mens of Indian and Eskimo fishery implements which they include. The latter collection, which attracted much attention among the German anthropologists in 1880, has received many important additions through the explorations of Messrs. Dall, Bean, and Nelson, in Alaska.

Section E, which relates to the fishermen themselves, contains at least one collection interesting to the ethnologist. It illustrates the *cultus* of the American fisherman. Here are shown the games he plays, the books he reads, the products of the arts he affects, and the musical instruments upon which he performs. In another place is shown a series of large photographs from life, of fishermen of different nationalities employed in the fisheries of the United States.

The collection of biological works in the section devoted to literature forms an epitome of the development of the study of aquatic life in America. The writings of the earlier biologists — the elder Agassiz, Holbrook, Storer, Girard, Stimpson, and many others — are displayed; and in the list of special contributors are the names of Agassiz, Goode, Faxon, Dall, Jordan, Farlow, Ryder, Bean, Verrill, Lockington, and of many other prominent American biologists of the present day. It is much to be hoped that these volumes of papers, which have been gotten together with much labor both by the authors and the commission, may find their way, at the close of the exhibit, to the library of the commission or of the national museum.

Apparatus for scientific investigation of the waters is displayed not only by the fish commission, but by the coast-survey and signal-bureau as well. The latest improvements in sounding and dredging apparatus are represented, and the newest devices in barometers, thermometers, and other similar instruments. Among these are Professor Hilgard's recently invented densimeter and salinometer, Lieut. Tanner's deep-sea sounding-machine, Mr. Benedict's rake-dredge for annelids, and numerous others, many of which form part of the equipment of the fish-commission steamer Albatross.

In the manifold forms of apparatus for hatching fishes, the far-seeing zoölogist will see something more than machines for increasing the supply of food-fishes. Important though they be in that connection, they will appear in a new light as delicate instruments for embryological and physiological research, when a greater number of our ichthyologists shall have turned their attention from the taxonomy to the natural history of fishes.

We have not space to dwell upon the collections representing the various products of the fisheries; but there is much in the elaborate display of fish and fertilizers, of glues and oils, of leathers and furs and sponges, and the innumerable commodities which form the harvest of the seas, to attract the attention, and busy the thought, of the political economist and business-man.

It is too soon to say what rank the American division may attain in the exhibition; but one may be safe in remarking that there is no country in the world in which any of the great explorative industries have been subjected to a more thorough investigation from both a scientific and economic point of view than the fisheries of the United States are now undergoing at the hands of the national fishery commission.

NOTE RELATING TO A PECULIARITY DISTINGUISHING ANNEALED FROM UNANNEALED IRON.

The writer has had occasion recently to study the effect of prolonged stress upon the various materials in common use in the arts, and, among others, upon the finer qualities of iron. The well-known experiment of Vicat, made a half-century ago, had never, so far as the writer was aware, been repeated. The extreme importance of the results obtained by him had apparently not been realized by either physicists or engineers; and it seemed advisable that the experiment be repeated, and, should the results obtained by Vicat be again reached, that the attention of both scientific and practical men should be again called to the subject. The repetition of Vicat's experiment has not only confirmed his conclusion, but has led to the discovery of a new and important, as well as peculiarly interesting, difference in the effect of prolonged stress upon annealed and unannealed iron.

In the autumn of the year 1881, the writer procured two lots of the best Swedish iron wire from Mr. William Hewitt, the vice-president of the Trenton iron and steel works, who very kindly had the wire drawn for the purpose. This wire was divided into two parts, one being carefully annealed, the other being left hard-drawn as it came from the blocks. These were tested in the usual way, and it was found that the hard wire had about double the strength of the soft. Nine pieces were taken from each reel for test, under prolonged static stress, and were suspended from hooks, in the study of the writer, attached to springs,

in order that the effect of jar should not enter into the experiment. They were then loaded with, respectively, in each set, 95, 90, 85, 80, 75, 70, 65, 60, 55, per cent of the average ultimate strength, as already determined. This was done in November, 1881. Since that date, a number have broken, as follows: —

Effect of prolonged stress. — Swedish iron wire.

