

### 3.—A BIBLIOGRAPHY OF PUBLICATIONS IN THE ENGLISH LANGUAGE RELATIVE TO OYSTERS AND THE OYSTER INDUSTRIES.

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#### INTRODUCTION.

From the period of the Roman Empire to the present time, oysters have occupied a prominent position as a food product; and the growing, harvesting, and marketing of them have given employment to vast numbers of persons and much capital. The subject has consequently afforded an attractive theme for naturalists, historians, government officials, political economists, and miscellaneous writers, and an amazing amount of information in reference thereto has been recorded. This information is so widely distributed through publications and periodicals of almost every description that to the casual inquirer the literature of oysters and the oyster industries appears very meager. In view of the growing attention bestowed on oysters in this country and elsewhere, it is thought that the accompanying compilation of the literature of the subject will supply a need of many persons directly or indirectly interested in oysters and the industries dependent thereon.

Several incomplete bibliographies on this subject have already been published. One of these, consisting of 38 references, 26 of which are to publications in foreign languages, appeared in an appendix to the Report of the Maryland Fish Commission for 1881.\* A second list, giving the names of 70 papers in the English language, was published by the Nederlandsche Dierkundige Vereeniging in 1883†; this has been of considerable assistance in the present compilation. In a recent report by the writer on the oyster industry of Maryland‡ there was printed a list of 27 articles relating to the subject of that paper. None of these reference lists, however, furnishes a satisfactory idea of the extent and importance of oyster literature.

\*Report of T. B. Ferguson, a Commissioner of Fisheries of Maryland, January, 1881. Hagerstown, Md., 1881.

†Verslag omtrent Onderzoekingen op de Oester en de Oestercultuur betrekking hebbende uitgebracht door de Commissie voor het Zoologisch Station der Nederlandsche Dierkundige Vereeniging. Leiden, Januari, 1883. 8°, 112 pp.

‡The Oyster Industry of Maryland. By Charles H. Stevenson. Bulletin U. S. Fish Commission for 1892, pp. 203-297, plates LVI-LXXI, Washington, 1894.

The preparation of a complete bibliography of oysters and the oyster industries was originally contemplated, but the facilities for examining many publications in foreign languages are so unsatisfactory that the present paper has been restricted to works in the English language. It is recognized that such a bibliography must necessarily omit reference to some foreign publications of value. The number of these, however, is much reduced by the enterprise of American scientists and economists in causing most of the important foreign publications to be translated into English. Among the valuable foreign reports which have been translated may be mentioned *Voyage d'Exploration sur le Littoral de la France et de l'Italie*, by Jean Jacques Coste (Paris, 1861, 4°, 297 pp.), translated in the Report of the U. S. Fish Commission for 1880; *Étude sur l'Industrie Huîtrière des États-Unis*, by P. De Broca (Paris, 1865, 12°, 266 pp.), translated in the Report of the U. S. Fish Commission for 1873-74 and 1874-75; and *Die Auster und die Austern-wirthschaft*, by Karl Möbius (Berlin, 1877, 8°, 126 pp.), translated in the Report of the U. S. Fish Commission for 1880.

There are, however, several important reports on the anatomy and biology of the oyster that have not yet been translated into English. Among these are several of the publications of the *Nederlandse Dierkundige Vereeniging* from 1881 to 1885. The prominent pioneer works on the development of the oyster by Davaine\* and Lacaze-Duthiers† are also without English translations.

It is not within the scope of the present compilation to refer to papers dealing only with the nomenclature and classification of oysters, or to encyclopedia articles. Omission has also been made of a very extensive repository of information relative to regulations governing the oyster industries, viz, the session acts of various legislative bodies.

The bibliography here presented contains references to 546 separate publications, the work of over 278 authors. Of these papers, 294 were issued in the United States, 26 in Canada, 176 in England, 25 in Scotland, 10 in Ireland, and 115 in various other countries. Of the American publications, 73 were issued by the U. S. Fish Commission, of which 25 were translations and 48 original articles.

Brief abstracts of important or interesting statements in many of the papers are given, in order to increase the usefulness of the paper.

The compilation is accompanied by a subject index and an author's index to facilitate the finding of references to works on various subjects and the papers of individual writers.

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\* C. Davaine: *Recherches sur la Génération des Huîtres*, in *Comptes Rendus* and *Mém. de la Soc. de Biologie*, Paris, vol. iv, 1853, pp. 295-339, with 2 plates.

† H. De Lacaze-Duthiers: *Mémoire sur le Développement des Acéphales Lamellibranches (Ostrea)*, in *Comptes Rendus de l'Acad. des Sc. Paris*, vol. xxxix, pp. 103 *et seq.* Also, *Nouvelles Observations sur le Développement des Huîtres*, in *Comptes Rendus de l'Acad. des Sc. Paris*, vol. xxxix, pp. 1197 *et seq.*, etc.

## BIBLIOGRAPHY OF PUBLICATIONS IN THE ENGLISH LANGUAGE RELATIVE TO OYSTERS AND THE OYSTER INDUSTRIES.

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- 1665—Auzout, M. Shining worms in oysters. <Philosophical Transactions, London, May 7, 1665, No. 12, pp. 203-206.

Within over 240 oysters which the writer examined he discovered a shining substance which, after inspecting with a microscope, he describes as worms; "and these of three sorts; one sort was whitish, having 24 or 25 feet on each side, forked, a black speck on one side of the head and the back like an eel stript of her skin; the second was red, and resembling the common glow-worm, found on land, which folds upon their backs, and foot like the former, and with a nose like that of a dog, and one eye in the head; the third sort was speckled, having a head like that of a seal, with many tufts of whitish hair on the sides of it."

- 1668—Worlidge, J. *Systema Agriculturae; being the Mystery of Husbandry Discovered and Laid Open*. London, 1668. 4<sup>o</sup>, 278 pp.

Describes the uses of oyster shells for agricultural purposes. See 1675.

- 1669—Sprat, Thomas. The history of the generation and ordering of green oysters, commonly called Colchester oysters. <History of the Royal Society. London, 1669. 4<sup>o</sup>.

This, the first paper of importance within the scope of this bibliography, is so concise and interesting that it is here transcribed nearly entire, these extracts being from pp. 307-309 of the third edition, published in London in 1722: "In the Month of May the Oysters cast their Spawn (which the Dredgers call their Spat); it is like to a drop of Candle, and about the bigness of a half-penny. The Spat cleaves to Stones, old Oyster-shells, pieces of Wood, and such like things, at the bottom of the Sea, which they call 'Cultch.' 'Tis probably conjectured, that the Spat in 24 hours begins to have a Shell. In the month of May the Dredgers (by the law of the Admiralty Court) have liberty to catch all manner of Oysters of what size soever. When they have taken them, with a knife they gently raise the small brood from the Cultch, and then they throw the Cultch in again, to preserve the ground for the future, unless they be so newly spat that they can not be safely severed from the Cultch, in that case they are permitted to take the stone or shell, etc., that the Spat is upon, one shell having many times 20 spats.

"After the month of May it is Felony to carry away the Cultch, and punishable to take any other Oysters, unless it be those of size (that is to say) about the bigness of a half crown piece, or when the two shells being shut, a fair shilling will rattle between them. The places where these Oysters are chiefly catched are called Pont-Burnham, Maldon, and Colnewaters. \* \* \* This Brood and other Oysters they carry to Creeks of the Sea at Brinkel sea, Mersey, Longuo, Fringrego, Wimenho, Tolesbury, and Salt-coase, and there throw them into the Channel, which they call their Beds or Layers, where they grow and fatten, and, in 2 or 3 years, the smallest Brood will be Oysters of the size aforesaid. Those Oysters which they would have green, they put into Pits about 3 foot deep, in the Salt-marches, which are overflowed only at Spring tides, to which they have sluices, and let out the Saltwater until it is about 1½ foot deep. These Pits from some quality in the Soil cooperating with the heat of the Sun, will become green, and communicate their color to the Oysters that are put into them in 4 or 5 days, though they commonly let them continue there 6 Weeks or 2 Months, in which time they will be of dark green. To prove that the Sun operates in their greening, Tolesbury Pits will green only in Summer; but that the Earth hath the greater power, Briskle sea Pits green both Winter and Summer; and for further proof, a Pit within a foot of a greening Pit will not green; and those that did green very well, will in time loose their quality.

"The Oysters when the tide comes in, lie with hollow shell downwards, and when it goes out they turn on the other side; they remove not from their place unless in cold weather,

to cover themselves in the Ouse. The reason of the scarcity of Oysters, and consequently of their dearth, is because they are of late years bought up by the Dutch. There are great penalties by the Admiralty Court, laid upon those that fish out of those grounds which the Court appoints, or that destroy the Culch, or that take any Oysters that are not of size, or that do not tread under their feet, or throw upon the shore, a Fish which they call a Five-finger, resembling a Spur-rowel, because that fish gets into the Oysters when they gape, and sucks them out. The reason why such a penalty is set upon any that shall destroy the Culch, is because they find that if that be taken away the Ouse will increase, and then muscles and cockles will breed there, and destroy the Oysters, they having not whereon to stick their Spat. The Oysters are sick after they have Spat; but in June and July they begin to mend, and in August they are perfectly well: The Male Oyster is black-sick, having a black Substance in the Fin, the Female white-sick (as they term it) having a milky Substance in the Fin. They are salt in the Pits, saltier in the Layers, saltest at Sea." See 1722.

- 1675—Worlidge, J.** *Systema Agriculturae; the Mystery of Husbandry Discovered.* The second edition. London, 1675. 4°. See 1681.

Reprint of 1668. See 1681.

- 1681—Worlidge, J.** *Systema Agriculturae, the Mystery of Husbandry Discovered.* The third edition, with one whole section added (of fish, carp, trout, and oyster ponds). London. Tho. Dring. 1681. 4°.

Not seen. Title from *Verslag omtrent onderzoekingen op de ooster en de oostereultuur betrekking hebbende der Nederlandsche Dierkundige Vereeniging*, Leiden, 1883, p. 630. See 1698.

- 1693—Leuwenhoek, Anth. van.** *Animalcules in muscels and oysters.* <Philosophical Transactions, London, January, 1693, No. 196, pp. 593-594.

The animalcules in the oysters were possibly the young oysters. To this famous opponent of the doctrine of spontaneous generation belongs the honor of having discovered the existence of spermatozoa in oysters.

- 1697—Leuwenhoek, Anth. van.** Part of a letter concerning the eggs of snails, roots of vegetables, teeth and young oysters. <Philosophical Transactions, London, December, 1697, vol. XIX, No. 235, pp. 790-799.

Discovered September 3, 1697, in "an English oyster," a grayish stuff which he took to be young oysters; yet in 50 others nothing of the kind was discovered. Hence he surmises "that one oyster bringeth forth its young ones much later than the other."

- 1698—Worlidge, J.** *Systema Agriculturae, the Mystery of Husbandry Discovered.* The fourth edition. London, John Taylor, 1698, 4°.

A reprint of 1681. See also 1668.

- 1720—Rowlands, M.** *Stocking the river Mene with oysters.* <Philosophical Transactions, London, 1720, No. 369, p. 250.

States that the beds in Menai then furnished an abundance of oysters, notwithstanding the fact that none existed in that locality twenty-four years previously, the growth having been started by the personal industry of one planter.

- 1722—Sprat, Thomas.** *The history of the generation and ordering of green oysters, commonly called Colchester oysters.* <History of the Royal Society. Third edition. London, 1722, pp. 307-309.

A reprint of 1669.

- 1744—Bartram, J.** *Some observations concerning the salt-marsh muscel, the oyster banks and the fresh-water muscel of Pensylvania.* <Philosophical Transactions, London, 1744, vol. XLVIII, No. 474, pp. 157-160.

Likens the growth of oysters in Pensylvania to that of "*spuntia*" or Indian fig.

- 1755—Ellis, John.** *Corallines on oyster shells.* <Philosophical Transactions, London, 1755, vol. XLVIII, part II, pp. 627-633, with two plates.

Classifies the forms and describes the manner in which corallines grow on oyster shells around the British coasts.

- 1808—Chrisolm, C.** On the poison of fish. < Edinburgh Medical and Surgical Journal, Edinburgh. October, 1808, vol. IV, pp. 391-422.

On pp. 402-401 a case is reviewed in which certain persons suffered "cholera and excruciating tormina" after eating of oysters that grew on the copper sheathing of a sunken ship.

- 1814—Home, Everard.** The digestive organs of the oyster. < Home's Lectures on Comparative Anatomy, London, 1814, vol. II, p. 77.

Locates and describes the mouth, stomach, intestines, anus, and adductor muscle of the *Ostrea edulis*.

- 1827—Home, Everard.** The mode by which the propagation of the species is carried on in the common oyster and the large fresh-water muscle. Croonian lecture for 1826. Read November 17, 1826. < Philosophical Transactions, London, 1827, pp. 39-48, plates III-VI.

Discusses with much detail, on pp. 41-44, the anatomy and reproduction of *Ostrea edulis*. The plates indicate the locations of the several organs, and the various stages in the development of the ovaries and young oysters. See 1828.

- 1828—Home, Everard.** Development of the ova of the common oyster. < Home's Lectures on Comparative Anatomy, London, 1828, vol. VI.

A reprint of 1827.

- 1836—Deshayes, G. P.** Conchifera. < Todd's Cyclopaedia of Anatomy and Physiology, London, 1836, vol. I.

Treats of the anatomy of the oyster.

- 1837a—Garner, Robert.** On the nervous system of molluscan animals. < Transactions of the Linnean Society of London. London, 1837, vol. XVII, pp. 485-501, plate XXIV.

The special feature of this article is the author's reference to the visual powers of oysters. "In *Pecten*, *Spondylus*, and *Ostrea* we find small, brilliant, emerald-like ocelli, which from their structure, having each a minute nerve, a pupil, a pigmentum, a striated body, and a lens, and from their situation at the edge of the mantle, where alone such organs could be useful, and also placed as in *Gastropoda*, with the tentacles, must be organs of vision."

The question of the ability of oysters to see has also been answered in the affirmative by Will (in *Forriep's Neue Notizen*, No. 622), who states that there are as many as 30 distinct eyes projecting from the border of the mantle. But Siebold denies that such is the case, and regards the so-called eyes as simply excrescences devoid of optical powers. There can, however, be little doubt that these mollusks are sensitive to light. For further information on this interesting subject see Mitt. aus der Zool. Stat. zu Neapel, vol. VI, 1866; *Forriep's Neue Notizen*, Nos. 622 and 623; Siebold's *Anatomy of the Invertebrata*, Boston, 1854, vol. I, pp. 201-202; and *The Eye of Pecten*, by Sydney J. Hickson, Studied from the Morphological Laboratory in the University of Cambridge, Part II, 1882, pp. 1-12.

- 1837b—Anonymous.** The oyster. < Penny Magazine, London, June 24, 1837, vol. VI, pp. 235-238.

A description of the oyster industry of Great Britain with notes on the natural history of the oyster.

- 1838a—N—C.** A crustaceous tour; by the Irish Oyster-Eater. < Blackwood's Edinburgh Magazine, Edinburgh, November, 1838, vol. 44, pp. 637-649.

A humorous discussion of the Irish oyster beds and their products.

- 1838b—Anonymous.** An essay on oysters. < Colburn's New Monthly Magazine, London, 1838, vol. 53, pp. 541 *et seq.*

- 1839—Parliamentary Paper.** Convention between Her Majesty and the King of the French, Defining and Regulating the Limits of the Exclusive Right of the Oyster Fishery on the Coast of Great Britain and France, dated August, 1839. London, 1839.

- 1841a—Garner, Robert.** On the Anatomy of the Lamellibranchiate Conchifera. < Transactions of the Zoological Society of London. London, 1841, vol. II, pp. 87-102, pl. XIX.

[Communicated December 8, 1835.]

**1841 b—Gould, A. A.** Report on the Invertebrata of Massachusetts, Comprising the Mollusca, Crustacea, Annelida, and Radiata. Cambridge, 1841, 8°, xiii + 373 pp., 15 plates.  
See 1870 d.

**1843 a—Akerly, Samuel.** Shellfish of Richmond County. <Transactions of the New York State Agricultural Society, together with an Abstract of the Proceedings of the County Agricultural Societies for the year 1842. Albany, 1843, vol. II, p. 196.

Refers to the exhaustion of the natural oyster reefs and the development of the planting industry on the south side of Staten Island, New York.

**1843 b—Dekay, James E.** Zoology of New York, or the New York Fauna; Comprising Detailed Descriptions of all the Animals Hitherto Observed within the State of New York, with Brief Notices of those Occasionally Found Near its Borders, and Accompanied by Appropriate Illustrations. Part VI, Mollusca. Albany: W. & A. White & J. Visscher, 1843, 4°, 271 pp., 40 plates.

Discusses the occurrence and distribution of oysters along the shores of New York State.

**1846—Reade, J. B.** On the cilia and ciliary currents of the oyster. <Report of the British Association for the Advancement of Science, fifteenth meeting, 1845. London, 1846, pp. 66-67.

Describes the gullet of the oyster as covered with fine, silky hairs or cilia, which by a waving motion cause a current of water to flow towards the mouth, thus supplying the mollusk with food. Also states that the food consists wholly of infusoria.

**1849—Forbes, Edward, and Hanley, Sylvanus.** On the geographical distribution and uses of the common oyster (*Ostrea edulis*). <Edinburgh New Philosophical Journal of Natural Science, Edinburgh, October, 1849, vol. XLVII, No. xciv, pp. 239-248.

Reprint of part xx of Forbes and Hanley's History of British Mollusca. See 1853.

**1850—Perley, M. H.** Report on the Sea and River Fisheries of New Brunswick within the Gulf of St. Lawrence and Bay of Chaleur. Fredericton: J. Simpson, Printer to the Queen's Most Excellent Majesty. 1850. 8°, 176 pp.

The oyster resources of New Brunswick are described on pp. 132-133.

**1851—Haywarde, Richard.** The first oyster-eater. <The Knickerbocker, New York, May, 1851, vol. XXXVII, pp. 385-388.

An archaeological discussion.

**1852 a—Williams, Thomas.** On the structure of the Bronchiæ or mechanism of breathing in the Pholades and other Lamellibranchiate mollusks. <Report of the twenty-first meeting of the British Association for the Advancement of Science; held at Ipswich in July, 1851. London, 1852, p. 82.

An abstract of the address delivered.

**1852 b—Anonymous.** Shellfish, their ways and works. <The Westminster Review, London, February, 1852.

Discusses the "morals" of oysters. See 1852 c.

**1852 c—Anonymous.** The happiness of oysters. <International Magazine, New York, March 1, 1852, vol. v, p. 311.

Extracted from 1852 b.

**1852 d—Parliamentary Paper.** Memorial and Letters Relative to Dredging for Oysters in Deep Water During the Summer Months. London, 1852.

**1853—Forbes, Edward, and Hanley, Sylvanus.** On the geographical distribution and uses of the common oyster (*Ostrea edulis*). <History of British Mollusca, and their Shells. London, 1853, gr. 8°, 4 vols., 198 plates.

Indicates the location of the principal oyster beds of the British coast, including those of Scotland and Ireland, and refers to the existing fishery regulations. Describes the oyster enemies, especially the starfishes, whelks, sponges, and certain annelids. The work also contains many anatomical details. Several other editions have been published.

- 1854 a**—Seibold, C. Th. v. Anatomy of the Invertebrata. Boston: Gould and Lincoln, 1851, 8°, 470 pp.  
The Acephala are described on pp. 184-222.
- 1854 b**—Parliamentary Paper. Letters from the Board of Trade of April 28, 1847, to the Commissioners of Customs, and of July 31, 1849, to Messrs. Rayson, Alston and Gibbs, on the Subject of the Oyster Fishery on the East Coast of England. London, 1851.
- 1855 a**—Bush, George. A monstrous oyster shell. <Annals and Magazine of Natural History, London, February, 1855, pp. 91-92, 1 plate.  
Describes a very large oyster shell, which somewhat resembled the shell of *Pholas candida*, and discusses its origin.
- 1855 b**—Gray, J. E. A monstrous oyster shell. <Annals and Magazine of Natural History, London, March, 1855, p. 210.  
A continuation of the foregoing discussion.
- 1855 c**—Henslow, J. S. A monstrous oyster shell. <Annals and Magazine of Natural History, London, April, 1855, vol. xv, p. 314.  
A continuation of the discussion started by Bush. See 1855 a.
- 1856**—Eyton, T. C. The oyster and the oyster beds of the British shores. <Edinburgh New Philosophical Society of Natural Science, Edinburgh, October, 1856, vol. iv, No. 11, pp. 351-355.  
A reprint of 1857 c.
- 1857 a**—Carpenter, Philip. Report on the present state of our knowledge with regard to the mollusca of the west coast of North America. <Report of the twenty-sixth meeting of the British Association for the Advancement of Science, held at Cheltenham in August, 1856. London, 1857, pp. 159-368.  
Species of *Ostrea* are listed and described.
- 1857 b**—Eyton, T. C. Oyster breeding. <Annual of Scientific Discovery, London, 1857, p. 365.  
Calls attention to the effect of the depth of water on the spawning season of oysters and computes the brood of three oysters at 3,000,000.
- 1857 c**—Eyton, T. C. The oyster and the oyster beds of the British shores. <Report of the twenty-sixth meeting of the British Association for the Advancement of Science, held at Cheltenham in August, 1856. London, 1857, pp. 368-370.  
Discusses briefly: (1) The oyster beds of England and the laws respecting them; (2) An account of the individual beds from the author's personal observation and inquiries; (3) The natural history of the oyster (*Ostrea edulis*). See 1856 b.
- 1857 d**—MacAndrew, Robert. Report on the Marine testaceous molluscs of the northeast Atlantic and neighboring seas, and the physical conditions affecting their development. <Report of the twenty-sixth meeting of the British Association for the Advancement of Science, held at Cheltenham in August, 1856. London, 1857, pp. 101-158.  
Lists and describes *Ostrea* on pp. 114 and 135.
- 1857 e**—Parliamentary Paper. Directions for Giving Effect to Certain Rules Made by the Committee of Council for Trade on May 21, 1857, Respecting the Oyster Fisheries in the Seas between the British Isles and France. London, 1857.
- 1858 a**—De Bow, J. D. B. Oyster Trade of Virginia, Baltimore, and Fair Haven. <De Bow's Commercial Review, New Orleans, March, 1858, vol. 24, pp. 259-260.  
A statistical review of the industry in each of the three localities mentioned.

