

WESTERN RESERVE AND NORTHERN OHIO
Historical Society.

SH 34
.G3
Copy 1

...NATED BY

Feb

207
670
8-17-

ERS

ON THE

Y OF FISH BREEDING

IN THE

UNITED STATES,

AND

HYBRIDIZATION OF FISH;

READ BEFORE THE

KIRTLAND SOCIETY OF NATURAL SCIENCES,

AND THE

NATIONAL SPORTSMANS' ASSOCIATION,

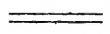
At Cleveland, Ohio,

1875.



BY

DR. THEODATUS GARLICK.



CLEVELAND, O.:
FAIRBANKS, BENEDICT & CO., PRINTERS, HERALD OFFICE,
1875.

SH34
G3

Exchange
West. Res. Hist. Soc.
1915

PAPERS ON THE PRIORITY OF FISH BREEDING.

FISHY.

The report of Prof. S. F. Baird, Assistant Secretary of the Smithsonian Institute and United States Fish Commissioner, concerning the operations of the Commissioners on Fish and Fisheries for the years 1872 and 1873, is a very interesting document. Portions of the information contained in it have from time to time been given to the public, but the report as a whole is none the less readable on that account.

We shall endeavor to find space at an early date for some of the more important portions of the report we have not already published, but our object just now is to call attention to one point in the document which opens up a historical question of local as well as general interest. Professor Baird says, on the authority of the *Southern Cultivator*, that Rev. Dr. John Bachman, of Charleston, S. C., as early as 1804, at the age of fourteen, impregnated and hatched the eggs of trout and other fishes. This has been questioned by some, but Dr. Slack, in his work on trout culture, remarks that Dr. Bachman's reputation as a Christian and a naturalist is too well established to permit us to doubt his word. It is not pretended, indeed, that the idea was original with him, but he probably found in the work of Duhamel Du Monceau the account of the methods of Jacobi, and imitated them. Professor Baird then goes on to say that "in 1853 Dr. Theodatus Garlick and Prof. Ackley established a fish farm near Cleveland, Ohio, the result of their experience being published in Dr. Garlick's work, entitled 'A Treatise on the Artificial Propagation of certain kinds of Fish; Cleveland, Ohio, 1857.'"

Now we would like to hear Dr. Garlick on this question of priority of fish culture in this country. We are of opinion he will not subscribe to Dr. Slack's and Prof. Baird's view in regard to Dr. Bachman's claims. We have always regarded Dr. Garlick as the original fish breeder in the United States, and we should like to hear what he has to say concerning this attempt to deprive him of the honor.—*Cleveland Herald*.

BEDFORD, O., Dec. 9, 1874.

EDS. HERALD: In your paper of to-day I notice an article taken from the report of the U. S. Fish Commissioners, in which Prof.

Baird gives to the Rev. John Bachman, D.D., of South Carolina, the credit of being the first person in this country to breed fish by artificial fecundation.

Prof. Baird does this on the authority of the *Southern Cultivator*, and what Dr. Slack says in his work on trout culture, to-wit: "Dr. Bachman's reputation as a Christian and a naturalist is too well established to doubt his word." Inasmuch as you desire a response from me I shall comply, though with some feeling of reluctance, for the reason that Dr. Bachman is dead. I trust, however, that I as fully recognize as I should that good and charitable Roman proverb, "*De mortuis, nil nisi bonum.*" No one hesitates to speak of Arnold or Robert E. Lee as traitors, though dead.

The *Southern Cultivator* is not authority to settle this question, nor is Dr. Slack's short-hand logic any better. I shall offer Dr. Bachman's statement, as published in the *Southern Cultivator*, for the consideration of your readers, and for the consideration of fish breeders in particular. I care not a fig for what Dr. Slack says; for aught Dr. Slack knows, I may be as much of a Christian and naturalist as Dr. Bachman, though I set up no such claims, nor wish it done for me. When I can present no better claims for priority than Dr. Slack offers for Dr. Bachman, I will surrender. But to the question at issue.

In 1855 Dr. Bachman read a paper before the South Carolina Agricultural Society, at Columbia, which was published in the *Southern Cultivator*. I reviewed Dr. Bachman's paper in the *Ohio Farmer*, with some strictures, greatly to the annoyance of some of my most esteemed friends, and added that review to my little book as an appendix, and do not to-day take back a single word or sentence of that review.

