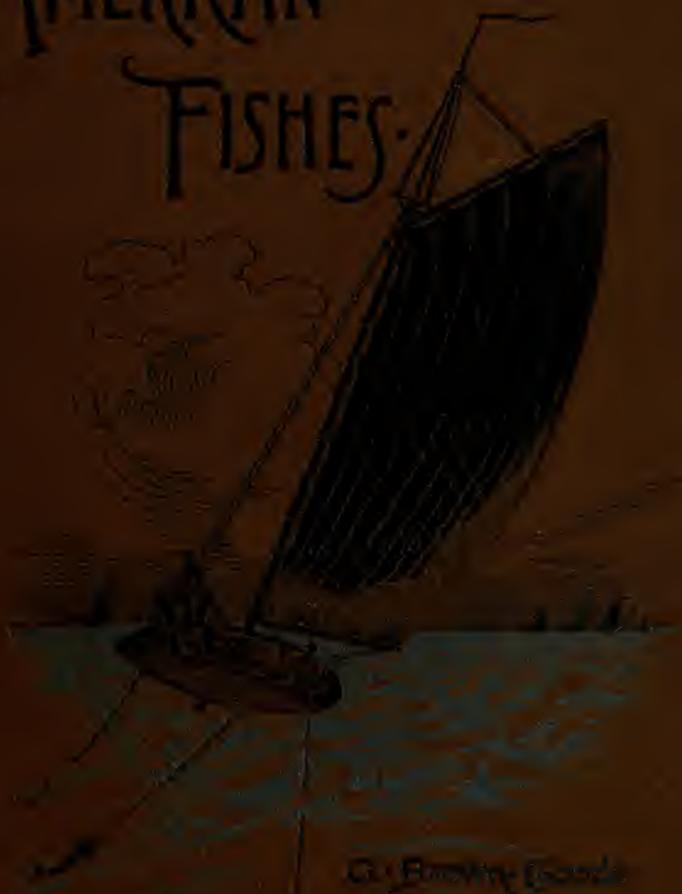


AMERICAN FISHES.



G. B. FISHING GUIDE



S. Quinlan

AMERICAN FISHES

A POPULAR TREATISE
UPON THE
GAME AND FOOD FISHES
OF
NORTH AMERICA

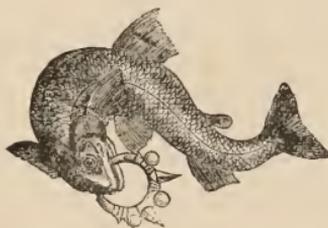
WITH ESPECIAL REFERENCE TO HABITS
AND METHODS OF CAPTURE

BY

G. BROWN GOODE

ASSISTANT SECRETARY OF THE SMITHSONIAN INSTITUTION IN CHARGE OF THE U. S. NATIONAL MUSEUM
LATE U. S. COMMISSIONER TO THE INTERNATIONAL FISHERIES EXHIBITIONS IN BERLIN
AND LONDON; AUTHOR OF "GAME FISHES OF THE UNITED STATES,"
"FISHERIES AND FISHERY INDUSTRIES OF THE
UNITED STATES," ETC., ETC.

WITH NUMEROUS ILLUSTRATIONS



BOSTON:
ESTES AND LAURIAT,
Publishers

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*L*A je recongnieu, sonnant sa grosse conche, Glauque, Protée, Nérée. et mille autres dieux et monstres marins. Veismes aussi nombre infiny de poissons, en especes diverses, dançants, volants, voltigeants, combattants, mangeants, respirants, belutants, chassants, dressants escarmouches, faisant embuscade, composants trefoes, marchandants, jurants, sèbuttants.

En un coing la pres veismes Aristoteles, tenant une lanterne, expiant, considerant, le tout redigeant par escript.

PANTAGRUEL, V., xxxi.



*Quis, nisi vidisset, pisces
sub undas natare crederet.*
LINNÆUS.

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PROLOGUE.

Ἡμεῖς μὲν ἰχθυολογῶμεν.

ATHENÆUS: *Deipnosophia.*

“COME, let us discourse about fish,” said Athenæus, in his “*Deipnosophia*,” and so said Mr. A. R. Hart, coming into my study last January. “Write us a book about fish and fishing in America,” he urged, and since, as it happens, I know more about fish and fishing in America than I do about anything else, I consented.

