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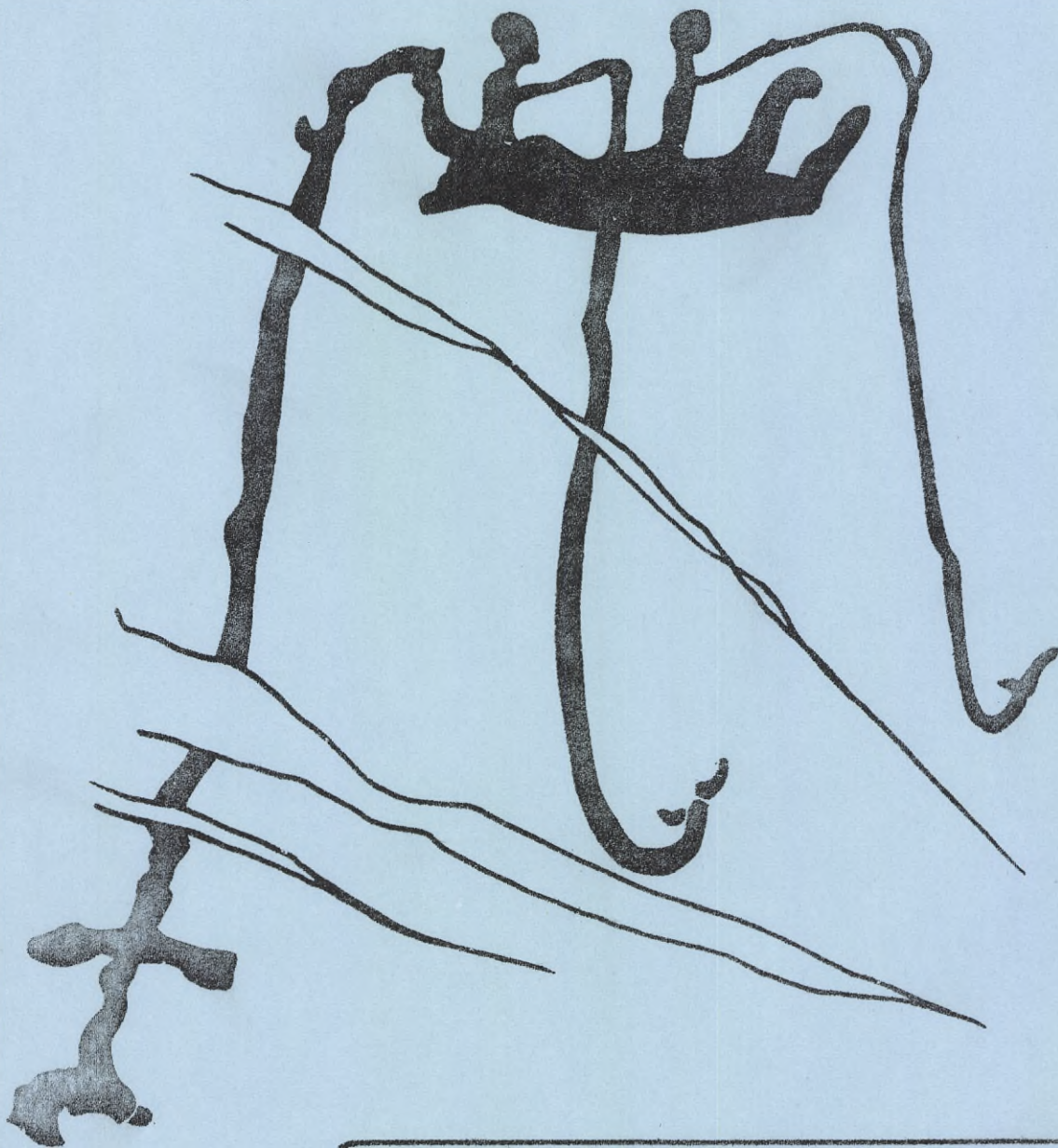
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Ödsmål, Kville sn, Bohuslän

Målaristning
Fishare från
bronsåldern

Rock carving
Bronze age
fishermen



MEDDELANDE från
HAVSFISKELABORATORIET • LYSEKIL

nr

35

Bibliography of Herring literature and
related species 1950 - 1966.

by

Hans Ackefors

August 1967

Bibliography of Herring literature and related
species 1950 - 1966.

