully,

NAT. H. COHEN, *President.*

S. P. BARTLETT, *Secretary and Superintendent.*

APPENDIX

Recapitulation of expenditures by Illinois State Fish Commission for maintenance of Steamer Reindeer from October 1, 1898 to September 30, 1900.

Bills of particulars and vouchers on file with State Auditor.

To appropriation available July 1, 1899	\$2,500 00	
<i>Cr.</i>		
By expenditures (vouchers) for month of July, 1899		\$719 76
.. August, 1899		790 00
.. September, 1899		412 69
	1,922 45	\$1,922 45
To amount on hand October 1, 1899	\$577 55	
To appropriation available July 1, 1900	2,500 00	
<i>Cr.</i>	\$3,077 55	
By expenditures (vouchers) for month of October, 1899		296 07
.. November, 1899		281 48
.. July, 1900		482 38
.. August, 1900		675 38
.. September, 1900		500 88
	\$2,236 19	\$2,236 19
Amount on hand October 1, 1900	\$841 36	

Recapitulation and expenditures by Illinois State Fish Commission as purchase, repairs and equipment of Steamer Reindeer.

Bills of particulars and sub-vouchers on file with State Auditor.

To appropriation available July 1, 1899	\$5,000 00	
To proceeds sale of Steamer Lotus, (See note)	1,000 00	
<i>Cr.</i>	\$6,000 00	
By purchase price Steamer Reindeer, (voucher)		\$3,900 00
By repairs and equipment, (voucher)		2,085 86
	\$5,985 86	\$5,985 86
Amount on hand October 1, 1900	\$14 14	

Recapitulation of expenditures by Illinois State Fish Commission from October 1, 1898 to September 30, 1900.

NOTE—The Steamer Lotus was sold by and on authority of the Governor to Mr. Harry L. Means, 602 Equitable Building, Louisville, Kentucky, and delivered to purchaser at St. Louis, April, 1899.

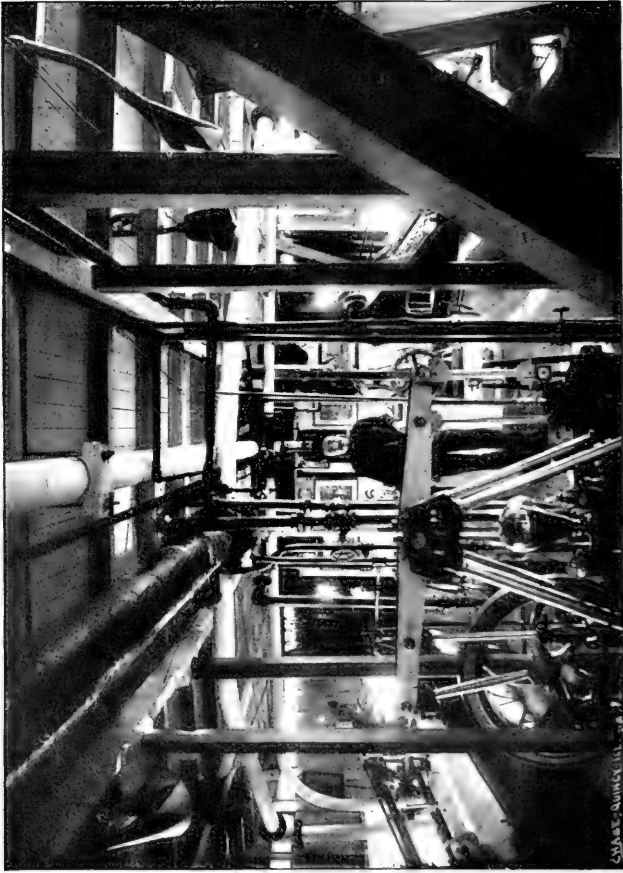
Bills of particulars and sub-vouchers on file with State Auditor.

To amount on hand October 1, 1898.....	\$2,021 70	
To appropriation available July 1, 1899.....	5,000 00	
	\$7,021 70	
<i>Cr.</i>		
By expenditure (vouchers) for month of October, 1898.....		244 34
.. .. . November, 1898.....		378 63
.. .. . December, 1898.....		164 27
.. .. . January, 1899.....		172 60
.. .. . February, 1899.....		195 70
.. .. . March, 1899.....		201 66
.. .. . April, 1899.....		213 47
.. .. . May, 1899.....		238 80
.. .. . June, 1899.....		447 39
.. .. . July, 1899.....		313 68
.. .. . August, 1899.....		229 19
.. .. . September, 1899.....		213 17
	\$3,012 90	\$3,012 90
To amount on hand October 1, 1899.....	\$4,008 80	
To appropriation available July 1, 1900.....	5,000 00	
	\$9,008 80	
<i>Cr.</i>		
By expenditure (vouchers) for month of October, 1899.....		238 40
.. .. . November, 1899.....		277 58
.. .. . December, 1899.....		272 15
.. .. . January, 1900.....		419 70
.. .. . February, 1900.....		430 09
.. .. . March, 1900.....		426 64
.. .. . April, 1900.....		260 29
.. .. . May, 1900.....		667 27
.. .. . June, 1900.....		559 30
.. .. . July, 1900.....		295 30
.. .. . August, 1900.....		276 23
.. .. . September, 1900.....		301 41
	\$4,424 36	\$4,424 36
Amount on hand October 1, 1900.....	\$1,584 44	

Recapitulation of expenditures by Illinois State Fish Commission for general expenditure, collection and distribution of fish, etc., from October 1, 1898 to September 30, 1900.

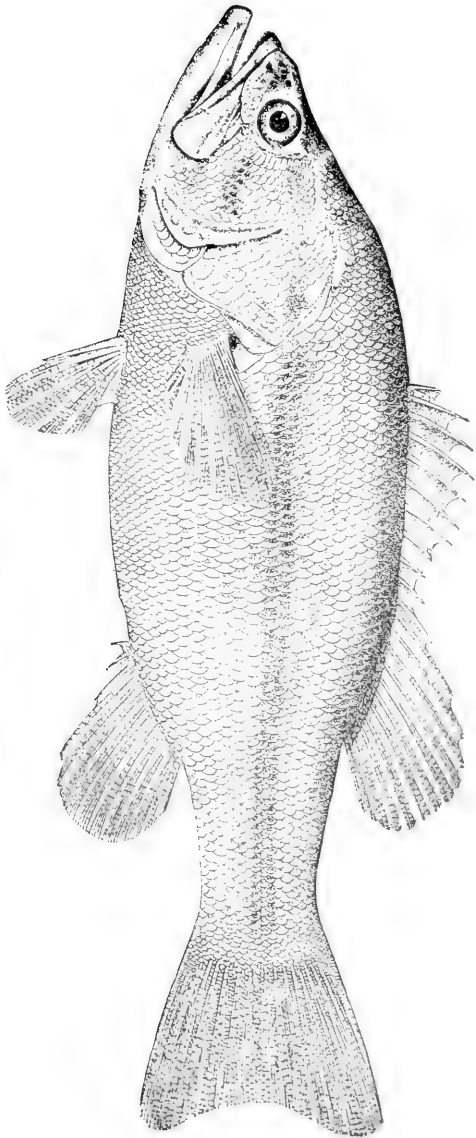
Bills of particulars and sub-vouchers on file with State Auditor.

To amount to credit of commission October 1, 1898.....	\$5,598 89	
To amount appropriation available July, 1898.....	7,500 00	
	\$13,098 89	
<i>Cr.</i>		
By expenditures (vouchers) for month of October.....		
.. .. . November, 1898.....		\$746 50
.. .. . December, 1898.....		590 77
.. .. . January, 1899.....		443 27
.. .. . February, 1899.....		407 64
.. .. . March, 1899.....		599 60
.. .. . April, 1899.....		775 79
.. .. . May, 1899.....		966 18
.. .. . June, 1899.....		634 37
.. .. . July, 1899.....		409 94
.. .. . August, 1899.....		464 99
.. .. . September, 1899.....		637 79
	\$7,108 55	\$7,108 55
Amount on hand October 1, 1899.....	\$5,990 34	
To appropriation available July 1, 1900.....	7,500 00	
To earnings Steamer Reindeer.....	150 00	
	\$13,640 34	



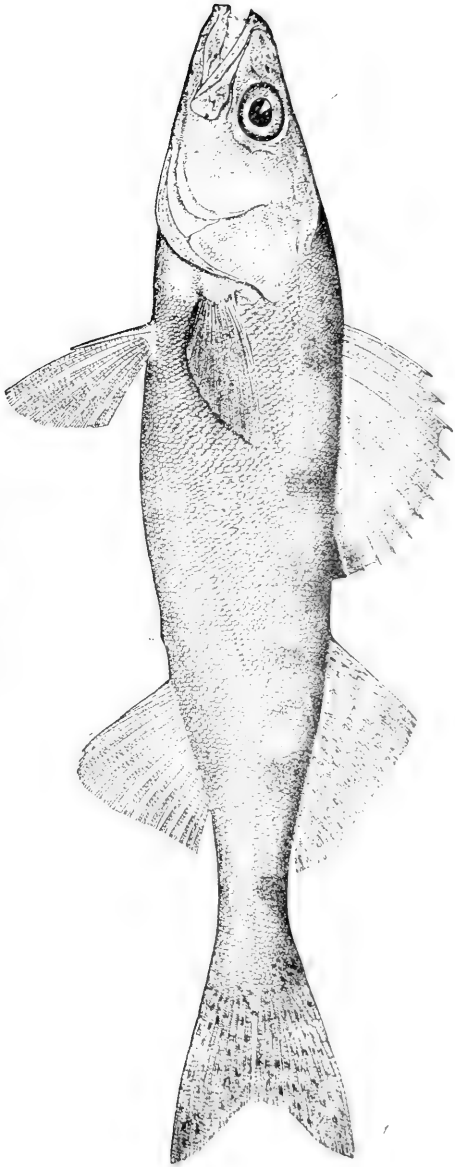
ENGINE ROOM, STEAMER REINDEER.

CHAS. QUINCY CO. N. Y.



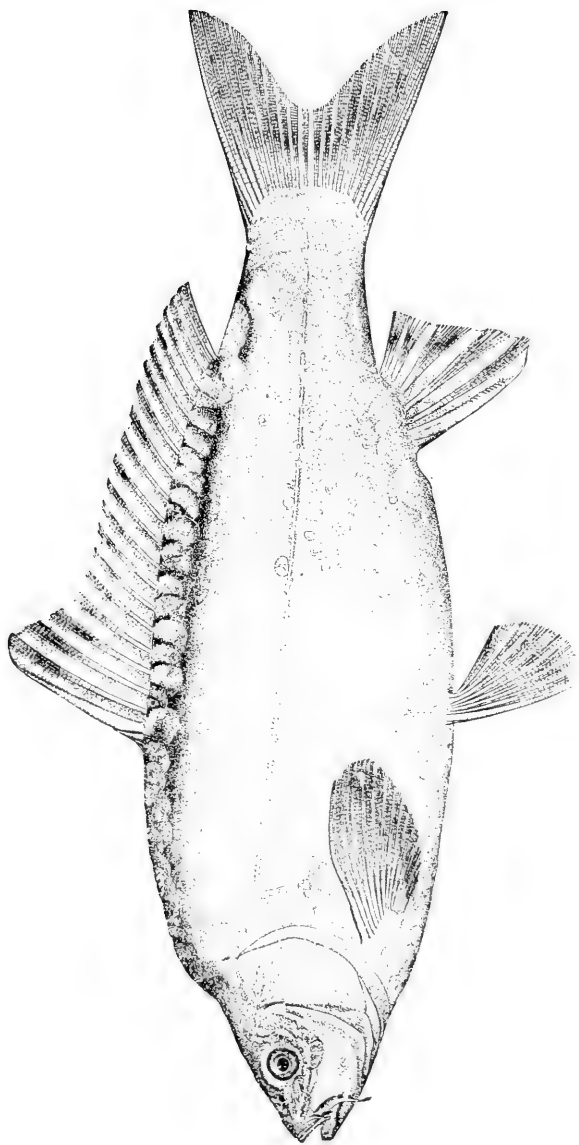
THE BIG-MOUTHED BLACK BASS.

Micropterus Salmoides.



THE SAUGER.

Stizostedion Canadense.



THE LEATHER CARP.

Cyprinus Carpio. (var. Coriaceous.)

Bills of Particulars and Sub-Vouchers—Concluded.

<i>Cr.</i>			
By expenditures (vouchers) for month of	October, 1899.....		\$735 03
.. .. .	November, 1899.....		526 34
.. .. .	December, 1899.....		744 82
.. .. .	January, 1900.....		641 80
.. .. .	February, 1900.....		420 94
.. .. .	March, 1900.....		459 06
.. .. .	April, 1900.....		795 55
.. .. .	May, 1900.....		599 96
.. .. .	June, 1900.....		861 78
.. .. .	July, 1900.....		659 23
.. .. .	August, 1900.....		532 78
.. .. .	September, 1900.....		683 21
		\$7,760 50	\$7,760 50
Amount on hand October 1, 1900.....		\$5,879 84	

PLANTS IN PUBLIC WATERS.

Fox Lake.....	Somonauk River.....
Lake View.....	Henderson
Grays Lake.....	DuPage
Eagle Lake.....	Green
Calumet River.....	Spoon
Fox River, Aurora.....	Spoon
.. .. . McHenry	Edwards
.. .. . Batavia.....	Mackinaw
.. .. . Elgin	Salt Creek
.. .. . St. Charles.....	Sangamon River, near Springfield.....
.. .. . Montgomery at Decatur.....
Rock River, Oregon..... at Riverton.....
.. .. . Sterling..... near Oakford.....
.. .. . Sinnock.....	Little Wabash
.. .. . Rock Falls.....	Big Muddy
Kankakee River, Kankakee.....	Vermilion
.. .. . Momence.....	Embarras
Iroquois River.....	Long Lake, Lake Co., Ill.....
East DesPlaines River.....	Wood River.....

FISH SUPPLIED PUBLIC WATERS.

From Urbana receiving ponds, Urbana, Ill.

Salt River.....	500 black bass	500 Crappie.....
Shawnetown, Ill., lake }	14 cans fish	
Jacksonville, Ill., lake }		
Crystal Lake.....	110 black bass	
Crystal Lake and creek	1,405 black bass	672 Crappie
Salt Fork.....	686 black bass fingerlings	1,534 Crappie, adult..
Clement's Lake, Danville		
Soldiers' Home	1,480 black bass, 220 War Mouth, sunfish, 570.	
	and 150 ring perch	535 Crappie
H. Tengen, ponds near Dan-		
ville	250 adult fish	

FISH SUPPLIED APPLICANTS.

W. C. Mitchell	Belleville	Ainsworth & Pfeil	Chandlerville
Edw. Leopold	Belleville	H. F. Tallyan	Paris
John J. Brenholt	Alton	Riley L. Sheren	Paris
Damon G. Tunnickliff	Macomb	B. E. Hutchinson	Marshall
Allan M. Clement	Chicago	J. E. Thompson	Prentice
W. H. Smolinger	Galesburg	L. A. Townsend	Galesburg
O. A. Krebs	Belleville	F. C. Zimmerman	Carterville
Chas. J. Off	Peoria	Harry E. Kizer	Decatur
J. H. Clough	Harristown	Samuel Mellen	Pochabontas
J. R. Hughton	Dwight	Herman Kreunegel	Vandalia
B. F. Pickrell	Lanesville	J. W. Kerr	Dahlgren
B. B. Boecker	Naperville	M. R. Fakes	Carbondale
L. & W. B. Bull	Quincy	M. S. Hight	Vienna
C. W. Bliss	Hillsboro	E. D. Cramer	Iuka
T. W. Thompson	Carbondale	W. R. Snow	Walnut Hill
O. B. Phillips	Carbondale	Harry Garren	Walnut Hill
Jas. H. Ferriss	Joliet	F. C. Zimmerman	Carterville
Illinois H. Press Brick Co	Collinsville	W. C. Postal	Chester
Charles S. Gibson	Kangley	Henry Scharman	Germantown
G. J. Parke	Decatur	Benj. Wilkens	Germantown
T. C. Mather	Springfield	Hon. Chas. E. Hull	Salem
Edwin H. Conrades	St. Louis, Mo.	Wesley Ekaer	Smithton
Albert Ahrens	Chicago	Wm. Jackson	Godfrey
Frank Child & J. J. Alvies	Farmingdale		

FISH WARDENS.