- 1858 b—**Eyton, T. C.** A History of the Oyster and the Oyster Fisheries. London, John Van Voorst. 1858. 8<sup>o</sup>, 40 pp., 6 plates.  
Treats of (1) History and antiquity of the oyster as an article of food. (2) Laws of Great Britain relative to oyster fisheries. (3) Natural history and anatomy of the oyster. (4) Reproduction and growth (*Ostrea edulis*). (5) Enemies of the oyster. (6) List and account of the principal oyster beds of Great Britain. (7) Suggestions for the formation of new oyster beds and the preservation of old ones.
- 1858 c—**Anonymous.** Essay on oysters. <Irish Quarterly Review, Dublin, 1858, vol. vii, pp. 801 *et seq.*
- 1859 a—**Pell, Robert L.** Edible fishes of New York. <Transactions of the New York State Agricultural Society, with an Abstract of the Proceedings of the County Agricultural Societies. Albany, 1859, vol. xviii, pp. 334-397.  
The oyster is discussed on pp. 394-396, the principal feature being statistics on the extent of the industry in Maryland in 1858.
- 1859 b—**Anonymous.** Oyster culture in France. <London Practical Mechanics Journal, London, May, 1859.  
Describes briefly the experiments made in oyster-culture by the Government of France in the Bay of St. Brieuc, on the coast of France.
- 1859 c—**Anonymous.** Oyster manufacture. <Journal of the Franklin Institute, Philadelphia, 1859, vol. 68, pp. 197-198.  
Abstract of 1859 b.
- 1860—**Martin, W. C. L.** Traveling oyster beds. <Recreative Science, London, 1860, vol. i, p. 96.
- 1861 a—**Dickens, Charles** (Editor). Oysters. <All the Year Round, London, March 16, 1861, vol. iv, pp. 541-547.  
Discusses the "morals" of the oyster and its edible qualities, with many references to historical celebrities who were fond of them.
- 1861 b—**Hall, Anna Maria.** Concerning oysters. <St. James Magazine, London, August, 1861, vol. ii, pp. 66-74.  
A compilation of well-known facts relative to the distribution and abundance of oysters. Also reviews briefly the oyster message of Governor Wise, submitted to the Virginia Legislature in 1860.
- 1861 c—**Anonymous.** Oysters. <Chambers' Journal, Edinburgh, 1861, vol. 36, pp. 336 *et seq.*
- 1862 a—**Bertram, James G.** The fisher folk of the Scottish east coast. <Macmillan's Magazine, London, October, 1862, vol. vi, pp. 501-512.  
Contains a description of the oystermen of Great Britain and their operations.
- 1862 b—**Anonymous.** Cultivation of oysters on the west coast of France. <Times, London, November 13, 1862.  
Describes the operations of the French Government and the results thereof.
- 1862 c—**Anonymous.** Kentish oysters. <London Society, London, 1862, vol. iii, p. 561.
- 1863 a—**Fortin, Pierre.** List of the Cetacea, Fishes, Crustacea, and Mollusca, which now inhabit and have inhabited the Canadian shores of the Gulf of St. Lawrence, and are the object of fishing operations, whether on a large or small scale, and which are used as bait, etc. <Annual Report of Pierre Fortin, Esq., Magistrate in Command of the Expedition for the Protection of the Fisheries in the Gulf of St. Lawrence, during the Seasons of 1861 and 1862. Quebec, 1863, pp. 109-124.
- 1863 b—**Jeffreys, John Gwyn.** *Ostreidæ*. <British Conchology, London, John Van Voorst, 1863, vol. ii, pp. 37-48.  
Briefly reviews several previous writings on the subject of oysters and their culture.
- 1863 c—**Masson, David.** Oysters: A gossip about their natural and economic history. <Macmillan's Magazine, London, March, 1863, vol. 7, pp. 401-408.  
A compilation relative to the methods of culture then practiced in France and England, with references to many historical celebrities who were fond of oysters.



**1863 d—Anonymous.** The Oyster; Where, How, and When to Find, Breed, Cook, and Eat it. London, 1863.

See 1863 f.

**1863 e—Anonymous.** Green oysters. <The Field, London, March 14, 1863.

**1863 f—Anonymous.** The Oyster; Where, How, and When to Find, Breed, Cook, and Eat it. Second edition, with a new chapter, the Oyster Seeker in London. London, Scribner & Co., 1863. 12°, 106 pp.

Discusses very cleverly the following subjects: (1) The oyster season; (2) Ancient history of the oyster; (3) Modern history of the oyster; (4) Natural history of the oyster; (5) Distribution of oysters about the British shores; (6) The cooking of oysters; (7) Medicinal properties of oysters; (8) Distribution of oysters in foreign countries; (9) Oyster pearls; and (10) The oyster shops of London. See 1863 d.

**1864 a—Buckland, Frank.** Spawning oysters. <Times, London, August 3, 1861.

**1864 b—Dickens, Charles** (Editor). Oysters and oyster culture. <All the Year Round, London, 1861, vol. xi, pp. 161 *et seq.*

**1864 c—Esdaile, David.** Oyster culture. <Good Words, London, 1861, vol. v, pp. 553-557.

A compilation of information having particular reference to the experiments of M. Coste, prosecuted at the instance of the French Government. States that in 1849 the quantity of oysters consumed in London amounted to 130,000 bushels.

**1864 d—Lawson, Henry.** Oysters and oyster culture. <Popular Science Review, London, 1864, vol. iii, pp. 448-459, one plate.

A review of the knowledge then existing relative to *Ostrea edulis*. Discusses particularly its distribution, anatomy, reproduction, age, enemies, the fishery in Great Britain, the French methods of culture, and the necessities for similar operations on the shores of Great Britain.

**1864 e—Pearce, M.** Propagation of oysters. Brighton, 1861.

Abstracts of reports relative to the experiments of Coste and Kemmerer.

**1864 f—Anonymous.** Oyster investigation. <Morning Post, London, August 29, 1861.

An account of the investigations of the Parliamentary commissioners (see 1866 b) on the condition of the deep-sea fisheries of Great Britain.

**1864 g—Anonymous.** New oyster beds. <Sporting Gazette, London, December 24, 1864.

Reports the discovery of new oyster beds in Glenelge Bay, in the district of Gallo-way, Scotland, and cites the possibilities for further discoveries of a similar nature.

**1865 a—Bertram, James G.** The Harvest of the Sea. London, John Murray, 1865, 8°.

On pp. 332-381 the following subjects are discussed by the author, the observations having particular reference to *Ostrea edulis*: (1) Proper time for oyster fishing to begin; (2) Description of the oyster; (3) Controversies about its natural history; (4) Spawning of the oyster; (5) Growth; (6) Quantity of spawn emitted by the oyster; (7) Social history of the oyster; (8) Great men who were fond of oysters; (9) Oyster breeding in France; (10) Lake Fusaro and the methods therein; (11) Bauf's discovery of artificial culture; (12) Oyster farming in the Bay of Biscay; (13) The celebrated green oysters; (14) Marennes; (15) Dr. Kemmerer's plan; (16) Lessons to be gleaned from the French pisciculturists; (17) How to manage an oyster farm; (18) Whitstable; (19) Cultivation of natives; (20) The Colne oyster trade; (21) Scottish oysters; (22) The Pandores; (23) Extent of oyster ground in the Firth of Forth; (24) Dredging; (25) Extent of American oyster beds. See 1868 b.

**1865 b—Buckland Frank.** Oyster culture. <Report of the thirty-fourth meeting of the British Association for the Advancement of Science; held at Bath, in September, 1861. London, 1865, pp. 89-90.

Discusses briefly the natural history and culture of oysters, with notes on the causes of the failure of spat during the preceding seasons.

**1865 c—Buckland, Frank.** Oyster enemies. <Land and Water Journal, London, 1865, vol. i.

- 1865 d—Buckland, Frank.** Heaps of oyster shells. <The Field, London, February 4, 1865.

Refers to previous distribution of oysters, as determined by remaining shell heaps.

- 1865 e—Buckland, Frank.** Young oysters. <Times, London, August, 1865.

- 1865 f—Caird, James; Huxley, T. H.; and Lefevre, G. S.** Report of the Commissioners Appointed to Inquire into the Sea Fisheries of the United Kingdom. Vol. II. Minutes of Evidence and Index. London, Parliamentary Paper, 1865, 4<sup>o</sup>, 1409 pp.

See 1866 b.

- 1865 g—Clark, Henry James.** Mind in Nature; or the Origin of Life and the Mode of Development of Animals. New York, 1865, 8<sup>o</sup>, 322 pp.

The anatomy and the biology of the oyster are discussed on pp. 199-203.

- 1865 h—Grimshaw, T. W.** Supposed cases of poisoning by oysters. <Medical Press, Dublin, October 25, 1865, vol. LV, p. 372.

Cites an instance in which three persons were made ill from the eating of oysters.

- 1865 i—Randall, Alex.** Opinion in Relation to Taking Oysters in the Chesapeake Bay and its Tributaries, to the General Assembly of Maryland. Annapolis, 1865, 8<sup>o</sup>, 8 pp.

The opinion of the attorney general of Maryland in reference to the authority of the State to restrict the taking of oysters to the citizens thereof and to issue licenses therefor.

- 1865 j—Anonymous.** Oyster farming. <Cornhill Magazine, London, January, 1865, vol. XI, pp. 52-61.

An exposition of the methods and results of oyster-culture on the western coast of France and the southern coast of England, with valuable statistical data.

- 1865 k—Buckland, Frank.** Oyster-culture. <The Fisherman's Magazine and Review. London, October, 1865, vol. II, pp. 470-473.

An abstract of address delivered at the thirty-fifth meeting of the British Association for the Advancement of Science. See 1866 a.

- 1866 a—Buckland, Frank.** Report on the cultivation of oysters by natural and artificial methods. <Report of the thirty-fifth meeting of the British Association for the Advancement of Science; held at Birmingham in September, 1865. London, 1866, pp. 3-15.

This report of personal observations and experiments discusses the following subjects:

- (1) The cultivation of oysters by natural means. (2) The cultivation of oysters by artificial means. (3) Experiments in hatching oyster eggs by artificial heat. (4) Experiments on a large scale on the fore shores. (5) The chemical analysis of the oyster. (6) Dredging and its effects. (7) Comparisons of French and English systems of oyster-culture. (8) Experiments in developing oyster-spat. (9) The causes of greenness in oysters.

- 1866 b—Caird, James; Huxley, T. H., and Lefevre, G. S.** Report of the Commissioners Appointed to Inquire into the Sea Fisheries of the United Kingdom. Vol. I. The Report, and Appendix. London, Parliamentary Paper, 1866, 4<sup>o</sup>, cvii and 72 pp. One map.

After making a very careful and exhaustive inquiry into the condition of the oyster industry of Great Britain, the commission summed up its observations as follows:

"We find that the supply of oysters has very greatly fallen off during the last three or four years. That this decrease has not arisen from overfishing, nor from any causes over which man has direct control, but from the very general failure of the spat, or young of the oyster, which appears, during the years in question, to have been destroyed soon after it was produced. A similar failure of spat has frequently happened before, and probably will often happen again. That the best mode of providing against these periodical failures of the spat is to facilitate the proceedings of those individuals or companies who may desire to acquire so much property in favorably situated portions of the sea bottom as may suffice to enable them safely to invest capital in preparing and preserving these portions of the sea bottom for oyster-culture. \* \* \* That no regulations or restrictions upon oyster fishing, beyond such as may be needed for the object just defined, have had, or are likely to have, any beneficial effect upon the supply of the oysters." See 1865 f and 1868 c.

- 1866 c—Knight, Thomas F.** Descriptive Catalogue of the Fishes of Nova Scotia. Published by direction of the Provincial Government. Halifax, N. S. Printed by A. Grant, Printer to the Queen's Most Excellent Majesty. 1866, 8°, 54 pp.  
The "*Edible molluscs of Nova Scotia*" are described on pp. 43-54. This portion of the work is really by Willis, for Mr. Knight says: "The author is indebted to J. R. Willis, Esq., of Halifax, for the following ample description of our edible mollusca, which has already been published in a colonial periodical." No trace has been found of the periodical herein referred to.
- 1866 d—Mearns, J. R.** Oysters and dredgers. <Once a Week, London, December 15, 1866, vol. xv, pp. 655-666.  
Describes the ancient oyster companies of Faversham and Whitstable, district of Kent, England, their origin and their oyster-grounds.
- 1866 e—O'Shaughnessey, Arthur W. E.** On green oysters. <Annals and Magazine of Natural History, London, September, 1866, vol. xviii, pp. 221-228.  
A review of nearly everything that was known relative to this subject in 1866, with special reference to the papers of Crosse (*Journal de Conchyliologie*, 1863, vol. xi, p. 221); Cuvet (Comptes Rendus de l'Académie des Sciences, 1863, vol. lvi, pp. 402-403); Christolm, C. (*Edinburgh Medical and Surgical Journal*, 1808, vol. iv, pp. 391-422); Gaillon (*Journal de Physique*, 1820, vol. 91, pp. 220-225; *Bull. Science Soc. Philom.*, 1820, pp. 120-130; and *Frer. Nat.*, 1821, vol. i, No. 1, pp. 5-7); Valenciennes (*Frer. Nat.*, 1841, vol. xviii, No. 370, pp. 65-67); Bizio (*Ricerche sopra il coloramento in verde delle branche delle Ostriche, Venezia*, 1845) and Buckland (*The Harvest of the Sea*, London, 1865).
- 1866 f—Parliamentary Paper.** The Herne Bay, Hampton and Reculver Oyster Fishery Company. Evidence Taken in a Committee of the House of Lords, April 19 and 20, 1866. London, 1866, 8°.
- 1866 g—Anonymous.** Oysters on the south coast of England and the north coast of France. <Times, London, September 6, 1866.  
Discusses and compares the French and the English methods of oyster-culture.
- 1866 h—Anonymous.** The exposition of Arcachon and its object. <Fraser's Magazine, London, September, 1866, vol. 74, pp. 297-308.  
Discusses the fisheries exposition of Arcachon, referring particularly and in detail to the advance made in methods of oyster-culture in the bay of Arcachon.
- 1866 i—Anonymous.** Touching the oyster. <Once a Week, London, August 4, 1866, vol. xv, pp. 124-126.  
Refers to the scarcity and high prices for oysters in England and the necessities for better methods of obtaining a continuous supply. See 1866 j.
- 1866 j—Anonymous.** Touching the oyster. <Every Saturday, Boston, September 1, 1866, vol. ii, pp. 244-246.  
An abstract reprint of 1866 i.
- 1867 a—Buckland, Frank.** On oyster cultivation. <Report of the thirty-sixth meeting of the British Association for the Advancement of Science; held at Nottingham, August, 1866. London, 1867, pp. 70-71.  
An abstract of the address delivered, which discussed particularly the development and movements of oyster spat, and the chemical constituents of oysters.
- 1867 b—Chambers, W. and R.** An oyster-island: Oyster fisheries on Ile de Ré <Chambers' Journal, Edinburgh, April 27, 1867, vol. 44, pp. 257-260.  
Oysters formerly grew naturally about the shores of this island, situated on the west coast of France, and which is so celebrated for its salt and oyster products; but the increased consumption or other causes led to the depletion and finally to the destruction of the natural beds. In March, 1858, the present system of oyster-culture was inaugurated by a poor stonemason, named Hyacinthe Beuf. This paper describes the experiments of Beuf and those of Jean Jacques Coste, which followed the former, and notices with much detail the general methods of culture practiced at the date of its publication.
- 1867 c—Dickens, Charles (Editor).** Oyster nurseries. <All the Year Round, London, July 27, 1867, vol. 18, pp. 116-118.  
Discusses oyster enemies, the scarcity of oysters, and the necessities for the formation of oyster-cultural stations on the shores of Great Britain, the operations in France being the basis of the latter portion of the paper.

- 1867 d—Fellows, F. W.** Oyster culture. <American Naturalist, Salem, 1867, vol. 1, pp. 196-202.

A short compilation on the generation and natural history of oysters, with particular reference to the results of the investigations of Coste and Davaine.

- 1867 e—Fellows, F. W.** Oyster-culture in France. <American Naturalist, Salem, 1867, vol. 1, pp. 346-351.

A compilation from various French publications relative to the methods of oyster-culture practiced in the imperial or model stations (*parcs*) in the bay of Arcachon.

- 1867 f—Lobb, Harry.** Successful Oyster Culture. London, 1867, 8°.

- 1867 g—Lovell, Matilda Sophia.** The Edible Molluscs of Great Britain and Ireland, with Receipts for Cooking Them. London, Reeve & Co., 1867, 8°, 207 pp., 12 plates.

*Ostræidæ* are discussed on pp. 68-97.

- 1867 h—Pennell, H. Cholmondeley.** Report to the Board of Trade upon the State and Progress of the Roach River Oyster Fishery. Parliamentary Paper, London, 1867.

- 1867 i—Pennell, H. Cholmondeley.** Report to the Board of Trade upon the Orders Applied for under "The Oyster and Mussel Fisheries Act, 1866," with Reference to the River Blackwater, by "The Blackwater Oyster Fishing Company (Limited)," "The Malden Oyster Fishery Company," and "The Fish and Oyster Breeding Company." Parliamentary Paper, London, 1867.

- 1867 j—Parliamentary Paper.** Return of Applications Made to the Board of Public Works in Ireland for licences to Form and Plant Oyster Beds, with Dates, etc.; also of the Expense Incurred by the Board of Works in Ireland with Reference to the Sea and Oyster Fisheries for 1864, 1865, and 1866. Dublin, 1867.

- 1867 k—Parliamentary Paper.** Copies of Application to the Board of Public Works in Ireland of the Right Hon. John Wynne, to Plant Oyster Beds in Sligo Bay; Proceedings Taken Thereon, and Report Relative to the Same. Dublin, 1867.

- 1867 l—Parliamentary Paper.** Report by the Board of Trade of their Proceedings under the Oyster and Mussel Fisheries Act, 1866. London, 1867.

- 1867 m—Anonymous.** Oysters and oyster-culture. <Edinburgh Review, Edinburgh, 1867, vol. 127, pp. 43 *et seq.*

- 1867 n—Anonymous.** Oyster-culture on the south coast of England and north coast of France. <Times, London, October 15, 1867.

- 1867 o—Anonymous.** The Oyster fisheries. <North British Review, Edinburgh, March, 1867, vol. 46, pp. 190-222.

An important compilation on the oyster, with particular reference to its natural history, and its gastronomical status among the Ancients. Also reviews the report of the Parliamentary commission of 1866. See 1866 b.

- 1867 p—Knight, Thomas F.** Shore and Deep Sea Fisheries of Nova Scotia. Published by Direction of the Provincial Government. Halifax, N. S., printed by A. Grant, Printer to the Queen's Most Excellent Majesty. 1867, 8°, vi+113 pp.

Discusses the oyster fisheries of Nova Scotia from an economical and political point of view.

- 1868 a—Arnold.** Oysters in brackish water. <Quarterly Journal of Science, London, 1868, vol. XIX, p. 237, and vol. XXI, pp. 15-19.

Describes an instance in which oysters grew in a small pond in which the saltness of the water was scarcely one-sixth that of the sea.

- 1868 b—Bertram, James G.** The Harvest of the Sea. Second edition. London, 1868, 8°, 519 pp., with 50 illustrations.

Reprint of 1865 a.

- 1868 c**—Caird, James; Huxley, T. H., and Lefevre, G. S. Report of the Commissioners Appointed to Inquire into the Sea Fisheries of the United Kingdom. Presented by command, 1866. London, 1868. 8°, 179 pp., one map.  
A reprint of the report contained in 1866 b.
- 1868 d**—Calder, J. E. Oyster-culture: a Compilation of Fact. Tasmania, 1868, 8°, 3 plates.
- 1868 e**—Dallas, E. S. British oysters at Rome. <Once a Week, London, February 29, 1868, vol. xviii, pp. 186-190.  
Reviews much of the existing information relative to the consumption of British oysters by the Romans and speculates as to their methods of obtaining them.
- 1868 f**—Dallas, E. S. French oyster nurseries. <Once a Week, London, September 19, 1868, vol. xix, pp. 231-235.  
Describes the imperial stations or *parcs* in the bay of Arcachon, France, and the methods therein employed, with references to the necessity for similar procedures on the British coast.
- 1868 g**—Dempster, Henry. The Deck-welled Fishing-boat, and Fisheries and Fish-market Reform: being Dialogues on these Important Subjects, with full Information on the Oyster Question. Glasgow, 1868, 8°.
- 1868 h**—de Vere, Schele. Mine oyster. <Putnam's Magazine, New York, October, 1868, vol. ii, pp. 418-431.  
A compilation and discussion of the natural history of the oyster.
- 1868 i**—Pennell, H. Cholmondeley. Report made to the Board of Trade on the Oyster and Mussel Fisheries of France, and the Applicability of the French System to British Waters. Parliamentary Paper, London, 1868.
- 1868 j**—Anonymous. Oysters, and the oyster fisheries. <Edinburgh Review, Edinburgh, January, 18 8, No. cclix, pp. 22-39.  
Reviews and comprises much of the valuable material contained in the following publications: "A history of the oyster and the oyster fisheries;" by T. C. Eyton, London, 1858. "Voyage d'Exploration sur le Littoral de la France et de l'Italie;" par M. Coste, Paris, 1861. "The Oyster, where, how, and when to find, breed, cook, and eat it;" London, 1863. "The Harvest of the Sea;" by James G. Bertram, London, 1865. "Report of the Commissioners appointed to inquire into the sea fisheries of the United Kingdom;" London, 1866, and "Successful Oyster Culture;" by Harry Lobb, London, 1867.
- 1868 k**—Parliamentary Paper. Sea Fisheries Act, 1868. Part III. Oyster and Mussel Fisheries. Board of Trade Regulations for the Instruction and Guidance of Persons applying for Fishery Orders under Part III of the Sea Fisheries Act, 1868 (31 and 32 Vict., chap. 45). London, 1868. 4°, 12 pp.
- 1869 a**—Buckland, Frank. On the progress of oyster and salmon cultivation in England. <Report of the British Association for the Advancement of Science, thirty-eighth meeting, held at Norwich in August, 1868. London, 1869, pp. 90-91.  
Attributes the failure of spat along the British coasts during the preceding six years to the cold weather and the rough water prevalent throughout the spawning season.
- 1869 b**—Jeffreys, John Gwyn. *Ostrea edulis*. <British Conchology, London, John Van Voorst, 1869, vol. v, pp. 165-166.  
Refers to several writings in which this species is discussed.
- 1869 c**—K—, W. The oyster trade in the United States. <The Field, London, May, 1869, vol. 33, p. 388.  
Reviews three consular reports emanating from the British Foreign Office, relative to the oyster industry of Chesapeake Bay, Louisiana, and New England waters.
- 1869 d**—"Ostrea." Artificial oyster culture. <The Field, London, February 13, 1869, p. 139.
- 1869 e**—Pennell, A. Francis. Oyster culture. <Times, London, January 29, 1869.
- 1869 f**—Wilcocks, J. C. Oyster fisheries. <The Field, London, 1869.  
Describes the location of certain oyster beds on the coast of Great Britain and cites the probabilities for discovering new areas.