If Dr. Bachman placed himself in a false position let him take the consequences. As for his Christianity, all I know about it is that he opened the secession convention by praying most fervently for the destruction of the best human government the world has ever seen, and for the building up of a slave oligarchy, which establishes, in Dr. Slack's opinion, his soundness as a Christian beyond all doubt. This being done, we will try him as a naturalist. Dr. Bachman made the following statements in his paper, above alluded

to. In 1804 he fecundated the ova taken from dead fishes, known as the "Corporal," which had been dead several hours, and hatched them; and further states that he fecundated the ova taken from dead brook trout, in the month of August, which was at least one month before they were mature, and hatched them; and more yet, he fecundated the ova taken from the perch, and after drying them for ten days, he hatched quite a number of young perch. Are we not to doubt such statements as these? Dr. Slack says, no.

Let Let Dr. Slack make these same experiments, and if he succeeds, as Dr. Bachman says he did, then let him try his hand at fecundating *addled* ova; he will succeed in the latter case, as well as the other cases. Try it, Dr. Slack, and report. Dr. Bachman further states in his paper, that in 1838, (I think it was,) he read a paper before a scientific society in London, in which he detailed these experiments. The proceedings of that society are now, or were, in the Smithsonian Institute.

I wrote to Prof. Baird, asking him to examine the reports of that meeting. Prof. Baird wrote me that he had examined the reports of the proceedings of that meeting, and no mention was made of such a paper as Dr. Bachman said he had read before that meeting. Strange *omission*—that such a paper—such a subject—so new, so valuable, should be *omitted* in their published proceedings. It is enough to make a Yankee hate John Bull. Dr. Bachman was careful to state in his paper, read at Columbia, that he was a boy when he made these wonderful experiments, and that he had never seen, nor did he know, that any book had ever been written on fishes; so you see that Prof. Baird's statement, that the boy Bachman had probably seen the work of Duhamel Dumonceau falls to the ground. It was, therefore, *original* with the boy Bachman, if we are to take Dr. Bachman's word, and Dr. Slack says we must not doubt it.

On the 21st day of November, 1853, (*not August*.) I artificially spawned and fecundated the ova from brook trout. On the 22d day of January, 1854, I found the first young trout hatched from these ova—just fifty years after the boy Bachman had done the same thing, with ova taken from dead trout in the month of *August*.

Very truly yours,

THEODATUS GARLICK.

Dr. Garlick replies to Prof. Baird on the subject of priority in artificial fish breeding, in a communication which will be found spicy reading by naturalists. The Doctor's letter will probably act as a stick thrust into a hornet's nest, and there undoubtedly will be

a buzzing. It is Prof. Baird's turn now to have the floor, and we wait his answer to the pointed statements of Dr. Garlick. As the case stands now the Doctor has very clearly the advantage of the Professor.—*Herald*.

BEDFORD, O., Feb. 2, 1875.

EDS. HERALD: Will you oblige me by publishing in your paper the following statement, which I intend shall be my final answer to Prof. S. F. Baird's Reports on Fish Culture, in which he gives to the Rev. John Bachman, D. D., of Charleston, S. C., the priority of fish breeding in this country. I have before me the first volume of the *Southern Agriculturist* for the year 1853, edited by Col. A. G. Sumner, and published at Laurensville, S. C. The March number contains an article on fish culture, taken from the *National Intelligencer*, by their Paris correspondent. The article is prefaced by a lengthy editorial, setting forth the importance of the discovery, etc. The article is simply the report of M. Milne Edwards, giving in detail the discoveries and experiments of the two Vosgien fishermen, Gehen and Remy, and no further allusion is made to that subject, by any one, in that paper. The reader will please notice right here that Dr. Bachman was writing original articles at that time (1853) for that paper on Roses, and other subjects.

Is it not remarkable that not a word or sentence is said or written by Dr. Bachman on this subject, either in that or any other paper at that time?

Two years afterwards he read a paper before the State Agricultural Society of South Carolina, at Columbia, stating that he had made the same experiments in 1804, differing only in this. He took ova from fishes which had been dead for several hours, and fertilized them, and hatched fishes from them. The fish was known as the Corporal. He also said that he took ova from dead trout in the month of August, which was before they were mature, and fertilized them, and hatched young fishes from these ova, and on the following spring he ate a fine trout breakfast from these young trout; and wound up his experiments by fertilizing the ova of the perch, and after drying them for ten days hatched perch from these dried ova.