Name.	Date.	Postoffice.
John D. True	May 9, 1890	Glochester
John Dickson	June 3, 1890	Sterling
Thomas Perry	June 6, 1890	Terre Haute
Thomas R. Muelens	July 8, 1890	Anna
James P. Campbell		Browning
Richard Harkness	Aug. 5, 1890	Macon county
Henry H. Turner	Sept. 18, 1890	Virginia
J. E. Stevens	Oct. 13, 1890	Noble
James First	March 2, 1891	Moline
Dr. O. M. Fike	May 2, 1891	Waterloo
Fred Schaulin		Morris
James W. Moon	May 22, 1891	Ogle county
George M. Berkley		Lee county
M. M. Benson		Maquon
David H. Law		Dixon
Wm. Rinesmith	June 13, 1891	Clinton county
Dan'l Harrah		Coles county
J. H. Morse		DeWitt county
Edward E. Westcott	July 25, 1891	Ottawa
James D. Hamilton	Aug. 25, 1891	Morrison
J. C. Parkes	March 18, 1892	Jo Daviess county
Thomas R. Gale	March 22, 1892	Tazewell co
Charles Scleeth		Pullman
John Keller	March 31, 1892	York
Theodore P. Hackney	May 10, 1892	White Hall
G. W. Ward	May 24, 1892	Macoupin county
John P. Hook	May 27, 1892	Fulton county
John F. Rittenhouse	July 11, 1892	Iroquois county
Chester Stirio	July 23, 1892	Byron
Henry Chappell	Feb. 6, 1896	Kendall
W. H. Moore	April 1, 1896	Danville
Charles A. Miller	May 13, 1896	Alton
Robert Rowe	July 16, 1896	DeKalb
John W. Day	May 22, 1896	Clinton
J. D. Miller		Hoopeston
Clemens S. Zens	May 22, 1897	McHenry
W. B. Ott		Freeport
W. H. Moore		Danville
Lyman Andrews	June 2, 1897	Dundee
Eugene Lavenne		Alton
W. P. Dolson		Arcola
John R. Page		Springfield
Harry Hardin		Ripley
M. L. Taylor		Noble
Daniel B. O'Hara		Paris
John Gill		Newton
John W. Shaffer		Charleston

Name.	Date.	Postoffice.
John Kelley.....	June 2, 1897	Alvan.....
A. Silis.....	"	Homer.....
John T. Powell.....	June 4, 1897	Waukegan.....
Edward St. Clair.....	June 17, 1897	Streator.....
Geo. Kleinman.....	June 16, 1897	Chicago.....
John Savage.....	June 18, 1897	Kankakee.....
Geo. Woodruff.....	"	Banner.....
E. J. Foreman.....	July 10, 1897	Roodhouse.....
Jonas Stultz.....	"	Dixon.....
Joseph McClaskey.....	"	Watseka.....
Dr. J. M. Johns.....	"	Taylorville.....
John B. Bielfeldt.....	July 16, 1897	Thornton.....
L. B. Bastley.....	"	Monticello.....
J. S. Bassfield.....	"	Henry.....
C. W. Smith.....	"	LaMoille.....
Jonas Stultz.....	"	North Dixon.....
S. Abraham.....	"	Genoa.....
Geo. W. Wertz.....	"	Potomac.....
L. W. Potts.....	"	Lewiston.....
John Kennedy.....	"	Atwood.....
Chas. Craine.....	"	Kankakee.....
G. R. Ratto.....	"	Chicago.....
Ferdinand Hinze.....	July 20, 1897	East St. Louis.....
John E. Slocomb.....	"	Fairfield.....
Geo. H. Medley.....	Aug. 11, 1897	Morris.....
E. A. Sickels.....	Sept. 9, 1897	Dixon.....
Henry Bender.....	"	Carlisle.....
J. C. Milton.....	Oct. 20, 1897	Belle Pine.....
James Hitchcock.....	"	Mt. Vernon.....
L. S. Carter.....	Nov. 26, 1897	Hammond.....
C. C. Emery.....	Dec. 8, 1897	Clinton.....
Zack T. Deeds.....	Dec. 15, 1897	Sullivan.....
F. W. Pittman.....	Feb. 24, 1898	Urbana.....
Samuel Frazier.....	Feb. 25, 1898	Rockwood.....
Bushby Williams.....	March 26, 1898	LaHarpe.....
Peregrine White.....	April 6, 1898	Mason.....
J. C. Dehague.....	"	Henderson county.....
Wm. Claybaugh.....	April 30, 1898	Paris.....
A. C. Thompson.....	May 21, 1898	Oregon.....
Geo. A. Anderson.....	May 25, 1898	DuQuoin.....
A. H. Scott.....	June 3, 1898	Clinton.....
Charles H. Buell.....	Sept. 2, 1898	Sycamore.....
Luther W. Palmer.....	Sept. 9, 1898	Greenville.....
Clay Hunter.....	Jan. 26, 1899	Savanna.....
Daniel McManm.....	March 9, 1899	Fox Lake.....
Emery Birks.....	"	Decatur.....
Joseph D. Juda.....	March 23, 1899	Collinsville.....
Thomas Armstrong.....	March 27, 1899	Lincoln.....
Fred Carstens.....	March 31, 1899	Kankakee.....
Edward Alberts.....	"	".....
Daniel A. Bellis.....	April 26, 1899	Oregon.....
John Reiss.....	May 18, 1899	Aurora.....
Alexander Holycross.....	June 8, 1899	Danville.....
Leonard Cope.....	July 3, 1899	Jerseyville.....
R. F. Thornberry.....	July 17, 1899	Vienna.....
A. J. Rock.....	"	Parkville.....
Chester Anthony.....	"	Joliet.....
John F. Fisher.....	Aug. 19, 1899	Delavan.....
A. J. Reese.....	"	Cobden.....
Samuel Cromwell.....	"	Momence.....
Norman T. Bourland.....	"	Peoria.....
Thomas Williams.....	"	Havana.....
N. F. McDaniel.....	Nov. 11, 1899	Eureka.....
Peter H. Walker.....	"	DuQuoin.....
Albert Reece.....	Jan. 4, 1900	Lake Villa.....
Charles T. Bronson.....	"	Chicago.....
William Modrell.....	June 2, 1900	Coles county.....
Chas. F. Hixson.....	"	Peoria.....
D. W. Winn.....	July 13, 1900	Oswego.....
S. L. Bowers.....	July 26, 1900	Elgin.....
B. J. McCleary.....	Aug. 3, 1900	Chicago.....
P. C. Pell.....	Sept. 12, 1900	Joliet.....
Louis Bernero.....	Oct. 2, 1900	Somonauk.....
E. M. Rowe.....	"	Sheridan.....
William D. Milner.....	"	Clarkson.....
W. A. McHaney.....	Oct. 10, 1900	Harrisburg.....

REPORT OF FISH WARDENS.

Report of G. R. Ratto, Chicago, Cook county, for two years ending September 30, 1900:

Number of arrests.....	127
Number of convictions.....	111
Number discharged.....	16
Number of jail sentences.....	0

Streams in County—Lake Front, Lake Michigan, Calumet river, Calumet lake, Fox lake, Fox river, Des Planes river, Little Calumet river.

Number of dams provided with fishways—None.

General remarks. I have confiscated 9,220 pounds of small size fish. Enclosed you will find the balance of the receipts. Mr. Bartlett has the others.

NOTE—It has been a practice in Chicago, when small fish are offered for sale, to take them and send them to the different hospitals in Cook county. This covers fish that are sent in to be sold by the Chicago wholesale houses, and run too small in size to meet the requirement of the law. Mr. Ratto has taken receipts for all fish so taken and utilized.

Report of John Kelley, Alvan, Vermilion county, for two years ending September 30, 1900:

Number of arrests.....	8
Number of convictions.....	0
Number discharged.....	8
Number of jail sentences.....	0

Streams in County—North fork, East fork, Jordan creek.

Number of dams in county—One at Marysville, one at Dauville, one at Wood's mill; all on North fork.

Number of dams provided with fishways—One.

Number of dams unprovided with fishways—Two.

Report of Henry Bender, Carlisle, Clinton county, for two years ending September 30, 1900:

Number of arrests.....	1
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in County—Kaskaskia river, Shoal creek, Beaver creek, Lost creek.

Number of dams provided with fishways—None.

Report of Chas. T. Bronson, Chicago, Cook county, for two years ending September 30, 1900:

Number of arrests.....	27
Number of convictions.....	23
Number discharged.....	4

Streams in county—None.

Number of dams provided with fishways—None.

NOTE.—Mr. Bronson has also confiscated and sent to the different county institutions a large amount of fish.

Report of A. Sites, Homer, Champaign county, for two years ending September 30, 1900:

Number of arrests.....	62
Number of convictions.....	48
Number discharged.....	8
Number of jail sentences.....	1

Streams in county—Salt fork.

Number of dams provided with fishways—None.

General remarks.—I would recommend that a law be made to confiscate all seines with meshes less than two inches.

Report of E. A. Sickels, Dixon, Lee county, for two years ending September 30, 1900:

Number of arrests.....
Number of convictions.....
Number discharged.....
Number of jail sentences.....

Streams in county—Rock river, Green river.

Number of dams in county—One, at Dixon, Ill.

Number of dams provided with fishways—One.

Report of Chas. H. Buell, Sycamore, for two years ending September 30, 1900:

Number of arrests.....	4
Number of convictions.....	4
Number discharged.....	0
Number of jail sentences.....	1

Streams in county—None.

Number of dams provided with fishways—None.

General Remarks—One arrested, convicted, released as pauper; one arrested, paid fine with costs; one arrested, not yet settled; one arrested, settlement still pending.

Report of Joseph McClaskey, Watseka, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Sugar creek, Iroquois river.

Number of dams provided with fishways—None.

Report of Louis Bernero, Somonauk, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Indian creek, Somonauk creek, Big Rock creek, Kishwaukee river.

General Remarks—The undersigned's appointment being so recent, he has been unable to fully investigate his territory to ascertain the number of dams, fishways, etc.

Report of N. F. McDaniel, Eureka, for two years ending September 30, 1900:

Number of arrests.....	7
Number of convictions.....	0
Number discharged.....	7
Number of jail sentences.....	0

Streams in county—Mackinaw river.

Number of dams provided with fishways—None.

Report of Thomas Armstrong, Lincoln, for two years ending September 30, 1900:

Number of arrests.....	4
Number of convictions.....	2
Number discharged.....	2
Number of jail sentences.....	1

Streams in county—Sugar creek, Kickapoo creek, Salt creek, Deer creek.

Number of dams in county—Two; located in Salt creek.

Number of dams provided with fishways—One.

Number of dams unprovided with fishways—One.

General Remarks.—The streams in this county have been filled with fish-traps heretofore, and during my term of office I have destroyed over 100 traps, and am determined to clear the stream of all of them, if possible.

Report of Samuel Cromwell, Monaca, Kankakee county, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Kankakee river.

Number of dams in county—One at Waldron, one at Kankakee.

Number of dams provided with fishways—One at Waldron.

Report of I. C. Milton, Belle Rive, Jefferson county, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Big Muddy creek, O'Cier creek.

Number of dams provided with fishways—None.

Report of R. f. Thornberry, Vienna, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0

Streams in county—Cache river.

Number of dams provided with fishways—None.

Report of L. S. Carter, Hammond, Piatt county, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Sangamon river, Lake Fork creek, Okaw creek.

Number of dams in county—One at Oakley.

Number of dams provided with fishways—None.

General remarks—I have personally inspected the streams in my locality and find no violations of the law this season.

Report of George Woodruff, Bauner, Fulton county, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—None.

Number of dams provided with fishways—None.

General remarks—There is only one way to better the fish interests in this locality: Make a law that is plain, and make it the duty of officers to destroy all illegal nets and seines.

Report of Wm. D. Milner, Clarkson, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Little Wabash river, Skillet Fork and tributaries.

Number of dams provided with fishways—None.

Report of John Reiss, Aurora, for two years ending September 30, 1900.

Number of arrests.....	2
Number of convictions.....	2
Number discharged.....	0
Number of jail sentences.....	2

Streams in county—Fox river.

Number of dams in county—One at Saint Charles, one at Geneva, one at North Aurora, two at Batavia, one at Aurora, one at Montgomery.

Number of dams provided with fishways—Seven.

Number of dams unprovided with fishways—None.

Report of Daniel A. Bellis, Oregon, for two years ending September 30, 1900.

Number of arrests.....	12
Number of convictions.....	4
Number discharged.....	4
Number of jail sentences.....	0

Streams in county—Rock river, Leaf river.

Number of dams in county—One at Oregon, Ill.

Number of dams provided with fishways—One.

Number of dams unprovided with fishways—None.

General remarks—I have eight suits pending in the circuit court before Judge Baun. When I get decision will make report, and if decision is favorable can do some good work here.

Report of P. C. Bell, Joliet, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Part of DuPage river, part of Kankakee river, Des Plaines river, Jackson creek, Hickory creek, Rock Run.

Number of dams in county—Below Wilmington, three on Kankakee, one on Des Plaines river, two on Hickory creek.

Number of dams provided with fishways—One on Hickory creek at Higinbotham's.

Number of dams unprovided with fishways—All but one.

Report of Luther W. Palmer, Greenville, for two years ending September 30, 1900.

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Shoal creek, East Fork.

Number of dams in county—One ten miles west of Greenville on Shoal creek.

Number of dams provided with fishways—None.

General remarks—This dam is controlled by a man by the name of Samuel Brown; his postoffice is Old Ripley, Bond county.

Report of C. C. Emery, Clinton, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Salt creek, Ten Mile creek.

Number of dams in county—One near Kenney, one near Berkebec.

Number of dams provided with fishways—One.

Number of dams unprovided with fishways—One.

General remarks—Eight cases of violations have just been reported to me, and will be prosecuted at once.

Report of Peregrine White, Mason, Effingham county, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—First and Second creeks, Big creek, Fulfer creek, Little and Big Salt creek, Bishop creek, Lucus creek; all feeders of the Wabash.

Number of dams in the county—One at Effingham Water Works, one at Tucker's Mill.

Number of dams provided with fishways—None.

General remarks—The dam at Tucker's Mill does not amount to much except in very low water; I advised in my last report that a warden be appointed at Louisville, as most of the violations of the law are committed in Clay county.

Report of Albert Reese, Nippersink, Lake county, for two years ending September 30, 1900:

Number of arrests.....	3
Number of convictions.....	3
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Fox lake, Grass lake, Pistaqua lake, Duck lake, Petite lake, Round lake, Fourth lake, Cedar lake, Deep lake, Crooked lake, Long lake, Zooster lake, Fox river.

Number of dams provided with fishways—None.

Report of George S. Medley, Morris, for two years ending September 30, 1900:

Number of arrests.....	3
Number of convictions.....	2
Number discharged.....	1
Number of jail sentences.....	2

Streams in county—Illinois river, Kankakee river, Auxsable creek, Mazon creek, Waupacan creek, Canal Nettle creek.

Number of dams provided with fishways—None.

Report of M. L. Taylor, Noble, Richland county, for two years ending September 30, 1900:

Number of arrests.....	0
Number of convictions.....	0
Number discharged.....	0
Number of jail sentences.....	0

Streams in county—Part of Little Wabash, part of Big Muddy river, part of Fox river.

Number of dams in county—One near Olney, Ill.

Number of dams provided with fishways—None.

General remarks—I have very little fishing ground in my jurisdiction for anything except hook and line, on account of the logs and drift wood. There has been some dynamiting, and I have been unable to get proof.

REPORT OF CHIEF WARDEN—ILLINOIS RIVER— GEORGE T. WILLIAMS.

Hon. Nat. H. Cohen, President Illinois State Fish Commission, Urbana, Ill:

I beg leave to submit my report covering the two years ending September 30, 1900. As ordered by the board, in connection with my duties as Master of Steamer Reindeer, I have given the enforcement of the law careful attention. On the Illinois river the law is constantly being violated, but such violations are, generally speaking, confined to the irresponsible fishermen who live along the river, and while it is true that a number of men engaged in fishing as a business, and who control a large number of fishing rigs, have been caught with illegal mesh seines in their possession, yet, for the most part, they have ceased to use them on notice to do so. The incentive to use any means to take fish when they are plentiful, is great, and the temptation is often too great to resist, but, on the whole, I am glad to report a better condition of affairs than for any previous season.

I have personally notified every fisherman on both rivers within my jurisdiction, to give careful heed to the provisions of the law, and have furnished copies of the law to all. I have made a practice of warning all at first offense, and prosecute for any subsequent one.

I have removed all fyke nets found too thickly placed, and kept the river free as possible from long leads and outrageous obstructions. I have always removed wing nets and all obstructions to the streams running into the rivers. I have taken a number of large seines of one and one-half inch mesh, and have them now in warehouse. I have always notified owner, when he could be found, of such seizure and offered the return of the seine if property was proven. The fact that there are on the Illinois and Mississippi rivers within my jurisdiction, a large number of small meshed seines can not be disputed, but I have no authority to take them unless while in use, so that I have been powerless to interfere with them. I have found them very frequently, lying on the banks, drying out, and as instructed, I have not made seizures unless found in use, or with evidence enough to prove that they had been used. The fiddler basket has caused great destruction to the channel cat fish, but the number used has rapidly diminished since the size of fish that can be offered for sale has been regulated by law.

I have offered assistance to anybody and everybody on the river, when such help was needed, towing fish boats when I found them afloat or hard to manage, other steamboats when in trouble, and have followed your instructions as closely as possible in helping the flood sufferers when banks of river were overflowed. We have removed stock and household goods, and given families shelter and food while carrying them to places of safety.

I have either removed or caused to be removed during the time mentioned, 2,730 hoop nets, 134 wing nets or obstructions near the mouth of streams or creeks emptying into the rivers. I have taken 41 nets of small mesh, one of them 500 yards long, and but few have been returned to owners, as in a large majority of cases, they have not called for their property, and so we still hold them. With other wardens associated with me, I have made 121 arrests, with 59 convictions. These cases have been disposed of in various ways, in

some instances, the fines have been remitted by the State's attorney, some are still unadjusted. I have, as a rule, undertaken to enforce the law without litigation, and in a number of instances have not prosecuted when parties would themselves destroy the seines or nets.

I am reasonably sure that if the law would permit me to take such illegal seines and nets as I found, whether in use or not, I could soon rid the rivers of all unlawful tackle. It has been very difficult to get convictions, as we have only our crew to prove violations, and we are nearly always met with a strong force of witnesses ready to refute our testimony. If seines and nets could be taken at sight there would be none used.

My time has been occupied from the opening of the season until July first, in patrolling the river, and preventing, as best I could, the use of any seine. The latter part of season it is given to the collection of fish, though still engaged in watching for violations.

My crew consists of the following persons:

George T. Williams, master and pilot.

William V. McKinley, engineer.

J. D. Crompton, fireman.

L. Verniaud, fireman.

F. Grussenmeyer, watchman.

A. T. Lorenz, cook.

Wm. Clark, helper.

We run only in daylight, except when necessity compels a night run, as we have only a single crew. The boat has made the following distances:

Season of 1899, ——— miles.

Season of 1900, 6,137 miles.