**1869 g—Anonymous.** Oysters. <Broadway, London, 1869, vol. v, pp. 405 *et seq.*

**1870 a—Blake, J. A.; Francis, Francis; Hart, G. W., and Brady, T. F.** Report of the Commission Appointed to Inquire into the Methods of Oyster Culture in the United Kingdom and France, with a View to the Introduction of Improved Methods of Cultivation of Oysters into Ireland. Dublin, Her Majesty's Stationery Office, 1870. 8°, 54 pp., with appendices, pp. 55-102, and 10 plates.

This commission was appointed in October, 1868, and was directed to visit the principal oyster regions of France, England, and Ireland, to consult the best-informed authorities on the oyster industry, to ascertain, so far as possible, the causes which had led to failures in the oyster fishery and to suggest the remedy. The report discusses the natural history of the oyster, the various branches of the oyster industry, including an interesting epitome of Coste's experiments and the results thereof, and concludes with the following recommendations:

1. All regulations with regard to close time around the Irish coast should be strictly maintained.

2. The inspectors of Irish fisheries should have power, whenever they determine to reserve a bank or any portion thereof from public dredging for the purpose of recovery, to make such arrangements as may seem desirable for keeping the restricted part free from weeds and vermin.

3. There should be procurable at each coast-guard station, at a small cost, general information as to oyster-culture and simple instructions as to the best modes of proceeding.

4. Facilities should be afforded to the coast population to acquire the use of small portions of foreshore, or sea bottom, for oyster cultivation, and to obtain loans on satisfactory security for the preparation of same, and for the purchase of oysters, collectors, etc.

**1870 b—Brady, Thomas F.** Digest of the Acts of Parliament and the By-Laws at present in force in Ireland for the Regulation of the Oyster Fisheries, to which is added an Abstract of the Law Enabling certain Persons to Form or Plant Bait Beds. Appendix to Report of the Commissioners Appointed to Inquire into the Methods of Oyster Culture in the United Kingdom and France, with a View to the Introduction of Improved Methods of Cultivation of Oysters into Ireland. Dublin, 1870, pp. 155-165.

**1870 c—Davidson, Hunter.** Report upon the Oyster Resources of Maryland to the General Assembly. Annapolis, William Thompson of R., 1870. 8°, 20 pp.

**1870 d—Gould, A. A.** Report on the Invertebrata of Massachusetts. Second edition, edited by W. G. Binney. Boston, 1870. 8°, viii+524 pp., 12 plates and many wood cuts.

*See 1841 b.*

**1870 e—Knight, T. F.** Oyster culture in France. <Proceedings and Transactions of the Nova Scotian Institute of Natural Science, for 1867, 1868, 1869, 1870. Vol. II, part II, pp. 42-51. Halifax, 1870.

A group of facts obtained from two authorities: (1) A pamphlet in French, by J. L. Soubeiran, secretary of the Imperial Society of Acclimatization of France, 1866. (2) The Harvest of the Sea, by James G. Bertram, 1865.

**1870 f—Pennell, H. Cholmondeley.** Report to the Board of Trade upon the State of the Oyster Fisheries in the Rivers Blackwater and Roach. Parliamentary paper, London, 1870.

A detailed report on the operations of an oyster company in each of the rivers mentioned.

**1870 g—Sullivan, W. K.** Composition of the Soils of Oyster Grounds. Appendix to Report of the Commissioners Appointed to Inquire into the Methods of Oyster Culture in the United Kingdom and France, with a View to the Introduction of Improved Methods of Cultivation of Oysters into Ireland. Dublin, 1870, pp. 166-176.

Because of the small amount of attention which this subject has received and the difficulty in obtaining or consulting copies of this report, the conclusions of Prof. Sullivan (who was a chemist rather than a naturalist) are here quoted in full:

1. The influence of the soil upon the breeding and growth of oysters is complicated by: temperature, especially during the spawning season; sudden alternations of heat and cold due to currents; alternation of depth of water, especially as regards whether the maximum of sun-heat and light coincides with low water during the spawning season; velocity of tide; angle of inclination of shore, etc.

2. The soil of oyster-grounds may be made up of materials of any of the great classes of rocks, arenaceous, argillaceous, or calcareous, provided they contain more or less of the fine flocculent highly hydrated silt, rich in organic matter, which indicates that Diatomaceae, Rhizopoda, Infusoria, and other minute creatures abound.

3. The character and abundance of such organisms in a locality seem to be the true test of a successful oyster-ground.

4. Although oysters do undoubtedly assimilate copper from water where mine-water containing traces of that metal flows into the sea in the neighborhood of the oyster beds, the copper is chiefly, if not exclusively, confined to the body of the oyster, and does not appear to reach the mantle or beard. That the so-called green oysters of Essex, Marennes, and other places, on the other hand, are green-bearded and contain no copper, nor can the most minute trace of copper be detected in the soil of the oyster-grounds where such green-bearded oysters are produced.

**1871 a—Lord, J. Keast.** Oysters. <Leisure Hour, London, September 16, 1871, vol. XX, pp. 581-582.

Discusses oyster seasons from a gastronomical point of view.

**1871 b—W—, E. P.** Oysters in Ireland. <Nature, London, December 14, 1871, vol. V, pp. 128, 129.

A review of 1870 a.

**1872 a—Bertram, James G.** Touching oysters. <St. Paul's Magazine, London, 1872, vol. 12, pp. 173 *et seq.*

**1872 b—Browne, Orris A.** Report to the Auditor of Public Accounts on the Oyster Beds of Virginia. Richmond, Shepperson & Graves, 1872. 8°, 21 pp.

A statement of the duties performed by the Virginia oyster inspector during the preceding year, with reference to the general condition of the oyster industry and recommendations to the State Legislature. Also contains many extracts from the "Report of the commission appointed to inquire into the methods of oyster culture in the United Kingdom and France, with a view to the introduction of improved methods of cultivation of oysters into Ireland," Dublin, 1870; and other papers. See 1877 c.

**1872 c—Davidson, Hunter.** Report on the Oyster Fisheries: Potomac River Shad and Herring Fisheries, and the Water Fowl of Maryland to his Excellency the Governor, and other Commissioners of the State O. P. Force, January 1, 1872. Annapolis, S. S. Mills, L. F. Colton & Co., 1872. 8°, 48 pp.

One of the most comprehensive of the early reports on the oyster industry of Maryland, especially rich in statistical data.

**1872 d—Parliamentary Paper.** Return of Particulars of all Inquiries and Examinations Held by the Inspector Appointed by the Board of Trade under "The Oyster and Mussel Fisheries Act, 1866," and "The Sea Fisheries Act, 1868," in Each Year 1868 to 1872; of the Names, Duties, and Salaries of the Persons Employed, etc. London, 1872.

**1873 a—Saunders, Silbert.** Development of oyster spat. <Quarterly Journal of Microscopic Science, London, 1873, vol. XIII, pp. 439-440.

Summary of a popular lecture delivered July 10, 1873, before the East Kent Natural History Society.

**1873 b—Timmons, William E.** Report of the Commander of the Oyster Fisheries and Water-Fowl of Maryland, to his Excellency the Governor, and the Commissioners of the State Oyster Police Force, January 1, 1874. Annapolis, Wm. T. Iglehart & Co., 1873, 8°, 11 pp.

Discusses the general condition of the oyster fishery of Maryland in 1873, with recommendations for further legislation.

- 1873c—Verrill, A. E.** Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characteristics of the region. <Report U. S. Fish Commission, 1871-72. Washington, 1873, vol. II, pp. 295-778.

Enumerates and describes, on pp. 472-478, the animals found inhabiting oyster-beds in brackish waters off the southern coast of New England.

- 1874a—Chambers, William.** Sea fish and oysters. <Chambers' Journal, Edinburgh, January 17, 1874, vol. 51, pp. 43-46.

A review of James G. Bertram's "Harvest of the Sea," London, 1865, with original observations.

- 1874b—Lockwood, Samuel.** The natural history of the oyster. <Popular Science Monthly, New York, No. 31, November, 1874, pp. 1-20, and No. 32, December, 1874, pp. 157-173.

An illustrated popular article; one of the most interesting contributions from this well-known naturalist. See 1873 i.

- 1874c—McCrary, John.** Observations on the food and the reproductive organs of *Ostrea virginiana*, with some account of the *Bucephalus culcullus*, nov. spec. <Proceedings of the Boston Society of Natural History, December 3, 1873, Boston, 1874, vol. XVI, pp. 170-192.

Concludes that *Ostrea virginiana* (the American species) is hermaphrodite. Also states that the food of oysters along the South Carolina coast consists largely of diatoms and sporules of algae.

- 1874d—Whiteaves, J. F.** Report on further deep-sea dredging operations in the Gulf of St. Lawrence, with notes on the present condition of the marine fisheries and oyster beds of part of that region. <Sixth Annual Report of the Department of Marine and Fisheries, for the year ending the 30th June, 1873. Printed by order of Parliament. Ottawa, T. B. Taylor, 1874, pp. 178-204 of appendices.

This report is devoted principally to the oyster industry of the Gulf of St. Lawrence, the observations being based on an examination of the oyster beds of Northumberland Straits and of the coast of New Brunswick. See 1874e and 1874f.

- 1874e—Whiteaves, J. F.** Notes on the marine fisheries, and particularly on the oyster beds, of the Gulf of St. Lawrence. <Canadian Naturalist, 1874, vol. VII, pp. 336-349.

An abridged reprint of 1874d.

- 1874f—Whiteaves, J. F.** Report on Deep-Sea Dredging Operations in the Gulf of St. Lawrence, with Notes on the Present Condition of the Marine Fisheries and Oyster Beds of Part of that Region. Ottawa, printed by T. B. Taylor, 1874, 8vo, 30 pp.

A reprint of 1874d.

- 1875—Buckland, Frank.** Report on the Fisheries of Norfolk, especially Crabs, Lobsters, Herring, and the Breams. House of Commons, London, August 11, 1875. 8°, 84 pp., 4 plates.

Contains numerous references to the oyster fisheries along the coast of Norfolk, England, on pp. 21-23 and 42-45.

- 1876a—De Broca, P.** On the oyster industries of the United States. <Report U. S. Fish Commission, 1873-74 and 1874-75. Washington, 1876, vol. III, pp. 271-320.

Translated from *Étude sur l'industrie huîtrière des États-Unis, faite par ordre de S. E. M. le Comte de Chasseloup Laubat, ministre de la marine et des colonies. Suivie de divers aperçus sur l'industrie de la glace en Amérique, les bateaux de pêche pourvus de glacières, les réserves flottantes à poisson, la pêche du maquereau, etc.* Par M. P. De Broca, lieutenant de vaisseau, directeur des mouvements du port du Havre. Nouvelle édition, augmentée de divers documents et de notes. Paris, 1865, 12mo, 2 pl., 266 pp. This, the first extensive report on the economic and commercial phases of the oyster industry in the United States, is based on an investigation made in the summer of 1862 by the author, acting under instructions from the French Government.



- 1876b**—**Francis, Francis.** The breeding of the oyster. <The Field, London, November 18, 1876.
- 1876c**—**Francis, Francis.** The breeding of the oyster. <The Field, London, December 2, 1876.
- 1876d**—**Hamilton, Lord Claud; Lefevre, G. Shaw; Stanhope, Edward** (and others). Report from the Select Committee on Oyster Fisheries; together with the Proceedings of the Committee, Minutes of Evidence, Appendix, and Index. House of Commons, London, July 7, 1876. 4<sup>o</sup>, xx + 334 pp.  
This committee was appointed to inquire "the reasons for the present scarcity of oysters on the British coasts." The report of the committee is briefly summed up as follows: There are not, in consequence of the increasing demand and consequent high price, so many full-grown oysters left to spat as there ought to be, hence the scarcity. The paper contains 3,941 questions and answers relative to oysters and the oyster industry of Great Britain.
- 1876e**—**Kent, Saville.** Reproduction of oysters. <The Field, London, April 22, 1876.
- 1876f**—**Lavoine, Napoleon.** Oyster fishery in the Gulf of St. Lawrence. <Report of the Commissioner of Fisheries, for the year ending 31st December, 1875. Ottawa, printed by Maclean, Rogers & Co., 1876, pp. 53-54.  
A brief review of the condition of the industry in 1875.
- 1876g**—**Lockyer, J. N.** Our oyster fisheries. <Nature, London, August 3, 1876, vol. XIV, p. 285.  
Reviews briefly the report of the British parliamentary "select committee on the oyster fisheries" of 1876.
- 1876h**—**Woods, W. Fell.** The breeding of the oyster. <The Field, London, November 25, 1876.
- 1876i**—**Parliamentary paper.** Report of Inspectors Appointed by the Board of Trade, under the 45th Section of "The Sea Fisheries Act, 1868," to Inquire into the State of the Fisheries Established under Orders made by the Board, in Pursuance of part 3 of the Above Named Act. London, 1876.  
Describes the oyster fisheries of Blackwater (Essex), Bosham, Boston Deep, Emsworth, Emsworth Channel, Firth of Forth, Greshernish, Hamble, Holy Loch, Langston, Lynn Deep, Paglesham, Roach River, and Swansea.
- 1876j**—**Anonymous.** Oysters: native and foreign. <Whittaker's Journal of Amusing and Instructive Literature, London, 1876.
- 1876k**—**Anonymous.** The oyster. <Saturday Review, London, August 26, 1876, vol. XLII, pp. 260-261.  
Reviews and deprecates the necessity for the report of the "select committee on the oyster fisheries" of 1876. See 1876d.
- 1877a**—**Bouchon-Brandely, G.** Oyster Culture on the Shores of the Channel and of the Ocean. Parliamentary paper, London, 1877.  
Translated from Journal officiel de la République Française, of January 22, 1877.
- 1877b**—**Brooks, W. K.** The affinity of the Mollusca and Molluscoida. <Proceedings Boston Society of Natural History, February 2, 1876. Boston, 1877, vol. XVIII, pp. 225-236.
- 1877c**—**Browne, Orris A.** Report on the oyster beds of Virginia. <Annual Report of the Fish Commissioner of the State of Virginia for the year 1877. Richmond, 1877, 8<sup>o</sup>, pp. 26-43.  
An abridgment of 1872b.
- 1877d**—**Dyer, W. T. Thiselton.** Greening of oysters. <Nature, London, September 6, 1877, vol. XVI, p. 397.  
Refers to the green color being particularly common in the oysters in the vicinity of Croisic, and attributes it to certain diatoms in the food of the oyster, especially *Navicula fusiformis* Grunow, var. *setigera*.

- 1877e—King, John T.** Oysters. <The Mirror, Baltimore, January 13, 20, and 27, and November 1, 1877.

A compilation on the natural history of oysters and on the oyster industry of the Chesapeake Bay.

- 1877f—Lockyer, J. N.** Oyster culture. <Nature, London, October 11, 1877, vol. xvi, pp. 499-500.

A brief review of *Die Auster und die Austernwirtschaft*, by Karl Mübius, Berlin, 1877. See 1883 u.

- 1877g—Page, John R.** Oyster-beds and oyster culture in Virginia. <Annual Report of the Fish Commissioner of the State of Virginia for the year 1877. Richmond, 1877, pp. 23-25.

A brief discussion of the area and location of the oyster beds of Virginia, with reference to their injurious effects on the agricultural interests of the tide-water counties of the State. Recommends individual ownership of oyster beds.

- 1877h—Richardson, James.** American oyster culture. <Scribner's Monthly, New York, December, 1877, vol. xv, pp. 225-238.

Touches upon the natural history of the oyster and describes the origin and development of the oyster-planting industry in the western part of Connecticut, with references to the industry in other American localities.

- 1877i—Woods, W. Fell.** Letters on Oyster Fisheries; the Causes of Scarcity; the Remedies, etc. Reprinted from the "Field," London. Edward Bumpus, 1877. 8°, 44 pp.

These letters appeared in the "Field," London, in 1876, and were intended to controvert evidence which had been given before the "Select Committee on Oyster Fisheries," of 1876.

- 1877j—Beale, Anne.** Oyster dredging. <Good Words, London, November, 1877, vol. xix, pp. 756-759.

A popular account of a visit to certain oyster beds on the shores of Great Britain.

- 1877k—Jones, J. Matthew.** Mollusca of Nova Scotia. <Proceedings and Transactions of Nova Scotian Institute of Natural Science, 1877, vol. iv, part iii, pp. 321-330.

- 1877l—Anonymous.** The lobster, crab and oyster fisheries. <The Quarterly Review, London, October, 1877, No. 288, vol. cxliiv, pp. 474-498.

An abstract publication and review of the following: (1) Report from the Select Committee on Oyster Fisheries; together with the Proceedings of the Committee, Minutes of Evidence, Appendix and Index. Ordered by the House of Commons to be printed, July 7, 1876. (2) Report on the Fisheries of Norfolk, especially Crabs, Lobsters, Herrings, and the Breads. By Frank Buckland, Inspector of Salmon Fisheries. Presented by Her Majesty's Command. Ordered by the House of Commons to be printed, August 11th, 1875. (3) Report on the Crab and Lobster of England and Wales, of Scotland and Ireland. Presented to both Houses of Parliament. By Command of Her Majesty. 1877.

- 1878a—Bledsoe, A. T.** The oyster at home. <Southern Review, Baltimore, October, 1878, vol. xxiv, pp. 385-404.

A popular discussion of the oyster fishery of the Chesapeake Bay, with brief abstracts from *Guide pratique de l'ostréiculteur et procédés d'élevage et de multiplication des races marines comestibles*. By Félix Fraiche, Paris, 1865. 12°, 174 pp.

- 1878b—Chambers, W. and R.** French oyster nurseries. <Chambers' Journal, Edinburgh, August 3, 1878, vol. lv, pp. 516-518.

Describes the oyster industry of Arcachon, Ile d'Oléron, Cancale, Vannes, and Auray, on the French coast, and discusses the possibilities for application of the methods of those localities to the shores of Great Britain.

- 1878c—Hayes, Jos.** Report on the Principal Oyster Fisheries of France; with a short Description of the System of Oyster Culture pursued at some of the most Important Places, from Inspections made in September and October, 1877. Presented to both Houses of Parliament by command of Her Majesty. Dublin, 1878. Royal 8°, 28 pp., 3 maps.

Reports on the oyster fisheries of (1) Courseulles sur Mer, (2) Grand Camp, (3) St. Vaast de la Hogue, (4) Granville, (5) Cancale, (6) Brest, (7) Auray, (8) Vannes, (9) Les Sables D'Olonne, (10) Ile de Ré, (11) Ile d'Oléron, (12) Marennes, (13) La Tremblade, (14) La Verdon, and (15) Arcachon.

- 1878 d—King, John T.** The Anatomy, Propagation and Cultivation of the Oyster. Washington, D. C. Harvey & Holden, 1878, 12°, 32 pp.  
A popular summary of well-known facts relative to the natural history of the oyster, with notes on the oyster industry of Chesapeake Bay. See 1879 A.
- 1878 e—Lockyer, J. N.** Oyster beds of the Chesapeake Bay. <Nature, London, October 17, 1878, vol. xviii, p. 653.  
Refers to the inauguration by the U. S. Coast Survey of an investigation of the oyster beds of James River, Virginia, and of Tangier and Pocomoke Sounds, Maryland and Virginia.
- 1878 f—Smith, E. A.** Ostrea assuming the sculpture of another shell (*Trochus maculatus*) to which it adheres. <Proceedings Zoological Society, London, 1878, p. 730, pl. XLVI, fig. 12.
- 1878 g—Winther, G.** On the geographical distribution of the common oyster. <Annals and Magazine of Natural History, London, March, 1878, 5 ser., vol. i, pp. 185-189.  
Abstract translation of Om vore Haves Naturforhold med Henseyn til kunstig Oestersavl og om de i den henseende anstillede Forsøg. Copenhagen, 1876. Nordisk Tidskrift for Fiskeri. Discusses briefly *Ostrea edulis* and the oyster areas of Europe.
- 1878 h—Woodward, S. P.** Manual of the Mollusca, third edition, with appendix by R. Tate. London, 1878, 8°, with numerous plates and woodcuts.
- 1878 i—Parliamentary paper.** Report to the Board of Trade upon Four Applications made under "The Sea Fisheries Act, 1868," for Orders for the Establishment of an Oyster Fishery in the River Blackwater. London, 1878.
- 1878 j—Anonymous.** Society of Oyster Culturists of Morbihan. Dublin, 1878.  
Explanatory pamphlet for the International Exposition of 1878.
- 1879 a—Brooks, W. K.** Preliminary observations on the development of the Marine Prosobranchiate Gastropods. <Chesapeake Zoological Laboratory, Scientific Results of the Season of 1878. Baltimore, 1879, pp. 121-142, one plate.
- 1879 b—Brooks, W. K.** Abstract of observations upon the artificial fertilization of oyster eggs and the embryology of the American oyster. <American Journal of Science, New Haven, December, 1879, vol. xviii, pp. 425-427.  
A concise statement of the observations published in the report of the commissioners of fisheries of Maryland, dated January, 1880. See 1880 b.
- 1879 c—Brooks, W. K.** Propagating oysters. <Science News, 1879, vol. i, pp. 249-251.  
A brief citation of the results noted in 1880 b.
- 1879 d—Buckland, Frank, and Walpole, Spencer.** Report by Frank Buckland, Esq., and Spencer Walpole, Esq., Inspectors of Fisheries for England and Wales, and Commissioners for Sea Fisheries on the Sea Fisheries of England and Wales. London. Her Majesty's Stationery Office, 1879. 8°, 282 pp., 1 map.  
Contains numerous brief references to the oyster beds along the coast of England and Wales.
- 1879 e—Gray, Barry.** Oysters and oyster eaters. <The Sea World, New Haven, November 17, 1879, vol. i, No. 14.
- 1879 f—Hopson, W. B.** Catching oysters by steam power. <The Sea World, New Haven, August 4, 1879, vol. i, No. 1.
- 1879 g—Hurlbutt, A. M.** On the structure of the blood corpuscles of the oyster. <Medical Press, New York, 1879, vol. xxix, pp. 23-30.  
The results of a microscopical examination with a lens of 1,200 diameters.

- 1879 b—King, John T.** Wonders and Food Luxuries of the Sea. The Anatomy, Propagation, Habits, Food, and Cultivation of Oysters, Clams, Crabs, Lobsters, Fish, and Maninose, and their Migrations. Baltimore, 1879, 16°, 152 pp.

The data relative to the oyster are largely a modification of a paper published in 1878. See 1878 d.

- 1879 i—Lockwood, Samuel.** The natural history of the oyster. <The Sea World, Branford, Conn., vol. 1, Nos. 2-7, August 18-September 24, 1879.

A reprint of 1874 b.

- 1879 k—Möbius, Karl.** How can the cultivation of the oyster, especially on the German coasts, be made permanently profitable? <Report U. S. Fish Commission, 1877. Washington, 1879, vol. v, pp. 875-884.