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Introduction

The herring as one of the most important commercial fishes has been the object for many different investigations from various point of views. In order to get a survey of herring literature from 1950 to 1966 this bibliography has been made. The aim has not been to collect all literature. I have tried to find various works which present the herring problems from many point of views. Because of this fact I have also included literature from related species as *Clupea pallasii*, *Sprattus* etc., which belong to the group *Clupeiformes*. I have tried to give priority to literature about the stocks in Kattegatt and Skagerack but I have not included all literature about the herring from this area either.

The literature has been divided into 36 groups under 36 reference words. Many of the works have been classified under more than one reference word.

In the "author index" page 7 every paper has got a number in running order. After every literature reference there are figures in brackets which refer to the different reference words.

In the subject index page 3 the papers have been collected under the different reference words.

The different reference words have been explained in page 3 .

Reference words used in theSubject indexbibliography of herring literature

(Figures below refer to the author index. See also explanations of the different reference words.)

- (1) Race
Refer to spawning group, tribe, stock, population
- (2) Morphology
This includes also taxonomy, all literature about meristic characters as mean vertebral counts etc.
- (3) Anatomy
Including histology and cytology
- (4) Evolution
Including genetics and problems around phylogeny
- (5) Ecology
Including biology. To these words most of the literature in this list may be referred. In accordance to the many special words with more limited meaning in the ecological field, there are very few works which have been referred to ecology.
- (6) Feeding
Including even things like plankton, planktonproduction in relation to herring feeding. In a few cases literature about digestion, starvation, fat storage have been included in feeding.
- (7) Growth rate
- (8) Reproduction
Including the ecology, physiology and morphology of fertilization. Sperm, egg, ovulation, fecundity and spawning are dealt with. Even problems around hermaphroditism, parthenogenesis etc.
- (1) 1, 11, 16, 17, 31, 32, 38, 77, 79, 88, 92, 93, 94, 101, 102, 109, 110, 115, 136, 138, 144, 145, 155, 159, 162, 196a, 196b, 199, 208, 213, 251, 274, 276.
- (2) 15, 16, 17, 19, 31, 32, 38, 61, 62, 74, 79, 84, 94, 97, 101, 108, 112, 114, 116, 144, 145, 152, 175, 204, 249, 251, 274, 276, 279.
- (3) 34, 45, 61, 105, 112, 112a, 112b, 127, 128, 129, 143, 148, 169, 175, 186, 191, 207.
- (4) 29, 32, 249.
- (5) See under
(6), (7), (15), (16), (17), (18), (20), (21), (22), (28).
- (6) 8, 10, 21, 34, 35, 37, 39, 46, 59, 60, 63, 64, 65, 66, 73, 75, 77, 78, 79, 88, 95, 96, 98, 102, 106, 112b, 117, 118, 119, 124, 130, 132, 140, 141, 152, 157, 163, 174, 181, 182, 186, 187, 191, 205, 215, 219, 248, 258, 262, 264, 265, 270, 278.
- (7) 3, 61, 64, 65, 66, 67, 77, 78, 79, 96, 107, 108, 124, 140, 173, 191, 251, 267, 274, 276.
- (8) 6, 7, 8, 10, 16, 17, 22, 29, 32, 37, 38, 43, 45, 59, 60, 64, 65, 66, 79, 81, 91, 102, 104, 107, 113, 115, 122, 124, 125, 126, 138, 143, 149, 158, 159, 162, 173, 174, 176, 186, 196a, 198, 201, 202, 207, 208, 213, 220, 222, 247, 251, 261, 267, 271, 275.