She has covered the Mississippi river from Keokuk to East St. Louis, and the Illinois river from Grafton to La Salle. The greater part of the time, however, has been spent on the Illinois river.

During the two seasons we have had no serious accidents to either boat or crew. A slight damage to the wheel at Peoria on the night of the great wind storm and a slight damage to head of boat in the La Grange locks in a storm being the extent.

Respectfully submitted,

(Signed): GEORGE T. WILLIAMS,

Chief Warden Illinois River.

LOG—STEAMER REINDEER—FOR SEASON 1899.

Boat left Quincy with steamer Lotus in tow for St. Louis, where Lotus was delivered to her purchaser.

Leaving Quincy at 6 o'clock, a. m., May 6th; arriving at St. Louis on 7th at 9 a. m.

Left St. Louis at 2:50 p. m. for Illinois river arriving on May 8th at Meredosia 5:50 p. m. on 9th.

Left Meredosia on 10th for Quincy, Ill., arriving at Quincy at 5 p. m. on 11th.

April 12 to 20.—Laying in Quincy Bay repairing and renovating boat.

April 20.—Left Quincy at 1:45 p. m. for St. Louis arriving at 2 p. m. on 21st.

Left St. Louis at 5 a. m. on 22nd arriving at Meredosia at 5:15 on 23rd.

April 24.—Run from Meredosia to Beardstown.

April 25 to 29.—Working between Beardstown and Havana.

- May 1 to 3.—Working between Havana and Meredosia.
- May 4 to 6.—Working between Meredosia and Peoria, returning to Beardstown.
- May 7.—Beardstown to Meredosia.
- May 8.—Cleaning boilers at Meredosia.
- May 9 to 11.—Working between Meredosia and Havana.
- May 12.—Left Havana, working down to Meredosia arriving at 6:10 p. m. on 14th.
- May 15 to 17.—Worked from Meredosia to Montezuma and back to Meredosia.
- May 18 and 19.—Worked down to Kampsville and back to Havana.
- May 20 and 21.—Worked from Havana to Hennepin.
- May 22 and 23.—Worked from Hennepin to Meredosia.
- May 24 to 30.—Worked from Meredosia to Grafton and return to Meredosia.
- June 1 to 5.—Worked from Meredosia to mouth of Illinois river, up Mississippi river to Quincy, Ill.
- June 6.—Quincy to Hannibal, Missouri.
- June 8-15.—Worked down Mississippi river to mouth of Illinois and up Illinois to Peoria, Ill.
- June 16—Left Peoria for Grafton, arriving at 4 o'clock p. m. on 17th. Left Grafton on 18th at 4:10 a. m. arrived at Meredosia at 7 p. m.
- June 19-23—Worked from Meredosia to Peoria and back to Meredosia.
- June 25-30—Worked down Illinois river to mouth and up Mississippi river to Quincy.
- July 1-5—Worked Mississippi river to mouth of Illinois and up to Havana.
- July 17-22—Worked from Havana to Peoria and returned to Havana.
- July 22-24—Worked from Havana to Meredosia and returned to Havana.
- July 25—Worked from Havana to Clear lake.
- July 26—Worked from Clear lake to Havana.
- July 27—Worked from Havana to Pekin.
- July 28—Worked from Pekin to Copperas creek.
- July 30—Worked from Copperas creek to Havana.
- Aug. 1-4—Worked from Havana to Copperas creek.
- Aug. 5-12—Worked from Copperas creek to Meredosia.
- Aug. 14-17—Worked from Meredosia to Havana.
- Aug. 18—Worked from Havana to Matingue lake.
- Aug. 19-21—Havana to Meredosia.
- Aug. 22-24—Meredosia to Havana.
- Aug. 25-28—Collecting between Valley City and Beardstown and back to Meredosia.
- Aug. 30-31—Meredosia to Bath Shute and back to Meredosia.
- Sept. 1-5—Working between Meredosia and Havana, Havana and Clear lake, and back to Meredosia.
- Sept. 6-8—Working between Meredosia, Ill., and Bedford, Ill., and back to Meredosia.
- Sept. 9-12—Working from Meredosia to Peoria, Ill.
- Sept. 14-16—Working from Peoria to Havana.
- Sept. 17-21—Working from Havana to Pekin and back to Meredosia.
- Sept. 22-26—Working from Meredosia to Grafton and return to Meredosia.

- Sept. 27-30—Worked from Meredosia to Hardin and returned to Meredosia.
 Oct. 2-5—Worked from Meredosia to Peoria and back to Havana.
 Oct. 4—Left Havana at 8:30, passed out of Illinois river on morning of 6th, arrived at Quincy on evening of 8th.
 Oct. 9-18—Laid up, making repairs at Quincy.
 Oct. 22—Left Quincy for Illinois river passing out of Mississippi on morning of 23rd, arriving at Meredosia on evening 23rd.
 Oct. 23-29—Working from Meredosia, Ill., to Chillicothe, Ill., and return to Meredosia.
 Oct. 31—Left Meredosia for Mississippi river working that river until close of season.
 Total miles made, 5,375.

LOG—STEAMER REINDEER—SEASON OF 1900.

- Left Quincy April 8 for Keokuk to go on docks.
 Left Keokuk April 15 for Quincy.
 Left Quincy April 18, 1:30 p. m., for Illinois river.
 Arrived Grafton—12:00 noon on 19th.
 Arrived Meredosia—12:30 p. m. on 20th.
 Left Meredosia April 23, with Warden Sites on board, for Stewart's lake and way points, returning to Meredosia at 6 o'clock p. m. on 24th.
 Left Meredosia for mouth of river, examined all nets and seines, returned to Meredosia April 28 at 5:50 p. m.
 Left Meredosia at 9:05 a. m. April 29 and run to Havana, Ill., laid one night at Havana. Worked river between Havana and Lancaster until May 3.
 Left Havana May 3 for Peoria.
 May 6—Run from Peoria to Rome Flats and return.
 May 7—Run from Peoria to Pekin and return to Peoria.
 May 9—Run from Peoria, Ill., to Havana, Ill.
 May 12—Run from Havana, Ill., to Meredosia, Ill.
 May 13—Run from Meredosia, Ill., to Kampsville and returned to Meredosia on the 19th.
 May 20—Run from Meredosia to head of Meredosia bay.
 May 22—Run from Meredosia, Ill., to Peoria, Ill.
 May 24—Run from Peoria, Ill., to Pekin, Ill.
 May 25—Run from Peoria, Ill., to Meredosia, Ill.
 May 26—Run from Meredosia, Ill., to Grafton, Ill.
 May 27—Run from Grafton, Ill., Illinois river to Quincy, Ill., arriving on 31st at 5:30 p. m.
 June 2—Run from Quincy, Ill., to Hannibal, Missouri.
 June 6—Run from Quincy, Ill., to Canton, Ill.
 June 7—Run from Quincy Ill., to head of Quincy bay.
 June 9—Left Quincy, Ill., at 6:15 a. m. for Illinois river, arriving at Havana at 2 o'clock p. m. on the 11th, 253 miles.
 June 12—Run from Havana, Ill., to Peoria, Ill., 90 miles.
 June 15—Run from Peoria to Kingston and return to Peoria, 40 miles.
 June 18—Run from Peoria to Havana and returned to Peoria, 100 miles.
 June 20—Run from Peoria to Lacon and returned to Peoria, 80 miles.
 June 22—Run from Peoria, Ill., to Havana, Ill., 64 miles.

June 24—Run from Havana to Idlewild Landing and returned to Havana, 28 miles.

June 25. Run from Havana to Meredosia collecting fish; delivered load at Meredosia, 10 o'clock, a. m., June 28, 1900.

June 29—Run from Meredosia to Havana, 83 miles.

July 1—Run to Locks, collecting; returned to Havana, 42 miles.

July 6—Run to Moscow Bay and returned, 40 miles.

July 9—Run from Havana to Browning and returned to Havana, collecting; 146 miles.

July 14—Devoted time to collecting above and below Havana, 155 miles.

July 15—Run from Havana to Meredosia, 63 miles.

July 17—Run from Meredosia, Ill., to Havana, Ill., 63 miles.

July 18—Run from Havana to Sangamon Bay, 29 miles.

July 19—Run from Sangamon Bay to Beardstown and returned to Sangamon Bay and Beardstown, 44 miles.

July 20—Run from Beardstown to Havana and returned to Beardstown, 72 miles.

July 21—Run from Beardstown to Meredosia and returned to Beardstown, 52 miles.

July 22—Run from Beardstown to Sangamon Bay, 14 miles.

July 23—Run from Sangamon Bay to Beardstown, 14 miles.

July 24—Run from Beardstown to Meredosia, 17 miles.

July 25—Run from Meredosia to Sangamon Bay, 26 miles.

July 26—Run from Sangamon Bay to Copperas creek, 41 miles.

July 27—Run from Copperas Creek to Frederick and back to Havana, 75 miles.

July 28—Run from Havana to Queen's lake and returned to Havana, 34 miles.

July 29—Run from Havana to Idlewild, 14 miles.

July 30—Run from Idlewild to Jack lake, 22 miles,

July 31—Run from Jack lake to Havana, 12 miles.

Aug. 1—Run from Havana to Hardin, 100 miles.

Aug. 2—Run from Hardin to Grafton and up river from Grafton to Peoria, arriving 5:50 p. m. on 3rd, then to Peru, arriving at Peoria on return down Aug. 4th, at 7 p. m., 241 miles.

Aug. 5—Run from Peoria to Meredosia, Ill., 90 miles.

August 6-8—Run from Meredosia to Valley City and returned to Meredosia, collecting. (Several trips.) 64 miles.

Aug. 10-11—Run from Meredosia to LaGrange Locks, collecting, 18 miles.

Aug. 13-14—Run from Meredosia to Beardstown and return to Meredosia, 73 miles.

Aug. 15—Run from Meredosia to Havana, 41 miles.

Aug. 16-19—Run from Havana to Lost lake, Copperas lake and return to Havana, to Jack lake, Idlewild, Beardstown and Meredosia, 84 miles.

Aug. 20-21—Run from Meredosia to LaGrange locks, Irish lake, Beardstown and return to Meredosia, 42 miles.

Aug. 22—Run from Meredosia to LaGrange locks, 18 miles.

Aug. 23—Run from Meredosia to Beardstown and LaGrange locks, 34 miles.

Aug. 26—Run from Meredosia to Beardstown, Idlewild and return to Meredosia, 76 miles.

Aug. 27 to Sept. 8—Run from Meredosia to Hardin and return to Meredosia, 97 miles.

Sept. 9—Run from Meredosia, Ill., to Beardstown, 17 miles.

Sept. 10-16—Run from Beardstown to Idlewild, Havana, Clear lake, Spring lake, Kingston, Peoria, Chillicothe, Lacon and back to Meredosia, 358 miles.

Sept. 18-20—Run from Meredosia to Montezuma and return to Meredosia, 101 miles.

Sept. 21—Run from Meredosia to Beardstown, 35 miles.

Sept. 22—Run from Beardstown to Havana, 33 miles.

Sept. 25—Run from Havana to Beardstown, 33 miles.

Sept. 26—Run from Beardstown to Stewart lake and back to Meredosia, 59 miles.

Sept. 27-30—Run from Meredosia to Valley City and return to Meredosia, 20 miles.

Oct. 1-4—Run from Meredosia to Havana and back to Peru, 189 miles.

Oct. 6—Run from Peoria to Stewart's lake, 64 miles.

Oct. 8-14—Run from Stewart's lake to Chillicothe and return to Havana, 144 miles.

Oct. 15—Run from Havana to Meredosia, 50 miles.

Oct. 16-22—Run from Meredosia to Henry, 153 miles.

Oct. 23-25—Run from Henry to Kampsville, 190 miles.

Oct. 26—Run from Kampsville to Quincy, 150 miles.

Nov. 1-15—Collecting on Mississippi river from Quincy to Warsaw, north; Quincy to Cincinnati Landing, south, 631 miles.

Total mileage made, 6,137 miles.

FISHWAYS.

We give herewith a cut of the fishway now in use by the Commission. It is simple in construction, and when properly placed is very effective. Specifications will be sent to all who desire to use them, and the work, under ordinary circumstances, can be done by any good carpenter without special supervision.

CARTHAGE LAKE CLUB.

We give an illustration showing the club house of the Carthage Lake Club, near Gladstone, Ill. This club has been an important factor in the enforcement of the laws and the protection of the fish.

BURLINGTON, IOWA, December 17, 1899.

Mr. S. P. Bartlett, Quincy, Ill.

DEAR SIR:—Herewith I make you my report of work done at Carthage lake under your permit and our supervision.

June 23—Water very high. Several hauls made, no particular success. Two or three hundred pounds carp and buffalo. Water about ten feet above low water mark.

July 17—Water still too high for good work. About six feet above. Seven or eight hauls. Catch about 700 pounds carp and buffalo, mostly carp. About 200 pounds dogs, gar and turtles.

There are a great many crappie, few bass, several pike showed. Fishermen claim most of fish out in the shallow pockets and among lily pads, unable to reach them.

July 24—Eight hauls. Water about four and a half feet above. Catch about 1,400 pounds carp and buffalo. Three hundred pounds dogs, skips, gar, etc. Great many crappie, few big bass and large pike. Indications are there were finer fish in the lake than ever.

July 31—"West of the fill." Four hauls. Catch about 800 pounds, mostly buffalo, few carp and spoonbill cat. Fifty pounds refuse. Good many crappie, but few bass. Water three and a half feet above low mark.

August 1—Seven hauls, three of them "west fill," balance lake proper. Catch about 1,000 pounds, mostly carp, few buffalo and spoons. About 300 pounds refuse. There are more crappie and big sunfish than ever. Many very large bass. Water three feet above.

August 2—Nine hauls, lake proper. Catch about 400 pounds carp and buffalo. Men say coarse fish have run out and also there are fifty fine fish in the lake to one last year, lots good bass. No estimate of refuse, but small. Water three feet.

August 23—Five sets made. Catch about 1,000 pounds carp and buffalo. Three hundred pounds refuse. Lots fine fish. In five hauls estimate 1,000 pounds crappie. More big sunfish than been for years. Dozens bass two to four pounds, one fellow about six to seven pounds. Few pickerel.

August 25—Five hauls. Catch about 700 pounds carp and buffalo. Many game fish showing. About 300 pounds refuse. Men claim fish gone to deep water lower end lake.

August 28—Seven hauls. Five lake, two "west of the fill." About 1,300 pounds carp and buffalo. Best catch "west of the fill," 700 pounds refuse. One spoon cat weighed fifty pounds. Not so many game fish. Men claim gone to deep water among snags.

August 30—Seven hauls. Three "west of fill" four in lake. About 600 pounds carp and buffalo, 300 pounds refuse. Crappie and bass good showing.

September 25—Four hauls, upper end lake. Skimmer. About 1,000 pounds carp and buffalo, 250 pounds refuse. Lots nice crappie, sunfish, good many fine bass.

September 26—"West of fill" catch very poor. Good many game fish showing. Three hauls. "Lake" four hauls, total catch, 100 pounds carp and buffalo. Game fish plentiful. Big seine used in deep water.

September 30—"Running slough lake" five or six hauls, about 700 pounds carp and buffalo, 200 pounds refuse, unusual game fish.

October 6—Men decided to use seine in "running" but owing to illness two of the men failed to go.

October 9—"Lake" proper, Carthage. Six hauls, skimmer, upper end. About 1,300 pounds carp and buffalo, 300 pounds refuse. Not many game fish, they in deep water.

October 11—"Running slough lake." (Seine.) About 1,300 pounds carp and buffalo, mostly buffalo. Three hundred pounds refuse. Usual game fish in evidence.

October 12 and 13—Weather extremely hot, "90."

October 23—"Running." About 1,300 pounds, mostly buffalo, few carp. Usual crappie, etc.

November 8—"Carthage lake." Water four feet. Fish hard to get owing to vegetation caused by rise. Catch about 500 pounds carp. No game fish to speak of.

November 15—"Carthage." Three hauls, upper end. About 1,000 pounds carp and buffalo, 100 pounds refuse. Very few game fish showing.

In addition to this work we removed from Pau lake, a pond in the timber near the club house, several tubs full of small bass, crappie, etc. We did not have proper net to fully clean this pond but did very well and seined majority of the little fellows, which were placed in the lake.

We had our main water in good shape but the last rise stocked us up again, but have done nothing since date last mentioned. I want you to allow our permit to stand good until the ice is sufficiently heavy to do some work under the ice, which will thoroughly clean up and leave the lake in good shape for spring, for reasons which I'll state.

We have according to the plans submitted to us by you, erected a dam and fishgate in our lake, which is now complete save a little more filling to be done. The work is ready for your inspection and approval and the directors desire that you inspect and approve the same at your earliest convenience. If you will notify me a day or two ahead of your coming, I'll make all arrangements for your stay. State if you come direct to Burlington, which probably would be most convenient for you, and at what hour you will reach here.

We have two trains to the lake daily, leave here at 7:25 a. m. and 3:10 p. m., returning from the lake at 11:20 a. m. and 7:05 p. m. Whichever way is most convenient to you will be satisfactory to us. Your coming would only necessitate your being from home one day, and we would like an early inspection of the work, which we feel satisfied will meet your approval.

I trust my report of the seining done is quite satisfactory and explicit enough to be thoroughly comprehended.

Very truly,

J. C. LATHAM,
Secretary.

BURLINGTON, Iowa, Nov. 1, 1900.

Mr. S. P. Bartlett, Quincy, Ill.

DEAR SIR:—Herewith is the report of work done at the Carthage lake under your special permit:

June 25—Five hauls in Willow Bay (upper end lake). About 1,000 to 1,200 pounds carp and buffalo, mostly carp. Very few fine fish, they in deep water. There are more carp than ever before in the lake.