This volume has been prepared for the use of the angler, the lover of nature, and the general reader. It is not intended for naturalists, and the technicalities of zoological description have therefore been avoided; for the concise and precise phraseology of science, admirable though it be for the use of those who have been trained to employ it, is to others not only misleading, but it may be, repulsive.

I have aimed to include in my discussion every North American fish which is likely to be of interest to the general reader, either because of its gameness or its economic uses. All others are excluded, because, from the standpoint of scientific interest, every one of the seventeen hundred and fifty species indigenous to our continent has equal claim to consideration, and to discuss, or even casually mention them all, within the limits of a book of ordinary size, would be next to impossible. President Jordan’s recent pamphlet, entitled “A Catalogue of the Fishes Known to Inhabit the Waters North of the Tropic of Cancer, with notes on the Species Discovered in 1883 and 1884,” contains, with its indexes, 184 pages, and this is merely a list. His “Synopsis of the Fishes of North America,” which simply enumerates and gives brief diagnoses of the fourteen hundred or more species known in 1882, contains 1018 pages. The former of these works is published by the United States Fish Commission, the latter by the National Museum, and to these and to the numerous monographic papers published in the transactions of learned societies and scientific institutions in America and abroad, I would refer the student

who desires to make a serious study of the technical portion of American ichthyology. My own little library of works on fish and fishing is far from complete, yet it includes over two thousand volumes and pamphlets, and my "Bibliography of American Ichthyology," which I hope to publish within the next two years, comprises nearly ten thousand titles of books and papers. It is evident that it is impossible to make a book on American fishes which shall include more than a very small part, indeed, of what might be said upon the subject. I hope that the readers of this volume will feel that a judicious selection of topics has been made.

Only the most important species are referred to, and in the discussion of them all descriptive matters are omitted save those which relate to color. There is an Oriental proverb to the effect that, "Though the distance between the ear and the eye is very small, the difference between hearing and seeing is very great."

Acting in the spirit of this wise saying, a figure of almost every species* discussed is presented, by the aid of which any one interested in fishes can determine the correct zoological name of the form before him, and by referring to the accompanying text can learn what is known about its geographical range, habits, methods of capture and economical uses. Exact bibliographical references are given in footnotes, to direct the reader to fuller discussions of subjects referred to when there are such in existence.

In the preparation of this book constant use has been made of my own previous writings, and especially to the quarto work on Food Fishes, published by the Government in 1885. Upon that work, in fact, this one is based, being essentially a rearrangement in condensed form. The text has, however, been for the most part rewritten, and much new matter has been added. One of my chief motives in preparing this volume has been the desire to see some of the results of twenty years' study of fishes printed in substantial and dignified form, in a book which shall not look out of place on a library shelf; for it has been my lot hitherto to have all the products of my pen published in those dismal looking bunches of papers known as public documents, which of necessity must be classified among Charles Lamb's "books which are not books."

The author acknowledges his extended and continued indebtedness, in

* Nearly all of the figures of American species are copied from the figures in the publications of the U. S. Fish Commission, and, by the kind consent of Prof. Baird, the engravings have in most instances been made direct from the original drawings. The remainder have been copied from standard European authorities.

the first place to his teacher and master, Prof. Baird, and secondly, to his colleagues in the preparation of the quarto volume just referred to, especially to Dr. Jordan, Dr. Bean, Capt. Collins, Mr. Earll and Mr. Stearns. If in some instances the quotation marks have been omitted in connection with statements derived from their pen, it is simply because in the work of abridgment certain changes have been made in their phraseology, for which it seems hardly proper to hold them responsible. It is proper to say that all the biographies of the fishes of the Pacific, and the minor freshwater species, are due to Jordan, and that Stearns is equally responsible for what is said of the fishes of the Gulf of Mexico. With Bean the writer has long sustained a partnership in all matters ichthyological; with Collins and Earll similar relations in matters connected with the study of fishery economy, and in such associations it is not always possible to separate interests in such a manner as to place credit where it properly belongs. The classification followed is the system elaborated and advocated by Dr. Gill, undoubtedly the most erudite and philosophic of living systematic ichthyologists.