Is it not astonishing that he did not remember these miraculous experiments when he saw the article on fish culture in the *Agriculturist*, for he must have seen it, as he was writing for that paper at that time? Two years afterwards his memory seems to have become remarkably refreshed, and he remembered very minutely all his experiments, in 1804, made in his boyhood, and made the subject of his paper read at Columbia in the fall of 1855, and published in

the *Southern Cultivator*, of the city of Charleston.

Early in 1853 I saw the same article on fish culture that was published in the *National Intelligencer* and copied by the *Agriculturist*, and it struck my fancy exactly, and I went to work at once, and worked hard—spent much valuable time, and some thousands of dollars in money, and demonstrated the practicability of artificial fish culture, without a hope, or wish, for any pecuniary reward, and exhibited at two of our State Fairs, (at Cleveland and Cincinnati,) old and young brook trout, alive in glass tanks, and I confess that I do not relish the idea of being defrauded out of what little credit there may be in being the first person in America to breed fish by artificial fecundation. Moreover the Chief of the United States Fish Commissioners ought to know better than to endorse such monstrous absurdities as Dr. Bachman states in his paper, read at Columbia, as it is calculated, as it has, to lead new beginners astray—no matter if Prof. Baird says that “Dr. Slack has well said, that Dr. Bachman’s character is too well established as a Christian, and as a naturalist, to doubt his word,” as it does not prove Dr. Bachman’s priority.

I ask no man to take my word on the question of priority. If Dr. Bachman states the truth in his paper above alluded to, he anticipated the two Vosgien fishermen by fifty years, but never made known his experiments for fifty-one years. I made my first experiments in the fall of 1853. On the 26th of November of that year, I artificially spawned and fecundated the ova taken from living brook trout, and on the 22d of January, 1854, I found my first young trout, and described these experiences in a paper read before the Cleveland Academy of Natural Science, February 17th, 1854, and that paper was immediately published in the *Annals of Science*, and other papers.

In 1854 I commenced a series of articles on artificial fish culture, which were published in the *Ohio Farmer*, illustrated with wood-cuts—these articles extended into 1855. The *Ohio Farmer* exchanged with the *Southern Cultivator*, of Charleston, where Dr. Bachman saw and read them, and I may add, plagiarized from my articles, as I will show. In the fall of 1855 Dr. Bachman read his paper, alluded to above, on fertilizing ova from dead fishes, and dried ova; which paper was published in the *Southern Cultivator*, published at Charleston, South Carolina, which Prof. S. F. Baird accepts as authority, for, according to Dr. Bachman, the priority of artificial fish culture in this country. If Bachman fertilized the ova, taken from fish that had been dead for several hours, beyond all doubt he fertilized dead ova, and it is to

be inferred, too, that the male fishes were also dead, from which the spermatic fluid was obtained to fertilize the dead ova, or ova taken from dead fishes. Dare Prof. Baird announce over his name, that he believes these statements of Dr. Bachman’s are true? I have charged Dr. Bachman with plagiarizing from my articles in the *Ohio Farmer*, and I here place side by side extracts from Dr. Bachman’s paper, alluded to above, and one from one of my articles in the *Ohio Farmer*:

<p><i>From the Ohio Farmer.</i> “The distance the water has to pass, is greatly increased, by putting in a flume zig-zaged as shown in the cut.”</p>	<p><i>From Dr. Bachman’s Paper.</i> “This (the spring) we conducted to the pond in zigzag lines, by which the distance was increased.”</p>
--	--

What a remarkable coincidence and for a boy of fourteen; and he did all this just one year before I was born.

I most cheerfully accord to Dr. Bachman originality, in fertilizing ova from dead fishes and ova that have been dried for ten days, and to Prof. Baird, immense credulity for believing such stuff.

THEODATUS GARLICK.

PAPER BY DR. GARLICK,

Read before the National Convention for the preservation of Game and Fish, June 8th, 1875, at Cleveland, Ohio.

The following paper on “Hybridization of Fish,” prepared by Dr. Garlick, was read by Mr. Brinsmade, in the absence of its author, who was detained by reason of illness:

MR. PRESIDENT AND MEMBERS OF THIS ASSOCIATION: I have been requested to read a paper on the subject of fish culture at this meeting. It is scarcely necessary for me to say that the subject has been written upon extensively, and is very well understood by a majority of the people throughout our country, therefore you will not expect anything new on this subject.

In the year 1857 I wrote and published a work on artificial fish breeding, based mainly on my own experiments. Being quite an enthusiast on anything that strikes my fancy, I expected to see in a very short time every man who had a suitable place for such a purpose raising his own fish. I need not tell you that I was very much disappointed, for the subject lay “flat as a flounder” for many years.