June 28—Trammel net in the lilies. About 600 pounds carp, few buffalo.

June 29—Six hauls, upper end to middle lake. About 1,000 pounds, mostly buffalo, balance carp, very few game.

July 2—Six hauls, middle to lower end. About 700 pounds carp and buffalo. Game fish scarce.

July 6—Seven hauls, lower end lake. About 700 pounds buffalo and carp.

July 9—Three hauls, upper end, three hauls below fill. About 6000 to 7000 pounds carp and buffalo; few bass and crappie.

July 17—Running Slough lake, trammel net. About 500 pounds carp and buffalo, good many goggle eye, few pike, no bass.

July 20—Six hauls "west of the fill." River up to three feet. Catch about 1,500 to 1,600 pounds carp and buffalo; very few game fish.

July 23—Five hauls "west fill." About 600 pounds carp and buffalo. River had fallen, fish ran out.

July 24—River three feet eleven inches. Rose ten inches.

July 26—River about four feet three inches. Two hauls running Slough lake. Catch very poor, water too high. Fish in the lilies. About 100 pounds. Four hauls "west fill." About 800 to 900 pounds buffalo, shiners, carp.

July 30—Three hauls "west fill." About 1,300 pounds, mostly buffalo and shiners; few carp. Three very large spoonbill cat (52 and 48 inches each), several small ones. Good many crappie, few bass, several pike.

August 1—Three hauls "west fill." Catch, nothing. Six hauls Carthage lake. About 800 to 900 pounds buffalo and carp. Good many spoons. Quite few bass and goggle, few pike.

August 3—Lake. Eight hauls. About 900 pounds carp and buffalo; game fish not plentiful.

August 6—Three hauls "west fill." About 1,300 pounds mostly buffalo, some carp, few spoons, game scarce.

August 8—Seven hauls, Carthage lake. About 1,300 pounds, mostly buffalo; quite a few game fish showed.

August 10—Six hauls, lake. About 1,100 pounds carp and buffalo, not many game fish.

August 14—Lake and "west fill." Seven hauls. Catch light. About 600 or 700 pounds carp and buffalo.

August 15—Lake. Seven hauls. About 1,200 pounds carp and buffalo.

August 23—Lake. Four hauls, two "west fill." About 1,200 pounds carp, buffalo and spoons. Very few game fish.

August 26—River back to three feet. Eight hauls lake, two "west fill." Catch poor, about 700 pounds carp and buffalo.

August 29—Lake. Five hauls, only 250 pounds carp and buffalo; quite few bass, crappie and pike. Four hauls "west fill." Catch, 600 to 700 pounds spoons, buffalo and carp.

September 2—Three hauls "west fill" and six in lake. Catch very poor, 500 pounds carp and buffalo.

September 4—Running Slough lake. Five hauls. About 75 pounds carp and buffalo (about 100 pounds magnificent crappie), no bass. Three hauls "west fill," catch about 650 to 700 pounds carp and buffalo.

September 17—Lake four hauls, "west fill" three hauls. Catch about 650 to 700 pounds carp and buffalo.

September 20—Five hauls "west fill." About 500 pounds carp and buffalo, few spoons (small).

September 24—Five hauls "west fill." Catch very small, about 300 pounds carp and buffalo. River four feet six inches, rise of seven inches. Rose thirteen inches in two days.

That is the last work done as the river kept coming till it reached nine feet here. Is now about six feet or probably five feet six inches. The refuse from each day's work, gar, dogs, skips and turtle, average from 200 to 500 pounds. The net we use this year, about 150 yards, full two inch mesh, lets small fish all through. We also return to the lake with game fish all small buffalo.

Since the water has begun to fall hook and line fishing, especially bass, has been excellent and fine fish. I saw a crappie taken measured fifteen inches, weighed two pounds strong. This rise stocked the lake, evidently.

Hope this report meets your favor.

Very truly,

J. C. LATHAM,

Secretary.

NOTE—Where I say "trammel" it was used where seine was useless, among lily pads.

MISSISSIPPI RIVER AND ITS TRIBUTARIES WHOLLY OR PARTLY WITHIN THE STATE OF ILLINOIS.

Ohio River.
Big Muddy River,
Kaskaskia River,
Mary's River,
Illinois River,
Fox River,
Henderson River.
Edwards River,
Rock River.
Plum River,
Apple River,
Sny Ecarte River.

Creeks tributary to Mississippi River:

Clear Creek.
Fountain Creek,
Cahokia Creek,
Piasa Creek,
Kiset Creek,
Mill Creek,
Rock Creek,
Bear Creek,
Honey Creek,
Dugout Creek,
Cedar Creek,
Ursa Creek,
Pope Creek,
Eliza Creek,
Copper Creek,
Johnson Creek,
Big Rush Creek,
Small Fox Creek.

Tributaries to Ohio River:

Saline River,
North Fork of Saline River,
South Fork of Saline River,
Embarras River.

Tributaries to Big Muddy River:

Kingkaid Creek,
Beaucoup Creek,
Pine Stone Creek,
Galum Creek,
Little Beaucoup Creek,
Swanwick Creek,
Locust Creek,
Painter Creek,
Big Crab Orchard Creek,
Crab Orchard Creek,
Little Muddy River,
Carson Creek,
Middle Fork of Big Muddy River,
Ewing's Creek,
Gum Creek,
Casey Fork,
Atchinson's Fork,
Ray's Fork.

Tributaries to Kaskaskia River:

Nine Mile Creek,
Plumb Creek.

Silver Creek,
East Fork,
Big Muddy Creek,
Elk Horn Creek,
Sugar Creek,
Shoal Creek,
Beaver Creek,
Flat Branch,
East Fork of Shoal Creek,
Dry Creek,
Middle Fork of Shoal Creek,
West Fork of Shoal Creek,
Crooked Creek,
Lost Creek,
Great Point Creek,
Prairie Creek,
Coles Creek,
Gibbs Creek,
East Fork of Kaskaskia River,
Bear Creek,
Hurricane Creek,
Hickory Creek,
Camp Creek,
Booz Creek,
Suck Creek,
Big Creek,
Beck's Creek,
Richland Creek,
Brush Creek,
Robinson Creek,
Sand Creek,
West Fork of Kaskaskia River,
Apple Creek,
Lake Fork.

Tributaries to Illinois River:

Otter Creek,
Macoupin Creek,
Taylor Creek,
Joe's Creek,
Solomon's Creek,
Otter Creek,
Bear Creek,
Honey Creek,
Apple Creek,
Big Grassy Creek,
Big Sandy Creek,
Little Sandy Creek,
Walnut Slough,
Bay Creek,
Manvisterre Creek,
McKie's Creek,
Willow Creek,
Indian Creek,
Prairie Creek,
Crooked Creek,
Little Missouri Creek,
Grindstone Creek,
Carter's Creek,
Camp Creek,
Troublesome Creek,
Panther Creek,
Bronson's Creek,
Middle Creek.

Long Creek,
 North Branch of Crooked Creek,
 Spring Creek,
 Sangamon River,
 Big Panther Creek,
 Clay's Creek,
 Crane Creek,
 Salt River,
 Prairie Creek,
 Sugar Creek,
 Kickapoo Creek,
 Deer Creek,
 Salt Creek,
 North Branch of Salt Creek,
 Lake Fork Salt Creek,
 Rock Creek,
 Spring Creek,
 Lick Creek,
 Sugar Creek,
 Brush Creek,
 South Fork,
 Bear Creek,
 Flat Branch,
 Lake Fork,
 Willow Creek,
 Goose Creek,
 Camp Creek,
 Madden Creek,
 Stevens Creek,
 Otto Creek,
 Spoon River,
 Big Creek,
 Putman Creek,
 Coal Creek,
 Cedar Creek,
 Swan Creek,
 French Creek,
 Sugar Creek,
 Walnut Creek,
 Quiver Creek,
 Bucklin Creek,
 Mackinaw River,
 Mill Creek,
 Walnut Creek,
 Panther Creek,
 Northwestern Branch Mackinaw
 River,
 East Branch,
 Six Mile Creek,
 Honey Creek,
 Bray's Creek,
 Henline Creek,
 Kickapoo Creek,
 Richland Creek,
 Crow Creek,
 North Branch of Crow Creek,
 South Branch of Crow Creek,
 Strawn's Creek,
 Crow Creek,
 Sandy Creek,
 Clear Creek,
 Big Burian Creek,
 West Indian Creek,
 Negro Creek,
 Vermilion Creek,
 Wolf Creek,
 Otter Creek,
 Scattering Point Creek,
 Rook's Creek,
 South Fork Vermilion River,
 North Fork Vermilion River,
 Covel Creek,
 Fox River,
 Big Indian Creek,
 Indian Creek.

Mission Creek,
 Somonauk Creek,
 Battle Creek,
 Blackberry Creek,
 Fox Lake,
 Squaw Creek,
 Nippersink Lake and Creek,
 Nettie Creek,
 Waupean Creek,
 Mazon River,
 West Fork of Mazon River,
 East Fork of Mazon River,
 Gooseberry Creek,
 Au Sable Creek,
 Saratoga Creek,
 Kankakee River,
 Prairie Creek,
 Forked Creek,
 Rock Creek,
 Iroquois River,
 Sangamon River,
 Prairie Creek,
 Spring Creek,
 Sugar Creek,
 Exline Slough,
 Trim Creek,
 DuPage River,
 Little Cache River,
 West Branch of DuPage River,
 Jackson's Creek,
 Desplaines River,
 Calumet River,
 Little Calumet River,
 Salt Creek,
 Mill Creek,
 Green River,
 Mineral Creek,
 Spring Creek,
 Mud Creek,
 Coal Creek,
 Hickory Creek,
 Willow Creek,
 Rock Creek,
 Little Creek,
 Sugar Creek,
 Spring Creek,
 Elkhorn Creek,
 Five Mile Creek,
 Three Mile Creek,
 Pine Creek,
 Clear Creek,
 Kite Creek,
 Leaf River,
 Kishwaukee River,
 Piasa River,
 Coon Creek,
 Rush Creek,
 North Branch of Kent's Creek,
 Pecatonica River,
 Rock Run,
 Pillow Creek,
 Sugar Creek,
 Otter Creek.

Tributary to Henderson River:
 Cedar Creek.

Tributaries to Edwards River:
 Camp Creek,
 East Branch,
 West Branch.

Tributary to Apple River:
 Irish Hollow Creek.

FISH LAWS OF ILLINOIS.

An act to encourage the propagation and cultivation and to secure the protection of fishes in all waters under the jurisdiction of the State of Illinois.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That no person or persons shall place or cause to be placed or erected, any seine, weir, net, fish dam, or other obstruction in or across any of the rivers, creeks, ponds, streams, lakes, sloughs, bayous or other water or water courses within the jurisdiction of this State, in such a manner as will obstruct the free passage of fish up and down and through such water or water courses, and it shall be unlawful for any person to catch or take fish, except minnows for bait, with any device or means other than a hook and a line, within one-half mile of any dam constructed across any of the rivers or creeks or other water courses within the jurisdiction of this State.

That it shall be unlawful for any person or persons, at any time, to catch or kill any fish in any of the rivers, creeks, ponds, lakes, sloughs, bayous or other water courses within the jurisdiction of this State, by the use of lime, spear, acid, medical or chemical compound or explosives.

That it shall be unlawful for any person to catch or kill any fish in or upon any of the lakes or rivers within the jurisdiction of this State with any device or means when such waters are covered with ice.

That it shall be unlawful for any person to catch or kill or attempt to catch or kill or attempt to catch or kill any fish with any trammel net, seine or other devices and as a seine in or upon any of the rivers, creeks, streams, ponds, lakes, sloughs, bayous or other water courses within the jurisdiction of this State. Nor shall the meshes of any weir, seine, basket or trap of any net or seine used for catching fish, except for catching minnows for bait, be less than two inches square: *Provided, however,* that seining shall be lawful and allowed between the first day of July in each year, and the 15th day of April in the following year, with seines, the meshes of which shall not be less than two inches square, in such rivers or streams as are used for navigation within the jurisdiction of this State, and also in the navigable bays or lakes connected with such navigable streams within the jurisdiction of this State, and not extending beyond the overflowed bottoms of such rivers or streams: *Provided, also,* that it shall be lawful for the fish commissioners or persons authorized by them to take fish in any way at any time and in any such places as they deem best for the purpose of propagation, distribution or destroying of objectionable fish.

It shall be unlawful for any person to buy, sell or have in possession any fish at any time which shall have been caught, taken or killed contrary to the provisions of this act, and any person so offending shall be guilty of a misdemeanor and fined as provided in this act.

§ 2. NOT TO OBSTRUCT PASSAGE OF FISH.] That it shall be the duty of any person or persons who now own or control, or hereafter may erect or control any dam or other obstruction across any of the rivers, creeks, streams, bayous or other water courses wholly within or running through this State, in such manner as shall obstruct the free passage of fish up and down or through such water or water courses, to place or cause to be erected in or in connection with such dam or dams, durable and efficient fish-ways, so that the

free passage of fish up and down said water may not be obstructed. All such fishways shall be maintained and kept in good repair by the person or persons so owning or controlling such dam or other obstruction during the whole time for the existence of such dam or other obstruction, as aforesaid, so that said fish-ways shall at all times be open and free from obstruction for the passage of fish.

And in case the owner or person controlling, operating or using any dam or other obstruction, as aforesaid, shall fail or refuse, after ten days' notice, in writing, by a majority of the fish commissioners of this State, to construct and keep in good repair durable and efficient fish-ways, as provided in this act, then the fish commissioners may construct or cause to be constructed, durable and efficient fish-ways, or place the same in good repair, said work to be let by contract to the lowest responsible bidder, and may recover in an action of debt in the name of the People of the State of Illinois before any justice of the peace or any court of competent jurisdiction, the cost of constructing or repairing such fishway. Any person or persons or corporations owning or controlling any such dam or other constructions, who shall fail or refuse to comply with the provisions of this section with respect to the construction and maintenance in good repair of such fish-ways in any such dam, after having been notified in writing by the fish commissioners or a majority of them, to construct or repair the same, shall be deemed guilty of a misdemeanor, and for each and every twenty days after such notification that such person or persons shall neglect or refuse to comply with the provisions of this section in not erecting, maintaining and keeping in good repair such fishways, he or they shall be subject to a penalty of not less than twenty-five or more than two hundred dollars.

§ 3. SUITABLE FISH-WAYS—COMMISSIONERS—DAMAGES—PENALTY.] All fishways built as provided in this act, if constructed to the satisfaction and approval of a majority of the fish commissioners, then every owner or person controlling such dam or other obstruction, as provided in this act, may obtain from such fish commission, or a majority of them, a certificate that such fishway is constructed in compliance with this act, which certificate shall be a full protection against any prosecution for violation of this act for not providing a fishway. Such certificate may be suspended at any time by the fish commissioners, when such fish-way is not maintained or repaired, as herein required. If such person or persons so owning or controlling any such dam or other obstruction, shall fail to construct or maintain such fish-way to the satisfaction of the fish commissioners, or a majority thereof, then it shall be *prima facie* evidence of the violation of this act: *Provided*, that no owner or owners of any dam or dams shall be required by this act, or any other act, to construct or allow the construction of any fishway in such manner as to endanger the permanent durability of such dam or dams, or to impair their usefulness. Nor shall they be required to construct or repair such fish-way by using some particular patent on which a patent fee is demanded, or to construct or repair such fish-way when high water or climatic conditions may render such work impracticable. The fish commissioners, or a majority of them, to determine whether or not such fish-way will endanger the permanent durability of such dam, or impair its usefulness as to such high water or climatic conditions, and in case the owner or owners of such dam dissent to the decision of such fish commissioners, or a majority of them, then a board of arbitration shall be chosen to determine such matters: One by the fish commissioners, or a majority of them, one by the owner or owners of such dam, and the two so chosen shall select a third within thirty (30) days after their selection, and if not so selected within thirty (30) days, then the third one shall be selected by the Governor of the State, and the decision of such arbitrators, so chosen, shall be final. If the owner or owners of such dam shall not choose the arbitrator, as aforesaid, within ten (10) days after notice in writing by the fish commissioners, or a majority of them, then the decision of the fish commissioners shall be final and conclusive. In case of the destruction or damage resulting to the dam by reason of the construction of a fish-way, under the direction of the fish commissioners, such damage shall be repaired at the expense of the State.

§ 4. APPOINTMENT AND DUTY OF WARDENS.] The Governor, on request of the fish commissioners, shall appoint fish wardens, who shall enforce all laws relating to fishes, arrest all violators thereof, prosecute all offenses against same. They shall have power to serve processes against such offenders and shall be allowed the same fee as constables for like service, and shall have power to arrest, without warrant, any person for violating any of the provisions of this act; but such wardens shall receive no fees, except on cases where convictions are obtained. Such fish wardens may be removed at any time by the Governor.

§ 5. PERSONS VIOLATING ACT TO BE PROSECUTED.] It shall be the duty of all sheriffs, deputy sheriffs, constables, fish commissioners, and fish wardens to cause any person violating any of the sections of this act to be promptly prosecuted, and the several fish commissioners of this State shall have the power to arrest, without warrant any person or persons for violation of sections two (2) and three (3) of this act.

§ 6. It shall be unlawful to sell, or offer for sale, any of the following named fishes mentioned below which are less than the length specified for each:

Black Bass.....	Eleven	Inches
White or Stripped Bass.....	Eight	"
Rock Bass.....	"	"
Black or River Crappie.....	"	"
White Crappie.....	Nine	"
Yellow or Ring Perch.....	Eight	"
Wall-eyed Pike or Pike Perch.....	Fifteen	"
Pike Pickerel.....	Eighteen	"
Buffalo.....	Fifteen	"
German Carp.....	Thirteen	"
Native Carp.....	Twelve	"
Sun Fish.....	Six	"
Red-eyed Pike.....	Six	"
Catfish.....	Thirteen	"
White Perch.....	Ten	"

And, provided further, that the possession of any of the above named species for the purpose of sale, or offering for sale, of less length than above designated, shall be *prima facie* evidence of violation, and subject the party or parties having them in their possession to the penalties of the law, hereinafter mentioned.