Translated by Herman Jacobson from circular No. 3 of the Deutsche Fischerel-Verein, Berlin, March 21, 1877. Describes the location and character of the natural oyster-grounds of Germany, the reasons for there being no oysters on the barren grounds, and the methods for and difficulties of utilizing the latter.

- 1879 l—Patterson, Carlile P.** Investigations of Oyster Beds: Questions to Oystermen. Washington, 1879. Royal 8°, 21 pp.

- Contains 187 questions relative to the oyster beds, oysters, and the oyster industries. This publication was issued for distribution to the Chesapeake oystermen, to aid in the investigation, the results of which are noted in 1882 f.

- 1879 m—Robinson, John A.** Abstract of laws regarding oyster fishing in the several States from Maine to Virginia, inclusive, except Connecticut. <The Sea World, New Haven, October 15, 1879, vol. 1, No. 9.

Cites briefly the regulations of these States, under the following captions: (1) By whom private rights of cultivation may be granted. (2) To whom licenses may be granted. (3) Extent of area granted. (4) Form of conveyance. (5) Conditions on which land may be granted. (6) Fees for granting private oyster beds and taxes thereon. (7) Forfeitures of planting grounds. (8) Special licenses for oystering. (9) Dredging licenses and prohibitory provisions. (10) Special provisions.

- 1879 n—Simmonds, P. L.** Oysters and other edible mollusca. <The Commercial Products of the Sea. New York, 1879, 8°, viii + 484 pp.

- 1880 a—Balfour, Fr. M.** A Treatise on Comparative Embryology. London, 1880. 8°, vol. 1.

Treats of Lamellibranchiata on pp. 214-223.

- 1880 b—Brooks, W. K.** Development of the American oyster. <Appendix to Report of the Commissioners of Fisheries of Maryland. January, 1880. pp. 1-81, 10 plates.

Describes the first successful attempt to propagate the *Ostrea virginiana*, and is the standard authority on the anatomy and development of this species. See 1880 c.

- 1880 c—Brooks, W. K.** The development of the oyster. <Studies from the Biological Laboratory, Johns Hopkins University, Baltimore, 1880, No. iv, pp. 1-106, 10 plates.

A reprint of 1880 b.

- 1880 d—Brooks, W. K.** The acquisition and loss of a food yolk in molluscan eggs. <Studies from the Biological Laboratory, Johns Hopkins University, Baltimore, No. iv, pp. 107-116, one plate.

- 1880 e—Brooks, W. K.** Observations upon the artificial fertilization of oyster eggs and on the embryology of the American oyster. <Annals and Magazine of Natural History, London, January, 1880, Fifth series, vol. v, pp. 82-83.

A reprint of 1879 b.

- 1880 f—Brooks, W. K.** Biology of the American oyster. <North Carolina Medical Press, Wilmington, January, 1880, pp. 253-258.

A brief summary of 1880 b.

- 1880 g—Buckland, Frank.** The oyster's food, young, and foes. <The Sea World and Fishing Gazette, New York, October 12, 1880, vol. II, No. 9.
- 1880 h—Buckland, Frank.** Oyster culture in China. <The Sea World and Fishing Gazette, New York, November 23, 1880, vol. II, No. 15.
- 1880 i—Goode, G. Brown.** Bulletin of the U. S. National Museum. Exhibits of the Fisheries and Fish Culture of the United States of America, Made at Berlin in 1880. Prepared under the direction of G. Brown Goode, Deputy Commissioner. Washington, 1880, 8°, 263 pp.  
The exhibit of oysters and methods of cultivating oysters is catalogued on pp. 43-49.
- 1880 j—Hopson, W. B.** Oysters and oyster culture. <The Sea World, New York, May 11, 1880, vol. I, No. 39.
- 1880 k—Hopson, W. B.** The oyster supply in Connecticut. <The Sea World, New York, January 20, 1880, vol. XXI, No. 49.
- 1880 l—Hopson, W. B.** The oyster trade of New York City. <The Sea World, New York, September 7, 1880, vol. II, No. 4.
- 1880 m—Hore, J. P.** The Deterioration of Oyster and Trawl Fisheries of England: its Cause and Remedy. By J. P. Hore and Edward Jex. London, Elliot Stock, 1880. 8°, 128 pp.  
On pp. 1-51 is given a brief review of the oyster industry of Great Britain from early in the seventeenth century to 1880. The author attributes the depletion of the beds to (1) overdredging; (2) annihilation of the parent stock; (3) the want of an effectual close season; (4) to impediments under the present state of the law to artificial cultivation. This paper is particularly valuable because of the abstracts from manuscript documents of the seventeenth century preserved in the public record office of Great Britain.
- 1880 n—H., M. C.** The green color of oysters. <Nature, London, October 7, 1880, vol. XX, p. 549.
- 1880 o—McDonald, Marshall.** Report upon the Fisheries and Oyster Industries of Tidewater Virginia with Recommendations of such Legislation as is Necessary to Regulate the Same and Derive a Revenue from Them. Made in Obedience to a Joint Resolution of the General Assembly by M. McDonald, Commissioner of Fisheries of Virginia. Richmond, 1880. 8°, 20 pp.
- 1880 p—Macleay, William (President).** Legislative Assembly. New South Wales. Fisheries Inquiry Commission. Report of the Royal Commission, Appointed on the 8th of January, 1880, to Inquire into and Report upon the Actual State and Prospect of the Fisheries of this Colony; together with Minutes of Evidence, and Appendices. Ordered by the Legislative Assembly to be Printed, 13th May, 1880. Sydney: Thomas Richards, Government Printer, 1880. 4°, 42 + 128 + 21 pp.  
Contains numerous brief references to the oysters and the oyster fisheries of New South Wales, strongly urges immediate legislation for the protection of the fishery, and suggests the formation of oyster farms under the control of inspectors.
- 1880 q—Macleay, William (President).** New South Wales. Fisheries of New South Wales. Report of the Royal Commission, Appointed on the 8th of January, 1880, to Inquire into and Report upon the Actual State and Prospect of the Fisheries of this Colony. Sydney: Thomas Richards, Government Printer. 1880, Royal 8°, 110 pp.  
This is a reprint of the first 42 pages of 1880 p, and contains the report proper of the Commission.
- 1880 r—Power, Alfred.** Ode to an oyster. <Colburn's New Monthly Magazine, London, June, 1880, vol. 117, pp. 670-671.
- 1880 s—Ryder, John A.** On the course of the intestine in the oyster (*Ostrea virginiana*). <American Naturalist, Philadelphia, September, 1880, vol. XIV, pp. 674-675.

**1880 t—Winslow, Francis.** Extracts from report of investigations of the oyster beds in Tangier and Pocomoke sounds and parts of the Chesapeake Bay, conducted during portions of the years 1878 and 1879. <Appendix to Report of the Commissioners of Fisheries of Maryland, January, 1880, pp. 103-220.

A preliminary and abridged publication of 1882 f.

**1880 u—Anonymous.** The oyster season: An epicure analyzing the animal and intellectual properties of the bivalve. <The Sea World, New York, September 14, 1880, vol. II, No. 5.

**1880 v—Anonymous.** The oyster. <Chambers' Journal, Edinburgh, 1880, vol. 59, pp. 59 *et seq.*

**1880 w—Anonymous.** Mine oyster. <The Sea World, New Haven, February 9, 1880, vol. I, No. 26.

A description of the oyster industry of Louisiana.

**1881 a—Brady, Thomas F.** Oyster Fisheries, Ireland. Digest of the Acts of Parliament and the By-Laws at Present in Force in Ireland for the Regulation of the Oyster Fisheries, to which is added a List of the Licenses Granted for Oyster Beds, and an Abstract of the Law Enabling Certain Persons to Form or Plant Bait Beds. Dublin, Her Majesty's Stationery Office, 1881. 8°, 43 pp.

**1881 b—Dickens, Charles (Editor).** Something about oysters. <All the Year Round, London, March 26, 1881, vol. 46, pp. 534-537.

Discusses oysters gastronomically.

**1881 c—Ferguson, T. B.** The oyster. <Report of T. B. Ferguson, a Commissioner of Fisheries of Maryland, January, 1881. Hagerstown, 1881. pp. cv-cxiv. Cites the scientific investigations that had been made toward the preservation of the Maryland oyster industry.

**1881 d—Harding, Charles W.** Prize Essay, National Fisheries Exhibition, Norwich, 1881, on the Utilization of Localities in Norfolk and Suffolk suitable for the Cultivation of Mussels and other Shell Fish. Norwich, 1881. 4°, 4 pp.

**1881 e—Ingersoll, Ernest.** The Oyster Industry. U. S. Fish Commission, Washington, 1881. 4°, 252 pp., 22 plates.

This paper, the most voluminous and comprehensive yet published relative to the oyster industry of America, contains a description of the industry in each of the United States, a compilation of notes on the natural history of *Ostrea virginiana*, and a "glossary of terms or oysterman's dictionary."

**1881 f—Ryder, John A.** An account of experiments in oyster culture and observations thereto, made at St. Jerome's Creek, Maryland, during the summer of 1880. <Appendix A to Report of a Commissioner of Fisheries of Maryland, January, 1881, Hagerstown, 1881. pp. 1-64.

Discusses the anatomy and food of the oyster (*Ostrea virginiana*) and the faunas of oyster beds, and describes certain methods for breeding oysters in confinement. See 1884 f.

**1881 g—Shanks, W. F. G.** Oysters and oyster culture. <Lippincott's Magazine, Philadelphia, May, 1880, vol. xxvii, pp. 479-492.

An important discussion of the oyster industry of the Atlantic coast of the United States, with a review of the cultural methods employed in France.

**1881 h—Winslow, Francis.** Deterioration of American oyster beds. <Popular Science Monthly, New York, November and December, 1881, vol. xx, pp. 29-43 and 145-156.

Discusses the deterioration of the reefs in the Chesapeake Bay, particularly those of Tangier and Pocomoke sounds, and suggests methods for restoring them to their former condition of abundant productiveness. The second chapter is devoted to the "natural history of the oyster with especial reference to the process of reproduction and the conditions influencing its rate of increase."

- 1881 i—Winslow, Francis.** An account of an experiment in artificially fertilizing the ova of the European oyster (*Ostrea edulis*). <Appendix to Report of a Commissioner of Fisheries of Maryland, January, 1881. Hagerstown. 1881, pp. 65-75.

Describes the development of *Ostrea edulis* from the earliest phases.

- 1881 j—Anonymous.** Advent of the oyster. <American, Philadelphia, 1881, vol. II, p. 324.

- 1882 a—Brocchi, P.** Oyster Culture on the Shores of the Channel and of the Ocean. Parliamentary paper, London, 1882.

Translated by T. H. Farrer from Journal Officiel de la République Française, November, 1881, pp. 6181-6180. See 1884 c and 1884 d.

- 1882 b—Horst, R.** On the development of the European oyster (*Ostrea edulis* L.). <Quarterly Journal of Microscopical Science, London, October, 1882, vol. XXII, pp. 341-346, 1 plate.

Abstract from Tijdschrift der Nederlandsche Dierkundige Vereeniging, 1882, vol. VI.

- 1882 c—Lockyer, J. N.** The oyster industry of the United States. <Nature, London, November 9, 1882, vol. XXVIII, pp. 39-40.

A review of 1881 e.

- 1882 d—Pike, R. G.; Hudson, W. M., and Woodruff, G. N.** Report of the Commissioners of Shell-Fisheries of Connecticut. Presented to the Legislature, January session, 1882. Hartford, 1882, 8°, pp. 37-132, 2 maps.

This first report of the Connecticut Shellfish Commission describes the organization of the Commission, the area and location of the natural oyster-grounds of the State, the areas of ground preempted, and the methods of culture pursued in the State. The appendix contains the State laws regulating the oyster industries. One of the maps indicates the location of the oyster-grounds, both public and private, and the other contains a sketch of the triangulations executed in 1881 in connection with the oyster surveys.

- 1882 e—Ryder, John A.** Notes on the breeding, food, and green color of the oyster. <Bulletin U. S. Fish Commission, vol. I, 1881. Washington, 1882, pp. 403-419.

Reviews the history of investigations in the subjects noted and gives many original observations. See 1882 f, 1882 g, and 1883 a.

- 1882 f—Ryder, John A.** Notes on the breeding, food, and cause of green color of the oyster. <Transactions of the American Fish-Cultural Association, Eleventh Annual Meeting. New York, 1882, pp. 57-79.

Reprint from Bulletin U. S. Fish Commission, vol. I, 1881. Washington, 1882, pp. 403-419. See 1882 e.

- 1882 g—Ryder, John A.** Notes on the breeding, food, and cause of green color of the oyster. <Forest and Stream, New York, May 25, 1882, and June 1, 1882, vol. XVIII, pp. 331-332 and pp. 349-351.

Abstract of 1882 e.

- 1882 h—Ryder, John A.** A summary of recent progress in our knowledge of the culture, growth, and anatomy of the oyster. <Forest and Stream, New York, November 30, 1882, vol. XIX, pp. 351-352.

- 1882 i—Walpole, Spencer.** Report on the manner in which the Herne Bay, Hampton, and Reculver Oyster Company are Cultivating the Oyster Grounds within the Limits of the Fishery granted them by "The Herne Bay Fishery Act, 1864." Parliamentary paper, London, 1882.

- 1882 j—Winslow, Francis.** Report on the oyster beds of the James River, Va., and of Tangier and Pocomoke Sounds, Maryland and Virginia. <Appendix No. 11, Report U. S. Coast and Geodetic Survey, 1881. Washington, 1882. 4°, 87 pp., 3 maps.

A report on the delineation of the oyster beds of the localities cited in the title, with notes on the tides and currents, density of the waters, characteristics and abundance of the oysters, effects of ice and gales, with general notes on the condition of the fishery. The three maps indicate the locations of the oyster beds. See 1879 l and 1880 f.

- 1882 k—Anonymous. Success in oyster culture. <Forest and Stream, New York, September 14, 1882, vol. XIX, p. 121.

A description of the experiments made by Prof. Henry J. Rice in the summer of 1882. See 1888 aa.

- 1883 a—Anderson-Smith, W. Oyster Culture in Scotland. Selection of the Prize Essays of the International Fisheries Exhibition, Edinburgh, 1882. London, Blackwood, 1883.

- 1883 b—Anderson-Smith, W. Various Methods of Oyster Culture. Selection of the Prize Essays of the International Fisheries Exhibition, Edinburgh, 1882. London, Blackwood, 1883.

- 1883 c—Atwater, W. O. Report of progress of an investigation of the chemical composition and economic values of fish and invertebrates used for food. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 231-286.

Contains an account of analyses of oysters, including description of samples, tabular statements of results, and methods of analyses; also summarizes the more immediately practical results of the work, especially in its relations to the nutritive values of the samples analyzed, the detailed account of the more abstract investigations being reserved for another report. See 1885 a.

- 1883 d—Bouchon-Brandely, G. A report on oyster-culture in the Mediterranean. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 907-930.

Translated from pp. 45-103 of *Rapport au Ministre de l'Instruction publique sur la Pisciculture en France et l'Ostréiculture dans la Méditerranée*, par M. Bouchon-Brandely. Paris, 1878. Extrait du Journal Officiel des 16, 17 et 18 Mai, 1878. Small 8°, 103 pp.

Discusses the methods and conditions of oyster-culture as prosecuted at Lake Fusaro, Tarento, Toulon, Peninsula of Giens, Berre, Caronte, Thau, Leucate, and Agay.

- 1883 e—Bouchon-Brandely, G. Report relative to the generation and artificial fecundation of oysters. <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. II, pp. 319-338.

Translated by John A. Ryder from *Rapport relatif à la génération et à la fécondation artificielle des huîtres, adressé au Ministre de la Marine et des Colonies*, par M. Bouchon-Brandely. Journal officiel de la République Française. December 16 and 17, 1882, pp. 6762-6764 and 6778-6782.

This is at present the standard authority on the embryology and biology of *Ostrea angulata*, or Portuguese oyster. See 1883 f.

- 1883 f—Bouchon-Brandely, G. The Generation and Artificial Fecundation of Oysters. Parliamentary paper, London, 1882.

Another translation of the preceding paper.

- 1883 g—Coste, Jean Jacques. Report on the oyster and mussel industries of France and Italy. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 825-884.

Extracted and translated from pp. 89-193 of *Voyage d'Exploration sur le littoral de la France et de l'Italie*. Deuxième édition. Paris, 1861. 4°, 297 pp. This well-known report pictured the success of the oyster-cultural processes of Italy and strongly urged their introduction on the French coast, and resulted in the institution, under the patronage of Napoleon III, of a series of experimental measures, which have finally resulted in the present important oyster industry on the coasts of France. The following subjects are discussed in the translation: (1) Artificial oyster beds of Lake Fusaro. (2) Green oysters of Marennes. (3) Mussel weirs of the Bay of Aiguillon. (4) Condition of the oyster beds along the coasts of France, and the necessity of restocking them. (5) Artificial oyster beds created in the Bay of Saint-Brieuc. (6) Restocking of the Basin of Arcachon. (7) Appliances suitable for the reception of oyster spat.

- 1883 h—Cox, James C. On the edible oysters found on the Australian and the neighboring coasts. <Proceedings Linnæan Society of New South Wales, Sydney, 1883, vol. VII, pp. 122-134 and pp. 555-560.

Describes thirteen species occurring on those coasts, with notes on the oyster beds and the oyster industry.



- 1883 i—De Bon, M.** Report on the condition of oyster culture in France in 1875. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 885-906.

Translated from Notice sur la Situation de l'Ostréiculture en 1875; précédée d'un Rapport adressé au Ministre de la Marine et des Colonies, par M. De Bon. (Extrait de la Revue Maritime et Coloniale.) Paris, 1875. 8°, 27 pp. In addition to describing the condition in 1875, this report sketches the history of oyster-culture in France from its origin.

- 1883 j—Fraiche, Félix.** A practical guide to oyster culture, and the methods of rearing and multiplying edible marine animals. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 753-824.

Translated by H. J. Rice from Guide Pratique de l'Ostréiculture et Procédés d'Élevage et de Multiplication des Races Marines Comestibles, par M. Félix Fraiche. Paris, E. Lacroix, 1865, 12°, 174 pp., 25 woodcuts. Discusses the natural history of the common European oyster (*Ostrea edulis*) and other mollusks, cites the history of oyster-culture in France, and describes with much detail the methods of culture pursued in that country.

- 1883 k—Hausser, A. É.** Oyster culture in Morbihan. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 943-1000.

Translated from L'Industrie Huitrière dans le Morbihan. Rapport adressé au nom de la Commission du concours de Vannes, par A. E. Hausser, Paris, 1876, 12°, 152 pp.

The methods of culture practiced at Morbihan, France, in 1875, are described with great minuteness. The principal subject-captions are as follows: Breeding parks in general, collectors, liming, formation of breeding parks, removal of young oysters from the collectors, their preservation, enemies of the oyster, parks for raising and fattening oysters, and measures required to insure the prosperity of oyster-culture.

- 1883 l—Hoek, P. P. C.** Results of the investigations relative to the oyster and its cultivation at the end of the first year of these investigations. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 1001-1036.

Translated by Herman Jacobson from Overzicht van den stand van het onderzoek de oester en haar cultuur betreffende aan het einde van het eerste onderzoekingsjaar. In 1880 the Netherlands Zoological Association devoted its attention to investigations respecting the minute anatomy and the biology of the oyster, and an account of the general outline and results of that work appears in this paper.

- 1883 m—Hoek, P. P. C.** Researches on the generative organs of the oyster (*Ostrea edulis*). <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. II, pp. 343-345.

Translated by John A. Ryder from Recherches sur les organes génitaux des huîtres, par M. P. P. C. Hoek. Comptes rendus des séances de l'Académie des Sciences, Paris, Novembre 6, 1882. States that the generative organs (of the *Ostrea edulis*) do not consist of localized glands, but extend over nearly the whole of the body mass. They are not separated on either side of the body from the integument. It is the same cul-de-sac which produces at one time the spermatozoa and the ova. See 1890 a.

- 1883 n—Horst, R.** A contribution to our knowledge of the development of the oyster (*Ostrea edulis*). <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. II, pp. 159-167.

Translated by John A. Ryder from Tijdschrift der Nederlandsche Dierkundige Vereeniging, vol. VI, 1882.

- 1883 o—Hovey, H. C.** Oyster farming in Connecticut waters. <Science, Cambridge, September 14, 1883, vol. II, pp. 376-377.

Abstract of a paper read before the American Association for the Advancement of Science, August, 1883.

- 1883 p—Hubrecht, Thomas.** Oyster Culture and Oyster Fisheries in the Netherlands. One of the Papers of the Conferences held in Connection with the Great International Fisheries Exhibition. London, Clowes & Sons, 1883.

- 1883 q—Huxley, Thomas H.** Oysters. <The Fish Trades Gazette and National Fisheries Record, London, May 26, 1883, vol. I, pp. 5-6.

Abstract of an address on the natural history of the oyster and results of oyster fishing, delivered at the Royal Institution, London, May 11, 1883. See 1883 r.

- 1883 r—Huxley, Thomas H. Oysters and the oyster question. <The English Illustrated Magazine, London, October, 1883, and November, 1883, vol. 1, pp. 47-55, and pp. 112-121.

A lecture delivered at the Royal Institution, London, on May 11, 1883, with additional notes. Describes, in a popular manner, the minute anatomy and the biology of *Ostrea edulis*, and reviews the oyster industry of Europe, with notes on the efficiency of certain regulations. Concludes that the abundance or scarcity of oysters depends on causes that can not be materially affected by restrictive legislation. All such legislation is in itself objectionable, inasmuch as it creates new offenses and tends to make the administration of justice odious, and the burden of proof is always on those who advocate it to show that its utility is so great and manifest as to outweigh the inconvenience.

- 1883 s—Lockwood, Samuel. Natural history of the oyster. <American Monthly Microscopical Journal, Boston, January, 1883, vol. iv, pp. 7-8.

Abstract of a popular address delivered by the author before the New York Microscopical Society, December 15, 1882.

- 1883 t—Lockyer, J. N. Oysters, oyster fishing, and oyster-culture at the Fisheries Exhibition. <Nature, London, August 30, 1883, vol. xxviii, pp. 415-416.

Recites briefly the exhibits made in these lines by various countries at the London Fisheries Exhibit, 1883.

- 1883 u—Möbius, Karl. The oyster and oyster-culture. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. viii, pp. 683-752.

Translated by H. J. Rice, from *Die Auster und die Austernwirthschaft*; von Karl Möbius, Berlin, 1877, 8°, 128 pp. Discusses the following branches of the subject, especial reference being made to the Schleswig-Holstein oysters: (1) The sea flats. (2) Oyster banks and oystering. (3) The reproduction of the oyster. (4) Why oysters are not found over all portions of the sea flats. (5) Artificial oyster-breeding in France. (6) Attempts to introduce the French system of oyster-breeding into Great Britain. (7) Can the French system of artificial oyster-breeding be carried on in the waters of the German coast? (8) Can natural oyster-beds be enlarged, and can new beds be formed, especially along the German coast? (9) Growth and fecundity of the oyster. (10) An oyster-bed is a *bioöcönose* or a social community. (11) Concerning the increase in the price of oysters and in the number of consumers, and the decrease in the number of oysters. (12) The chemical constituents and flavor of oysters. (13) The objects and results of oyster-culture.