- (9) Embryology (9) 6, 30, 175, 176, 180, 188, 197, 255, 261.
- (10) Larvae (10) 21, 24, 25, 27, 28, 33, 34, 35, 37, 38, 46, 48, 58, 59, 60, 61, 63, 70, 75, 81, 96, 97, 111, 112a, 112b, 117, 118, 119, 126, 129, 132, 149, 156, 157, 161, 163, 174, 181, 182, 187, 188, 191, 201, 206, 213, 222, 231, 253, 255, 261, 279.
Larval stage from hatching of the egg to the metamorphosis of the larvae to adolescent herring. The change to this stage takes place when herring is about 24-45 mm. The main changes are development of scales, adult pigmentation and alterations of the relative positions of the fins and anus.
- (11) Ontogeny (11) 30, 34, 61, 111, 112a, 112b, 127, 129, 156, 206.
Referring to the development of different organs such as alimentary organs, brain etc. from hatching of the egg to the adult individual.
- (12) Adolescence (12) 2, 18, 19, 40, 53, 56, 63, 65, 98, 153.
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- (13) Herring fishery (13) 4, 11, 44, 71, 77, 87, 88, 92, 136, 137, 141, 142, 146, 155, 179, 196a, 196b, 209, 225, 244, 245, 248, 251, 252, 264, 265, 276.
- (14) Tanning (14) 101, 103, 133, 134, 135, 248, 266, 268.
- (15) Hydrography (15) 26, 36, 61, 71, 87, 89, 105, 113, 147, 149, 182, 205, 209, 218, 245, 248, 257.
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- (16) Temperature (16) 23, 24, 30, 31, 33, 39, 48, 53, 54, 61, 62, 71, 84, 89, 91, 95, 112b, 113, 114, 116, 151, 157, 183, 186, 188, 210, 218, 220, 226, 246, 262, 277, 279.
- (17) Oxygen, H₂S and pH (17) 24, 25, 112a, 161, 261.
- (18) Salinity (18) 27, 55, 63, 67, 104, 116, 126, 156, 157, 176, 186, 279.
- (19) Nutrient salts (19) No references
- (20) Light (20) 13, 21, 39, 40, 41, 44, 52, 69, 72, 75, 90, 106, 142, 153, 157, 165, 166, 178, 195, 201, 210, 212, 215, 221, 225, 227, 245, 254, 257, 258, 260, 269, 273, 277, 278.

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- (35) Survey articles (35) 1, 4, 11, 35, 38, 39, 109, 110, 121, 136, 137, 190, 192, 203, 223, 225, 268.
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- (36) Miscellanea (36) 108, 164.