§ 7. FISHING WITHOUT CONSENT OF OWNER—PENALTY.] Any person or persons who shall, for the purpose of fishing, with seine or net, without the consent of the owner, trespass upon the lands of another, containing any fish pond or lake, whether natural or artificial, shall be deemed guilty of a misdemeanor, and on conviction shall be fined in any sum not less than twenty-five nor more than one hundred dollars, and cost of suit for first offense, and not less than fifty nor more than two hundred dollars for the second offense, and the same for each subsequent offense, as for the second offense.

§ 8. HOW ENFORCED—COMPLAINT—AFFIDAVIT.] To enforce the provisions of this act, all suits brought under the same, shall be brought in the name of the People of the State of Illinois, and shall be brought on the complaint of any person or persons showing by affidavit that some section of this act has been violated, giving the name of the person or persons violating if known, and if unknown, such affidavit shall state by some person or persons whose name or names are unknown, and such complaint shall be made before any justice of the peace of the county in which such violation has been made.

§ 9. WHERE COMPLAINTS TO BE MADE.] When such violation is alleged to have been committed upon that portion of a stream or water course which may be the dividing line between two counties, then the complaint may be made to any justice of the peace of either of such counties.

§ 10. WHEN WARRANT TO ISSUE.] If the justice of the peace, before whom such complaint shall be made, shall be satisfied that there is a reasonable cause to justify the making of such complaint, he shall issue his warrant, directed to the sheriff or constable of such county, commanding him forthwith to arrest and bring before him, or in his absence, before some other nearest justice of the peace within such county, the person or persons alleged to have been guilty of violating any of the sections of this act.

§ 11. HEARING—COMPLAINT—JUDGMENT—JUROR.] Whenever any person or persons shall be brought before any justice of the peace, in the manner provided in this act, it shall be the duty of such justice to hear and determine the complaint. The person or persons so charged may demand jury trial at any time before the commencement of the trial, and the case shall be tried as cases before justices in civil cases, and judgment shall be for conviction or acquittal of the defendant or defendants in the case. In case a jury is called, the form of the verdict shall be, if for conviction: "We, the jury, find the defendant guilty, and assess the fine at dollars;" and if for acquittal: "We, the jury, find the defendant not guilty." The justice shall pronounce judgment in accordance with the verdict.

§ 12. PENALTY—COLLECTION AND DISTRIBUTION OF.] Whenever any judgment of conviction shall be rendered against defendant or defendants, as provided, execution shall issue forthwith on such judgment, and the sheriff or constable to whom the same shall be directed shall pay one-half of all penalties collected on such execution, in payment of such judgment, to the person or persons who shall have made the complaint, and the remaining one-half to the superintendent of schools of the county wherein such trial shall be had.

§ 13. WHEN EXECUTION RETURNS NO PROPERTY—ARREST.] Whenever any execution issued as above provided, shall be returned "No property found," the justice issuing the same, or in case of his death or absence, any other justice having possession of the docket in which said judgment was entered, shall issue his warrant to the sheriff or any constable of such county, commanding him to take and deliver the defendant or defendants in the execution to the jailer of such county, who shall receive such defendant or defendants into his custody and commit to the county jail of such county, whenever one exists, for a period of not less than ten nor more than sixty days, as the justice shall decide and direct in his warrant, but such defendant or defendants so arrested or committed shall be discharged at any time on payment of such fine and costs.

§ 14. APPEAL.] Any defendant or defendants against whom such judgment of conviction shall be rendered, and in case of acquittal, the party making the complaint or any person who will give the necessary bond, shall have the right to appeal, on the same terms as in civil cases before justices, but no proceeding herein provided for shall be stayed until such appeal shall be fully perfected.

§ 15. PENALTY.] Any person or persons violating any of the provisions of the preceding sections of this act, when no other penalty is provided, shall be deemed guilty of a misdemeanor, and, upon a conviction, shall be fined not less than twenty-five nor more than two hundred dollars for each offense.

§ 16. REPEAL BOARD OF FISH COMMISSIONERS.] All acts and parts of acts in conflict with this act are hereby repealed; but such repeal shall not disturb the status of the present board of fish commissioners.

REGULATING THE CATCHING, SHIPPING AND SALE OF FISH.

An act to regulate fishing in Lake Michigan, and the shipping of fish in the State of Illinois.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That it shall be unlawful for any person or persons or corporation to take, catch or kill, or attempt to take, catch or kill in any manner or by any means whatsoever, in the waters of Lake Michigan, any white fish or lake trout, between the fourteenth day of October in each year and the succeeding thirtieth day of November. It shall be unlawful for any person to set or cause to be set or used in the water of Lake Michigan within one-quarter of a mile of the main shore thereof, any gill, pound or fike net. No dip-nets shall be used except for catching minnows for bait, said dip-nets not to exceed twenty inches in diameter.

§ 2. All packages containing fish shall be labeled in plain letters on the address side of the package, so as to disclose the fact that said package contains fish, and the nature of said fish so contained in said package. It shall be unlawful for any person to deliver to any common carrier for transportation any package or parcel containing fish, which said package or parcel shall not be labeled as herein required, or to place upon said package or parcel a false statement as to the contents thereof. Every person delivering to a common carrier a package or parcel containing fish shall place upon said package the name and address of the owner or consignor of said package or parcel. It shall be unlawful and is hereby prohibited by any common carrier, or agent, servant, or employé of a common carrier, to receive for transportation or transport any package or parcel containing fish unless the same shall be labeled as provided in this act. It shall be unlawful and is hereby prohibited for any person, firm or corporation acting as a common carrier to bring into this State any fish from any state during the time that such other state prohibits the transportation of such fish from said state to a point within the same.

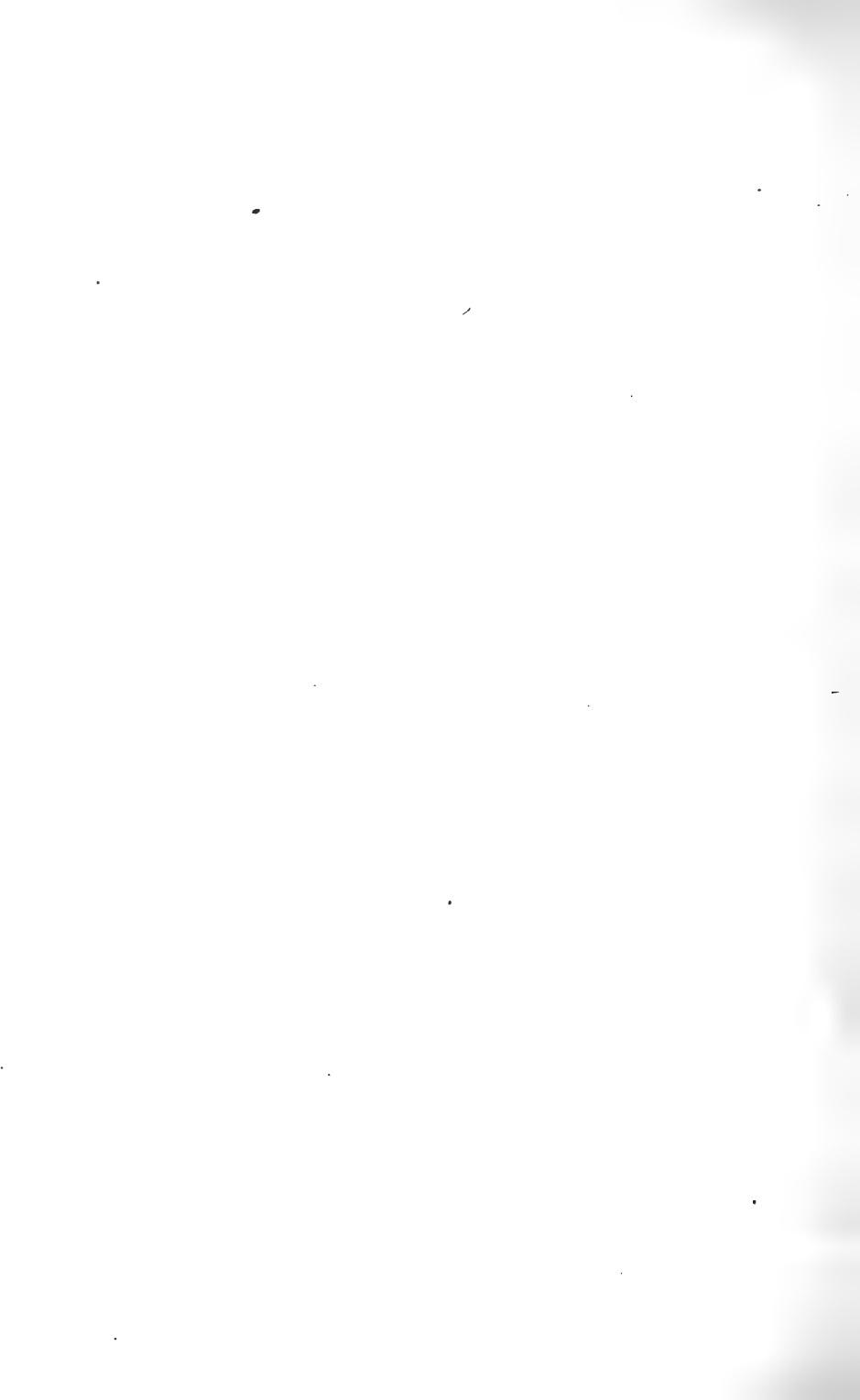
§ 3. PENALTY.] Any person or persons violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense.

Approved April 21, 1899.

A CATALOGUE
OF THE
Native Fishes of Illinois.

BY
S. A. FORBES, PH. D.

Professor of Zoölogy, University of Illinois.



CATALOGUE.

Class I. PISCES. (THE TRUE FISHES.)

Sub-class PHYSOCLISTI.

Order I. ACANTHOPTERI. (THE SPINY-RAYED FISHES.)

Family I. GADIDÆ. (COD-FISHES.)

Genus 1. LOTA, Cuvier.

1. *Lota maculosa* Le Sueur.—BURBOT; LING; EL POUT.
Taken only in Lake Michigan.

A single specimen occurred some years ago at Naples, on the Illinois river, having evidently entered the river through the canal, then recently opened to the Chicago river.

Family II. COTTIDÆ. (THE SCULPINS.)

Genus 2. URANIDEA, De Kay.

2. *Uranidea richardsoni*, Agassiz.—MILLER'S THUMB; BLOB; MUFFLEJAW;
BULL-HEAD.
(Bul. II, 50; *Potamocottus alvordi*, *Potamocottus wilsoni*, *Potamocottus meridionalis*.)

This species, the only representative of its family known positively to occur within the limits of our State, is by far the most abundant in Southern Illinois, where it is a common creek species, nestling under stone in shallows and rapids. A single specimen from a muddy stream in McHenry county, and a few from the shallow waters of Lake Michigan, are the only representatives in our collections from the northern part of the State. Other species of this family occur in Lake Michigan have been found only in the deeper waters outside our limits.

Family III. SCIÆNIDÆ.

Genus 3. HAPLOIDONOTUS, Rafinesque.

FRESH-WATER DRUMS.

3. *Haploidonotus grunniens*, Raf.—SHEEPSHEAD; DRUM; WHITE PERCH;
CROAKER.

This species occurs in Illinois only in the great lakes and in rivers, occasionally in spring finding its way into creeks tributary to the Illinois and the Ohio.

Family IV. SERRANIDÆ. (THE SEA BASS.)

Genus 4. ROCCUS, Mitchell.

BASS.

4. *Roccus interruptus*, Gill.—YELLOW BASS; STRIPED BASS; BRASSY BASS. (Bul. II, 44; *Morone interrupta*.)

This species has not occurred in Northern Illinois to our knowledge, but has been collected by us almost wholly in the Illinois river and in the bottom lakes connected with that stream.

5. *Roccus chrysops*, Raf.—WHITE BASS; SILVER BASS.

Throughout Illinois, in creeks and rivers, and in Lake Michigan, much more rarely in the small northern lakes. It seems, indeed, to be wholly wanting in the lakes of the Fox river system, in which it is said by the old fishermen to have been exterminated by severe winters some years ago. The presence of impassable fishdams in the Fox river, through which these lakes are drained, probably accounts for its non-appearance since.

Family V. PERCIDÆ.

Sub-family PERCINÆ. (THE TRUE PERCHES.)

Genus 5. STIZOSTEDIUM, Raf.—PIKE PERCHES.

6. *Stizostedium canadense*, Smith.—SAUGER; SAND-PIKE; GRAY-PIKE.

The distribution of this species in Illinois is precisely like that of the following.

7. *Stizostedium vitreum*, Mitch.—WALL-EYED PIKE; DORY; GLASS-EYE; YELLOW PIKE; BLUE PIKE; "JACK SALMON."

Found only in the larger rivers and lakes; occurring in our collections from the Wabash, Illinois, and Rock rivers. Especially abundant in the former at the rapids above Mt. Carmel.

Genus 6. PERCA, Linnæus.

PERCH.

8. *Perca americana*, Schranck.—YELLOW PERCH; AMERICAN PERCH; RINGED PERCH.

A very abundant species in the northern part of the State; excessively common in Lake Michigan, where it is caught from the wharves by thousands daily. Also swarming in the small northern lakes, and one of the commonest fishes in the clearer creeks and rivers. In Central Illinois it is somewhat rare, occasional specimen only occurring in the Illinois. In the southern part of the State we have not seen it at all, not a single specimen, in fact, occurring in our collections south of the latitude of Alton. Southward its common name even is applied to other species—the various sun-fishes. There is a uniform average difference in brightness of color between the lake and river specimens, the latter being much the brighter, but there are no specific distinctions.

Sub-family ETHEOSTOMATINÆ. (THE DARTERS.)

Genus 7. MICROPERCA, Putnam.

9. *Microperca Punctulata*, Putnam.—LEAST DARTER.

This little species, the smallest of our fishes, is much the commonest northward, but has been taken as far south as Union county. It is less select in its haunts than most of the other Darters, occurring in waters of every description; but we have found it commonest in lakes, and scarcely less abundant along the weedy margins of larger rivers.

Genus 8. ETHEOSTOMA, Raf.

10. *Etheostoma eos*, Jor. & Copeland.(Bul. II, 42; *Boleichthys eos*: Synop., *Pacilichthys eos*.)

Not especially common in Illinois; chiefly of northern distribution; most abundant in the lakes, and occurring also in the smaller rivers.

11. *Etheostoma fusiforme*, Grd.(Bul. II, 43; *Boleichthys elegans*: Synop., 519 & 520; *Pacilichthys butlerianus*, *Pacilichthys Barrati*, *Pacilichthys fusiformis*.)

This darter, which has appeared in the earlier lists as *Boleichthys elegans*, is southern in its Illinois distribution, not having occurred north of the Kaskaskia river. To the southward it is rather common in lakes, clear ponds, small rivers and creeks.

12. *Etheostoma asprigene*, Forbes.(Bul. II, 41; *Pacilichthys asprigenis*: Synop., 518; do.)

This common species, originally described from the Illinois river, has since been found generally distributed in the central and southern portions of the State, in lakes and rivers, large and small, but has not been taken in Northern Illinois.

13. *Etheostoma caeruleum*, Storer.—BLUE DARTER; RAINBOW DARTER; SOLDIER-FISH.(Bul. II, 41; *Pacilichthys variatus*, *Pacilichthys spectabilis*, *Pacilichthys*: Synop., 517 & 518; *Pacilichthys caeruleus*, *Pacilichthys spectabilis*.)

The most highly colored of our common darters, occurring throughout the State in lakes, rivers, and creeks, much the most abundant in the latter.

14. *Etheostoma flabellare*, Raf.

Not common. Clear creeks and rivers in Southern Illinois.

15. *Etheostoma lineolatum*, Agassiz.—STRIPED DARTER.(Bul. II, 42; *Etheostoma flabellare*, var. *lineolatum*.)

Rather rare; chiefly from Northern Illinois, in creeks and rivers.

16. *Etheostoma zonale*, Cope.(Bul. II, 41; *Nanostoma zonale*: Synop 510; do.)

This little darter is not common in Illinois and is confined to the northern part of the State, as far as our collections show, where it occurs in creeks and the smaller rivers.

Genus 9. HADROPTERUS, Agassiz.

17. *Hadropterus evides*, Jordan & Copeland.(Bul. II, 39; *Ericosma evides*: Synop., 503; *Alvordius evides*.)

Represented in our Illinois collections only by a few specimens from Rock river. Reported by Dr. Jordan from White river, Indiana, but apparently not collected elsewhere.

18. *Hadropterus aspro*, Cope & Jordan.—BLACK-SIDED DARTER.(Bul. II, 39; *Alvordius maculatus*: Synop., 501; *Alvordius aspro*.)

This fine darter is rather common throughout the whole State in large creeks and small rivers, being especially abundant in the Wabash Valley and in the Little Wabash, Saline, and Embarras rivers. A few specimens were taken also in the Illinois.

19. *Hadropterus phoxocephalus*, Nelson.(Bul. II, 39; *Alvordius phoxocephalus*: Synop., 501; do.)

This species, described from specimens taken in Central Illinois, has not yet been found in the northern part of the State, although it is decidedly common from the Illinois river southward, including the Wabash Valley. It occurs in our collections only from the larger streams; such as the Fox, Illinois, Saline, and Little Wabash rivers, and Mackinaw creek.

Genus 10. PERCINA, Haldeman.

LOG PERCHES.