Perhaps some may feel aggrieved because there are no discussions of rods, reels, lines, hooks and flies, and no instructions concerning camping out, excursions, routes, guides and hotels. To such the author would say that he has at present neither time nor inclination to enter upon these subjects. Men who know them better than he have already written what should be written. Thaddeus Norris's "American Angler's Book" is an excellent guide in the selection and construction of tackle. Roosevelt's "Game Fishes of the North" and "Superior Fishing" are full of good suggestions, and Scott's "Fishing in American Waters," and even the work of Brown and Frank Forrester, are at times useful. Hallock's "Sportsman's Gazetteer" points out distant localities for sport to the few who are not satisfied with home attractions.

The files of "Forest and Stream," "The American Field" and "The American Angler" are treasuries which cannot be exhausted, and the back volumes of the monthlies, "Harpers," "Lippincott's" and the "Century" are full of finely illustrated essays, of interest to fishermen and anglers.

The English "Field," "Land and Water" and "Fishing Gazette" are also full of interest for Americans.

Prof. Mayer's "Sport with Gun and Rod in American Woods and Waters" is a charming and instructive book made up chiefly of reprinted magazine essays.

The Reports and Bulletins of the United States Fish Commission must not be overlooked, and the reports of the State Commissions, the reports of the Canadian Department of Fishery, the bulletin of the French Society of Acclimation, the circulars of the German Fischerei-Verein, and the publications of the London and Berlin Fisheries Exhibitions are worthy of study.

I do not think that the term "game fish" has ever been properly defined. It is generally supposed to apply to fishes which are active, wily and courageous, and whose capture requires skill or cunning—those, in short, which afford sport to the sportsman. As a matter of fact, although most food fishes are not game fishes, no fish which is not of the highest rank as a table delicacy is rated by Americans as a game fish. The barbel, the dace and the roach, the pets of the father of angling, classical in the pages of sportsman's literature, are despised by new world authorities, and are now considered "coarse fish" even by English writers. Yet they afford excellent sport—sport which in England tens of thousands enjoy to every one who gets the chance to whip a salmon or trout line over preserved waters.

"Game" in law and everyday usage is a term employed to describe wild animals—*feræ naturæ*, in which no man holds personal title of possession. Game birds are those which can only be obtained occasionally and with difficulty, and which, having been obtained, are worthy the notice of the epicure. Game fishes are rated in much the same manner, it appears to me. If not, why were the Pompano, the King-fish and the California Salmon and the Spanish Mackerel included among the twenty selected to be painted by Kilbourn for Scribner's atlas of the game fishes of the United States. Surely not because they afford sport to the sportsman. Some years ago I defined the term as follows:

Game fishes are those which by reason of the courage, strength, beauty and the sapidty of their flesh are sought for by those who angle for sport with delicate fishing tackle.

Now I should simply say that—

A game fish is a choice fish, a fish not readily obtained by wholesale methods at all seasons of the year, nor constantly to be had in the markets—a fish, furthermore, which has some degree of intelligence and cunning, and which matches its own wits against those of the angler, requiring skill, forethought and ingenuity to compass its capture.

Many writers, especially those of America, show a disposition to deny the rank of "game fishes" to all species which will not rise to a surface lure. This is illogical such, if it were strictly insisted upon, sheepshead and sea-bass would be counted out, while the shad and even the gar-pike must needs be allowed at least humble positions among the game fishes.

I hope that the readers of this book will freely communicate to me any new facts concerning American fishes, or any criticisms of erroneous statements, for use in preparing such fuller and better editions of this book as it may be decided in future to publish.

It is a great satisfaction to feel that this little volume will probably be the companion of men whom I know, or should like to know, in numerous delightful excursions to lake, brook and sea. In closing this prologue I feel disposed to repeat the prayer at the end of Walton's immortal pastoral: "That the blessing of St. Peter's master be upon all that hate contentions, and love quietnesse, and virtue, and go a-angling."

G. B. G.

SMITHSONIAN INSTITUTION,
WASHINGTON, Dec. 1, 1886.

IN vain had God stor'd Heav'n with glistening studs,
The plain with grain, the mountain tops with woods,
Sever'd the Aire from Fire, the Earth from Water,
Had he not soon peopled this large Theatre
With living creatures : therefore he began
(This-Day) to quicken in the *Ocean*
In standing *Pools*, and in the straggl'g *Rivers*
(Whose folding Chanell fertill Champain severs)
So many *Fishes* of so many features
That in the Waters one may see all Creatures
And all that in this All is to be found :
As if the World within the Deeps were drown'd.

