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SUCCESS IN CAUSING THE PEARL OYSTER TO SECRETE SPHERICAL PEARLS

BY BASHFORD DEAN

The following notes were presented:

1. The Japanese have, during the past decade, developed a small but prosperous industry producing culture pearls which are hemispherical or nearly spherical in form. The process by which they are produced is well known, centuries old in the East, and there is considerable literature dealing with it.

2. After experimenting several years the late Dr. T. Nishikawa, formerly of the Fisheries Bureau in Tokyo, and later associated with his father-in-law, Mr. Mikimoto, of Tokyo, the leading pearl culturist of Japan, devised a method by which the pearl oyster could be caused to produce spherical pearls. This appeared to be the first time that such a result was obtained. The speaker has authority of one of the foremost zoologists of Japan that the method was successful, and as evidence of the success of the new method he was told that during commencement time at the Imperial University of Tokyo (shortly after Dr. Nishikawa's death) pearl oysters were brought before the Emperor and that Professor Iijima, head of the department of zoology, demonstrated pearls of spherical form *in situ*, produced by the Nishikawa method.

3. The new method is a secret one, with one or more patents pending.

4. Whether the process is now producing pearls in the Mikimoto establishment or elsewhere is an important question commercially. The speaker has not seen a Nishikawa pearl, and has no accurate knowledge that the new pearls are in the market. The matter, however, even in its latent stage, is of interest generally, for the expense of producing a spherical pearl by a culture process is but a small per-

centage of the normal price. It is suggested, therefore, that pearl experts would do well to give the actual Japanese methods their careful attention.

[Since the meeting of the Fisheries Society word has come from the Science College in Tokyo that extensive experiments are under way to improve the process above noted. The process is still a secret one, and no one but the actual operators know the way in which the artificial cores are inserted between the shell and the mantle of the oyster. From the tenor of the letter one infers that the pearls of these experiments have not up to the present time been large enough to "spoil the market." It would be of great interest to obtain details at the Japanese end of the line.]

DISCUSSION

DR. W. P. HERRICK, New York City: This matter of the mechanical production of round, perfect pearls is of a great deal of interest to me, because for nineteen years it has been my wish to make experiments in that line. It was only this summer that the opportunity came, however, on the 10th of July, when I commenced some work of that nature. I used two varieties of mussel, the soft-shell clam, and the oyster, and then worked on the various Unios; and afterwards I got some of the western varieties through the kindness of Dr. Coker. Now this matter has come up so quickly that there is little more to show you than a few specimens. As I understand it, these are the first experiments of the kind that have been undertaken in America, and the first on American Unios. I think it might be interesting to exhibit the specimens so far obtained from the experiments.

Perhaps, by way of explanation, it might be well to add that it is now generally admitted that an epithelial cyst is essential to the formation of a round pearl. It also might be interesting to add that Dr. Hornell, in speaking of cysts in this regard, says that these cysts though small are usually visible to the eye and measure 1.3 mm. in diameter; he afterwards says that some are about half that diameter. That would be about a thirtieth to a sixtieth of an inch. Dr. Jameson, in speaking of the mussel cysts producing pearls, says that they are about a millimeter in diameter and of a yellowish color. So just in explanation of the specimens I was going to submit I make this statement.

I will say that Professor Nishikawa's investigations are wonderful. I have not seen a pearl; from a press notice, however, it appears that a good many of those pearls had a black spot, but that he has produced a perfect, spherical pearl.

I would like to say (exhibiting specimen to Society) that this specimen from a Unio shows a little yellowish-brown cyst about half the

size of a pin head. The formalin has bleached it out considerably and it does not show as well as it would otherwise. There was another one which in dissecting I cut half across, so that it does not show quite so well.

I show you now a section of a somewhat similar cyst except that it was pinkish; is a 45-day growth, in the other it is from 23 to 28 days. This is only an 11-day cyst; it is rather pinkish, instead of being yellowish-brown, as the other one. Dr. Field kindly made these sections for me, and I can only add, in explanation, that the cyst has a lining which, I think, is epithelium. I have submitted it to some who believe that while not absolutely typical epithelium, as it is very young, still it is an epithelium lining of the cyst.