20. *Percina caprodes*, Raf.—LOG PERCH; ROCK-FISH; HOG-MOLLY; HOG-FISH.(Bul. II, 39; *Percina caprodes*, *Percina manitou*.)

The largest of its sub-family, and among the most abundant in the northern part of the State. Our collections contain specimens from the borders of Lake Michigan to Cairo and the Wabash Valley. In Northern Illinois it is extremely common in the small lakes and in the streams connected with them, and likewise occurs in other creeks.

Genus 11. COTTOGASTER, Putnam.

21. *Cottogaster shumardi*, Grd.(Bul. II, 39; *Imostoma shumardi*: Synop., 498; do.)

Somewhat rare in Illinois, and occurring chiefly in large streams. It has, in fact, been taken by us only from the Rock, Illinois, and Wabash rivers.

* Genus 12. DIPLESIUM, Raf.

22. *Diplesium blennioides*, Raf.—GREEN-SIDED DARTER.

Found by us only in the Wabash valley, where it is not rare. Collected from the little Wabash, at Flora.

Genus 13. BOLEOSOMA, De Kay.

TESSELLATED DARTERS.

23. *Boleosoma camurum*, Forbes.(Synop., 493; *Vaillantra camurum*.)

This little species is wide-spread, but somewhat rare, occurring throughout the State in creeks and ponds, but much more abundantly to the southward.

24. *Poleosoma nigrum*, Raf.—JOHNNY DARTER.(Bul. II, 400; *Boleosoma olmstedii*, *Boleosoma maculatum*.)

By far the most abundantly and widely distributed of the darters, occurring in almost all waters, though of course far more abundantly in creeks, and preferring rocky shallows. I do not know that it is ever found in foul or muddy situations. It ranges throughout the State from the Galena and Calumet rivers on the north, southward to Union county.

Genus 14. AMMOCRYPTA, Jordan.

25. *Ammocrypta asprella*, Jordan.(Bul. II, 38; *Pleurolepis asprellus*.)

The only specimens of this species in our collections are the original types, taken in a small bluff stream in Hancock county. It is reported by Dr. Jordan, however, to range from Illinois to Alabama. The creek in which the type occurred is a muddy stream, with occasional reaches of gravelly bottom.

26. *Ammocrypta pellucida*, Baird.—SAND DARTER.(Bul. II, 38; *Pleurolepis pellucidus*.)

The range of this little darter is limited strictly by the character of the streams which it prefers, as it seems to occur only in somewhat swiftly running waters with sandy bottom. We have taken it in the Little Wabash and the Embarras, and some other creeks of the Wabash Valley, but not elsewhere in the State.

Sub-family CENTRACHINÆ. (THE SUN-FISHES.)

Genus 15. MICROPTERUS, Lacépède.

BLACK BASS.

27. *Micropterus dolomieu*, Lac.—SMALL-MOUTHED BLACK BASS.(Bul. II, 44; *Micropterus salmoides*.)

Abundant in rivers and larger creeks, but occurring more rarely in lakes, preferring swifter waters than the preceding species. It occurs throughout Illinois, but is relatively rare to the southward. Has been taken by us in the Wabash and some of its larger tributaries, but not elsewhere south of the Illinois river.

28. *Micropterus salmoides*, Lac.—LARGE-MOUTHED BLACK BASS; OSWEGO BASS; GREEN BASS; BAYOU BASS.(Bul. II, 44; *Micropterus pullidus*.)

The large mouthed black bass favors especially lakes, ponds and sluggish waters, but occurs also in rivers and large creeks throughout Illinois. It is the common southern form of black bass, although perhaps, on the whole, no more abundant there than in the northern part of the State.

Genus 16. LEPOMIS, Raf.

29. *Lepomis gibbosus*, L.—COMMON SUN-FISH; BREAM; PUMPKIN-SEED; SUNNY.](Bul. II, 46; *Eupomotis aureus*.)

By far the most abundant sun-fish in Northern Illinois, where it literally swarms in every lake and pond. It occurs, however, throughout the State, but somewhat rarely southward, its place there being taken by *Chænobryttus gulosus*.

30. *Lepomis notatus*, Agassiz.(Bul. II, 46; *Eupomotis pallidus*.)

A rather rare species, occurring from the Illinois river southward, chiefly in ponds and larger streams.

31. *Lepomis pullidus*, Mitch.—BLUE SUN-FISH; COPPER-NOSED BREAM; DOLLARDEE; RIVER SUN-FISH.(Bul. II, 45; *Lepiopus pallidus*.)

Probably the most abundant of the sun-fishes; its preëminence, however, in this respect being disputed by *Lepomis cyanellus* and *gibbosus*. Its distribution and its haunts are more varied than those of either of these species, as it is almost equally abundant in all parts of the State, and occurs in all waters—in lakes, ponds, rivers, and smaller streams, from Lake Michigan and the Illinois to small creeks and ponds. It is, on the whole, most abundant in the larger rivers, being, in fact, the common sun-fish of the Illinois. Collected by us from Lake to Union county, and in the Wabash valley.

32. *Lepomis humilis*, Grd.—RED-SPOTTED SUN FISH.(Bul. II, 45; *Lepiopomus anagallinus*.)

This species, common nowhere, is altogether wanting in Northern Illinois, ranging, according to our collections, from Woodford to Alexander county. It has been collected by us only in creeks.

33. *Lepomis megalotis*, Raf.—LONG-EARED SUN-FISH.(Bul. II, 46; *Xenotis megalotis*, *Xenotis inscriptus*, *Xenotis peltastes*.)

Not especially common within our limits. Most abundant southward. Like most of the sun-fishes, it prefers ponds and creeks to larger waters, although we have taken it occasionally in the Illinois River, and more commonly in the Wabash.

34. *Lepomis ischyurus*, Jordan & Nelson.(Bul. II, 46; *Lepiopomus ischyurus*.)

Of this rare but well-marked species we have taken only the original type, obtained in the Illinois River; but Mr. Nelson has reported a second specimen, collected in the Calumet, near South Chicago. Its resemblances to *L. pallidus* are so strong that, even if abundant, it would probably be usually overlooked by collectors.

35. *Lepomis macrochirus*, Raf.

Not seen by me. Reported here on the authority of Dr. Jordan, who has a specimen of the species from the Illinois River.

36. *Lepomis garmani*, Forbes.

This species, but just described, has been seen only in the Wabash River and its tributaries, in the vicinity of Phillipstown and Cairo, in White county.

37. *Lepomis symmetricus*, Forbes.

This species, recently described and still rare in collections, has been taken only in ponds and streams in Central and Southern Illinois. It is found chiefly in the southern part of the State, especially in the Wabash Valley, but is occasionally seen in the Illinois River, and has been taken by us in Union county.

38. *Lepomis cyanellus*, Raf.—RED-EYE; BLUE SPOTTED SUN-FISH.(Bul. II, 45: *Apomotis cyanellus*.)

This is the most abundant sun-fish of the small prairie streams and pools of Central Illinois, where, in fact, it is almost the only species occurring. It ranges throughout the State, from Cook to Union county, occurring in relatively small numbers in the rivers, but superabundantly in creeks and ponds.

Genus 17. CHÆNOBRYTTUS, Gill.

39. *Chenobryttus gulosus*, C. & V.—WARMOUTH; RED-EYED BREAM.

The sun-fish ranges throughout Illinois, but is far the most abundant southward, where it is one of the commonest species of its family. Indeed, we have not ourselves taken it north of the Illinois River, but Dr. Jordan reports specimens received from Lake Michigan. It is essentially a pond species but occurs also in the larger streams. In the southern part of the State it receives several of the common names (such as Goggle-eye, Red-eye, etc.) appropriated northward to the Rock-bass.

Genus 18. AMBLOPLITES, Raf.

- 40.
- Ambloplites rupestris*
- , Raf.—COMMON ROCK-BASS; RED-EYE; GOGGLE-EYE.

Quite common northward, but relatively rare in Southern Illinois, where, indeed, we have not yet taken it. As its southern range, however, is said to extend to Louisiana, it probably occurs occasionally in the southern part of the State, and is reported by fishermen to be common in the rapids of the Wabash. In Northern and Central Illinois it is found in streams of all sizes, from small creeks to the Illinois River, and is also common in the smaller lakes.

Genus 19. POMOXYS, Raf.

CROPPIES.

- 41.
- Pomoxys sparoides*
- , Lac. BLACK CROPPIE; CALICO BASS; GRASS BASS; BARFISH; BUTTER BASS.

(Bul. II, 47; *Pomoxys nigromaculatus*.)

Found, like the preceding, throughout Illinois, but commonest to the north, occurring in both lakes and streams; most abundant in the former.

- 42.
- Pomoxys annularis*
- , Raf.—CROPPIE; PALE CROPPIE.

Ranges throughout Illinois from Galena to Cairo. Confined principally to the larger streams and their immediate tributaries, it becomes rapidly more abundant as we pass from north to south, finally virtually replacing the preceding species.

Genus 20. CENTRARCHUS, C. & V.

- 43.
- Centrarchus macropterus*
- , Lac.

(Bul. II, 47; *Centrarchus irideus*.)

This is also a species confined in Illinois to the southern part of the State, where we have taken it in Cache river, in Clear and Drury creeks, in Great House creek, near Mt. Carmel, and in various ponds and sloughs in the river bottoms of that region.

Family VI. ELASSOMATIDÆ.

Genus 21. ELASSOMA, Jordan.

- 44.
- Elassoma zonatum*
- , Jordan.

A southern species, not collected by us north of St. Francisville, in Lawrence county. Not uncommon in small, muddy pools.

Family VII. APHREDODERIDÆ.

Genus 22. APHREDODERUS, Le Sueur.

- 45.
- Aphredoderus sayanus*
- , Gilliams.—PIRATE PERCH.

(Bul. II, 48; *Aphredoderus isolepis*.)

Throughout the State from the Calumet to Union county and the Wabash but far the most abundant southward. Occurs almost invariably in small streams only, but occasionally taken in the Illinois. One of the commonest species in mud holes in the Mississippi bottoms, in Southern Illinois. Very rare in the central prairie region.

Family VIII. ATHERINIDÆ. (THE SILVERSIDES.)

Genus 23. LABIDESTHES, Cope.

46. *Labidesthes sicculus*, Cope.—BROOK SILVERSIDE.

A very abundant minnow in small streams and lakes in central and northern Illinois; also occurs rarely in the Wabash Valley, commonly in Rock river, and occasionally in the Illinois.

Order II. HEMIBRANCHII.

Family IX. GASTEROSTEIDÆ. (THE STICKLEBACKS.)

Genus 24. GASTEROSTEUS, L.

47. *Gasterosteus inconstans*, Kirt.—BROOK STICKLEBACK.

Locally common in rivers and small streams in the northern part of the State only. We have not taken it south of Rock river.

Sub-class PHYSOSTOMI.

Order III. APODES.

THE EELS.

Family X. ANGUILLIDÆ. (THE TRUE EELS.)

Genus 25. ANGUILLA, Thunberg.

48. *Anguilla rostrata*, Le Sueur.—COMMON EEL.

Not very abundant, but occurring everywhere in streams of large and moderate size, throughout Illinois.

Order IV. HAPLOMI.

Family XI. ESOCIDÆ. (THE PIKES.)

Genus 26. ESOX, L.

49. *Esox nobilior*, Thomas.—MUSKALLUNGE.

Found by us only in Lake Michigan.

50. *Esox lucius*, L.—PIKE.

Throughout the State, but most abundant northward. Occurs also in Lake Michigan.

51. *Esox vermiculatus*, Le Sueur.—LITTLE PICKEREL.

(Bul. II, 53; *Esox salmoneus*, *Esox cypho*.)

An abundant species north and south, occurring most commonly, perhaps, in weedy lakes, but scarcely less frequently along weedy margins of rivers and smaller streams.

Family XII. UMBRIDÆ. (THE MUD MINNOWS.)

Genus 27. UMBRA, Müller.

52. *Umbra limi*, Kirt.—MUD MINNOW.

(Bul II, 52; *Melanura limi*.)

Lakes and muddy ponds in Northern and Southern Illinois; not taken by us in the central part of the State. Occurs occasionally in running streams, as in Fox river, at McHenry.

Family XIII. CYPRINODONTIDÆ. (THE TOOTHED MINNOWS.)

Genus 28. GAMBUSIA, Poey.

53. *Gambusia patruelis*, B. & G.,

(Bul. II, 52; *Zygonectes melanops*; Synop., 340 and 892; *Zygonectes melanops*, *Zygonectes inurus*.)

A southern species, not collected by us north of White county. Abundant in ponds and streams in the hill region of Southern Illinois.

A comparison of Illinois specimens of "*melanops*" with *Gambusia patruelis* from North Carolina, leaves no doubt of both generic and specific identity. Our Illinois examples were many of them with living young.

Genus 29. ZYGONECTES, Agassiz.

TOP MINNOWS.

54. *Zygonectes dispar*, Agassiz.

Throughout the State in small lakes, ponds, and creeks, and occurring rarely in the main stream of the Illinois river. Chiefly a pond species.

55. *Zygonectes notatus*, Raf.—TOP MINNOW.

Ranges throughout the State, but is far the most abundant southward. Common in small creeks and stagnant pools. Apparently able to live in any water.

Genus 30. FUNDULUS, Lacepede.

KILLIFISHES.

56. *Fundulus diaphanus*, Le Sueur.—SPRING MINNOW.

Abounds in the small lakes and streams of extreme Northern Illinois. Not seen in the central or southern parts of the State. It is somewhat abundant along the weedy margins of the small lakes, and has been found but once or twice by us in streams.

Family XIV. AMBLYOPSIDÆ. (THE BLIND FISHES.)

Genus 31. CHOLOGASTER, Agassiz.

57. *Chologaster papiliferus*, Forbes.

Confined to cave streams and limestone springs of Southern Illinois at their immediate origin in the bluffs. It is unquestionably a subterranean species.

Order V. ISOSPONDYLI.

Family XV. PERCOPSIDÆ. (THE TROUT PERCHES.)

Genus 32. PERCOPSIS, Agassiz.

58. *Percopsis guttatus*, Agassiz.—TROUT PERCH.

A common fish of the Great Lakes. Not often taken from rivers, but obtained by us a few times in the Illinois. Apparently frequents deep water.

Family XVI. SALMONIDÆ. (THE SALMON).

Genus 33. -SALVELINUS, Richardson, TROUT.

59. *Salvelinus namaycush*, Walb.—MACKINAW TROUT; GREAT LAKE TROUT.
(Bul. II, 54; *Christivomer namaycush*.)

Occurs only in Lake Michigan.

Genus 34. COREGONUS, L.

WHITE FISH.

60. *Coregonus artedi*, Le Sueur.—LAKE HERRING; CISCO; MICHIGAN HERRING.

Extremely abundant in Lake Michigan; occurring also in the small lakes of Indiana and Wisconsin (where it is known as the Cisco) but not in those of Illinois.

61. *Coregonus clupeiformis*, Mitch.—COMMON WHITE FISH.

Occurring only in Lake Michigan, and there, at present, chiefly in the deeper water outside the limits of this State.

Family XVII. DOROSOMATIDÆ. (THE GIZZARD SHADS.)

Genus 35. DOROSOMA, Raf.

62. *Dorosoma cepedianum*, Le Sueur.—GIZZARD SHAD; HICKORY SHAD; SKIP JACK.

One of the most abundant of our river fishes, and an extremely valuable article of food for the game species. It is confined to the larger rivers and their immediate tributaries, occurring in lakes and ponds only when left by the overflow. It was reported some years ago to have entered Lake Michigan by way of the canal, and to have multiplied there at an extraordinary rate; but I have not lately heard of it in those waters, nor seen it in the catches of the fishermen at South Chicago. We have obtained it from Galena to Cairo and the Wabash Valley, in the Mississippi, Ohio, and Illinois rivers and their larger and more immediate tributaries, and in ponds near St. Francisville.

Family XVIII. CLUPEIDÆ. (THE HERRINGS.)

Genus 36. CLUPEA, L.

HERRINGS.

63. *Clupea chrysochloris*, Raf.—OHIO SHAD; GOLDEN SHAD.
(Bul. II, 55; *Pomolobus chrysochloris*.)

One of the rarer fishes of our larger rivers, appearing in our collections only from the Illinois, Ohio and Mississippi rivers. Said to have been introduced, through the canal, into Lake Michigan.

Family XIX. HYODONTIDÆ.

Genus 37. HYODON, Le Sueur.

MOON EYES.

64. *Hyodon tergisus*, Le Sueur.—MOON EYE; TOOTHED HERRING.

A moderately common fish in the Illinois, Mississippi and Ohio Rivers, but not occurring in smaller streams.

65. *Hyodon alosoides*, Raf.

Taken by us only in Galena River, in extreme Northern Illinois.

Order VI. EVENTOGNATHI.

Family XX. CYPRINIDÆ. (THE MINNOWS.)

Genus 38. NOTEMIGONUS, Raf.

66. *Notemigonus chrysoleucus*, Mitch.—GOLDEN SHINER; BREAM.

In Illinois this species occurs everywhere, in waters of all descriptions—lakes, ponds, creeks and rivers, although most abundant in small ponds and muddy creeks.

Genus 39. OPSOPÆODUS, Hay.

67. *Opsopæodus emiliae*, Hay.

(Synop. 247; *Opsopæodus emiliae*, *Trycherodon megalops*.)

This species has occurred sparingly in our collections throughout the State, and only in running streams or in lakes immediately connected with them. Very abundant in ponds near Mt. Carmel.

Genus 40. SQUALIUS, Bonaparte.

DACE.

68. *Squalius elongatus*, Kirtland.—RED-SIDED SHINER.

Said by Dr. Jordan to occur in Lake Michigan and in Rock River. Not seen by us from Illinois.

Genus 41. SEMOTILUS, Raf.