One (like a Pirat) onely lives of prizes,
That in the Deep he desperately surprises ;
Another haunts the shore, to feed on foam :
Another round about the Rocks doth roam,
Nibbling on Weeds ; another hating theeving,
Eats nought at all, of liquor onely living :
For the salt humor of his element
Serves him, alone, for perfect nourishment.

Some love the clear streams of swift tumbling torrents.
Which through the rocks straining their struggling currents
Break Banks & Bridges ; and do never stop
Till thirsty Summer comes to drink them up ;
Some almost alwaies pudder in the mud
Of sleepy Pools, and never brook the flood
Of Chrystall streams, that in continuall motion
Bend toward the bosom of their Mother Ocean.

O watry Citizens, what Umpeer bounded
Your liquid Livings ? O ! what Monarch wounded
With walls your City ? what severest Law
Keeps your huge armies in so certain aw,
That you enroach not on the neighboring Borders
Of your swim-brethren ?

What cunning Prophet your fit time doth show ?
What Heralds trumpet summons you to go ?
What Guide conducteth, Day & Night, your Legions
Through path-less Path in unacquainted Regions ?
Surely the same that made you first of Nought
Who in your Nature some *Ideas* wrought
Of Good and Evil ; to the end that we
Following the Good might from the Evil flee.

Du Bartas His First Week ; or The Birth of the World, 1005

chub and he, have, I think, both lost part of their credit by ill cookery. they being reputed the worst or coarsest of fresh-water fish. But the barbel affords an angler choice sport, being a lusty and a cunning fish—so lusty and cunning as to endanger the breaking of the angler's line, by running his head forcibly towards any covert or hole or bank, and then striking at the line, to break it off with his tail, as is observed by Plutarch in his book "De Industriâ Animalium," and also so cunning, to nibble and suck off your worm close to the hook, and yet avoid letting the hook come into his mouth."

The Barbel, *Barbus fluviatilis*, the Barbe of Germany, the Barbeau of France, has no representative in America, though Günther recognizes over two hundred species in the tropical and temperate parts of the Old World, some of which are of considerable economic importance. The "Mahaseer," *Barbus tor*, which inhabits the mountain streams of India, attains sometimes the weight of one hundred pounds and the length of six feet, and has scales as large as the palm of a man's hand. It is the largest of all cyprinoids and its introduction into the United States might be advantageous, since when under twenty pounds in weight this and other Indian forms are said to be excellent food.

The English Barbel is one of the coarsest of their "coarse fish," and is not needed in America. It is, however, quite as highly esteemed in England as our chubs and suckers are on this side of the Atlantic. Its habits are indeed not unlike those of our suckers or catostomoid fishes, and the methods of Barbel angling may yet be adopted in America for the fishes of this group. From the angler's standpoint, also, the Barbel is perhaps more like our "suckers" or *Catostomidæ* than any other European species. The *Catostomidæ* are, however, not represented in the Old World, although they are so numerous in North America that no stream or river is without them.

The suckers, like the American representatives of the carp family, have suffered unjustly at the hands of Prof. Jordan, who is the principal authority as to their scientific affinities, and who, in the midst of his discussions of fin-formulæ and pharyngeals, never loses an opportunity to denounce them as unfit to eat. I can only account for his hatred of these fishes by the fact that he has handled so many thousands of specimens badly kept in alcohol, that he has acquired a loathing for them in any condition. Conceding to him a thorough knowledge of cyprinology and

catostomology, I impeach him as a gastronomist. If he ever is a candidate for election to the Ichthyophagous Club, I hope I may have the privilege of casting a black-ball. He does not know what fish are good to eat, or, at any rate, is a bigoted disciple of the *Salmonidæ*.

