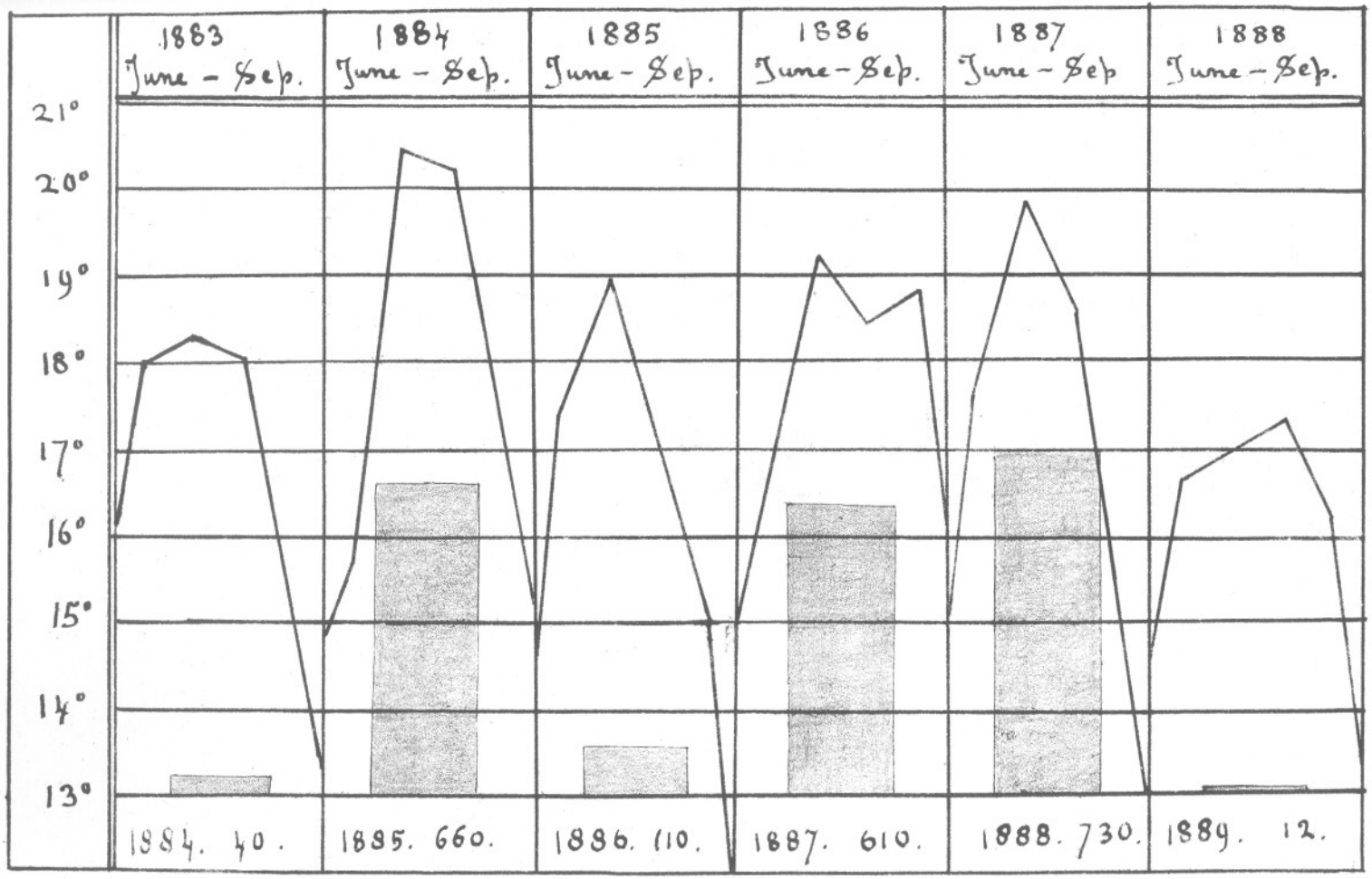
NOTES AND MEMORANDA.