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1. Ahlstrom, E.H. 1957. A review of recent studies of subpopulations of Pacific fishes. - Spec. sci. Rep. U.S. Fish Wildl. Serv. 208: 44-73. (1,35).
2. Ancellin, J., 1953. Etude comparative des harengs immatures de la Baie du Mont-Saint-Michel de la Baie de Seine et du sud de la Mer du Nord (bancs des Flandres). - Rev. Trav. Office Pêches Marit 18(1): 9-17. (12).
3. Andersson, K.A. 1954. Studies on the fluctuations in the rate of growth of the herring in the Kattegat and Skagerak. - Rep. Inst. mar. Res. Lysekil, Ser. Biol. 3: 1-13. (7).
4. Andersson, K.A., 1958. The stock of herring and the herring fisheries on the westcoast of Sweden in the first half of the twentieth century. - Rep. Inst. Mar. Res., Lysekil, Ser. Biol. 8: 1-28. (13,35).
5. Andreev, N.N., 1955. Some problems in the theory of the capture of fish by gill nets. (In Russian.) Trans. Inst. Mar. Fish. U.S.S.R. 30: 109-27. (33).
6. Anokhina, L.E., 1959. On the relationship between fecundity and the fat content of *Clupea harengus membras* L. (In Russian, Marine Laboratory, Aberdeen trans. no. 735.) C.R. Acad. Sci., U.R.S.S. 129 (6): 1417-20. (5,8,23).
7. Anokhina, L.E., 1960. On the relationship between fecundity, differences in the size of ova and fat content of *Clupea harengus pallasi maris-albi* Berg. (In Russian, Marine Laboratory, Aberdeen trans. no. 734.) C.R. Acad. Sci. U.R.S.S. 133 (4): 960-3. (5,8,23).
8. Anokhina, L.E., 1961. Relationship between the fertility, fat content and the variations in the size of ova in the clupeid fishes. (In Russian, Marine Laboratory, Aberdeen trans. no. 733.) Trud. Soveshch. ikhtiol. Kom. Akad. Sci. S.S.S.R. 13: 290-5. (5,6,8,23).
9. Anon. 1952. Californian Cooperative Oceanic Fisheries Investigation. Prog. Rep., 1st Jan. 1951-30th June 1952. 51 pp. (6, 26).
10. Anon. 1963. Report of meeting of Atlantic-Scandian herring working group, Bergen 22nd-26th 1963.-ICES Herring Committee, Doc.No.70, Appendix 1. (mimeo.) "Norwegian spring spawners". (6,8,21).
11. Anon. 1964. Report of the Atlanto-Scandian herring working group.- ICES Herring Committee, Doc. No. 8 (mimeo.) (1,13,35).

12. Arthur, D.K. 1956. The particulate food and food resources of the larvae of three pelagic fishes, especially the Pacific sardine, *Sardinops caerulea* (Girard). Scripps. Inst. Oceanogr. Ph.D. thesis. (31).
13. Balls, R. 1951. Environmental changes in herring behaviour. A theory of light avoidance as suggested by echosounding observations in the North Sea. *J. Cons. int. Explor. Mer*, 17: 274-94. (20,22,27).
14. Bamford, T.W. 1941. The lateral line and related bones of the herring (*Clupea harengus* L.) *Ann. Mag. nat. Hist., Ser. II*, 8; 414-38. (26).
15. Barlow, G.W. 1961. Causes and significance of morphological variation in fishes. *Syst. Zool.* 10: 105-17. (2,5).
16. Baxter, I.G. 1959. Fecundities of winter-spring and summer-autumn herring spawners. *J. Cons. int. Explor. Mer*, 25: 73-80. (1,2,8).
17. Baxter, I.G. 1963. A comparison of fecundities of early and late maturity stages of herring in the North-Western North Sea.- *Rapp. Cons. Explor. Mer*, 154: 170-174. (1,2,8).
18. Bertelsen, E. and Madsen, K.P., 1956. Young herring from the Bløden Ground Area.- *Ann. biol. Copenhagen* 11: 125-127. (12)
19. Bertelsen, E. and Madsen, K.P., 1957. Meristic characters of samples from the Bløden Ground Area, 1955.- *Ann. biol. Copenhagen* 12: 197-98. (2,12).
20. Beverton, R.J.H., and Holt, S.J. 1959. A review of the lifespans and mortality rates of fish in Nature, and their relation to growth and other physiological characteristics. *Ciba Symp. on The Lifespan of Animals*, 142-77. (31).
21. Bhattacharyya, R.N. 1957. The food and feeding habits of larval and post-larval herring in the northern North Sea. *Mar. Res. Scot.* no. 3, 14 pp. (6,10,20).
22. Bibov, N.E. 1960. Acclimatization of salaka (Baltic herring) *Clupea harengus membras* L. in the Aral Sea. I.C.E.S. Herring Committee Paper no. 135 (mimeo). (8,33).
23. Biryukov, N.P. 1958. On the distribution of herring in the North Sea in 1957. I.C.E.S. Herring Committee, Paper no. 77 (mimeo) (16,22).
24. Bishai, H.M. 1960a. The effect of gas content of water on larvae and young fish. *Z. wiss. Zool.* 163:37-64. (10,16,17,28).
25. Bishai, H.M. 1960b. The effect of hydrogen ion concentration on the survival and distribution of larvae and young fish. *Z. wiss. Zool.* 164: 107-18. (10,17).
26. Bishai, H.M. 1960c. The effect of water currents on the survival and distribution of fish larvae. *J. Cons. int. Explor. Mer*, 25: 134-46. (15,27).