It is quite different now, for not only several States but the general government have taken hold of it extensively, and made liberal appropriations of money to restock our impoverished streams and lakelets, establishing breeding houses and other suitable improvements for facilitating the objects of the enterprise, and employing eminent men—men of science and practical fish culturists—

to do this work. If you will read Prof. Baird's reports, you will see that a vast amount of work has been done, and no doubt will be done, and a very few years will prove the great importance of this branch of human industry, in fact it is already proven.

I propose to offer for your consideration the hybridization of certain kinds of fish, and, although not entirely new, I am able to present some facts not generally known.

They are contained in a paper that I read, or rather caused to be read, for I was sick at the time, before the Kirtland Academy of Natural Science at Cleveland, February 3d, 1873. It will be seen that this paper which I offer for your consideration is over two years old, and has been used; but the "autocrat of the breakfast table" remarked at his fifth breakfast, that "certain things are good for nothing until they have been long kept, and other things are good for nothing until long kept and used; of the first is wine, and among the latter are poems, violins, and meerschau pipes." As this paper has not been long kept, nor much used, it should not be expected to have improved much by age or use.

The hybridizing of both plants and animals has been long practiced by naturalists, and one eminent statesman of our country suggested the idea of extinguishing an entire race of men in our own country by cross-breeding, or, as he termed it, "the bleaching process." In proof of his sincerity it is said that he practiced what he preached. I do not, however, propose to carry hybridizing to that extent—only applying the principle to fishes.

In the pages referred to I have only mentioned fishes of the Salmon family for hybridizing, and I have not a doubt but what this has been accomplished in several species of the Salmon family, both by the aid and without the aid of man. That it has been achieved by the aid of man, there can be no doubt whatever, and I am equally certain that it has occurred spontaneously, as detailed in the following paper

If it can be accomplished with different species of Salmon, there can exist no reasonable doubt it can be done with other families of fishes of the same genus, such as Perch, Pike, Bass, and other kinds of fishes.

It should not be expected that all attempts at hybridization shall prove to be successful, nor that in every instance the hybrids would be an improvement in size or quality, of the parent fishes; though in Mr. Hanson's hybrids the quality was greatly improved; and so are the hybrids of Lake Superior, as I can bear testimony, having eaten frequently of the hybrids, and of the parent fishes. In case the parent fishes from which you wish to breed hybrids, do not spawn precisely at

the same time. Mr. Hanson's method may be adopted, but such persons as believe Dr. Bachman's statements should try his methods of "drying the eggs for ten days" or even for a hundred days, for I apprehend that ten or a hundred days of drying them will make no difference in the result.

I will only add a little scrap of history furnished me recently by Prof. J. P. Kirtland, which I think will interest all fish culturists. It is an extract from Peter Kalm's travels in North America, November, 1748, vol. 1, p. 289, London edition, Fleet street, 1772. Translated by John Reinholdt Fostor.

"Mr. Franklin (Dr. B. Franklin) told me, that in that part of New England where his father lived, two rivers fell into the sea, in one of which they caught great numbers of herrings, and in the other, not one. Yet the places where these rivers discharge themselves into the sea were not far asunder. They had observed that when the herrings come in the spring to deposit their spawn, they always swam up the river where they used to catch them, but never came into the other. This circumstance led Mr. Franklin's father, who was settled between the two rivers, to try whether it was not possible to make the herrings likewise live in the other river. For that purpose he put out his nets as they were coming up for spawning, and he caught some. He took the spawn out of them, and carefully carried it across the land into the other river. It was hatched and the consequence was, that every year afterwards they caught more herrings in that river; and this is still the case. This leads one to believe that the fish always like to spawn in the same place where they were hatched, and from whence they first put out to the sea, being, as it were, accustomed to it."

Very correct Mr. Kalm, all observations since that time shows that you were a close observer. Peter Kalm was a Swede, an eminent botanist, and the favorite student of Charles Linnaeus, the great botanist. Our beautiful *Kalmias* (the Laurel) was named after Peter Kalm.

It appears by this little bit of history that Doctor Benjamin Franklin's father was the original artificial fish breeder in this country, and Doctor Bachman and myself must go down to the foot. He was not only the first man that made the attempt of artificial fecundation of the ova of fishes, but the idea was original with him, and this more than a century and a quarter ago. I am glad to know that an American citizen can claim this honor, and he the father of our own Doctor Franklin.