- 1883 v—Osborn, Henry L. The structure and growth of the shell of the oyster. <Studies from the Biological Society of Johns Hopkins University, Baltimore, 1883, vol. ii, pp. 427-432, with 1 plate.

- 1883 w—Pike, R. G.; Hudson, W. M., and Woodruff, Geo. N. Second report of the Shellfish Commissioners of the State of Connecticut, to the General Assembly, January session, 1883, Middletown, Conn., 1883, 8°, 44 pp., 1 map.

A record of the proceedings of the Commission in 1882, with official designations of the several natural oyster beds under the exclusive jurisdiction of the State, and the State laws relating to shell fisheries enacted in 1882. The map shows the triangulation work executed in 1882.

- 1883 x—Rasch, H. H. On the reason for an extraordinarily rich production of oysters in a natural basin. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. viii, pp. 1037-1044.

Translated by Tarleton H. Bean from *Nordisk Tidsskrift for Fiskeri*, 1880, pp. 49-58.

The natural basin consisted of a small lake situated a few feet higher than the open sea close outside of it, and which could receive salt water from the sea only during severe storms.

- 1883 y—Renaud, J. An account of the Portuguese and French oysters (*Ostrea angulata* and *Ostrea edulis*) cultivated in the Bay of Arcachon. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. viii, pp. 931-938.

Translated from *Notice sur l'Huître Portugaise et Française cultivée dans la Baie d'Arcachon*, Arcachon, 1878, 4°, 83 pp.

- 1883 aa—Rice, H. J. Experiments in oyster propagation. <Transactions of the American Fish-Cultural Association, twelfth annual meeting, New York, 1883, pp. 49-56.

Describes a process by means of which he was enabled to propagate the *Ostrea virginiana* and retain the young oysters alive for fourteen days. See 1883 ab.

- 1883 ab—Rice, H. J. Experiments in oyster propagation. <Forest and Stream, New York, August 9, 1883, vol. xxi, pp. 28-29.

An abstract of 1883 aa.

- 1883 ac—Ryder, John A. Preliminary notice of some points in the minute anatomy of the oyster. <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. ii, pp. 135-137.

- 1883 ad—Ryder, John A. The microscopic sexual characteristics of the American, Portuguese, and common edible oyster of Europe compared. <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. ii, pp. 205-215.

- 1883 ae—Ryder, John A. Note on the organ of Bojanus in *Ostrea virginica*. <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. ii, pp. 345-347.

- 1883 af—Ryder, John A. On the green color of the oyster. <American Naturalist, Philadelphia, January, 1883, vol. xvii, pp. 86-88.

Report on the continuation of the observations noted in 1882 e.

- 1883 ag—Ryder, John A. Rearing oysters from artificially fertilized eggs, together with notes on pond culture. <Bulletin U. S. Fish Commission, 1883. Washington, 1883, vol. iii, pp. 281-294.

Describes the experiments made by the author in the summer of 1882 at St. Jerome Creek, St. Mary County, Maryland. For journal of operations see 1884 r.

- 1883 ah—Ryder, John A. Rearing oysters from artificially impregnated eggs. <Science, Cambridge, February 23, 1883, vol. i, pp. 60-62.

An abstract of 1883 ag.

- 1883 ai—Ryder, John A. Rearing oysters from artificially impregnated eggs. <New Zealand Journal of Science, July, 1883, vol. i, pp. 455-459.

An abstract of 1883 ag.

- 1883 aj—Ryder, John A. On the mode of fixation of the fry of the oyster. <Bulletin U. S. Fish Commission, 1883. Washington, 1883, vol. iii, pp. 383-387, 9 figs.

- 1883 ak—Ryder, John A. Oyster culture in Holland. <Science, Cambridge, July 20, 1883, vol. ii, p. 79.

A review of Varslag omtrent onderzoek op de oester en de oestercultuur betrekking hebbende. Aflevering i. Leiden, 1883, 8°, 253 pp., 5 plates.

- 1883 al—Ryder, John A. The protozoan parasites of the oyster. <Science, Cambridge, June 22, 1883, vol. i, pp. 567-568.

Reviews a paper by M. Cortes on the protozoan parasites or commensals of *Ostrea edulis*.

- 1883 am—Ryder, John A. The oyster problem solved. <Forest and Stream, New York, August 30, 1883, vol. xxi, p. 90.

Cites briefly the results of the author's experiments at Stockton, Maryland, in the summer of 1883. See 1883 an.

- 1883 an—Ryder, John A. Rearing oysters from artificially fertilized eggs at Stockton, Maryland. <Science, Cambridge, October 5, 1883, vol. ii, pp. 463-464.

An account of experiments made by the author during the summer of 1883.

- 1883 ao—Sole, Mary. Oysters and oyster fisheries. <The Fish Trades Gazette and National Fisheries Record, London, July 28, 1883, vol. i, pp. 209-210.

Argues the desirability of improved regulations for the formation of oyster-cultural companies in England.

- 1883 ap—Winslow, Francis.** Catalogue of the Economic Mollusca and the Apparatus and Appliances used in their Capture and Preparation for Market, Exhibited by the United States National Museum at the Great International Fisheries Exhibition, London, 1883. Washington, 1883, 8°, 86 pp.

On pp. 14-44 the author discusses the biology of *Ostrea virginiana* and the oyster industry in the United States, with statistics of the business, the latter being abstracted from 1881 e; and on pp. 62-85 is given a list of the materials exhibited by the U. S. National Museum for illustrating the oyster and the oyster industry.

- 1883 aq—Winslow, Francis.** Chesapeake oyster beds. <Science, Cambridge, September 28, 1883, vol. II, pp. 440-443.

A review of 1882 f.

- 1883 ar—Anonymous.** Progress in oyster culture. <The Scotsman, Edinburgh, October 29, 1883, p. 6.

- 1883 as—Anonymous.** Artificial oyster rearing. <Chambers' Journal, Edinburgh, 1883, vol. LX, pp. 602.

- 1883 at—Anonymous.** Oysters in China. <Special catalogue of the Chinese collection of exhibits for the International Fisheries Exhibition, London, 1883. Describes the methods of oyster-culture on the coasts of China.

- 1883 au—Anonymous.** The United States at the Fisheries Exhibition. <Engineering News, London, September 14, 1883, vol. XXXVI, pp. 249-230.

A brief review of an address delivered by G. Brown Goode at the Great International Fisheries Exposition, London, 1883.

- 1883 av—Anonymous.** The Oyster Epicure: Collation of Authorities on the Gastronomy and Dietetics of the oyster. New York, White, Stokes and Allen, 1883, 12°, 61 pp.

The following branch subjects are discussed: (1) When in season; (2) How to eat it; (3) How to serve it; (4) What to drink with it; (5) How many to eat; (6) How to open it; (7) Roasted in its own shell; (8) Which to choose, and where; (9) Dietetics of the oyster; (10) Famous oyster-eaters.

- 1883 aw—Bouchon-Brandely, G.** Oyster culture in France. <The Fish Trades Gazette and National Fisheries Record, London, June 2, June 9, and June 16, 1883, vol. I, pp. 30-31, 64, and 92-93.

A reprint of 1883 d.

- 1883 ax—Bouchon-Brandely, G.** On the sexuality of the common oyster (*O. edulis*) and that of the Portuguese oyster (*O. angulata*). Artificial fecundation of the Portuguese oyster. <Bulletin U. S. Fish Commission, 1882. Washington, 1883, vol. II, pp. 339-341.

Translated by John A. Ryder from De la sexualité chez l'huître ordinaire (*O. edulis*) et chez l'huître portugaise (*O. angulata*). Fécondation artificielle de l'huître portugaise. Comptes rendus hebdomadaires des Séances de l'Académie des Sciences. Vol. xov, No. 6 (31 Juillet, 1882), pp. 256-259. Paris, 1882.

- 1883 ay—Faber, G. L.** The Fisheries of the Adriatic and the Fish Thereof. London, 1883, Royal 8°, 292 pp.

- 1883 az—Seal, Matthew (Chairman).** Royal Commission on the Fisheries of Tasmania. Report of the Commissioners, together with General and Critical Observations on the Fisheries of the Colony; Classified Catalogue of all the known species; Abstract of the Minutes of Proceedings of the Commission; Evidence taken before Commissioners; Statistics, etc. Tasmania: William Thomas Stoutt, Government Printer, Hobart, 1883. 4°, LXVI+86 pp.

Contains numerous brief references to the oysters and the oyster industries of Tasmania, and the regulations governing the taking of oysters.

- 1883 ba—Hoek, P. P. C.** Oyster culture in the Netherlands. <Report U. S. Fish Commission, 1880. Washington, 1883, vol. VIII, pp. 1029-1035.

Translated from Circular No. 2, 1879, of the Deutsche Fischerel-Verein.

- 1883 bb—Möbius, Karl.** On experiments, begun in 1880, to plant American oysters in the Western Baltic, and the usefulness of continuing these experiments, with the aid of the German Fishery Association. < Bulletin U. S. Fish Commission, 1883. Washington, 1883, vol. III, pp. 213-217.  
Translated by Herman Jacobson, from Circular No. 2, 1883, of the Deutsche Fischerel-Verein, Berlin, April 30, 1883.
- 1883 bc—Anonymous.** International Fisheries Exhibition, 1883. Official Catalogue. London: William Clowes & Sons, Limited, 1883. 8°, xci + 382 pp.  
Refers to the exhibits of oysters and the methods of oyster-culture made by various countries.
- 1884 a—Anson, C. V., and Willett, E. H.** Oyster Culture. Prize Essay issued in connection with the Great International Fisheries Exhibition. London, Clowes & Sons, 1884. 8°.
- 1884 b—Bouchon-Brandely, G.** Report to the Minister of the Marine relative to oyster-culture upon the shores of the British Channel and the ocean. < Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 673-724.  
Translated by Marshall McDonald from report published in the Journal Officiel de la République Française, January 22, 24, 25, and 26, 1877.
- 1884 c—Brocchi, P.** Report on the condition of oyster culture in France in 1881. < Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. IV, pp. 97-111.  
Translated from Journal Officiel de la République Française, November 8, 1881, pp. 6181-6186. A very interesting and important statistical paper by a zoologist thoroughly conversant with the industry. See 1882 a and 1884 d.
- 1884 d—Brocchi, P.** Report on the condition of oyster-culture in France in 1881. < Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 725-739.  
A reprint of 1882 a, which is another translation of the original of 1884 c.
- 1884 e—Brooks, W. K.; Wardell, J. T., and Legg, W. H.** Report of the Oyster Commission of the State of Maryland, January, 1884. Annapolis, 1884, 4°, 183 pp., 4 maps, 13 plates.  
This commission was authorized and directed by the general assembly of Maryland to "examine the condition of the oyster beds of the State and report the same to the next general assembly, with such recommendations as will conduce to the protection of this important industry." The report discusses the results of an examination of the oyster beds, the causes for their exhaustion, the necessary procedures for their improvement, the methods and possibilities of oyster planting, with particular reference to the practices in France, the oyster industry and oyster regulations of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, and Virginia, and recommendations for the improvement of the industry in Maryland, with a minority report by W. H. Legg, stating his objection to some points of the report. The maps represent portions of the Chesapeake Bay. See 1884 f.
- 1884 f—Brooks, W. K.; Wardell, J. T., and Legg, W. H.** Report of the Oyster Commission of the State of Maryland, January, 1884. Baltimore, 1884, 4°, 193 pp., 4 maps, 13 plates.  
A reprint of 1884 e.
- 1884 g—Goode, G. Brown.** The oyster industry of the world. < Transactions of the American Fish-Cultural Association, thirteenth annual meeting. New York, 1884, pp. 146-148.  
Presents an approximation of the oyster products of the world. See 1884 h.
- 1884 h—Goode, G. Brown.** The oyster industry of the world. < Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. IV, pp. 468-469.  
A reprint of 1884 g.

### 334 REPORT OF THE COMMISSIONER OF FISH AND FISHERIES.

**1884 i—Greene, Albert R.** Shell fisheries of Rhode Island: public hearing by the joint special committee of the general assembly. <Providence Journal, Providence, Rhode Island, March 5, 1891.

**1884 j—Hoek, P. P. C.** Oyster Culture. Prize essay issued in connection with the Great International Fisheries Exhibition. London, Clowes & Sons, 1884, 36 pp., 3 plates.

**1884 k—Hovey, Horace C.** Oyster farming in Connecticut. <Proceedings of the American Association for the Advancement of Science, thirty-second annual meeting, held at Minneapolis, August, 1883. New York, 1884, pp. 460-466.

**1884 l—Hudson, William M.** The shell fisheries of Connecticut. <Transactions of the Fish-Cultural Association, thirteenth annual meeting. New York, 1884, pp. 124-146.

Considers the relations existing between the State and the public and private oyster areas in Long Island Sound within the boundaries of Connecticut, with especial reference to legislation affecting the oyster industry.

**1884 m—Lockwood, Samuel.** An oyster on a crab. <American Naturalist, Philadelphia, February, 1884, vol. XVIII, p. 200.

Describes a female *Cancer irroratus* (Say), one-fourth full-grown, and with the caudal flaps distended with eggs, carrying attached to the right side of its carapace an oyster 2½ inches in length and 2 inches in width.

**1884 n—Pike, R. G.; Hudson, W. M., and Woodruff, G. N.** Third Report of the Shell Fish Commissioners of the State of Connecticut to the General Assembly, January session, 1884. Middletown, Conn., 1884. 8°, 40 pp.

Contains the official designation of the natural beds under the exclusive jurisdiction of the State, and refers to the general condition of the oyster industry of Connecticut in 1883.

**1884 o—Puysegur, M.** On the cause of the greening of oysters. With a supplementary note on the coloration of the blood corpuscles of the oyster, by John A. Ryder. <Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 793-805.

Also reviews much of the existing literature relative to this subject. This first part of this article is translated from Notice sur la Cause du Verdissement des Huitres. Paris, Berger-Levrault et Cie, 1880. 8°, 11 pp., 1 plate.

**1884 p—Rumpff, Carl.** The oyster as a popular article of food in North America. <Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. iv, pp. 356-358.

Translated by Herman Jacobson from Circular No. 3, 1884, of the German Fishery Association, Berlin, April 4, 1884.

**1884 q—Ryder, John A.** On a new form of filter or diaphragm to be used in the culture of oysters in ponds. <Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. iv, pp. 17-31.

The filter described consists of barriers of sand confined between gunny cloth and galvanized wire cloth, which works quite successfully. This article also describes the methods of constructing the oyster ponds or *claires*.

**1884 r—Ryder, John A.** Journal of operations on the grounds of the Eastern Shore Oyster Company, on Chincoteague Bay, near Stockton, Md., during the summer of 1883. <Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. iv, pp. 43-47.

This journal contains a daily record of the work, the results of which were published in Bulletin U. S. Fish Commission, 1883, vol. iii, pp. 281-294, in a paper entitled "Rearing oysters from artificially fertilized eggs, together with notes on pond culture." See 1883 ag.

- 1884 s—Ryder, John A.** An account of experiments in oyster culture and observations relating thereto. <Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 763-778.

A continuation of an article by this author, published in the report of the Maryland Fish Commissioner for 1881. See 1881 f.

- 1884 t—Ryder, John A.** The metamorphosis and post-larval stages of development of the oyster. <Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 779-791.

- 1884 u—Ryder, John A.** A contribution to the life-history of the oyster (*Ostrea virginica* Gmelin and *O. edulis* Linn.). <The Fisheries and Fishery Industries of the United States. Washington, 1884, sec. 1, pp. 711-758.

Discusses—(1) Outline sketch of the coarser anatomy of the oyster.

(2) The minute anatomy of the oyster.

(3) Sex, sexual products, and differences of the sexual habits of the American and European oysters.

(4) New methods of distinguishing the sexes and of taking the eggs of the oyster.

(5) Rate of growth of *Ostrea virginica*.

(6) The food of the oyster.

(7) On the cause of the green color of the oyster.

(8) Local variations in the form and habits of the oyster.

(9) The oyster crab as a messemate and purveyor.

(10) Physical and vital agencies destructive to oysters.

(11) Natural and artificial oyster banks.

- 1884 v—White, H. P.; Long, C. W., and Bock, Thos. H.** The Local Oyster Law of Somerset County, Codified as Public Local Laws, Article XIX, Sections 91-101, Inclusive. Also Regulations and Designations made by the County Commissioners of said County. Crisfield, Md: From Crisfield Leader Press, 1884. Royal 8°, 6 pp.

- 1884 w—Winslow, Francis.** Report of experiments in the artificial propagation of oysters, conducted at Beaufort, N. C., and Fair Haven, Conn., in 1882. <Report U. S. Fish Commission, 1882. Washington, 1884, vol. x, pp. 741-762.

These experiments, like those of Dr. Brooks in 1879 and of Prof. Ryder and Lient. Winslow in 1880, resulted in impregnating the egg and maintaining the embryo alive for a short period, after which it died. This report cites the methods and apparatus employed and the influence of the various natural conditions affecting the development of the egg.

- 1884 x—Winslow, Francis.** Memorandum of the present condition and future needs of the oyster industry. <Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. iv, pp. 233-234.

Briefly refers to the necessity for model oyster farms and continued investigations of the embryological life of the oyster.

- 1884 y—Winslow, Francis.** Notes upon oyster experiments in 1883. <Bulletin U. S. Fish Commission, 1884. Washington, 1884, vol. iv, pp. 354-356.

- 1884 z—Winslow, Francis.** Present condition and future prospects of the oyster industry. <Transactions of the American Fish-Cultural Association, thirteenth annual meeting. New York, 1884, pp. 148-163.

Refers particularly to the Chesapeake region.

- 1884 aa—Winslow, Francis, and Others.** Ownership of oyster grounds. <Transactions of the American Fish-Cultural Association, thirteenth annual meeting. New York, 1884, pp. 241-247.

Recommends the adoption by each State of the principle of individual ownership of oyster grounds.

- 1884 ab—Anonymous.** Oyster fishery in Connecticut. <Science, New York, March 20, 1884, vol. v, p. 234.

A brief review of the fourth annual report of the Shellfish Commissioners of the State of Connecticut. See 1885 o.

- 1884 ac—Duvar, J. Hunter.** Oysters in Prince Edward Island. <Report on the Fisheries of Canada for the year 1883. Ottawa, 1884, pp. 177-180.

A discussion of the condition of the oyster industry of Prince Edward Island during the preceding year, with notes on the inefficiency of the regulations governing the fishery and recommendations for additional restrictions on the public fishery and for encouragement to oyster-culturists.

- 1885 a—Atwater, W. O.** Contributions to the knowledge of the chemical composition and nutritive values of American food fishes and invertebrates. <Report U. S. Fish Commission, 1883. Washington, 1885, vol. xi, pp. 433-500.

A continuation of 1883 c. On pp. 460-488 is given a table of percentages of water and nutritive ingredients in 38 specimens of fresh oysters and 3 specimens of canned oysters from various localities in America. See 1888 a.

- 1885 b—Blackford, Eugene G.** Report of the Commissioner of Fisheries of the State of New York in charge of the Oyster Investigation. Albany, 1885, 8°, 70 pp.

The first of the three reports of this investigation discusses the decrease of oysters in New York State and the means of increasing the supply, the locations and conditions of the reefs, and the enemies of the oyster, the investigation relating to those beds west of Patchogue on the south side and Port Jefferson on the north side of Long Island.

- 1885 c—Blackford, Eugene G.** Report of the work of an Oyster Investigation with the steamer Lookout. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. v, pp. 52-57.

Describes the conditions of the oyster-grounds at City Island, Perth Amboy, and the south side of Staten Island, Cold Spring Harbor, Hempstead Harbor, Little Neck Bay, Manhasset or Cow Bay, Execution Light-house rock, Port Chester and Rye Beach, Northport Harbor, Princess Bay, and Spuyten Duyvil Creek, all in the State of New York.

- 1885 d—Blackford, Eugene G.** The oyster beds of New York. <Transactions of the American Fisheries Society, fourteenth annual meeting. New York, 1885, pp. 85-89.

Describes briefly the preliminary work in the investigation of the natural oyster beds of New York, begun in 1884, and cites the possibilities for oyster-culture in that State. See 1885 e.

- 1885 e—Blackford, Eugene G.** The oyster beds of New York. <Forest and Stream, New York, August 13, 1885, vol. xxv, p. 50.

A reprint of the preceding paper.

- 1885 f—Brooks, W. K.** Oyster farming for North Carolina. <Forest and Stream, New York, April 16, 1885, vol. xxiv, pp. 230-231.

A paper read at the Fishermen's Convention at Raleigh, October 15, 1884.

- 1885 g—Cunningham, T. J.** Resting position of oysters. <Nature, London, October 22 and December 10, 1885, vol. xxxii, p. 597, and vol. xxxiii, p. 129.

Disputes the statements of many well-known malacologists that oysters rest on the convex valve, and advances the theory that they rest on the flat valve because that side is nearly always the cleaner, being more nearly free from worm tubes, hydroids, etc. See 1885 k, 1885 n, 1885 s, 1885 u, and 1886 v.

- 1885 h—Garman, Samuel.** Protecting the oyster beds from starfish depredations. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. v, pp. 127-128.

Urges the use of divers in the removal of starfish from the oyster beds in Long Island Sound.



- 1885 i—Hoek, P. P. C.** Comparative examination of cultivated and uncultivated oysters, with the view to determine the number which, during the first year, took part in reproduction. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. v, pp. 193-196.

Translated by Herman Jacobson from pp. 481-495 of *Tijdschrift der Nederlandsche Dierkundige Vereniging*, Supplement Dell 1. Leiden, E. J. Brill, 1883-84.

These experiments were made in Holland, and, being conducted under very unfavorable circumstances, were, according to the writer, not conclusive.

- 1885 j—Hopson, W. B.** An Essay on the Oyster Industry of the United States. New York: The McWilliams Printing House, 1885. 8°, 78 pp.

Discusses: (1) Oyster cultivation in Connecticut; (2) Experiences in oyster-planting in Connecticut; (3) Enemies of the oyster; (4) Food of the oyster; (5) Anatomy of the oyster; (6) "Drinking oysters"; (7) The oyster trade of Boston and Providence; (8) The Connecticut trade; (9) The oyster trade of New York City; (10) Shipping seed oysters to California; (11) European shipments; (12) Blue points; (13) Rockaways; (14) Shrewsbury; (15) The oyster trade of Delaware Bay; (16) The Baltimore trade; (17) Chesapeake Bay oyster industry; (18) Hints regarding the cooking of oysters.