69. *Semotilus dissimilis*, Kirtland.—SPOTTED SHINER.

(Bul. II, 72; *Ceratichthys dissimilis*: Synop. 316; *Ceratichthys sterletus*.)

Has occurred in Illinois only in rivers and in lakes immediately connected with them. It has been collected by us in the Rock, Illinois and Ohio.

70. *Semotilus amblops*, Raf.—SILVER CHUB.

(Bul. II, 62; *Ceratichthys amblops*: Synop., 214; do.)

This fish has been obtained by us not rarely in Illinois, chiefly from the Ohio and the Wabash and the larger tributaries of the latter.

71. *Semotilus biguttatus*, Kirt.—HORNY HEAD; RIVER CHUB; JERKER.

(Bul. II, 62; *Ceratichthys biguttatus*: Synop., 212; do.)

This species seems limited, in Illinois, to creeks and rivers, and has not occurred in our collections south of the center of the State.

72. *Semotilus corporalis*, Mitch.—CHUB; HORNED DACE.

Almost wholly confined to small streams, in which it is, in Illinois, the most abundant minnow, commonest in those with muddy bottom; but a few have been obtained in the Illinois River, from lakes in the Illinois bottoms, and from the Little Wabash. It ranges throughout the State.

Genus 42. PLATYGOBIO, Gill.

FLAT-HEADED CHUBS.

73. *Platygobio pallidus*, Forbes.

A single specimen of this very rare species, obtained in the Ohio River at Cairo, is the only one hitherto taken.

Genus 43. COUESIUS, Jordan.

74. *Couesius prothemius*, Cope.

Not in our collection. Specimens from near Evanston, taken in Lake Michigan, are said by Dr. Jordan to be in the National Museum.

Genus 44. RHINICHTHYS, Agassiz.

75. *Rhinichthys atronasmus*, Mitch.—BLACK-NOSED DACE.

(Bul. II, 62 and 63; *Rhinichthys cataractæ*, *Rhinichthys obtusus* *Rhinichthys meleagris*: Synop., 207, 208; *Rhinichthys cataractæ*, *Rhinichthys atronasmus*, *Rhinichthys obtusus*.)

This is essentially a brook species, delighting especially in swift and rocky streams. We have not found it in Southern Illinois, its localities being confined, in our experience, to the northern half of the State. Its relative rarity here is doubtless due to the infrequent occurrence of suitable streams.

Genus 45. PHENACOBIUS, Cope.

76. *Phenacobius mirabilis*, Grd.

(Bul. II, 61; *Phenacobius scopiferus*.)

Occurs somewhat rarely throughout the State, from Galena to extreme Southern Illinois; almost invariably in small, swift streams, or in the rapid, rocky parts of more sluggish creeks.

Genus 46. ERICYMBA, Cope.

77. *Ericymba buccata*, Cope.

We have found this species only in the sandy stretches of the tributaries of the Wabash, where it is locally very abundant.

Genus 47. NOTROPIS, Raf.

SHINERS.

78. *Notropis dinemus*, Raf.—EMERALD MINNOW.

(Bul. II, 60; *Notropis rubrifrons*, *Notropis atherinoides*: Synop., 202 and 203; *Minnilus rubellus*, *Minnilus dinemus*, *Minnilus rubrifrons*.)

Excessively abundant; far commonest northward, but confined everywhere almost strictly to the larger lakes and rivers. Not a single specimen has occurred in our collections from the smaller lakes in Northeastern Illinois, while the waters of Lake Michigan, a few miles distant, were swarming with them along the shore. Not abundant in the Ohio and northern Mississippi, but rather common in the Illinois. From the smaller tributaries of these streams we have not so much as one of this species. In the Wabash and Saline Rivers, in Southern Illinois.

79. *Notropis macrolepidotus*, Forbes.

A very rare minnow, taken thus far only from the Illinois River.

80. *Notropis atripes*, Jordan.—RED FIN.

(Bul. II, 59; *Lythrurus atripes*, *Lythrurus diplæmius*: Synop., 197; *Minnilus atripes*, *Minnilus diplæmius*.)

This species prefers especially small clear streams, in which it is occasionally abundant; but, owing probably to the relative scarcity of such waters in

Illinois, it occupies a subordinate place among our cyprinoids. It is commonest in the extremes of the State, occurring but rarely throughout the central prairie region.

81. *Notropis jejunus*, Forbes.

(Bul. II, 60; *Episema jejuna*: Synop., 194; *Minnilus jejunus*.)

A species of the larger rivers, occurring in our collections only from the Ohio, Illinois, Wabash, and Mississippi, or at short distances from these streams, in lakes and tributaries immediately connected with them. Not taken in Northern Illinois.

82. *Notropis megalops*, Raf.—SHINER; RED-FIN; DACE.

(Bul. II, 57; *Lucilus cornutus*: Synop., 186; *Minnilus cornutus*.)

An extremely abundant fish, perhaps the commonest of the cyprinoids; most common in rivers and creeks and to the northward, but also found in Southern Illinois, and occasionally in lakes and ponds.

83. *Notropis whipplei*, Grd.—SILVER-FIN.

(Bul. II, 57; *Photogenis analostanus*: Synop., 178 and 179; *Cliola whipplei*, *Cliola analostana*, etc.: M. V., 294; *Lucilus analostanus*.)

Most abundant in the northern part of Illinois, occurring principally in rivers and large creeks, but likewise rather common southward. It is not unknown from the lakes, but we have found it almost strictly confined to running water.

84. *Notropsis lutrensis*, B. & G.

(Bul. II, 57; *Cyprinella forbesi*: Synop., 174 and 175; *Cliolaforbesi*, *Cliola lutrensis*, etc.: M. V., 406; *Cyprinella forbesi*.)

This active little fish delights in the rocky ripples of swift, small streams. It is essentially a southern species, and is much the most abundant to the southward of this State. Along the Mississippi, however, its range extends to extreme Northern Illinois. We found it in great numbers in some creeks in western Hancock county. The small, swift streams running down from the bluffs of the Mississippi River are its favorite haunts. A few specimens have been taken in the Illinois, but it is not known from the lakes, from the Wabash region, or from the small interior streams.

85. *Notropis hudsonius*, Clinton.—SPAWN-EATER.

(Bul. II, 56; *Alburnops hudsonius*, *Alburnops storerianus*: Synop., 171; *Cliola hudsonius*: M. V., 290; *Hybopsis hudsonius*.)

Common everywhere to the northward, especially in Lake Michigan and the smaller lakes of Northern Illinois. Collected to our extreme southern limits, but not abundant south of the central part of the State. Next to the lakes we have found it most abundant in the Illinois River, and it has occurred likewise in smaller streams from the Calumet River, in Chicago, to the larger creeks in Union county.

86. *Notropis phenacobius*, Forbes.

Very rare, at Peoria; not seen elsewhere.

87. *Notropis stramineus*, Cope.—STRAW-COLORED MINNOW.

(Bul. II, 57; *Alburnops stramineus*: Synop., 167; *Cliola stramineus*: M. V., 291; *Hybopsis stramineus*.)

This species is rare in our collections, and has occurred only in rivers and small streams in Central and Northern Illinois.

88. *Notropis fretensis*, Cope.

(Bul. II, 57; *Alburnops fretensis*: Synop., 167; *Cliola fretensis*: M. V., 292; *Hybopsis fretensis*.)

Very rare in Illinois; not more than a single specimen among all our cyprinoids certainly belonging to this species.

89. *Notropis anogenus*, Forbes.

Thus far taken only in Fox river, at McHenry, Illinois.

90. *Notropis heterodon*, Cope.

Thus far taken only in Fox river, at McHenry, Illinois.

(Bul. II, 62. *Hemitremia heterodon*: Synop., 163; do.)

This is, within our limits, essentially a species of lakes and larger streams in Northern Illinois, although the form with perfect lateral line has been collected in small numbers from the southern extremity of the State. It is one of the most abundant minnows in the small lakes, northward. It likewise inhabits the Illinois river and the bottom lakes communicating with that stream.

Genus 48. CLIOLA, Girard.

SILVER FINS.

91. *Cliola vigilax*, B. & G.

(Bul. II, 56; *Alburnops tuditanus*: Synop., 165; *Cliola tuditana*.)

Abundant in small streams throughout Illinois. Seems to have been usually confounded with *Pimephales notatus*, to which it bears a strong general resemblance.

Genus 49. PIMEPHALES, Raf.

FAT-HEADS.

92. *Pimephales notatus*, Raf.—BLUNT-NOSED MINNOW.

(Bul. II, 55 and 57; *Hyborhynchus, notatus*, *Hyborhynchus surperciotus*: Synop., 159 and 160; do.)

One of the commonest of our fishes; extremely abundant in the prairie streams which characterize so large a part of Illinois. It chiefly affects, however, gravelly spots in muddy streams. It is not common in rivers, but is occasionally taken at the mouths of creeks. It has not been found by us in ponds, but specimens were collected from the small lakes of Illinois.

93. *Pimephales promelas*, Raf.—FAT-HEAD; BLACK-HEADED MINNOW.

The distribution of this fish in the State is somewhat peculiar. The species is altogether absent, as far as our collections indicate, from the prairie streams of Central Illinois. It is not uncommon in small muddy creeks connected with the larger rivers, and occurs occasionally in these latter streams themselves. We have not taken it in lakes or ponds or similar waters, neither has it occurred to us in Illinois south of the latitude of Alton.

Genus 50. HYBOGNATHUS, Agassiz.

94. *Hybognathus nubilus*, Forbes.

(Bul. II, 56; *Alburnops nubilus*; Synop., 167; *Cliola nubila*.)

This minnow has thus far been reported only from Illinois, and has occurred in our collections only from the extreme northern part of the State—from the Rock river and its tributaries.

95. *Hybognathus nuchalis*, Agassiz.—SILVERY MINNOW.

Almost strictly a river species, being most abundantly represented in our collections from the Illinois, and next from the Wabash, Ohio, and the Mississippi. We have not taken it in any lake or pond outside the great river bottoms, and it has occurred but rarely in creeks.

Genus 51. CHROSOMUS, Raf.

96. *Chrosomus erythrogaster*, Agassiz.—RED-BELLIED DACE.

This species has occurred sparingly in our collections but from all parts of the State, both in rivers and small streams. We have not taken it, however, from lakes or ponds.

Genus 52. OXYGENEUM, Forbes.

97. *Oxygeneum pulverulentum*, Forbes.

Only a single specimen of this genus and species is thus far known, and this was taken from the Illinois river, at Peoria.

Genus 53. CAMPOSTOMA, Agassiz.

98. *Campostoma anomalum*, Raf. STONE-ROLLER; STONE-LUGGER.

This species is very common in small streams throughout the State, from Galena to Cairo, and occurs occasionally in rivers, but rarely or never in lakes or ponds.

Family XXI. CATOSTOMIDÆ. (THE SUCKERS.)

Genus 54. PLACOPHARYNX, Cope.

BIG JAWED SUCKERS.

99. *Placopharynx carinatus*, Cope.

This species has not actually occurred in our personal collections from Illinois, but has been received by Dr. Jordan from the Illinois river, and is said by fishermen to be rather common in the Wabash. Its resemblances to *Moxostoma* are so strong that it would very probably be passed by collectors as belonging to that genus.

Genus 55. MOXOSTOMA, Raf.

RED HORSE.

100. *Moxostoma aureolum*, Le. S.

Distribution like that of the following species, from which it is, in my opinion, but doubtfully distinct. Less common in Illinois than *macrolepidotum*.

101. *Moxostoma macrolepidotum*, Le Sueur.—COMMON RED HORSE; MULLET; WHITE SUCKER; LARGE-SCALED SUCKER.

(Bul. II, 63 and 64; *Myxostoma macrolepidotum*, *Myxostoma relatum*.)

Very abundant everywhere in lakes, rivers and smaller streams. It inhabits Lake Michigan and the smaller lakes in northern Illinois, and is not less common to the southward. Where the common sucker is not known its name is appropriated to this species, the name of "red horse" being rarely heard in Southern Illinois.

102. *Moxostoma carpio*. Val.—CARP MULLET.

Said by Dr. Jordan to occur in the Great Lakes. Not positively identified by me in Illinois, the common lake mullet of South Chicago not being clearly different, to my mind, from *Moxostoma macrolepidotum*.

Genus 56. MINYTREMA, Jordan.

SPOTTED SUCKERS.

- 103.
- Minytrema melanops*
- , Raf.—SPOTTED MULLET; STRIPED SUCKER.

Moderately common in streams throughout the State.

Genus 57. ERIMYZON, Jordan.

- 104.
- Erimyzon sucetta*
- , Lac.—CREEK-FISH; CHUB-SUCKER.

Everywhere abundant in streams and lakes, ascending creeks in spring. Occurs in our collections from McHenry to Union county.

Genus 58. CATOSTOMUS, Le Sueur.

SUCKERS.

- 105.
- Catostomus nigricans*
- Le Sueur.—HOG-SUCKER; STONE-ROLLER; TOTER; CRAWL-A-BOTTOM; HAMMER-HEAD; STONE-LUGGER; HOG MOLLY.

Occurs chiefly in streams and frequents their rapids and shallows, in clear water. Commonest to the northward, probably owing to the clearer and more rocky character of the streams of that part of Illinois. Taken rarely in lakes.

- 106.
- Catostomus teres*
- , Mitch.—COMMON SUCKER; WHITE SUCKER; BROOK SUCKER; FINE SCALED SUCKER.

(Bul. II, 64; *Catostomus commersonii*: Synop. 129 do.)

Abundant northward, occurring rarely in the Illinois as far south as Peoria and still more rarely in the extreme southern part of the State. Where it is abundant it inhabits nearly all waters, both lakes and flowing streams. It is common in Lake Michigan.

Genus 59. CYCLEPTUS, Raf.

BLACK HORSE.

- 107.
- Cycleptus elongatus*
- , Le Sueur.—BLACK HORSE; GOURD-SEED SUCKER; MISSOURI SUCKER.

Rare in this State, occurring only in the larger rivers. Taken by us only from the Illinois.

Genus 60. ICTIOBUS, Raf.

BUFFALO FISHES.

- 108.
- Ictiobus cyprinus*
- , Le Sueur.—CARP SUCKER; RIVER CARP.

(Bul. II, 65; *Carpiodes velifer*, *Carpiodes selene*, *Carpiodes cutisanterinus*, *Carpiodes difformis*, *Carpiodes bison*, *Carpiodes cyprinus*, *Carpiodes thomysoni*, *Carpiodes carpio*: Synop., 118, 119, 120; *Carpiodes carpio*, *Carpiodes thompsoni*, *Carpiodes bison*, *Carpiodes cyprinus*, *Carpiodes difformis*.)

Abundant in the great rivers of the State and their larger tributaries, and also in Lake Michigan and the smaller lakes of Northern Illinois. Extremely common in the lakes and ponds of the river bottom.

After prolonged study of the so-called species of native carp represented in our collections, I have been compelled to merge them all in one, under the oldest specific name.

109. *Ictiobus bubalus*, Raf.—SMALL-MOUTHED BUFFALO; QUILL-BACK BUFFALO.

(Bul. II, 66; *Bubalichthys cyanellus*: Synop. 116; *Bubalichthys altus*; M. V., 322 and 325; *Bubalichthys altus*, *Bubalichthys bubalinus*.)

A very abundant fish in the larger streams, and in the bottom lakes; this and the red-mouth being the species commonly shipped under the name of "buffalo fish," from the Illinois and the other larger rivers. They are among the most important commercial fishes in our streams.

110. *Ictiobus urus*, Agassiz.—BIG-MOUTHED BUFFALO; BLACK BUFFALO; MONGREL BUFFALO.

(Bul. II, 65; *Bubalichthys urus*: M. V., 323 *Ichthyobus cyanellus*.)

Taken by us only in the Illinois river, where it is somewhat rare.

111. *Ictiobus cyprinellus*, C. & V.—RED-MOUTH BUFFALO.

(Bul. II, 65; *Ichthyobus bubalus*: Synop. 114; *Ictiobus bubalus*.)

One of the most abundant edible fishes in the larger rivers and their lakes, ascending the smaller creeks in spring. In the laboratory collections from the Illinois and its larger tributaries, and from the Ohio and Wabash.

Order VII. NEMATOGNATHI.

Family XXII. SILURIDÆ. (THE CAT-FISHES.)

Genus 61. ICTALURUS, Raf.

112. *Ictalurus furcatus*, C. & V.

Confined, in our experience, to southern localities, and taken by us only in the Ohio. Not known in the Illinois river, as far as I am aware; known to the southward, at least, as the channel cat or blue cat. I have not taken this species in creeks.

113. *Ictalurus punctatus*, Raf.—WILLOW CAT; CHANNEL CAT; WHITE CAT.

(Bul. II, 66; *Ichthælorus punctatus*, *Ichthælorus robustus*.)

Abundant from the larger rivers, reaching a weight of from 20 to 25 pounds.

Found in the deeper water of the Mississippi, Ohio and Illinois, and occurring likewise in the larger creeks connected with these streams, and occasionally in overflow ponds in the river bottoms.

114. *Ictalurus ponderosus*, Bean.—GREAT CAT-FISH.

One of the gigantic cat-fishes. Described from the Mississippi at St. Louis. Has not occurred in our collections, unless some specimens belong to it which are apparently intermediate between this and *Ictalurus nigricans*. I doubt if it is distinct from the latter.

115. *Ictalurus nigricans*, Le Sueur.—CAT-FISH OF THE LAKES; GREAT FORK-TAIL CAT; MISSISSIPPI CAT; FLORIDA CAT; FLANNEL-MOUTH CAT.

(Bul. II, 66; *Amiurus nigricans*: Synop., 108; *Ictalurus lacustris*.)