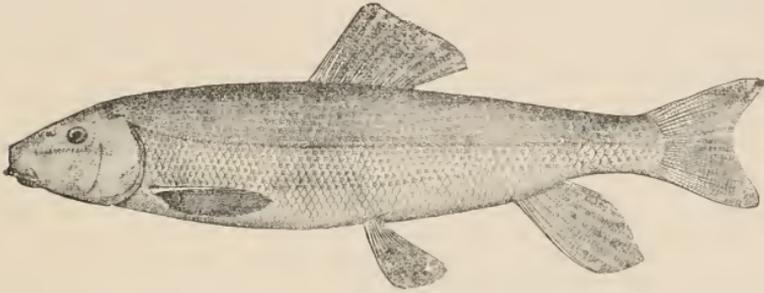
For the benefit of our river fishermen I quote two recipes in favor in England for preparing the drier cyprinoids for table use.

“After being scaled and cleaned, they should be cut open like haddocks, well peppered all over, and then a good handful of salt rubbed in; let them lie in this all night. In the morning hang them up in the sun all day, to let them dry; fry them in the evening, with as little lard or butter as practicable, and eat them cold for breakfast. If you try it, I think you will say they are an excellent relish for breakfast, and nearly as good as anchovies. The secret lies in well drying them in the sun, and eating them cold.

“Although the Chub is generally a much despised fish, he is capable during the days of winter, the colder and more frosty the weather the better, of being elevated to a dish by no means despicable. At a dinner recently I was ‘helped twice’ from a *plat* of this fish, not knowing what it was composed of, and being induced by its delicious flavor to commit this solecism. When told that I had been regaling so earnestly upon chub from a neighboring stream, and expressing my desire for the recipe, my hostess very kindly upon my quitting gave me the following, telling me at the same time, she had received it while residing in Italy, from a Jewish family: ‘Take four or five large onions, boil them until they give to the pressure of the spoon, slice them: take the back bone out of the fish, and cut it, if large, into pieces of 3 inches or 4 inches; strew equally over the bottom of a stew-pan a little ginger in powder, salt and pepper; place the fish on these, and almost cover the fish with fresh water, then the sliced onions over all; put the lid on close, and let it simmer gently till all is done. While this is proceeding beat up the yolks of four eggs, with a good quantity of parsley chopped very fine, and a little of the liquor from the stew-pan, and while it is amalgamating, squeeze the juice from two lemons into it, very gradually, or the juice will curdle the eggs. Take up the fish with the onions upon it in a deep dish, and pour the mixture over it.’ I ought to add that I tasted the dish again when cold next morning at breakfast, and that it had lost nothing of its relish, and I do not think that many who sat down before it without prejudice would come to any other than such a favorable conclusion. Perhaps vinegar instead of lemon might cheapen the dish, but as the recipe is given, it may be classed as economical.”

The common “Brook Sucker,” *Catostomus Commersoni*, or the “White Sucker,” is the most familiar and generally abundant of the group. It

inhabits all bodies of water, large and small, from New England to Colorado. In the great lakes it reaches a length of two feet or more. In small brooks it is mature at eight or ten inches. It varies much in size, color and form in the different streams. It bites freely, and is one of the fishes with which the unambitious brook angler is well contented. When taken out of clear water, properly cared for and well washed, it is an excellent pan-fish, like most of its kind.



THE BROOK SUCKER—*CATOSTOMUS COMMERSONI*.

All the lakes and rivers of the Rocky Mountains and the Pacific slope, says Jordan, are inhabited by species of this genus, or of the allied genera *Chasmistes* and *Pantosteus*. In Utah Lake, said to be the "greatest Sucker-pond in the world," are found *Catostomus fecundus* and *ardens*, *Chasmistes liorus* and *Pantosteus platyrhynchus*, all in abundance. In Lake Tahoe *Catostomus tahoensis*; in the Sacramento *C. occidentalis*; in the Columbia *C. macrochilus*; in Klamath Lake *Chasmistes luxatus* and *Ch. brevirostris*, abound, while in the great lakes and all waters thence to Alaska and Arctic Ocean *C. longirostris* is an important food-fish.