At a meeting of Cleveland Academy of Natural Science, held February 17th, 1854, I read a paper on the artificial propagation of fish. In that paper I detailed my experi-

ments with the *Salmo Fontinalis* (brook trout). Those experiments were eminently successful, and probably the first attempt ever made in this country to breed fish by artificial impregnation. This has been repeatedly done since that time, on a large scale, in different parts of the country, and with several different kinds of fish, with entire success. Several State governments, and I believe the General Government, have made considerable appropriations, and appointed fish commissioners for the purpose of re-stocking our impoverished rivers, and of introducing fishes of different kinds from other localities, so that it may be said, at this time, that fish raising is a well established branch of our industries; and yet I feel justified in saying that it is only in its infancy.

The time is not far distant when every available spring and rivulet will be used, to some extent at least, for this purpose; and we may look for new discoveries and improvements. Among these will be hybridizing, or cross breeding of the different species of the same genus of fishes, to which I wish to call your attention at this time.

In the year 1858, and for some years after, I spent a portion of the summer and fall seasons at Ontonagon and other parts of Lake Superior. At Ontonagon the fishermen were taking large quantities of fish, by means of gill nets set in deep water (700 to 900 feet deep) in Lake Superior. Among the fish so captured were the *Salmo Amethystus* (great lake trout), *Salmo Siskawit* (Siskawit trout), and that best of all fishes, the White Fish. I noticed among these fishes a fish that was new to me—a salmon, but differing materially from the two salmon mentioned above. I also noticed that the purchasers eagerly selected this fish in preference to the lake trout or the Siskawit trout, the former being rather coarse and lean, and the latter too fat. I made inquiries about this (to me) new fish, and was told by the fishermen that it was a cross between the great lake trout and the Siskawit trout, and a very much better fish than either of the parent fishes. I have eaten frequently of all these fishes, and can fully bear testimony to the great excellence of this hybrid fish; I say hybrid, for I made further and particular inquiries and observations about this fish, and am entirely satisfied that it is a hybrid from the two species above named. This hybrid resembles, to some extent, both of its parents, as might be expected; some larger than the largest Siskawit, but not so large as the largest lake trout—the markings not like either of their parents, but somewhat similar to both. I inquired how it was *known* that this fish was a cross between the lake trout and the Siskawit trout, and was informed, and I have no doubt correctly, that both of the parent fishes spawn

at the same time or season of the year, and were frequently together on the same spawning beds, which are generally in the bays and near shore where they are taken *together* while engaged in spawning, by means of seines, in the fall of the year.

From repeated inquiries, and personal observations, I am entirely satisfied that the *Salmo Amethystus* and the *Salmo Siskawit* do produce a hybrid fish, and no doubt they have existed in Lake Superior so long that "memory of man runneth not to the contrary." So much for Lake Superior hybrids.

Some years since my friend professor James H. Richardson, of the University of Toronto, Canada, wrote me that many years ago they had a salmon in Lake Ontario that is now extinct, and asked for an explanation.

My explanation was as follows: Lake Ontario has many tributaries that were formerly breeding streams for the *Salmo Salar* (sea salmon). All of these breeding streams, except one, a very small stream, a mere creek, known as Wilmot's creek, have been destroyed as breeding streams, by excessive and destructive fishing.

Before these breeding streams of the *Salmo Salar* were destroyed (as breeding streams) the *Salmo Salar*, or sea salmon, used to run up the St. Lawrence river in vast numbers into Lake Ontario, and seeking their breeding grounds, they run along near shore and frequently encountered the *Salmo Amethystus* on their spawning beds in the bays, engaged in spawning, as both species spawn at the same season of the year, and a portion of the sea salmon remained on the spawning beds of the *Salmo Amethystus* and spawned with them, and a hybrid was the result, which is now extinct, for the reason that no sea salmon, or none of any account, run into the tributaries of Lake Ontario for spawning purposes.

I may remark here that it is a well established fact that all fishes return to where they were hatched for spawning purposes. Should these breeding streams be restored by artificial aid, and I have no doubt they will be, we shall again have that extinct fish, which is a hybrid from the *Salmo-Salar* and *Salmo-Amethystus*.

The above are two instances where hybrids are produced without the aid of man. It may be proper for me to say that Professor Richardson does not accept my theory. In a letter received from him recently he says that he believes the extinct fish to be the *Salmo Salar*, but one which never leaves fresh water, but always remains in the lake or its tributaries. I do not accept his theory, for it is contrary to the habits of the sea salmon, which always lives for a portion of the year in the sea, if it can get there, and certainly there is no impediment to their returning to

the sea from Lake Ontario; and, furthermore, why should the fish spoken of now be extinct if Professor Richardson's theory be correct?