Probable Relation between Temperature and the Annual Catch of Anchovies in the Schelde District (with Pl. XXIV).—Mr. C. J. Bottemanne, of Bergen-op-Zoom, the Inspector of Fisheries for Holland, has expressed in tables published *in extenso* in the Verslag omtrent den Toestand der Visscherijen in de Schelde en Zeeuwsche Stroomen for 1888, some very interesting statistics which have been condensed in Pl. XXIV of this journal. The temperature observations were made on the Rinkelaar guardship of the Ijerseke Bank of the Eastern Schelde (see Map, Pl. XXI); the amounts of the annual catch are taken from the official returns. It appears probable from these statistics that *the extent of the catch of anchovies in the Schelde district in any year is (at least largely) dependent on the temperature of the water during the midsummer months of the preceding year.* The curves in Pl. XXIV exhibit the temperature on the Ijerseke Bank during the months June to September from 1883 to 1888, the shaded blocks below them represent graphically the mass of anchovies *taken in the succeeding year, i. e.* 1884—1889 (the figures in the bottom line placed after the year indicate the total number of barrels). The only apparent exception is 1886, but, though the highest recorded temperature of this year is not great, the mean temperature in July to September was extremely and unusually high, as will readily be seen in the diagram. As an example of the valuable information which scientific observers may give to those interested in fisheries, Mr. Bottemanne, on receiving the statistics of temperature for 1888, warned the fishermen of the district last year not to go to trouble or expense about the anchovy fishery; they persisted, however, and justified his advice by realising 12 barrels as against 730 barrels of the previous year.

Even more convincing, because more complete, are the observations made in the Zuyder Zee on the same point, which are tabulated in the Verslag van den Staat der Nederlandsche Zeevisscherijen for 1885 by Prof. Hoffmann, and extend over twenty-eight years, from 1857 to 1885; they entirely bear out the same conclusions as those made in the Schelde district.—G. H. FOWLER.

Halosphæra viridis, Schmidt.—This marine alga was found here last spring. It has been observed at Naples, but its life-history is very imperfectly known. It consists of a hollow sphere from a quarter to half a millimetre in diameter, the inner surface of which is covered by a thin layer of protoplasm containing numerous chlorophyll granules embedded in it, and a large nucleus which is surrounded by a mass of protoplasm free from chlorophyll. These spheres float in great numbers close to the surface of the sea, and are carried about by the waves, having no motion of their own. F. Schmitz, the only observer who has recorded any observations on them, states (Mittheil. aus d. Zool. Stat. zu Neapel, Bd. i, 1879) that these spheres always make their appearance at Naples in January or February and remain till June, when they disappear. During that time he observed repeated division of the nucleus to take place, accompanied by spindle formation, as the result of which the contents of the sphere are converted into a large number of daughter-cells consisting each of a nucleus surrounded by a mass of protoplasm, to which the chlorophyll, now diffused, gives a dense green colour. These daughter-cells adhere to the wall of the sphere, which consists of two envelopes, an outer and an inner. The outer one bursts, and the inner one gradually dissolves away, setting free a number of zoospores to which the daughter-cells above mentioned have meanwhile given rise by subdivision. These zoospores are conical cells furnished with a pair of cilia springing from the basal end of the cell. They swim about freely. Beyond this their history has not been traced. Our knowledge of its development is thus insufficient to enable us to determine the systematic position of Halosphæra. Specimens found at Plymouth were sent up to London for examination in April last, but owing to defective conditions it was not possible to keep them alive long enough for observation. I hope an opportunity may be found of studying them under more favorable circumstances next spring.—HERBERT THOMPSON.


1883
June – Sep.
1884
June – Sep.
1885
June – Sep.
1886
June – Sep.
1887
June – Sep
1888
June – Sep.
21°
20°
19°
18°
17°
16°
15°
14°
13°
1884. 40.
1885. 660.
1886. 110.
1887. 610.
1888. 730.
1889. 12.

G. H. F. andrews.