- 1885 k—Hunt, Arthur R.** Resting position of oysters. <Nature, London, November 5 and December 17, 1885, vol. xxxiii, pp. 8 and 154.

Argues that they rest on the convex side.

- 1885 l—Mather, Fred.** Successful oyster-culture. <Forest and Stream, New York, October 1, 1885, vol. xxv, pp. 190-191.

Describes the experiments of the author in 1885.

- 1885 m—Möbius, Karl.** Report on planting Canadian oysters near the Island of Aaröe, in the Little Belt, November 6, 1884. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. v, pp. 257-260.

Describes the details of the planting of 17 barrels of oysters in November, 1884. The success of the operation was not noted.

- 1885 n—Möbius, Karl.** Resting position of oysters. <Nature, London, November 10, 1885, vol. xxxiii, p. 52.

Replies adversely to T. J. Cunningham's arguments on this subject. See 1885 g.

- 1885 o—Pike, R. G.; Hudson, W. M., and Bill, J. A.** Fourth Report of the Shell Fish Commissioners of the State of Connecticut, to the General Assembly, January session, 1885. Middletown, Conn., 1885. 8°, 32 pp.

Completes the official designation of the natural oyster reefs under the exclusive jurisdiction of the State of Connecticut. Refers to the proceedings of the commissioners and the general condition of the oyster industry in 1884. Appendix contains the shellfish enactments of 1884.

- 1885 p—Pike, R. G.; Hudson, W. M., and Bill, J. A.** Fifth Report of the Shell Fish Commissioners of the State of Connecticut, to the General Assembly, January session, 1886. Middletown, Conn., 1885. 8°, 26 pp.

Contains notes on the procedures of the commissioners and the condition of the oyster industry of Connecticut in 1885, and the shellfish enactments of the State during the same year.

- 1885 q—Rice, H. J.** The propagation and natural history of the American oyster. <Supplement to the Report of the Commissioner of Fisheries of the State of New York, in charge of the Oyster Investigation. Albany, 1885. 8°, pp. 71-137.

A brief summary of the present knowledge regarding the natural history of *Ostrea virginiana*, and its application to the waters of the State of New York. Discusses particularly the distribution of the species, structure of the shell, the coarse anatomy of the animal, the generative organs, seed oysters, food of the oyster, coloration of the oyster, its friends and enemies, artificial propagation, and the methods of obtaining spat.

**1885 r—Ryder, John A.** The oyster problem actually solved. <Forest and Stream, New York, October 22, 1885, vol. xxv, pp. 249-250.

**1885 s—Ryder, John A.** Resting position of oysters. <Nature, London, November 26, 1885, vol. xxxiii, pp. 80-81.

Opposes the theory advanced by T. J. Cunningham that oysters rest on the convex side. See 1885 g.

**1885 t—Ryder, John A.** New system of oyster culture. <Science, New York, November 27, 1885, vol. vi, pp. 465-467.

The principles of the new system are as follows:

(1) Oyster embryos diffuse themselves throughout the three dimensions of a body of water, and will affix themselves to collecting surfaces similarly distributed, up to and even above low-water level.

(2) The floating fry will adhere to smooth surfaces as well as rough ones.

(3) The surfaces upon which spatting occurs must be kept as free as possible from sediment and organic growths, in order that the very small mollusks may not be smothered and killed during the most critical period of their lives.

(4) Artificial fertilization of the egg of the oyster is feasible, and will become an important adjunct to successful spat-culture.

(5) The water charged with embryo oysters may be passed through a steam pump without injury.

(6) Oyster fry usually adheres most freely to the under surface of shells or other collectors, because the lower side is cleanest, and most favorable to the survival of the animals.

(7) The spat of the oyster will grow and thrive with comparatively little light.

(8) The specific gravity of the water may range from 1.003 to 1.0235.

(9) The most favorable temperatures of the water for spatting seem to be from 68° to about 80° F.

(10) Spatting will occur just as freely in ponds or tanks with a free circulation as in open water.

**1885 u—Stuart-Wortley.** The resting position of oysters. <Nature, London, October 29, 1885, vol. xxxii, p. 625.

In this writer's experiments "the young oysters born in tanks rested on the flatter shell when they obtained a flat surface, such as a tile, to adhere to; but when so arranged that they had irregular surfaces to deal with, such as little bundles of twigs, some adhered one way and some another. But where young oysters, nearly two years old, were moved from their original supports, and were compelled to find new ones, they selected the flat shell to rest upon in every instance, except where they were placed on sand, in which case they rested on the convex shell, in order apparently to avoid clogging the mouth of the shell with sand." See 1885 g.

**1885 v—Turner, W.** Resting position of oysters. <Nature, London, November 12, 1885, vol. xxxiii, p. 30.

**1885 w—Verrill, A. E.** How long will oysters live out of water. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. v, pp. 161-162.

In the instance described the oysters lived ten weeks under very unfavorable circumstances.

**1885 x—Winslow, Francis.** The North Carolina oyster industry. <Forest and Stream, New York, May 7 and 14, 1885, vol. xxiv, pp. 292, 293, and 332.

A paper read at the Fishermen's Convention, Raleigh, October 16, 1884. Cites instances of the depletion of oyster beds in all parts of the world, reviews the development of the oyster, and outlines the practical application of the information to the water areas of North Carolina.

**1885 y—Wood, W. M.** Report of operations at St. Jerome station, in laying out oyster ponds, by the steamer *Fish Hawk*, in 1883. <Report U. S. Fish Commission, 1883. Washington, 1885, vol. xi, pp. 1153-1156.

Contains a brief table showing the results of dredging on oyster beds by the steamer *Fish Hawk* in various localities in Maryland from November 15 to 24, 1883.

**1885 z Anonymous.** Oyster commission of New York. <Forest and Stream, New York, February 26, 1885, vol. xxiv, p. 91.

Reviews the first report of the New York oyster commissioner. See 1885 b.

- 1885 aa—Anonymous.** Whitstable oysters. <Chambers' Journal, Edinburgh, 1885, vol. LXII, pp. 481 *et seq.*
- 1885 ab—Anonymous.** Prices of English oysters. <Standard, London, March 19, 1885.
- 1885 ac—Anonymous.** Whitstable and her natives. <London Daily Telegraph, London, August 31, 1885.  
Describes the company of free fishermen and dredgers of Whitstable, England.
- 1885 ad—Anonymous.** Oyster-culture in Connecticut. <Forest and Stream, New York, December 17, 1885, vol. XXV, p. 410.  
Reviews the Fifth Annual Report of the Shellfish Commissioners of the State of Connecticut. See 1885 p.
- 1885 ae—Anonymous.** Clinton oyster lands. <New Haven Register, New Haven, September 15, 1885.  
An account of the controversy relative to the rights to oyster-grounds in the channel of the Hammonasset River, Connecticut.
- 1885 af—Harding, Charles W.** An Apparatus for Storing, Keeping Alive, and Protecting from the Force of the Sea Edible Molluscs. London. Published and sold at the Patent Office Sale Branch, 1885. 4<sup>o</sup>, 4 pp., 2 plates.
- 1885 ag—Ryder, John A.** The rate of growth of oysters at Saint Jerome Creek Station. <Bulletin U. S. Fish Commission, 1885. Washington, 1885, vol. V, pp. 129-131.
- 1886 a—Blackford, Eugene G.** Oyster-culture in New York. <Commercial Advertiser, December 28, 1886.  
A discourse on the necessity of giving to the oyster-cultivators of New York State some certainty of tenure in the grounds used by them.
- 1886 b—Bothwell, A. J.** On the half shell: a description of oyster fishing. <Review, Brooklyn, N. Y., February, 27, 1886.
- 1886 c—Buch, S. A.** Oyster-culture as seen at the London Fisheries Exhibition. <Report of the U. S. Fish Commission, 1884. Washington, 1886, vol. XII, pp. 913-924.  
Translated by Herman Jacobson from Norsk Fiskeritidende, Bergen, October 1884, vol. III, Nos. 2 and 4.
- 1886 d—Hodson, Thomas S.** Long Island oyster beds. <The Sun, Baltimore, August 2, 1886.
- 1886 e—Hodson, Thomas S.** Steam oyster dredges: their work in New England waters. <The Daily American, Baltimore, August 5, 1886.
- 1886 f—Hodson, Thomas S.** Private oyster beds: cultivation needed in Maryland. <The Daily American, Baltimore, August 14, 1886.  
Suggests methods for increasing the abundance of the Chesapeake oyster yield.
- 1886 g—Horst, R.** The development of the oyster (*Ostrea edulis* L.). <Report U. S. Fish Commission, 1884. Washington, 1886, vol. XII, pp. 891-911, 2 plates.  
Contains an historical résumé of the investigations in this subject, with an account of the individual researches of the author.
- 1886 h—Mather, Fred.** Oyster-culture. <Transactions of the American Fisheries Society, fifteenth annual meeting. New York, 1886, pp. 26-26.  
A review of experiments made at Cold Spring Harbor, New York, during the summer of 1885.
- 1886 i—Mather, Fred.** Oyster-culture. <Forest and Stream, New York, July 15, 1886, vol. XXVI, p. 491.  
A modified reprint of 1886 h.

### 340 REPORT OF THE COMMISSIONER OF FISH AND FISHERIES.

- 1886 j—Phillips, Thomas.** American oysters. <The Fish Trades Gazette and Game and Poultry Trades Chronicle, London, October 30 and November 6, 1886, vol. iv, Nos. 180 and 181.

The English trade in American oysters from the standpoint of a Liverpool oyster dealer.

- 1886 k—Pike, R. G.; Hudson, W. M., and Bill, J. A.** <Sixth Report of the Shell Fish Commission of the State of Connecticut to the General Assembly, January session, 1887. Middletown, Conn., 1886. 8°, 30 pp.

A report of the procedures of the commissioners, the general condition of the oyster industry in the State during the preceding year, and the shellfish enactments of 1885. See 1880 l.

- 1886 l—Pike, R. G.; Hudson, W. M., and Bill, J. A.** The oyster industry. <The New Haven Register, New Haven, November 26, 1886.

A reprint of 1886k.

- 1886 m—Verrill, A. E.** How long will oysters live out of water. <The Fish Trades Gazette and Poultry Trades Chronicle, London, July 3, 1886, vol. iv, No. 163.

A reprint of 1885w.

- 1886 n—White, William.** The American oysters. <Eagle, Brooklyn, September 12, 1886.

A lengthy account of the development and methods of the exportation of American oysters to England.

- 1886 o—Winslow, Francis.** Report on the Waters of North Carolina, with Reference to their Possibilities for Oyster-Culture; together with the Results Obtained by the Surveys directed by the Resolution of the General Assembly, ratified March 11, 1885. Raleigh, 1886. 8°, 151 pp., 2 maps.

Discusses for each water area of the State the character of the bottom, the depth and specific gravity of the waters, the strength and direction of the currents, and the character of the indigenous fauna. The maps indicate the location of the public and private oyster beds and the areas considered suitable for cultivation. See 1889 n.

- 1886 p—Anonymous.** Shell fish in Connecticut. <Science, New York, January 15, 1886, vol. vii, pp. 59-60.

Reviews briefly the fifth report of the shellfish commissioners of the State of Connecticut. See 1885 p.

- 1886 q—Anonymous.** Oyster grounds. <All the Year Round, London, 1886, vol. LIX, pp. 250 *et seq.*

- 1886 r—Anonymous.** The Oyster Packers of Crisfield. <The Times, Philadelphia, February 1, 1886.

- 1886 s—Anonymous.** Maryland's oyster wealth. <The Sun, Baltimore, August 10, 1886.

- 1886 t—Anonymous.** Our oyster supplies. <The Fish Trades Gazette and Game and Poultry Trades Chronicle, London, September 25, 1886, vol. iv, No. 175.

Discusses the oyster supplies available for the London market.

- 1886 u—Anonymous.** The Connecticut shell-fish commission. <Forest and Stream, New York, December 30, 1886, vol. xxvii, p. 440.

A review of the sixth annual report. See 1880 k.

- 1886 v—Duvar, J. Hunter.** Oysters in Prince Edward Island. <Annual Report of the Department of Fisheries, Dominion of Canada, for the year 1885. Printed by order of Parliament, Ottawa. Printed by Maclean, Rogers & Co., 1886. 8°, pp. 257-261.

A report on the condition of the oyster industry of Prince Edward Island during 1885.

- 1887 a—Atwater, W. O.** The chemical changes produced in oysters in floating, and their effects upon the nutritive value. <Transactions of the American Fisheries Society, sixteenth annual meeting. New York, 1887, pp. 37-52.

In floating or fattening oysters in fresher water, as is commonly done in preparing them for market in certain localities, the animal gains from one-eighth to one-fifth in bulk and weight by taking up water, but at the same time parts with some of its salts, with small quantities of nutritive ingredients which escape at the same time, the gain of water and loss of nutriment being evidently due to osmosis. The flavor of the oysters is said to be thereby improved and they bear transportation and keep better.

- 1887 b—Atwater, W. O.** The chemistry of "oyster fattening." <Popular Science Monthly, New York, November, 1887, vol. xxxii, pp. 77-87.

An adaptation from 1887 a.

- 1887 c—Atwater, W. O.** The chemical changes in oysters by floating. <Forest and Stream, New York, December 1 and 8, 1887, vol. xxix, pp. 368-369 and 389-390.

A reprint of 1887 a.

- 1887 d—Blackford, Eugene G.** Report of an oyster investigation in New York with the steamer *Lookout*. <Report U. S. Fish Commission, 1885. Washington, 1887, vol. xiii, pp. 157-164.

Describes conditions of the oyster-grounds in Peconic Bay, Hudson River, Port Jefferson Harbor, Princess Bay, and in the vicinity of The Kills and Execution Light-House Rock.

- 1887 e—Blackford, Eugene G.** Second Report of the Oyster Investigation and of Survey of Oyster Territory, for the years 1885 and 1886. Transmitted to the Legislature January 20, 1887. Albany, The Argus Company, 1887. 80, 47 pp., one map, 5 plates.

Describes the oyster beds of The Kills, Execution Light-house Rock, Hudson River, Port Jefferson Harbor, Princess Bay, Hempstead Bay and other localities contiguous to New York City. Reports the area of the natural beds to be 15,586 acres, and of grounds available and suitable for cultivation 303,600 acres. The map indicates the location of a large portion of the natural oyster beds of the State.

- 1887 f—Bouchon-Brandely, G.** Report on the artificial fecundation and generation of oysters. <Bulletin U. S. Fish Commission, 1886. Washington, 1887, vol. vi, pp. 225-240.

Translated by Herman Jacobson from *Rapport sur la fécondation artificielle et la génération des huîtres*, Paris, 1884.

"The following has been the endeavor of our researches: (1) To find out whether artificial fecundation could yield practical results in entirely closed waters; and (2) To ascertain whether the raising of the Portuguese oyster (*Ostrea angulata*) is possible and profitable in the ponds on the Mediterranean."

- 1887 g—Brooks, W. K.** On the artificial propagation and cultivation of oysters in floats. <Bulletin U. S. Fish Commission, 1886. Washington, 1887, vol. vi, pp. 443-445.

Reprint from Johns Hopkins University circular, vol. v, No. 43.

- 1887 h—Dean, Bashford.** The food of the oyster; its conditions and variations. <Second Report of the Oyster Investigation and of Survey of Oyster Territory, for the years 1885 and 1886. Albany, 1887. Supplement, pp. 49-78, 3 plates.

The observations were made entirely within the waters of the State of New York.

- 1887 i—Duvar, J. Hunter.** Oysters in Prince Edward Island. <Annual Report of the Department of Fisheries, Dominion of Canada, for the year 1886. Printed by order of Parliament. Ottawa, printed by Maclean, Roger & Co., 1887, pp. 181-182.

Reports the condition of the oyster industry in 1886. The product was 33,125 barrels, valued at \$99,375.

- 1887 j—Ganong, W. F. The marine mollusca of New Brunswick. <Bulletin of the Natural History Society of New Brunswick, Saint John, N. B., 1887, No. VI, pp. 17-61.

Refers to the regions in which oysters are found in the Province of New Brunswick.

- 1887 k—Ingersoll, Ernest. The oyster industry. <The Fisheries and Fishery Industries of the United States. Washington, 1887. Sec. V, vol. II, pp. 505-565.

A modified reprint of "The Oyster Industry," U. S. Fish Commission, Washington, 1881. 4°, 252 pp. See 1881 c.

- 1887 l—Ninni, Alexander. Fish and oyster culture in the Province of Venice. <Bulletin U. S. Fish Commission, 1886. Washington, 1887, vol. VI, pp. 177-186.

Translated by Herman Jacobson from Progetti per estendere la piscicoltura ed introdurre la coqueicoltura nel fondo situato nei comuni censuari di Lugugnana e Caorle in Distretto di Portogruaro, Provincia di Venezia. Rome, 1885.

- 1887 m—Pike, R. G.; Hudson, W. M., and Bill, J. A. Seventh Report of the Shell Fish Commissioners of the State of Connecticut, for the year ending October 31, 1887. Middletown, Conn., 1887. 8°, 44 pp.

Devoted principally to the procedures of the Commissioners. From 1831 to 1886, inclusive, the State revenue from the oyster industry was \$77,331.67, and the disbursements \$87,773.51.

- 1887 n—Ryder, John A. A contribution to the life-history of the oyster (*Ostrea virginica* Gmelin and *O. edulis* Linn.). <The Fisheries and Fishery Industries of the United States. Washington, 1887. Sec. I, vol. I, pp. 711-758, plate 259.

Discusses the following branches of the title subject: (1) The coarse anatomy of the oyster; (2) The minute anatomy of the oyster; (3) Sex, sexual products, and difference of sexual habits of the American and European oysters; (4) New methods of distinguishing the sexes and of taking the eggs of the oyster; (5) Rate of growth of *Ostrea virginica*; (6) The food of the oyster; (7) On the cause of the green color of the oyster; (8) Local variations in the form and habits of the oyster; (9) The oyster-crab as a messmate and purveyor; (10) Physical and vital agencies destructive to oysters, and (11) Natural and artificial oyster banks. See 1893 p.

- 1887 o—Ryder, John A. An exposition of the principles of a rational system of oyster culture, together with an account of a new and practical method of obtaining oyster spat on a scale of commercial importance. <Report U. S. Fish Commission, 1885. Washington, 1887, vol. XIII, pp. 381-424.

Outlines a method by which "it is possible to certainly secure an abundance of spat under conditions which can be controlled, and within such an area and at such a cost as will render it possible for persons possessing the proper knowledge to undertake spat culture or the actual propagation of the oyster as a business."

- 1887 p—Stearns, Silas. Some of the fisheries of western Florida. <Bulletin U. S. Fish Commission, 1886. Washington, 1887, vol. VI, pp. 465-467.

Approximates the area of oyster beds on the west coast of Florida at 12,800 acres, and the product in 1884 at 75,000 bushels, for which the fishermen received \$45,000.

- 1887 q—Worth, S. G. North Carolina encouragement to shell-fish culture. <Transactions of the American Fisheries Society, sixteenth annual meeting. New York, 1887, pp. 53-59.

Reviews the history of the enactment of the North Carolina oyster-planting law of 1887, and quotes that law in its entirety.

- 1887 r—Worth, S. G. North Carolina encouragement to shell-fish culture. <Forest and Stream, New York, August 11, 1887, vol. XXIX, pp. 50-51.

A reprint of 1887 q.

- 1887 s—Young, Archibald.** The Salmon sea-trout, and oyster and mussel fisheries in the Orkney and Shetland Islands. <Fifth Annual Report of the Fishery Board for Scotland, being for the year 1886. Edinburgh, Her Majesty's Stationery Office, 1887. Appendix G, pp. 361-413.

The oyster resources of the Orkney Islands are described on pp. 376-382, and of the Shetland Islands on pp. 393-395. This paper contains an exhaustive review of the oyster fishery in the Orkney Islands since the beginning of the sixteenth century, the same being written by Mr. W. G. T. Watt.

- 1887 t—Anonymous.** The oyster problem: difficulties in the way of North Carolina planters. <The Sun, Baltimore, April 21, 1887.

- 1887 u—Anonymous.** The New York Oyster Commission. <Forest and Stream, New York, July 28, 1877, vol. xxix, pp. 9-10.

A review of the "Second Report of the Oyster Investigation and Survey of Oyster Territory, for the years 1885 and 1886." Transmitted to the Legislature January 20, 1887. Albany, 1887. 4°, 47 pp., 1 map, 5 plates. See 1887 e.

- 1887 v—Anonymous.** Oyster fishing: the industry in Rhode Island and how carried on. <The Providence Journal, Providence, November 6, 1887.

A comprehensive description of the methods of growing oysters in Rhode Island waters.

- 1887 w—Anonymous.** New York oyster franchises. <Forest and Stream, New York, November 17, 1887, vol. xxix, p. 329.

- 1887 x—Anonymous.** French and Irish oysters. <The Fish Trades Gazette and Game and Poultry Trades Chronicle, London, February 5, 1887, vol. iv, No. 190.

- 1887 y—Anonymous.** Delaware Law. An act in Relation to Oysters. Passed at Dover, March 28, 1887. Dover, Delawarean Print, 1887. 4°, 10 pp.

- 1887 z—Seed, William.** Fish-culture in New Zealand. <Bulletin U. S. Fish Commission, 1886. Washington, 1887, vol. vi, pp. 213-216.

Refers to the regulations governing the oyster fishery of New Zealand and estimates the extent of the product.

- 1887 aa—Ryder, John A.** On a tumor in the Oyster. <Proceedings of the Academy of Natural Sciences of Philadelphia. Philadelphia, 1877, pp. 25-27.

- 1888 a—Atwater, W. O.** Oysters as food. <Report of the Oyster Investigation and Shell Fish Commission, for the year ending November 30, 1887. Appendix A, pp. 53-78. Albany, 1888.

A continuation of 1883 c and 1885 a.

- 1888 b—Atwater, W. O.** Fattening of oysters. <Report of the Oyster Investigation and Shell Fish Commission for the year ending November 30, 1887. Appendix B, pp. 79-92. Albany, 1888.

Reprinted from Transactions of the American Fisheries Society, sixteenth annual meeting, New York, 1887, pp. 37-52.

- 1888 c—Bertram, James G.** Oyster-growing in England, France, and America. <National Review, London, September, 1888, vol. xii, pp. 102-114.

- 1888 d—Blackford, Eugene G.** Report of the Oyster Investigation and Shell Fish Commission, for the year ending November 30, 1887. Transmitted to the Legislature January 25, 1888. Albany, 1888. 8°, 106 pp.

This, the third and final report on oyster investigation authorized by the General Assembly of New York, discusses on pp. 1-52 the depletion of the public beds of that State and the necessity for private culture; also the pollution of the water contiguous to the oyster beds by refuse from oil refineries and similar establishments. The appendix contains the State shellfish enactments of 1887.