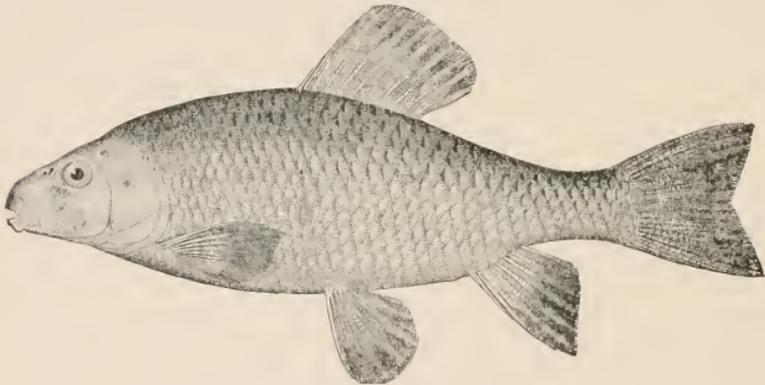
The "Stone-roller," "Hog Sucker," "Stone Toter" or "Hammer-head Sucker," *Catostomus nigricans*, abounds in most waters from the great lakes southward. The Stone-roller is extremely abundant in every running stream in the North and West, where its singular, almost comical form is familiar to every school-boy. It delights in rapids and shoals, preferring cold and clear water. Its powerful pectorals render it a swifter swimmer than any other of its family. Its habit is to rest motionless on the bottom, where its mottled colors render it difficult to distinguish from the stones among which it lies. When disturbed it darts away very quickly, after the manner of the etheostomoids. They often go in small schools.

I have never found this fish in really muddy water. Although called the "Mud Sucker" in the brooks, it is most characteristically a fish of the running streams. This species reaches a length of about two feet, and is often caught in its spawning season by means of a spear or snare. It is, like *C. commersoni*, a "boy's fish," and not worth the eating.

It is hardy in the aquarium, and like its handsome cousin, *Catostomus melanops*, the Striped Sucker is recommended for domestication by Cope.

The suckers afford sport of an exciting kind to those who know how to capture them with snares of horse-hair or fine wire. I have thus caught them in Dutchess County, N. Y., where this method is greatly in favor.

Vast quantities are taken in the sluiceways of dams, and by spearing by torch-light or "weequashing."



THE CHUB SUCKER—ERIMYZON SUCCETTA.

The "Chub Sucker," *Erimyzon succetta*, the "Sweet Sucker" or "Creek-fish," is one of the most abundant and widely diffused of the Suckers, being found from Maine to Texas. It is one of the smallest species, reaching a length of little more than a foot. A closely related species abounds in Florida, where it was first collected by the author, and has been named by Jordan *Erimyzon Goodei*. Hallock says that the "Chub-sucker" is often called the "Barbel."

The Black Horse, *Cycleptus elongatus*, also called "Missouri Sucker," "Gourd-seed Sucker," "Suckerel" and "Shoenaher" is found in the river channels of the Ohio and Mississippi. It reaches a considerable size, weighing sometimes fifteen pounds, and is said to be a much finer

fish in flesh than any other of its family. It is common in the Pittsburg market.

The different species of the genus *Carpiodes* abound in all the larger bodies of water south and west of New York as far as the Rio Grande. They reach a weight of four or five pounds. In Virginia and elsewhere they go by the name of "Carp," as they have done from the earliest days of the English occupation. Though fairly eatable, they are not equal to the Carp, and are less prolific, less rapid in growth, and most of all, not accustomed to domestication. The term American Carp should be abandoned, and when characteristic local names are not in use, the name "Carp-sucker" is recommended for adoption.

Carpiodes velifer, the "Spear-fish," "Sail-fish," "Quill-back" or "Skim-back" of the Ohio River, is a fish often seen in the markets.

Carpiodes cyprinus, the "Carp" of the Susquehannah, is abundant east of the Alleghanies from New York to Alabama. It is a common and acceptable food-fish in Pennsylvania, attaining a weight of two or three pounds. It is the "Carp" that is abundant in the Mattapony and Pamunky Rivers in Virginia.

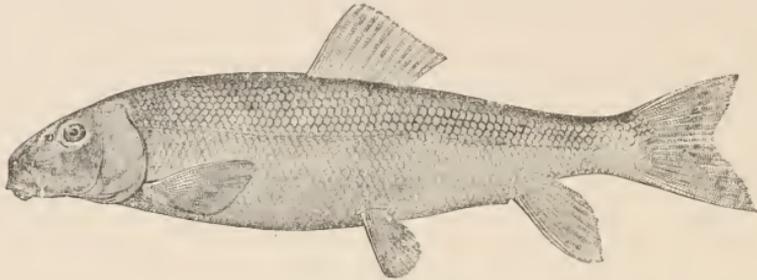
The "Red Horses" belong to the genus *Moxostoma* and the related *Minytrema* and *Placopharynx*, and usually have their lower fins bright red. They are useful and palatable food-fishes, although our writers have persistently underrated their value.