One of the gigantic cat-fishes of the Ohio, Illinois, and Mississippi, and of Lake Michigan. Probably the most abundant of the large species.

116. *Ictalurus natalis*, Le Sueur.—YELLOW CAT.(Bul. II, 66; *Amiurus natalis*: Synop., 105; do.)

Occurs everywhere throughout Illinois, but less abundantly than *nebulosus*, and preferring larger streams. It has not been taken by us from ponds and lakes except where these were immediately connected with streams subject to overflow.

117. *Ictalurus nebulosus*, Le Sueur.—BULL-HEAD; HORNED POUT; SMALL CAT-FISH.(Bul. II, 66; *Amiurus vulgaris*, *Amiurus catus*, *Amiurus melas*, *Amiurus xanthocephalus*: Synop., 104; *Amiurus xanthocephalus*, *Amiurus melas*, *Amiurus catus*.)

Abundant in all waters, frequenting by preference ponds and muddy streams. It occurs, however, in clear lakes and creeks, and has been taken by us occasionally in the larger rivers. It is the everywhere abundant "bull-head," or "bull-pout."

118. *Ictalurus marmoratus*, Holbrook.—MARBLED CAT.(Bul. II, 67; *Amiurus marmoratus*: Synop., 104; do.)

The marbled cat has not occurred in the northern part of the State, but seems to be most abundant in the Illinois and its tributaries. Confined almost wholly to the larger streams and their immediate affluents, in Central and Southern Illinois.

Genus 62. LEPTOPS, Raf.

MUD CATS.

119. *Leptops olivaris*, Raf.—MUD CAT; YELLOW CAT.(Bul. II, 67; *Pelodichthys olivaris*.)

Common in the larger streams. Obtained by us only from the Illinois, Wabash and Ohio rivers.

Genus 63. NOTURUS, Raf.

STONE CATS.

120. *Noturus flavus*, Raf.—COMMON STONE CAT.

Rather common in Illinois, in creeks of moderate size.

121. *Noturus exilis*, Nelson.

Rare in this State, only two specimens occurring in our collections besides the original type. Creeks in DeKalb, Woodford, and Union counties.

122. *Noturus minurus*, Jordan.

Taken by us only in Southern Illinois, in the Cache and Wabash rivers.

123. *Noturus gyrinus*, Mitch.(Bul. II, 68; *Noturus sialis*.)

This species occurs throughout Illinois, but has been confined in our collections mostly to lakes, rivers and large creeks. It is not by any means restricted to rocky situations, but seems rather to prefer the muddy parts of both the rivers and lakes in which it occurs.

Sub-class HOLOSTEI.

(THE BONY GANOIDS.)

Order VIII. HALECOMORPHI.

Family XXIII. AMIDÆ.

Genus 64. AMIA, L.

124. *Amia calva*, L.—MUD-FISH; DOG-FISH; GRINDLE.

Very abundant throughout the State, in the lakes and larger streams, and also common in ponds in Southern Illinois.

Order IX. GINGLYMODI.

Family XXIV. LEPIDOSTEIDÆ. (THE GAR PIKES.)

Genus 65. LITHOLEPIS, Raf.

125. *Litholepis tristachus*, Bloch & Schneider.—ALLIGATOR GAR.(Bul. II, 69; *Litholepis spatula*.)

Not common in Illinois, occurring somewhat rarely in the Ohio and Mississippi rivers, occasionally in the Illinois, and in at least a single instance in the Big Muddy, near Carbondale.

Genus 66. LEPIDOSTEUS, Lacépède.

126. *Lepidosteus platystomus*, Raf.—SHORT-NOSED GAR.

One of the most abundant of the larger Illinois fishes, rarely occurring, however, in the smaller streams, and confined chiefly to the larger rivers and the lakes and ponds connected with their waters. It is also taken in Lake Michigan.

127. *Lepidosteus osseus*, L.—LONG-NOSED GAR; BILL-FISH; COMMON GAR PIKE.

Generally abundant in the larger streams throughout the State, and taken by us in the Illinois, Mississippi, and Ohio. Occurs also in the smaller lakes in Northern Illinois.

Sub-class CHONDROSTEI.

Order X. GLANIOSTOMI.

(THE STURGEONS.)

Family XXV. ACIPENSERIDÆ.

Genus 67. SCAPHIRHYNCHOPS, Gill.

128. *Scaphirhynchops platyrhynchus*, Raf.—SHOVEL-NOSED STURGEON; WHITE STURGEON.

Taken by us somewhat rarely in the Ohio and Mississippi rivers at Cairo, and in the Illinois at Peoria.

Genus 68. *Acipenser*, L.129. *Acipenser rubicundus*, Le Suer.—LAKE STURGEON; OHIO STURGEON; BLACK STURGEON; STONE STURGEON; ROCK STURGEON.(Bul. II, 69; *Acipenser maculosus*, *Acipenser rubicundus*.)

Ohio, Mississippi, and Illinois rivers and Lake Michigan. Reaches, in the last, a weight of a hundred and fifty pounds, or more. The characters vary greatly with age and size.

Order XI. SELACHOSTOMI.

Family 26. POLYODONTIDÆ.

Genus 69. POLYODON, Lacépède.

130. *Polyodon spathula*, Wall.—SHOVEL-FISH; PADDLE-FISH; SPOON-BILL CAT; DUCK-BILL CAT.

(Bul. II, 69; *Polyodon folium*.)

Abundant in the Mississippi and Illinois rivers, and especially in the ponds and lakes in the bottoms of these streams. Rarely, if ever, ascending smaller streams, and not collected by us in any of the interior lakes. Not known from Lake Michigan. Hausman Bros., a firm of fishermen at South Chicago, reported the capture of a single specimen of this species in the Calumet river, probably an emigrant by way of the canal.

Class II. MARSIPOBRANCHII.

(THE MYZONTS.)

Order XII. HYPEROARTIA.

Family XXVII. PETROMYZONTIDÆ. (THE LAMPREYS.)

Genus 70. ICHTHYOMYZON, Girard.

SILVERY LAMPREYS.

131. *Ichthyomyzon argentus*, Kirt.—SILVERY LAMPREY.

(Bul. II, 70; *Ammocetes argentus*, *Ammocetes hirudo*.)

Collected by us chiefly in the Illinois and Ohio Rivers, attached to shovel-fish, cat-fish, sturgeon, buffalo, and other large species, as taken in the nets of the fishermen.

Genus 71. AMMOCETES, Duméril.

BROOK LAMPREYS.

132. *Ammocetes niger*, Raf.—SMALL BLACK LAMPREY.

A small species, which we have found only in small streams in the northern part of the State. Especially abundant in spring, at the spawning season.

SUMMARY AND CONCLUSION.

The especial characteristics of the fish fauna of the State as distinguished from other zoölogical areas, are the preëminence of the Catostomidæ and the Siluridæ, (the suckers and the cat-fishes,) and of the sunfishes, darters and minnows, the shovel fish and the various species of gars, and the dog-fish, are likewise among the characteristic features of our fauna, as is also the excessive abundance of the hickory shad.

The limited share of Illinois in Lake Michigan, not extending into water of more than twelve or fifteen fathoms, gives us but a small group of species peculiar to the great lakes: viz., the common white fish, the lake herring, the lake trout, the muskallunge, and the burbot.

NUMERICAL DATA.

It will be seen that the fishes of Illinois, as shown by this list, represent 132 species, which are here distributed among 71 genera and 27 families.

A cursory summary, in popular terms, of the number of species by which each leading family is represented, will have its interest to the general reader.

The largest family of our fishes is the perches (Percidæ), including the sunfishes, darters, and true perch. It is represented in our fauna by thirty-eight species and sixteen genera, nearly half of which (eighteen species) are the little darters, while the sunfishes (seventeen species) include most of the remainder. The next largest family is that of the true minnows (Cyprinidæ), represented by thirty-three species, distributed among sixteen genera. There are twelve species of cat-fishes, four of them the small stone cats, rarely seen by fishermen, and thirteen of the sucker family, four of them buffalo fishes. The sea bass are represented by two species; the sheepshead by one; the fresh water sculpins by one; and the codfish family by but one,—the burbot. There are three of the salmon family within our limits, all from the lake; one "blind" fish, one trout perch, four toothed minnows, three species of pike, and one each of the mud minnows, eels, sticklebacks, silversides, pirate perches and elasmoses. The lampreys are represented by two species, the shovel-fish by one, the sturgeons by two, and the gars by three. We have also the one dog-fish, two moon-eyes, one representative of the shad family, and the hickory shad.

DISTRIBUTION OF SPECIES.

A few brief notes respecting the peculiarities of distribution in Illinois will not be without interest. The extraordinary length of this State, from north to south, extending through nearly six degrees of latitude, the southern extremity lying in the southern (Austro-riparian) zoölogical region, and the northeastern corner covering a portion of the Great Lake area, gives us an unusual number of species whose range does not extend throughout our territory; some being strictly southern, others as strictly northern, and still others extending their range from the north southward, or from the south northward, without actually reaching the opposite extremity of the State. For the purpose of presenting these facts of distribution in a compact and summary manner, I append lists of species peculiar to the different parts of Illinois, so far as our present knowledge extends, it being taken for granted, of course, that my references to distribution relate only to Illinois.

The first list includes those species which are found in the northern part of the State, and do not occur to the southward, those found, that is, in Illinois north of the Illinois River on the parallel of Ottawa and La Salle.

The second list includes those northern species which extend more or less to the southward, but do not reach the hilly region of Southern Illinois beyond the Big Muddy River, or the valley of the Wabash south of Vincennes.

The third list includes the Southern Illinois species, which extend northward beyond the limits of the region just mentioned, but do not pass the Illinois River to the north beyond La Salle and Ottawa.

The fourth and final list includes those species which are confined to Southern Illinois, as above limited.

Two species, *Notropis macrolepidotus* and *Oxygeneum pulverulentum*, have occurred in the central part of the State, but not in either extremity, but as these are represented only by single specimens each, this fact has no geographical significance.

Another species *Umbri limi*, occurs in the two extremities of the State, but not in the center,—a peculiarity explained by the preference of the species for waters not occurring in Central Illinois.

NORTHERN.

Lota maculosa, *Perca americana*, *Etheostoma eos*, *Etheostoma lineolatum*, *Etheostoma zonale*, *Hadropterus evides*, *Gasterosteus incanctans*, *Esox nobilior*, *Fundulus diaphanus*, *Salvelinus namaycush*, *Coregonus artedii*, *Coregonus clupeiformis*, *Hydon alsoides*, *Squalius elongatus*, *Couesius prosthemus*, *Notropis anogenus*, *Hybognathus nubilus*, *Ammocetes niger*.

(*Eighteen species.*)

NORTHERN AND CENTRAL.

Lepomis gibbosus, *Lepomis ischyurus*, *Labidesthes sicculus*, *Percopsis guttatus*, *Rhinichthys astronotus*, *Pimephales promelas*, *Catostomus teres*.

(*Seven species.*)

SOUTHERN AND CENTRAL.

Roccus interruptus, *Etheostoma asprigene*, *Hadropterus phoxocephalus*, *Lepomis notutus*, *Lepomis humilis*, *Lepomis symmetricus*, *Notropis jejunus*, *Notropis lutrensis*, *Placopharynx carinatus*, *Ictiobus cyprinellus*, *Ictalurus marmoratus*, *Litholepis tristœchus*, *Scaphirhynchops*, *platyrhynchus*, *Polyodon spathula*.

(*Fourteen species.*)

SOUTHERN.

Etheostoma fusiforme, *Etheostoma flabellare*, *Diplesium blennioides*, *Lepomis garmani*, *Centrarchus macropterus*, *Elassoma zonatum*, *Gambusia patruelis*, *Chologaster papiliferus* *Platygobio pallidus*, *Eriocyma buccata*.

(*Ten species.*)

ECONOMIC RELATIONS.

Our most valuable food fishes are found chiefly in the perch and salmon families; in the former the common perch, the sauger, (or "jack salmon"), the wall-eyed pike, the crappies, and the two black bass; and in the latter, the white-fish, the lake trout, and the lake herring.

But little inferior to the perches are the two principal members of the pike family—the common pike and the muskallunge. Inferior but always salable species are found among the cat-fishes, the sucker family, and the smaller sun-fishes—the largest species of the first and the three buffalo-fishes being more generally and widely marketed than all other species together. Our river carp, a nearly worthless fish, included with the suckers, is not at all to be confounded with the European carp, the two belonging, in fact, to different families. The sturgeon, the sheepshead, the white bass, the striped bass, most of our sun fishes, and the burbot of the lakes are also generally eaten. Indeed, even the dog-fish and the shovel-fish are esteemed for food in some localities.

Briefly, we may say that of our one hundred and thirty-two native fishes, about twelve are of a superior quality; six at least,—the white-fish, the lake trout, the two pike perch, and the two black bass,—being among the best of all fresh water fishes. Eighteen others are of fair and always merchantable quality, and at least a dozen more are really to be classed as edible, although they are not always eaten.

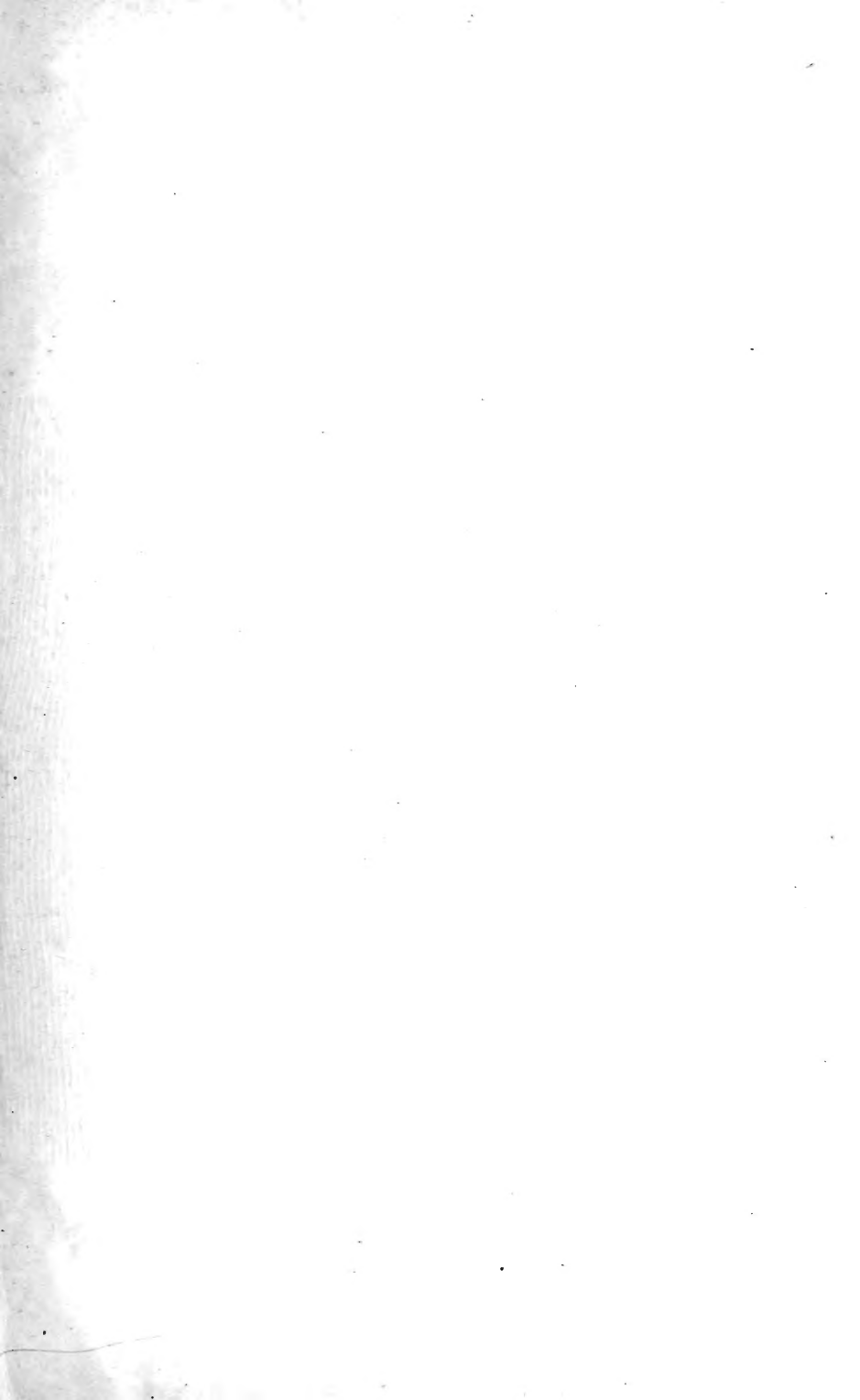
Besides these forty or more directly useful species, nearly all the others are to be considered indirectly valuable, as affording indispensable food to the edible kinds, especially to the best of these, the most highly prized game fishes. While it may be an open question whether some of the poorer food-fishes on our list do not more harm than good by appropriating food which would otherwise maintain a large number of their betters, the absolutely injurious species—those which inflict injury and render no benefit, direct or indirect, in return—are only the two lampreys and the three gars, the first being parasites and the others predaceous species which are never eaten themselves, either by fishes or by men.

I think that no one, with these facts in mind, can for a moment doubt that the native fish fauna of Illinois is well worthy of careful study and of most solicitous protection. Its value, present and prospective, now little understood, will become more and more evident as the people of the State become better educated in our local natural history, and will, in fact, rapidly appreciate as food becomes more costly, and as the intelligent and well directed efforts of our State Fish Commission bear their necessary fruit. It is the writer's own opinion that the preservation and improvement of our native fishes, already adapted to our climate, waters, and peculiar conditions of life afford a far more promising field of practical fish culture than the importation of foreign species, except, perhaps, the European carp.

CHAMPAIGN, ILL., December 30, 1884.







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