Per cent max. static load.	TIME UNDER STRESS.	
	Hard wire (unannealed).	Soft (annealed).
95	80 days.	3 minutes.
90	35 days.	5 minutes.
85	17 months, unbroken.	1 day.
80	91 days.	266 days.
75	Unbroken.	17 "
70	"	455 "
65	"	455 "
60	"	Unbroken.
55	"	"

Thus, wire loaded with but 65 per cent of the breaking-load, as usually determined, broke after being subjected to stress for a period of fifteen months, when annealed; while hard wire carrying 85 per cent of the maximum temporary load remains unbroken after seventeen months. It is seen that these results are the same in kind as those obtained by Vicat, and confirm the conclusion that heavily loaded iron, as well as other metals and the woods, are likely to yield ultimately under loads that are sustained for short periods of time without apparent injury. This fact has been amply proven by earlier investigators, as well as by the writer; but the difference above observed, between hard and soft iron, has, so far as the writer has been able to learn, never, until now, been discovered.

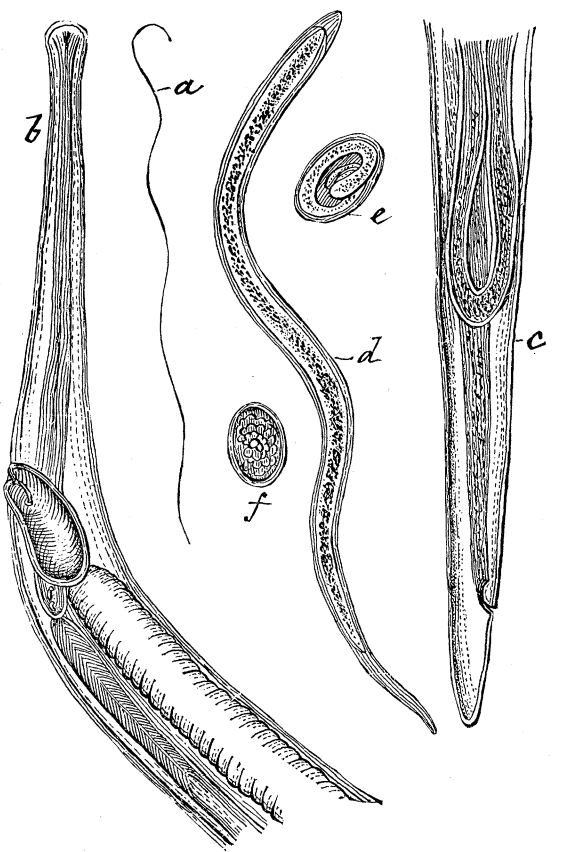
Although the experiments of which this is the first are not yet concluded, this discovery, if such it prove, has seemed to be of sufficient importance to justify this note.

R. H. THURSTON.

Hoboken, N.J., April 22, 1883.

ELEPHANTIASIS, OR FILARIA DISEASE.

DR. A. F. A. KING, dean of the faculty of the National medical college, has recently cited a number of curious coincidences between the habits of the mosquito and the observed phenomena respecting malaria. There are, however, fatal objections to any theory that would connect the two; the coincidences rather indicating that the germs of both develop in similar places. The connection of the mosquito as an intermediary host in the full life-development of the haematozoön, Filaria sanguinis-hominis, however, has been very fully and conclusively made out by Dr. Patrick Manson, of Amoy, China, in the Customs medical reports, published in Shanghai by the order of the inspector-general of customs. Dr. Manson discovered the parent Filaria in the mosquito in 1878, and has since published several admirable articles, giving the results of his experiments; which, in the main,



FILARIA BANCROFTI.

a, female (nat. size); *b*, head and neck (× 55 diam.); *c*, tail; *d*, free embryo (× 400 diam.); *e*, egg containing an embryo; *f*, egg, with mulberry cleavage of the yolk (× 360 diam.) — After Cobbold.)

have been independently confirmed by Dr. Mackenzie of the London pathological society, Mr. T. R. Lewis in India, Dr. W. W. Myers, Drs. T. S. Cobbold, Wucherer, Bancroft, Araujo, and others. The facts have an entomological bearing, and are of great scientific interest and practical importance. They may be briefly stated as follows: —

In 1872 Dr. T. R. Lewis first announced the discovery of the immature or larval haematozoön, to which he gave the above trinomial