They are spring spawners, and when dams and other obstructions do not forbid run up to the head-waters to breed. It is of the utmost importance that fish-ways should be built over every dam on the continent, for already the streams have been drained, not only of the game fishes, local and anadromous, but of most of the humbler forms, which supply food to the carnivorous water-aristocrats, and render trout and bass culture possible.

The most familiar member of this group is the "Brook Mullet," *Moxostoma macrolepidotum*, also called "Red Horse" in Pennsylvania, and elsewhere, and pretty generally distributed east of the Rocky Mountains, except in Eastern New England. The form which occurs in the Ohio and Missouri has a larger head and larger mouth, and is generally catalogued as a variety or sub-species *Duquesnii*. This form is shown in the cut, which represents a specimen from Ecorse, Michigan.

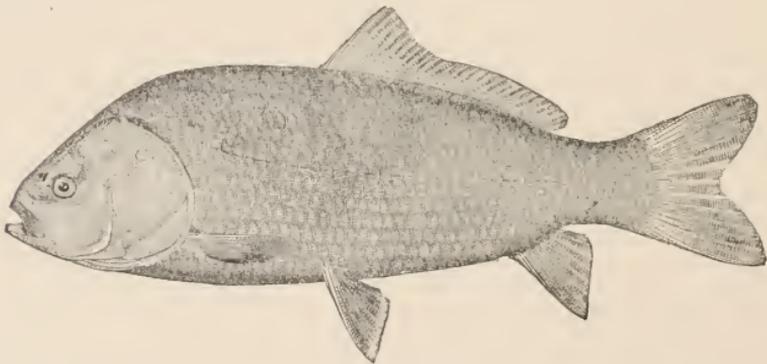
The eastern form occurs in the Great Lakes, together with the allied

M. aurcolus, and is common in the markets. Philadelphia receives a large supply from the Susquehanna and the Delaware. It is sometimes called the "Lake Shad." There are four species of good size in the Catawba and other streams of the Southern Alleghanies. The Mulletts and the Red Horses sometimes grow to the weight of four pounds.



THE WESTERN RED HORSE.

The "Buffalo-fish," *Bubalichthys*, so called from the bull-like hump on the nape, are found mainly in the river channels of the Mississippi and its tributaries. They are the largest of the Suckers, reaching a weight of fifteen pounds or more. In the Mississippi and Ohio Valleys they form a large percentage of the food-fish consumed. They usually bring a better price than the smaller Suckers, excepting the Black Horse. The Buffalo-fishes are found by Prof. Forbes to feed on small crustaceans more than do the other Suckers, and less on mollusks.



THE BUFFALO FISH.

Icthyobus bubalus, is abundant in the larger streams of the Mississippi

Valley, growing to a weight of twenty or thirty pounds and a length of three feet.

Bubalichthys urus, of Agassiz, occurs in the same waters, and is called the Big-mouth Buffalo. In the Ohio and Mississippi Basins it is used very extensively for food, and grows to weigh fifty pounds or more.

Bubalichthys altus, which, like *I. bubalus*, is a small-mouth species, is distinguished by its smaller head and other characteristics. (See Jordan's "Synopsis," p. 116.)

The name "Gaspergou" is shared by these fishes with the fresh-water Drum.

The only angling book which tells how to catch Buffaloes is a very old one, that of Brown. A bottom line of good strength and heavily leaded is used, and the bait prescribed is a wad of soft cheese and raw cotton.

The "Rabbit-mouth Sucker," *Quassilabia lacera*, "Hare-lip," "Split-mouth" or "May-sucker" is found in abundance in many rivers of Tennessee and in some streams in Ohio. It reaches a length of about eighteen inches, being one of the smaller species, but its qualities as a food-fish are said to be better than usual in this family.

The name "Sucker" has acquired a special and by no means complete significance in the colloquial language of the United States, being applied to worthless fellows, and especially to toppers. The allusion is doubtless to the slow, greedy habits of the fishes of this family.