27. Bishai, H.M. 1961a. The effect of salinity on the survival and distribution of larvae and young fish. *J.Cons. int. Explor.Mer.* 26, 166-79. (10,18,31).
28. Bishai, H.M. 1961b. The effect of pressure on the survival and distribution of larvae and young fish. *J.Cons. int. Explor.Mer.* 26, 292-311. (10,21).
29. Blaxter, J.H.S. 1955. Herring Rearing - I. The storage of herring gametes. *Mar. Res. Scot. no. 3*, 12 pp. (4,8,33).
30. Blaxter, J.H.S. 1956. Herring Rearing - II. The effect of temperature and other factors on development. *Mar. Res. Scot. no. 5*, 19 pp. (5,9,11,16).
31. Blaxter, J.H.S. 1957. Herring Rearing - III. The effect of temperature and other factors on myotome counts. *Mar. Res. Scot. no. 1*, 16 pp. (1,2,16).
32. Blaxter, J.H.S. 1958. The racial problem in herring from the viewpoint of recent physiological, evolutionary and genetical theory. *Rapp. Cons. Explor. Mer.* 143, 10-19. (1,2,4,8,23).
33. Blaxter, J.H.S. 1960. The effect of extremes of temperature on herring larvae. *J. mar. biol. Ass. U. K.* 39, 605-8. (10,16).
34. Blaxter, J.H.S. 1962. Herring Rearing - IV. Rearing beyond the yolk sac stage. *Mar. Res. Scot. no.1*, 18 pp. (3,6,10,11,27,33).
35. Blaxter, J.H.S. 1963. The feeding of herring larvae and their ecology in relation to feeding. *Calif. Coop. Oceanic Fish. Invest.* 10:79-88. (6,10,35).
36. Blaxter, J.H.S., and Dickson, W. 1959. Observations on the swimming speeds of fish. *J. Cons. int. Explor. Mer.* 24, 472-9. (15,27).
37. Blaxter J.H.S., and Hempel, G. 1961. Biologische Beobachtungen bei der Aufzucht von Heringsbrut. (Eng. summary.) *Helgoländ Wiss. Meeresunters.* 7, 260-83. (6,8,10,28,33).
38. Blaxter, J.H.S. and Hempel, G. 1963. The influence of egg size on herring larvae (*Clupea harengus* L.). *J.Cons. int. Explor. Mer.* 28:211-40. (1,2,8,10,31,33,35).
39. Blaxter, J.H.S., and Holliday, F.G.T. 1958. Herring (*Clupea harengus* L.) in aquaria.-II. Feeding. *Mar.Res. Scot. no. 6*, 22 pp. (6,16,20,25,26,33,35).
40. Blaxter, J.H.S., and Parrish, B.B. 1958. The effect of artificial lights on fish and other marine organisms at sea. *Mar. Res. Scot. no. 2*, 24 pp. (12,20,22,27).
41. Blaxter, J.H.S., Parrish, B.B., and Meadows, P.S. 1960. The reaction of herring to moving obstacles. I.C.E.S. Comparative Fishing Committee, Paper no. 16 (mimeo) (20,26,27).