- 1888 e—DeSalis, Harriet A.** Oysters à la Mode; or, the Oyster and over 100 Ways of Cooking it, to which are added a few Receipts for Cooking all kinds of Shellfish. London and New York, Longmans, Green & Co., 1888. 12°, 68 pp.

Contains 113 recipes for cooking oysters.

**1888 f—Duvar, J. H.** (Secretary). Report of the Commissioners Appointed to Report on the Lobster and Oyster Fisheries of Canada. Ottawa, 1888, 65 pp.

**1888 g—Fryer, Charles E.** Report to the Board of Trade by Mr. C. E. Fryer, Inspector of Fisheries, on the Injury Alleged to be Caused to the Fisheries by the Deposit of Rubbish in the Estuary of the River Thames. London, 1888. 4°, 11 pp.

Cites the damage done to the oyster beds at the mouth of the Thames by the deposit of rubbish and recommends certain regulations for preventing it.

**1888 h—Morgan, C. Lloyd.** Oysters. <Murray's Magazine, London, January, 1888, vol. III, pp. 87-91.

"All that I propose to do here is to say a few words, suitable for those who do not like to be altogether ignorant of such matters, but have neither the time nor the inclination to be fully instructed, on the life-history of the oyster from its birth to its descent into the engorged and expectant tomb." See 1888 i.

**1888 i—Morgan, C. Lloyd.** Oysters. <Littell's Living Age, Boston, January, 1888, vol. 176, pp. 164-168.

A reprint of 1888 h.

**1888 j—Oemler, A.** Needs of the Georgia oyster industry. <The News, Savannah, Ga., November 20, 1888.

**1888 k—Pike, R. G.; Hudson, W. M., and Bill, J. A.** Eighth Report of the Shellfish Commissioners of the State of Connecticut, for the year ending October 31, 1888. Middletown, 1888. 8°, 27 pp.

Contains an account of the procedures of the Commissioners and the general condition of the oyster industry of the State in 1888. The area of ground held by individuals for planting purposes on October 31, 1888, was 78,167.50 acres.

**1888 l—Segrave, E. S.** Report on the Oyster Fisheries of Maryland. Foreign Office, Misc. series, No. 8, Reports on subjects of general and commercial importance. United States. London, 1888. 8°, 7 pp.

A compilation of data previously published relative to the extent of the oyster industry of Maryland, with notes on the shipment of the so-called "locked-oysters."

**1888 m—Winkley, Henry W.** Molluscs found in the oyster beds of Cognac, N. B. Bedeque and Summerside, P. E. I. <Bulletin of the Natural History Society of New Brunswick. No. VII, pp. 69-71. Saint John, N. B., Barnes & Co., 1888.

**1888 n—Anonymous.** Oyster-culture at Arcachon. <Blackwood's Magazine, London, March, 1888, vol. 143, pp. 366-371.

**1888 o—Anonymous.** Our oyster navy. <The Sun, Baltimore, November 20, 1888

A description of the Maryland oyster police force and its efficiency.

**1888 p—Anonymous.** The oyster war. <The Telegraph, Philadelphia, December 12, 1888.

An account of the troubles in the Chesapeake Bay in 1888.

**1888 q—Anonymous.** Oyster Laws Enacted by the General Assembly of Maryland at the January sessions, 1884, 1886, and 1888. Annapolis, 1888. 8°, 30 pp.

**1888 r—Anonymous.** Article LXXII. Oysters. Annapolis, 1888. 8°, 36 pp.

A compilation of all the general oyster laws of Maryland operative in 1888.

**1889 a—Cowen, John K.** The Maryland oyster in State politics. <The Sun, Baltimore, February 4, 1889.

A comprehensive discussion of the political reasons for the lack of encouragement to oyster-culturists in the State of Maryland.

**1889 b—Delmonico, Charles.** The Blue Point fraud. <The Evening Star, Washington, October 26, 1889.

A gastronomical discussion.



- 1889 c—Doyle, Edward P.** (Secretary). Seventeenth Report of the Commissioners of Fisheries of the State of New York. Transmitted to the Legislature January 10, 1889. Albany, 1889. 8°, 244 pp.

On pp. 107-182 is published the report of the shellfish commissioners of New York State for the year ending November 30, 1888.

- 1889 d—Folsom, Montgomery M.** Gathering oysters: a night on the waves with the fishermen of Brunswick. <The Atlanta Constitution, Atlanta, Ga., March 10, 1889.

- 1889 e—Ganong, W. F.** The economic mollusca of Acadia. <Bulletin of the Natural History Society of New Brunswick. Saint John, N. B., 1889. No. VIII, pp. 3-100.

This paper reviews, on pp. 46-63, the history of the oyster fishery in Canada from earliest times and contains a table showing the value of the oyster product in the three oyster-producing provinces, viz.—New Brunswick, Nova Scotia, and Prince Edward Island. See 1889 f.

- 1889 f—Ganong, W. F.** The economic mollusca of Acadia. Reprinted from Bulletin No. VIII of the Natural History Society of New Brunswick. St. John, N. B. Barnes & Co., printers. 1889. 8°, 166 pp.

A reprint of 1889 e.

- 1889 g—Nelson, Julius.** Oyster interests of New Jersey: New Jersey Agricultural Experiment Station. Special Bulletin. Trenton, 1889. 8°, 40 pp.

A report on the extent, condition, and product of the natural oyster beds of New Jersey, the extent and condition of the oyster planting industry, and the means of extending the cultivation of oysters in the State. Reports the area of natural beds to be 79,000 acres, with an annual product of 2,000,000 bushels of oysters, the greater portion of which are planted in the State; the area of the planted grounds to be 14,900 acres, the annual product of which amounts to 2,052,000 bushels, valued at one dollar per bushel.

- 1889 h—Oemler, A.** The Life History, Propagation, and Protection of the American Oyster. An Essay read before the Georgia Historical Society, March 4 and April 1, 1889, in the Interests of a Bill which is to be Introduced in the Georgia Legislature for the Protection and Development of the Oyster Industry of Georgia. <Savannah, The Morning News Print, 1889. 8°, 28 pp.

- 1889 i—Ravenel, W. de C.** Report of operations at St. Jerome oyster-breeding station for the year 1886. <Report U. S. Fish Commission, 1886. Washington, 1889, vol. XIV, pp. 765-777.

- 1889 j—Rowe, H. C.** Blundering oyster laws. <The Post, New York, February 25, 1889.

A criticism of certain features of the Connecticut oyster-cultivating regulations.

- 1889 k—Smith, Charles Sydney.** Connecticut oyster legislation. <Providence Journal, Providence, February 7, 1889.

This is the report of a joint special committee appointed by the legislature of the State of Rhode Island to inquire into the system of oyster legislation adopted by the State of Connecticut, and the practical workings thereof.

- 1889 l—Smith, Charles Sydney.** Connecticut oyster legislation. <Register, New Haven, February 11, 1889.

A reprint of 1889 k.

- 1889 m—White, Charles T.** Enemies of the oyster. <The World, New York, September 1, 1889.

- 1889 n—Winslow, Francois.** Report on the Sounds and Estuaries of North Carolina, with reference to oyster-culture. <Bulletin U. S. Coast and Geodetic Survey, No. 10, 4°, 136 pp., 3 maps.

See 1886 e.

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**1889 o—Young, Archibald.** Short report on the oyster and mussel fisheries in parts of Argyleshire, Iverness-shire, Sutherlandshire, and Ross-shire in 1888. <Seventh Annual Report of the Fishery Board for Scotland, being for the year 1888. Edinburgh, 1889.

**1889 p—Anonymous.** Washington's oyster trade. <The Evening Star, Washington, January 26, 1889.

**1889 q—Anonymous.** New Orleans oysters. <State, New Orleans, February 14, 1889.

**1889 r—Anonymous.** The Shellfish Commission. <The Hartford Courant, Hartford, Conn., February 15, 1889.

Reviews the finances of the Connecticut Shellfish Commission.

**1889 s—Anonymous.** Scarcity of oysters. <Forest and Stream, New York, October 24, 1889, p. 270.

**1889 t—Anonymous.** The Potomac dispute: Hog Island Flats. <The Sun, Baltimore, November 30, 1889.

**1889 u—Anonymous.** War on Raritan Bay: A row over oysters and clams. <The News, Newark, New Jersey.

A discussion of the New York-New Jersey boundary line in Raritan Bay so far as it affects the oyster industry.

**1889 v—Jackson, R. T.** The development of the oyster, with remarks on allied genera. <Proceedings of the Boston Society of Natural History, Boston, 1889, vol. XXIII, pp. 531-556, 4 pls.

**1890 a—Bourne, Gilbert C.** The generative organs of the oyster. <Journal of the Marine Biological Association of the United Kingdom. Plymouth. Published by the Association, 1889-90. Vol. I, pp. 268-281, pls. XXII and XXIII.

Abstract translation of *De Voortplantingsorganen van de Oester*. Bijdrage tot de Kennis van hun Bouwen en Functie. Door Dr. P. P. C. Hoek. Tijdschrift der Nederlandsche Dierkundige Vereeniging, Supplement Deel I. Leiden, E. J. Brill, 1883-84, pp. 113-254.

This paper gives the result of the observations of Dr. Hoek and reviews the conclusions of other naturalists. See 1883 m. It also contains an abstract translation of *Vergelijkend Onderzoek van Gekweekte en in het wild Opgegroeiide Oesters*, \* \* \* Door Dr. P. P. C. Hoek. Tijdschrift der Nederlandsche Dierkundige Vereeniging. Supplement Deel I. Leiden, E. J. Brill, 1883-84, pp. 481-495. See 1885 i.

**1890 b—Boyd, Thomas J. (Chairman).** Oysters. <Eighth Annual Report of the Fishery Board for Scotland, being for the year 1889. Edinburgh, 1890, pp. 27-33.

A review of the condition of the oyster industry during the preceding seven years, with notes on the progress of oyster-culture in other countries.

**1890 c—E——, T. F.** An oysterman's views. <The Daily American, Baltimore, December 23, 1890.

Urges a better enforcement of the cull law in Maryland.

**1890 d—Fowler, G. Herbert.** Notes on oyster-culture. <Journal of the Marine Biological Association of the United Kingdom. Plymouth. Published by the Association, 1889-90. Vol. I, pp. 257-267, pl. XXI.

A detailed description of the practical operations in oyster-culture on the Eastern Schelde, in the Dutch province of Zeeland, with notes on recent legislation relative to English oyster fisheries.

**1890 e—Fullarton, J. H.** Oyster culture in France and Holland. <Eighth Annual Report of the Fishery Board for Scotland, being for the year 1889. Part III. Scientific Investigations. Edinburgh, 1890, pp. 220-229.

This report is based on observations made by the author during a visit to the chief oyster centers from the East Scheldt in Netherlands to Arcachon in the southwest of France.

**1890 f—Hackett, Edward.** Oysters in Prince Edward Island. <Annual Report of the Department of Fisheries, Dominion of Canada, for the calendar year 1889. Ottawa, 1890, pp. 152-153.

A report on the oyster industry of Prince Edward Island during the year 1888.

- 1890 g—Hotchkiss, Samuel M.** Fifth Annual Report of the Bureau of Labor Statistics of the State of Connecticut, for the Year ending November 30, 1889. Hartford, Conn., The Case, Lockwood & Brainard Co., 1890. 8°, 215 pp., 5 plates, 2 maps.

On pp. 91-153 is given a statistical résumé of the extent of the oyster industry of Connecticut for the year ending May 1, 1889. The maps, which are worthy of special notice, indicate for the year 1889 the location of all the public and private oyster areas of the State.

- 1890 h—Lorne, Marquis of.** Oyster-culture. <Good Words, London, March, 1890, vol. xxxi, pp. 161-171.

A discussion of present methods practiced in France, with comparisons of the abundance of oysters in France and Great Britain. Illustrated by H. R. H. Princess Louise.

- 1890 i—Montagu, Lord.** Letter on oyster-culture. <Journal of the Marine Biological Association of the United Kingdom. Plymouth. Published by the Association. 1889-90. Vol. i, pp. 282-285.

An account of experiments made in oyster breeding in the Beaulieu River by Lord Montagu of Beaulieu.

- 1890 j—Nelson, Julius.** Report of the Biologist. <Tenth Annual Report of the New Jersey State Agriculture Experiment Station and the Second Annual Report of the New Jersey Agricultural College Experiment Station for the year 1889. Camden, N. J. F. F. Patterson, State Printer. 1890, 8°, pp. 197-220.

Contains an historical résumé of ostreicultural experiments and methods, with notes on certain experiments conducted by the author during the summer of 1889.

- 1890 k—Thomas, R. S.** Oysters and revenue. <The Richmond Dispatch, Richmond, January 12, 1890.

Discusses methods of increasing the oyster revenue in Virginia.

- 1890 l—Hyatt, Alpheus.** The Oyster, Clam, and other Common Mollusks. Boston, D. C. Heath & Co., 1890. 16°, 65 pp., 16 plates.

A guide to the popular anatomical study of these mollusks.

- 1890 m—Kent, W. Saville.** Oysters and the Oyster Fisheries of Queensland. [Blue Book Rept.] Brisbane, 1890, fol., 17 pp., 9 pls.

- 1890 n—Anonymous.** Blue Point oysters. <The New York Herald, New York, September 28, 1890.

- 1890 o—Anonymous.** The fate of our oyster industry. <The Daily American, Baltimore, November 29, 1890.

Refers to the fishery in Maryland.

- 1891 a—Agnus, Felix.** Is it reform or ruin? <The Daily American, Baltimore, January 9, 1891.

Observations made during a cruise over Maryland's oyster territory, with notes on the necessity for a change in the oyster regulations of the State.

- 1891 b—Brooks, W. K.** Oyster-farming needed. <The Daily American, Baltimore, January 13, 1891.

Discusses the inefficiency of cull laws and the need of regulations for oyster cultivation in Maryland.

- 1891 c—Brooks, W. K.; Cowen, J. K.; McDonald, Marshall, and Hodson, T. S.** Oyster beds. <The Daily American, Baltimore, March 19, 1891.

Abstract of addresses delivered at a meeting held in Baltimore on March 18, 1891, to promote the adoption of an oyster-cultural system in Maryland.

- 1891 d—Brooks, W. K.** The Oyster. Baltimore, Johns Hopkins Press, 1891. 12mo, 230 pp., 14 plates.

A popular summary of all the writings of this erudite biologist on the oyster and the oyster industries.

- 1891 e—Drake, J. C.** Sounds and estuaries of Georgia, with reference to oyster culture. <Bulletin U. S. Coast and Geodetic Survey, No. 19. Washington, 1891, pp. 179-209, 7 maps.

Describes the specific gravity, currents, and characteristics of the bottom of each tide-water area in the State. The area of natural oyster reefs of the State was determined to be 1,756.8 acres. The maps indicate the location of the reefs on a scale of  $\frac{1}{100,000}$ .

- 1891 f—Du Bois, C. A.** The necessity for restricting dredging a few years. <The Daily American, Baltimore, February 2, 1891.

- 1891 g—Felton, Franklin.** What oyster farming would do for Maryland. <The Daily American, Baltimore, April 11, 1891.

- 1891 h—Gilbert, Charles H.** Report upon certain investigations relating to the planting of oysters in Southern California. <Bulletin U. S. Fish Commission, 1889. Washington, 1891, vol. 9, pp. 95-98.

Discusses the advantages and disadvantages in the planting of oysters possessed by Alamitos and Newport bays and the Gulf of California.

- 1891 i—Hodson, Thomas S.** Oyster laws. <The Daily American, Baltimore, February 2, 1891.

Compares the oyster regulations of Maryland with those of Connecticut.

- 1891 j—Hopkins, Jenny L.** An oyster village. <Cosmopolitan, New York, October, 1891, vol. II, pp. 717 *et seq.*

A description of Inwood, N. Y., and the oyster industry thereof.

- 1891 k—Hudson, W. M.; Waldo, George C., and Treat, B. A.** <Annual Report of the Shellfish Commissioners, State of Connecticut, 1891. Hartford, Conn., 1891. 8°, 24 pp.

- 1891 l—Jones, A. C.** A new oyster law. <The Daily American, Baltimore, April 20, 1891.

Suggests and recommends certain new regulations for the oyster industry of Maryland.

- 1891 m—Knowles, Horace G.** Artificial oyster culture in France. <U. S. Consular Reports, October, 1891, Washington, 1891, No. 133, pp. 244-246.

General references to the methods practiced at Areachon.

- 1891 n—McDonald, Marshall.** State oyster policy. <Forest and Stream, New York, April 16, 1891, vol. XXXVI, p. 253.

Abstract of address delivered at Baltimore, March 18, 1891.

- 1891 o—McKinney, Philip W.** The oyster question. <Virginian, Norfolk, December 10, 1891.

Reprint of a special message of the governor of Virginia on the oyster industry of that State.

- 1891 p—Martin, H. Newell.** The oyster question. <Science, New York, March 27, 1891, vol. XVII, pp. 169-170.

Discusses the progress of scientific investigations towards the preservation of the Maryland oyster.

- 1891 q—Page, Henry, and others.** Oyster beds. <The Sun, Baltimore, April 30, 1891.

Abstract of addresses delivered in Baltimore, April 29, 1891, in opposition to the leasing of natural oyster beds in Maryland.

- 1891 r—Philpots, John R.** Oysters, and All About Them. Being a Complete History of the Titular Subject, Exhaustive on all Points of Necessary and Curious Information from the Earliest Writers to those of the Present Time, with Numerous Additions, Facts, and Notes. London, John Richardson & Co., 1891. 8°, 2 vols, 1370 pp.

A voluminous publication filled with repetitions, abstracts, and the undigested results of the inquiries of naturalists and government officials. The first volume, which contained 642 pages, was issued in 1890.

- 1891 s—Smith, Hugh M.** Notes on an improved form of oyster tongs. <Bulletin U. S. Fish Commission, 1889. Washington, 1891, vol. 9, pp. 161-164.  
Describes and recommends the employment of the implement commonly known as the "deep-water tong."
- 1891 t—Thompson, W. H.** Some reasons why the State of Maryland should improve the oyster beds. <The Daily American, Baltimore, January 21, 1891.
- 1891 u—Weeks, Thomas C.** Speech delivered at the Concordia Opera House [Baltimore], on Thursday, April 30, 1891, under the auspices of the Canton Oyster Exchange of Baltimore City. 1891. 8°, 16 pp.  
Cites reasons why Maryland should not lease or sell to individuals or corporations any portion of the oyster-grounds of the Chesapeake Bay.
- 1891 v—Wilson, H. L.** Biography of the oyster. <Scribner's Monthly, New York, October, 1891, vol. x, pp. 469 *et seq.*
- 1891 w—Anonymous.** Facts about the oyster. <The Daily American, Baltimore, January 26, 1891.  
A review of the industry in Maryland and Virginia, with brief references to other States.
- 1891 x—Anonymous.** Oysters. <Saturday Review, London, October 3, 1891, vol. 72, p. 384.  
Brief popular reference to the beginning of the oyster season and the reproduction of oysters.
- 1891 y—Tilton, John.** Oysters in the British Provinces. Annual Report of the Department of Fisheries, Dominion of Canada, for the year 1890. Printed by order of Parliament. Ottawa, 1891, pp. LI-LXII.  
A history of the regulations of the fishery in Canada.
- 1891 z—Fullarton, J. H.** On the suitability of Scottish waters for oyster culture. <Ninth Annual Report of the Fishery Board for Scotland, being for the year 1890. Part III. Scientific Investigations. Edinburgh, 1891, pp. 184-200.  
Paper based on a physical and biological examination made during the summer of 1890. "In Scotland it can hardly be said that the oyster industry exists. If it does exist at all, it is only in the earliest initiatory stage. It seems as if it were merely a groping after oyster culture, and that, too, on a minimum scale." The product of the oyster beds of Scotland in 1888 was valued at £742.
- 1891 aa—Fullarton, J. H.** Oyster fishery of Scotland. <Transactions of the Philosophical Society of Glasgow, session 1890-91. Glasgow, 1891.  
A contribution to the economic phases of the industry in Scotland. Compares the present status of the fishery with the condition a century ago.
- 1891 ab—Nelson, Julius.** Report of the biologist. <Eleventh Annual Report of the New Jersey State Agricultural Experiment Station and the Third Annual Report of the New Jersey Agricultural College Experiment Station for the year 1890. Trenton, N. J., 1891, pp. 251-320.  
A report of experiments conducted by the author during the summer of 1890, looking toward a practical method of artificially fertilizing and growing oysters.
- 1891 ac—Collins, J. W.** Notes on the oyster fishery of Connecticut. <Bulletin U. S. Fish Commission, 1889. Washington, 1891, vol. ix, pp. 461-497, plates CLIX-CLXVI.
- 1891 ad—Cox, James C.** New South Wales. Fisheries of the Colony. Report of the Commissioners of Fisheries for the year ending 31st December, 1890. [Sydney, 1891.] 4°, 44 pp.  
Reports the condition of the oyster industry of New South Wales in 1890, and contains a copy of the act of 1891 that consolidated and amended the oyster laws of the colony.

## 350 REPORT OF THE COMMISSIONER OF FISH AND FISHERIES.

- 1892 a—Atwater, W. O.** The chemical composition and nutritive values of food fishes and aquatic invertebrates. <Report U. S. Fish Commission, 1888. Washington, 1892, vol. xvi, pp. 679-868.

On pp. 858-866 is given a discussion of the value of oysters as food, the statements and deductions being based on examinations of many specimens from various localities.

- 1892 b—Battle, John D.** An investigation of the coast waters of South Carolina with reference to oyster-culture. <Bulletin U. S. Fish Commission, 1890. Washington, 1892, vol. x, pp. 303-330, 7 maps.

A report of the operations of the U. S. Fish Commission steamer *Fish Hawk* in the winter of 1890-91 in surveying and determining the position and extent of oyster beds and of bottom areas not then producing oysters, but suitable for their cultivation.

- 1892 c—Bauset, S. P.** Oysters. <Annual Report of the Department of Fisheries of the Dominion of Canada, 1891. Printed by order of Parliament. Ottawa Printed by S. E. Dawson, 1892. pp. 34-39.

A report on the condition of the oyster industry of Canada during the preceding seasons, with notes on the regulations for the licensing of oyster-grounds.

- 1892 d—Bedloe, Edward.** Some Chinese fishes. <Forest and Stream, New York, February 4, 1892, vol. xxxviii, p. 104.

Describes the "bamboo oysters" of Foochow, Amoy and Taiwafoo in Formosa, and the methods of cultivating them.

- 1892 e—Collins, J. W.** Statistical review of the coast fisheries of the United States. <Report of U. S. Fish Commission, 1888. Washington, 1892, vol. xvi, pp. 271-378.

Reports the extent of the oyster product of the United States in 1888.

- 1892 f—Collins, J. W.** Report on the Fisheries of the Pacific coast of the United States. <Report U. S. Fish Commission, 1888. Washington, 1892, vol. xvi, pp. 3-269.