Professor Richardson believes that the sea salmon would live and breed in our great lakes, provided they could get sufficient food, without ever visiting the sea. This may be true, and I have been informed that there are true sea salmon in one of the small lakes in Maine, which never visit the ocean because they cannot, being land locked. How they came to be there I do not know, but I think it very certain that they would visit the ocean if they could.

I will now call your attention to the fact that a hybrid salmon has been produced by the aid of man. Mr. Hanson, of Stavanger, in Norway, has bred a hybrid salmon, by crossing the *Salmo Alpinus* with the *Salmo Eriox*, the former's time for spawning being some weeks earlier than the latter.

Mr. Hanson secured a female *Salmo Alpinus* nearly in a condition for spawning, and placed her in a perfectly dark tank of water, which prevented a further maturing of her ova, and as soon as possible afterward, he secured a male *Salmo Eriox*, which was in, or near, a mature condition for spawning, and placed them together in a favorable place for spawning purposes. This pair of fish readily mated, the female depositing her ova, and they were fecundated by the male *Salmo Eriox*, and in due time the young fish made their appearance in the hatching boxes, with a loss of only about one per cent. This hybrid attains its growth in four years, the fish being remarkable for its vigor and activity in the water, and delicacy of flavor when prepared for the table.

Mr. Hanson entertained strong hopes that these hybrids will reproduce, because he found ova in the females; in this he will probably be disappointed, for though he did find roes, or ova, in the females they probably were not capable of being fecundated.

I understand that Mr. Hansoa has been breeding salmon artificially for a number of years previous to this attempt at breeding hybrids.

These facts are all interesting to the man of science, as well as to the pisciculturist, and will no doubt lead to other important discoveries and improvements in fish culture.

EDS. HERALD:—Will you oblige me by publishing in your paper the following reply to Prof. Baird's Fishery Reports for 1872 and 1873. In my last review of Prof. Baird's reports I said that I intended it should be my final reply. Since that time I have come into possession of Prof. Baird's reports for the years of 1872 and 1873. On

page 533 he says: "In the United States, the first published record of an experiment in artificial fecundation was made by the late Rev. John Bachman, of Charleston, S. C., in 1855." This statement of Prof. Baird is untrue.

The first published statement of the artificial fecundation of the ova of fishes in this country, was published in the "Annals of Science," edited by Prof. H. L. Smith, of Cleveland, O., in the month of February, 1854, and soon afterwards copied by all, or nearly all, the Cleveland papers, and by other papers in this country and in Europe. It was a detailed account of my experiments in artificial fish culture in 1853, and running into 1854.

Prof. Baird further states, on page 536 of his reports, "that an account was first given by Doctor Garlick in the *Ohio Farmer* of the methods employed by himself, and Dr. Ackley, within two or three years after beginning their experiments." This is also untrue. If Prof. Baird intends to support Doctor Bachman's claims to priority in artificial fish culture in this country by misrepresentations, I shall continue to expose him.

I again call Prof. Baird's attention to the fact mentioned in my last communication, to-wit: the publication in the *Southern Agriculturalist*, in 1853, of a detailed account of the discoveries of Messrs. Ghehen and Remy in artificial fecundation of the ova of fishes. Doctor Bachman was then writing articles for that paper; and the number that contained the account of the discovery of artificial fecundation contained an article from Dr. Bachman's pen on the cultivation of roses, but no word on artificial fecundation of the ova of fishes from Dr. Bachman's pen in that or any other paper until the fall of 1855, two years after my paper had been written and published. Does it not appear singular that Dr. Bachman should not have remembered that he had made these same experiments fifty years before, when he read the article on artificial fish culture in the *Southern Agriculturist*? How does Prof. Baird account for this?

About two years after this article, and my published article on this subject, he all at once remembers that fifty years before he made these same experiments, differing on y in this—he used the ova and milt taken from brook trout that had been *dead* for several hours—and wound up his experiments by drying the eggs taken from the perch for ten days, and hatching them. Dare Prof. Baird endorse such statements?

I do not hesitate to say that no man, living or dead, ever accomplished such impossibilities.

T. GARLICK.

BEDFORD, O., July 12, 1875.

March 11, 1875
Vol. 11, no. 3

LIBRARY OF CONGRESS



0 002 874 991 0