Contains brief notices of the oyster industry of Shoalwater Bay and Puget Sound, Washington, and of San Francisco Bay, California.

- 1892 g—Dean, Bashford.** The physical and biological characteristics of the natural oyster-grounds of South Carolina. <Bulletin U. S. Fish Commission, 1890. Washington, 1892, vol. x, pp. 335-362, pl. LXI-LXVII.

This report aims to point out the natural advantages offered by the State for successful oyster-culture, and discusses the characteristics of the "raccoon reefs," reasons for absence of oyster spat in deep water, food of the South Carolina oyster, analyses of the waters over the oyster beds, etc.

- 1892 h—Dean, Bashford.** Report on the present methods of oyster-culture in France. <Bulletin U. S. Fish Commission, 1890. Washington, 1892, vol. x, pp. 362-388, plates LXIX-LXXVIII.

From the personal observations of a biologist familiar with the oyster industry in several of the United States.

- 1892 i—Hicks-Beach, Michael** (President). Second Annual Meeting of Representatives of Authorities under the Sea Fisheries Regulation Act, 1888. Tuesday, 21st June, 1892. London. Printed for Her Majesty's Stationery Office, 1892. 4°, 35 pp.

The close season in England for foreign oysters is discussed on pp. 25-27.

- 1892 j—Kellögg, James L.** A contribution to our knowledge of the morphology of lamellibranchiate mollusks. <Bulletin U. S. Fish Commission, 1890. Washington, 1892, vol. x, pp. 389-436, plates LXXIX-XCV.

- 1892 k—Nelson, Julius.** Report of the biologist. <Twelfth Annual Report of the New Jersey State Agricultural Experiment Station and the Fourth Annual Report of the New Jersey Agricultural College Experiment Station for the year 1891. Trenton, N. J., The John L. Murphy Publishing Co., 1892, pp. 177-232.

A record of experiments conducted in the summer in Virginia, New York, and New Jersey with a view to discovering a practicable and economical method of artificially fertilizing and growing oysters.

- 1892i—McMenamin, James.** A Review of Governor McKinney's Message on the Oyster Question. Hampton, Va., Monitor Advance Print, 1892, 8°, 11 pp.
- 1892m—Rathbun, Richard.** Oyster culture on the Atlantic coast. <Report U. S. Fish Commission, 1888. Washington, 1892, vol. xvi, pp. LIX-LXV.  
Reviews the scientific work of the U. S. Fish Commission during the fiscal year 1887-88 in the investigation of the oyster beds of the Atlantic coast of the United States.
- 1892n—Seth, Joseph B.** Annual Report of the Commander of Maryland State Fishery Force to the Board of Public Works, for the Year ended 1891. Annapolis, 1892, 8°, 13 pp., 4 plates.  
Reviews briefly the condition of the Maryland oyster fishery in 1891.
- 1892o—Thompson, W. H.** Free fishery rights in oystering. <The Daily American, Baltimore, March 19, 1892.
- 1892p—Weeks, Thomas C.** The Oyster Industry of Maryland. <Fourth Biennial Report of the Bureau of Industrial Statistics and Information of Maryland, 1890-91. Annapolis, 1892. 8°, pp. 11-194.  
Discusses the general condition of the fishery during the preceding four seasons, and contains a summary or epitome of all the oyster laws of the State operative in 1891.
- 1892q—Young, Archibald.** Report by Archibald Young, advocate, Inspector of Salmon Fisheries for Scotland, and evidence in application by Mrs. Ogilvie of Barcaldine for an order for a several oyster and mussel fishery in Loch Crevan. <Tenth Annual Report of the Fishery Board for Scotland, being for the year 1891. Edinburgh, 1892, pp. 51-55.
- 1892r—Anonymous.** Oyster farming. <The Daily American, Baltimore, February 23, 1892.  
A description of the present methods of oyster-culture practiced at Arcachon, France.
- 1892s—Anonymous.** The oyster: How the delicious bivalve is raised and eaten all the world over. <The Evening Star, Washington, September 3, 1892.
- 1892t—Anonymous.** Compilation of the Oyster Laws of Virginia, 1892. Richmond, J. H. O'Bannon, Superintendent Public Printing, 1892. 8°, 26 pp.
- 1892u—Anonymous.** Maryland State Fishery Force. Article LXXII. Oysters, 1892. [Annapolis, 1892.] 8°, 37 pp.  
A compilation of the general oyster laws operative in Maryland in 1892.
- 1892v—Schiedt, R. C., and Ryder, J. A.** Diffuse pigmentation of the epidermis [not periostracum] of the oyster, due to prolonged exposure to the light, etc. <Proceedings of the Academy of Natural Sciences of Philadelphia, Philadelphia, November 15, 1892, pp. 350-352.
- 1893a—Brooks, W. K., and Knower, H. McE.** The Oyster Industry. <Maryland, its Resources, Industries, and Institutions. Prepared for the Board of World's Fair Managers, of Maryland, by members of Johns Hopkins University and others. Baltimore, 1893, pp. 264-312.  
A compilation of previously-published data relative to the natural history of oysters and the oyster industry of Maryland.
- 1893b—Cox, James C.** The Australian oyster, its cultivation and destruction. <History of the Fisheries of New South Wales; with a Sketch of the Laws by which they have been Regulated. Compiled from Official and other Authentic Sources. Sydney, 1893. Appendix, pp. 120-126.
- 1893c—Cox, James C.** The oyster fisheries laws. Address delivered before the Linnæan Society, by the President, 1883. <History of the Fisheries of New South Wales; with a Sketch of the Laws by which they have been Regulated. Compiled from official and other authentic sources. Sydney, 1893. Appendix, pp. 115-120.  
A thorough review of the oyster regulations of New South Wales from the earliest times up to the year 1883, with suggestions as to methods of improving those regulations.

- 1893 d—Cox, James C. New South Wales. Fisheries of the Colony. Report of the Commissioners of Fisheries for the Year ending 31st December, 1892. [Sydney, 1893.] 4°, 26 pp.

Reports the condition of the oyster industry of New South Wales in 1892.

- 1893 e—Dean, Bashford. Report on the European methods of oyster-culture. <Bulletin U. S. Fish Commission, 1891. Washington, 1893, vol. x, pp. 357-406, plates 75-88.

Describes the present methods of oyster-culture in Italy, Spain, Portugal, Germany, Holland, Belgium, and England.

- 1893 f—Dean, Bashford. The present methods of oyster-culture in France. <The Fishing Gazette, New York, February 23-June 29, 1893, vol. x, Nos. 8-15.  
A reprint of 1892 e.

- 1893 g—Haman, B. Howard. Oysters and Roads. Address Delivered before the Maryland Convention for Good Roads, held at Baltimore on January 12, 1893. Baltimore, 1893, 8°, 24 pp., with chart.

Urges the leasing of the barren bottoms of the Chesapeake Bay, the revenue therefrom to be applied to the improvement of the public roads in Maryland.

- 1893 h—Howard, A. B., Jr. First Annual Report of the Bureau of Industrial Statistics of Maryland, 1893. Baltimore, 1893, 8°, 225 pp.

The oyster industry of Maryland is discussed on pp. 113-142, detailed statistics of the industry during the seasons 1889-90 and 1890-91 being presented.

- 1893 i—Hudson, W. M.; Waldo, G. C., and Beardsley, C. W. Annual Report of the Shell-fish Commissioners, State of Connecticut, 1893. Hartford, Conn., 1893, 8°, 36 pp.

Reviews the work of the commissioners and discusses the condition of the oyster industry of Connecticut during the preceding year, and contains a list of the owners of oyster-ground in the State waters, with a statement of the acreage owned by each.

- 1893 j—Jennings, C. E. The oyster, that succulent bivalve. <The Fishing Gazette, New York, January 5, 1893, vol. x, No. 1, p. 3.

A review of the oyster industry tributary to New York City.

- 1893 k—Kemp, Ernest. Report on the Oyster Fisheries of Canada. Ottawa, 1893, 8°, 13 pp.

Observations made by a practical oyster-grower of England after examining the oyster beds in New Brunswick, Nova Scotia, and Prince Edward Island.

- 1893 l—McMillan, William (President). World's Columbian Exposition, Chicago, 1893. Catalogue of the Exhibits in the New South Wales Courts. Sydney: Charles Potter, 1893. 8°, 782 pp.

On pp. 204-205 is a catalogue of the collection of oysters, the number of exhibits amounting to 30.

- 1893 m—Mather, Fred. The propagation and natural history of the American oyster (*Ostrea virginiana*). <The Fishing Gazette, New York, January 19-February 16, 1893, vol. x, Nos. 3-7.

An account of investigations carried on at Cold Spring Harbor, N. Y., during the summer of 1892.

- 1893 n—Mundella, A. J. (President). Third Annual Meeting of the Representatives of Authorities under the Sea Fisheries Regulation Act, 1888. Tuesday, 6th June, 1893. London. Printed for Her Majesty's Stationery Office, 1893. 4°, 38 pp.

On pp. 11-17 is discussed the regulations for acquiring land for oyster-culture in certain parts of Great Britain.

- 1893 o—N——, W. History of the oyster industry in New York. <The Fishing Gazette, New York, January 5, 1893, vol. x, No. 1.

A history of the location of the various oyster markets in New York City.



- 1893p—**Ryder, John A.** A Contribution to the Life-History of the Oyster (*Ostrea virginica* Gmelin and *O. edulis* Linn.). <Natural History of Economic Mollusks of the United States, by Ernest Ingersoll and John A. Ryder. Washington, 1893, pp. 687-758.

On pp. 711-758 is given a reprint of 1887 n, the edition being struck from the same plates as the latter.

- 1893q—**Smith, Marion deK.** Record of Licenses Issued to Take Oysters in the State of Maryland and the Several Counties thereof during the Season of 1892-93, and Licenses to Take Oysters with Scrape and Dredge, Issued by the Comptroller of the Treasury. Baltimore, 1893, 8°, 135 pp.

This pamphlet, being issued before the close of the season 1892-93, does not contain a complete list of the licenses issued during that season.

- 1893r—**Smith, William.** Oyster culture. <Twenty-fifth Report of the Department of Marine and Fisheries for the fiscal year ended June 30, 1892. Ottawa. Parliamentary paper, 1893. Royal 8°, pp. xv-xix.

An account of the condition of the oyster industry in Canada in 1892.

- 1893s—**Stevenson, Charles H.** Report on the Coast Fisheries of Texas. <Report U. S. Fish Commission, 1891. Washington, 1893, vol. xviii, pp. 373-420, plates 12-27.

Contains a history of the oyster industry of Texas, and a description of the oyster-grounds, with an account of the regulations affecting them.

- 1893t—**Thompson, Lindsay G.** History of the Fisheries of New South Wales; with a Sketch of the Laws by which they have been regulated: Compiled from Official and other Authentic Sources. Published by Authority of the New South Wales Commissioners for the World's Columbian Exposition, Chicago, 1893. Sydney: Charles Potter, Government Printer, 1893. Royal 8°, 101 pp.

On pp. 52-72 the oyster fisheries of New South Wales and the laws regulating them are discussed with great thoroughness. The various oyster-producing localities, the area and condition of the reefs, and the extent of the product are noted with much detail.

- 1893u—**Tønning, H.** Ostréiculture. A Report Concerning the Actual Condition of this Industry. Copenhagen. Andr.-Fred. Høst and Fils, 1893, 8°, without numbered pages.

This paper is intended as a practical guide to carrying on the culture of oysters on the coasts of Norway.

- 1893v—**Townsend, Charles H.** Report of Observations Respecting the Oyster Resources and Oyster Fishery of the Pacific Coast of the United States. <Report U. S. Fish Commission, 1891. Washington, 1893, vol. xviii, pp. 313-372, plates 2-11.

Is accompanied by charts showing the locations of the public and private areas of oyster-grounds.

- 1893w—**Whiteledge, Thomas.** Extracts from report on the worm disease affecting the oysters on the coast of New South Wales. <History of the Fisheries of New South Wales; with a Sketch of the Laws by which they have been Regulated: Compiled from Official and other Authentic Sources. Sydney, 1893. pp. 109-115.

These worms appear to be *Polydora ciliata*. The following branches of the subject are discussed: (1) The infected area; (2) Symptoms of the disease; (3) How the worms effect an entrance into the oysters; (4) Evidence as to boring, from an examination of the shell; and (5) the remedy. The original report was printed in *Records of the Australian Museum*, Sydney, 1890, vol. i, pp. 41-55, pls. iii-vi.

**1893 x—Anonymous.** Schedule of applications for licenses of areas for oyster culture between the years 1882 and 1892, with action taken thereon. <Twenty-fifth Annual Report of the Department of Marine and Fisheries for the fiscal year ended June 30, 1892. Ottawa, Parliamentary paper, 1893, appendix No 6, pp. 197-200.

**1894 a—Brown, Frank.** Oysters. <Message of the Governor of Maryland to the General Assembly at its regular session, January, 1894. Baltimore, 1894, pp. 16-20.

Discusses the condition of the State oyster fund.

**1894 b—Fox, Howard.** Falmouth oyster fishery. <U. S. Consular Reports, February, 1894. Washington, 1894, vol. XLIV, pp. 341-342.

A brief note on the condition of the industry since 1850.

**1894 c—Howard, T. C. B.** Report of the Commander of Maryland State Fishery Force, to the Board of Public Works. Annapolis, Md., 1894, 8°, 12 pp.

A report on certain features of the oyster industry of Maryland, the principal subjects discussed being the oyster fund, condition of the navy, the cull law, the oyster season, and magistrates and fines.

**1894 d—Oemler, A.** The World's Fisheries Congress, Chicago, 1893. The past, present, and future of the oyster industry in Georgia. <Bulletin U. S. Fish Commission, 1893. Washington, 1894, vol. XIII, pp. 263-272.

**1894 e—Stevenson, Charles H.** The Oyster Industry of Maryland. <Bulletin U. S. Fish Commission, 1892. Washington, 1894, vol. XII, pp. 203-298, plates LVI-LXXI.

A comprehensive economic discussion which reviews the regulations of the fishery from the earliest period, and discusses the past and present condition of the industry under the following captions: (1) The oyster-grounds; (2) Tonging; (3) Dredging; (4) Scraping; (5) Oyster culture in Maryland; (6) Transporting; (7) The oyster markets; (8) Statistical summary; (9) State revenue and fishery force; (10) Conclusion. The paper is accompanied by a map indicating the general location of the oyster reefs of the State of Maryland and showing the areas on which the various forms of oyster fishery are authorized. See 1894 f.

**1894 f—Stevenson, Charles H.** The Oyster Industry of Maryland. <Second Annual Report of the Bureau of Industrial Statistics of Maryland, 1894. Annapolis, King Bros., 1894, pp. 215-388.

A reprint of 1894 e.

**1894 g—Anonymous.** Proceedings of the Convention Called to Consider and Discuss the Oyster Question, held at the Richmond Chamber of Commerce, Richmond, Va., Jan. 12, 1894, with Papers Issued in Calling the Convention. Richmond. J. W. Ferguson & Son, 1894, 8°, 47 pp.

Relates to the methods of improving the condition of the oyster industry of Virginia. Contains addresses delivered by J. B. Baylor, H. C. Rowe, Francis Winslow, Marshall McDonald, W. K. Brooks, O. A. Brown, and others.

## GENERAL CLASSIFICATION BY SUBJECTS.

For the purpose of facilitating reference to special branches of oyster literature the accompanying classification by subjects is here appended. Those numbers in heavy-faced type indicate the principal papers on the subjects under which they are listed.

### I. NATURAL HISTORY.

1. Distribution of oysters, 1841*b*, 1843*b*, 1849, 1853, 1857*a*, 1857*d*, 1861*b*, 1864*d*, 1865*d*, 1869*b*, 1869*f*, 1873*a*, 1877*k*, 1878*g*, 1883*h*, 1883*u*.
2. Anatomy, general, 1814, 1836, 1841*a*, 1846, 1854*a*, 1858*b*, 1864*d*, 1865*a*, 1865*g*, 1877*b*, 1878*d*, 1880*b*, 1880*e*, 1881*h*, 1881*e*, 1882*h*, 1882*m*, 1883*n*, 1883*ae*, 1884*u*, 1887*n*, 1888*b*, 1890*a*, 1890*f*, 1891*d*, 1891*r*, 1892*j*.
  - a. Bronchiæ 1852*a*. See also Anatomy, general.
  - b. Organ of Bojanus, 1883*ae*. See also Anatomy, general.
  - c. Sexual characteristics, 1883*ad*, 1887*n*.
  - d. Visual senses, 1837*a*.
  - e. Shell formation, 1855*a*, 1855*b*, 1855*c*, 1878*f*, 1888*r*.
  - f. Blood corpuscles, 1875*g*.
3. Habits and mode of life, general, 1669, 1722, 1744, 1837*b*, 1852*b*, 1852*e*, 1856*a*, 1858*b*, 1860*a*, 1863*f*, 1864*d*, 1865*a*, 1865*b*, 1865*g*, 1867*g*, 1867*o*, 1868*a*, 1868*h*, 1872*a*, 1874*b*, 1877*a*, 1877*h*, 1878*d*, 1879*i*, 1880*g*, 1881*e*, 1881*h*, 1883*j*, 1883*l*, 1883*g*, 1883*r*, 1883*e*, 1883*u*, 1883*e*, 1883*af*, 1884*m*, 1884*u*, 1885*g*, 1885*u*, 1885*g*, 1887*n*, 1888*h*, 1889*h*, 1891*d*, 1891*r*, 1891*v*.
  - a. Enemies and associates, 1065, 1093, 1865*e*, 1867*c*, 1873*e*, 1874*d*, 1880*g*, 1883*al*, 1884*m*, 1885*h*, 1887*n*, 1888*m*, 1889*m*, 1891*z*.
  - b. Resting position of oysters, 1869, 1885*g*, 1885*k*, 1885*n*, 1885*e*, 1885*u*, 1885*v*.
  - c. Food and green color, 1669, 1863*e*, 1866*a*, 1866*e*, 1870*g*, 1874*e*, 1877*d*, 1880*g*, 1880*n*, 1881*e*, 1882*e*, 1882*f*, 1882*g*, 1883*af*, 1884*o*, 1884*u*, 1887*a*, 1887*n*. See "Habits and mode of life, general," for other papers relative to the food of oysters.
  - d. Corallines on oyster shells, 1755.
4. Embryology and natural reproduction, 1669, 1697, 1722, 1827, 1828, 1857*b*, 1858*b*, 1864*a*, 1865*b*, 1865*e*, 1866*a*, 1867*a*, 1869*a*, 1873*a*, 1874*c*, 1876*b*, 1876*c*, 1876*e*, 1876*h*, 1879*a*, 1880*a*, 1880*b*, 1880*e*, 1882*b*, 1882*c*, 1882*f*, 1882*g*, 1882*h*, 1883*e*, 1883*f*, 1883*m*, 1883*n*, 1883*r*, 1883*ad*, 1884*t*, 1884*u*, 1884*u*, 1885*i*, 1885*g*, 1886*g*, 1887*n*, 1889*h*.
5. Artificial propagations, experiments, etc., 1860*a*, 1868*d*, 1869*d*, 1878*d*, 1879*b*, 1879*e*, 1880*b*, 1880*e*, 1881*f*, 1891*f*, 1882*h*, 1882*k*, 1883*b*, 1883*e*, 1883*f*, 1883*j*, 1883*l*, 1883*aa*, 1883*ag*, 1883*am*, 1883*an*, 1883*az*, 1884*a*, 1884*j*, 1884*o*, 1884*g*, 1884*r*, 1884*e*, 1884*y*, 1885*e*, 1885*r*, 1885*t*, 1886*h*, 1887*f*, 1887*g*, 1887*k*, 1887*n*, 1890*a*, 1891*ab*, 1892*k*, 1893*m*.

### II. ECONOMIC HISTORY.

1. Oyster industry of the world, 1884*g*, 1891*r*, 1894*e*.
2. France, 1859*b*, 1862*b*, 1863*e*, 1864*b*, 1864*o*, 1864*d*, 1864*e*, 1865*a*, 1865*j*, 1866*a*, 1866*g*, 1867*b*, 1867*d*, 1867*e*, 1867*n*, 1868*f*, 1868*h*, 1868*g*, 1870*a*, 1870*e*, 1877*a*, 1878*a*, 1878*b*, 1878*c*, 1878*j*, 1882*a*, 1883*d*, 1885*g*, 1883*i*, 1883*j*, 1883*k*, 1883*u*, 1883*y*, 1883*aw*, 1884*b*, 1884*c*, 1884*e*, 1883*e*, 1888*n*, 1890*e*, 1890*h*, 1891*m*, 1892*h*, 1882*r*, 1893*f*.
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4. English Channel, 1889, 1857*d*.
5. Ireland, 1837*b*, 1838*a*, 1864*f*, 1865*f*, 1866*b*, 1870*a*, 1870*b*, 1871*b*, 1881*a*.

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7. Wales, 1720, 1837*b*, 1879*d*.
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16. Canada, 1850, 1863*a*, 1866*e*, 1867*p*, 1874*d*, 1874*f*, 1876*f*, 1877*k*, 1881*e*, 1884*ac*, 1886*v*, 1887*i*, 1887*j*, 1888*f*, 1888*m*, 1889*e*, 1890*f*, 1891*y*, 1892*c*, 1893*k*, 1893*r*.
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33. District of Columbia, 1889*p*.
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35. Australia, etc., 1880*p*, 1880*q*, 1883*h*, 1883*az*, 1887*z*, 1891*ad*, 1893*b*, 1893*c*, 1893*d*, 1893*t*, 1893*v*.
36. European trade in American oysters, 1886*j*, 1886*n*.

### III. MISCELLANEOUS.

1. Archaeological notes, 1851, 1858*b*, 1861*a*, 1867*o*, 1868*e*.
2. Chemical composition of oysters, 1860*a*, 1867*a*, 1883*c*, 1883*u*, 1885*a*, 1887*a*, 1887*b*, 1887*c*, 1892*a*.
3. Examinations of oyster-grounds, 1870*g*, 1886*o*, 1887*d*, 1891*e*, 1892*b*, 1892*g*, 1893*s*, 1894*c*.
4. Poisonings caused by oysters, 1808, 1855*h*. See also "Food and green color."
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6. Exposition catalogues, etc., 1866*h*, 1878*j*, 1883*t*, 1888*ap*, 1883*at*, 1889*bc*, 1889*c*, 1893*l*.
7. Uses for oyster shells, 1668, 1675, 1681, 1688, 1881*e*, 1894*e*.
8. Gastronomical notes and cook books, 1858*b*, 1861*a*, 1863*f*, 1867*g*, 1867*o*, 1868*e*, 1871*a*, 1880*u*, 1881*b*, 1883*av*, 1884*p*, 1888*a*, 1888*e*, 1889*b*.
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