42. Bolster, G.C. 1958. On the shape of herring schools. *J. Cons. int. Explor. Mer*, 23, 228-34. (27,34).
43. Bolster, G.C., and Bridger, J.P. 1957. Nature of the spawning area of herrings. *Nature*, Lond. 179, 638. (8)
44. Borisov, P.G. 1955. The behaviour of fishes under the influence of artificial light. (In Russian, Marine Laboratory, Aberdeen trans. no. 411.) *Proc. Conf. on the behaviour of fish and on the locating of its commercial concentrations*. Ed. by E.N. Pavlovskii (Moscow 1955). (13,20).
45. Bowers, A.B., and Holliday, F.G.T. 1961. Histological changes in the gonad associated with the reproductive cycle of herring (*Clupea harengus* L.). *Mar. Res. Scot.* no. 5, 16 pp. (3,8).
46. Bowers, A.B., and Williamson, D.I. 1951. Food of larval and early post-larval stages of autumn spawned herring in Manx waters. *Rep. mar. biol. Stat. Pt. Erin.* 63, 17-26. (6,10).
47. Boyar, H.C. 1961. Swimming speed of immature Atlantic herring with reference to the Passamaquoddy Tidal Project. *Trans. Amer. Fish. Soc.* 90, 21-6. (23,27).
48. Boydanov, G.A. and Fedowo, S.S. 1966. On the effect of the water temperature and the abundance of the Norwegian and North Sea herring on the dynamic of their growth. *I.C.E.S. Herring Committee Doc. no. H:15*. (Mimeo). (10,16,31).
49. Brandes, C.H., and Dietrich, R. 1953a. *Über die Fettverteilung im Körper des Herings*. *Veröff. Inst. Meeresf. Bremerhaven*, 2, 109-21 (23,29).
50. Brandes, C.H. and Dietrich, R. 1953b. A review of the problem of fat and water content in the edible part of the herring. *Fette und Seif.* 55, 533-41. (29).
51. v. Brandt, A. 1954. *Perlernetze in der Ostseetreibnetzfischerei für Heringe*. *Der Fischwirt*, 4, 295-300. (34).
52. Brawn, V.M. 1960a. Underwater television observations of the swimming speed and behaviour of captive herring. *J. Fish. Res. Bd Can.* 17, 689-98. (20,21,22,27,32).
53. Brawn, V.M. 1960b. Seasonal and diurnal vertical distribution of herring (*Clupea harengus* L.) in Passamaquoddy Bay, N.B. *J. Fish. Res. Bd Can.* 17, 699-711. (12,16,22).
54. Brawn, V.M. 1960c. Temperature tolerance of unacclimatized herring (*Clupea harengus* L.) *J. Fish. Res. Bd Can.* 17, 721-3. (16).
55. Brawn, V.M. 1960d. Survival of herring (*Clupea harengus* L.) in water of low salinity. *J. Fish. Res. Bd Can.* 17, 725-6. (18,23).

56. Brawn, V.M. 1962. Physical properties and hydrostatic function of the swim bladder of herring (*Clupea harengus* L.). *J. Fish. Res. Bd Can.* 19, 635-56. (12,21,22,).
57. Breder, C.M. Jr. 1959. Studies on social groupings in fishes. *Bull. Amer. Mus. nat. Hist.* 117, 397-481. (27).
58. Bridger, J.P. 1958. On efficiency tests made with a modified Gulf lll high speed tow-net. *J. Cons. int. Explor. Mer*, 23, 357-65. (10,22,34).
59. Bridger, J.P. 1960. On the relationship between stock, larvae and recruits in the "Downs" herring. I.C.E.S. Herring Committee, Paper no. 159. (mimeo.) (6,8,10,31).
60. Bridger, J.P. 1961. On fecundity and larval abundance of Downs herring. *Fish. Invest. Lond., Ser. II*, 23 (3), 30 pp. (6,8,10).
61. Bückmann, A., and Hempel, G. 1957. Untersuchungen an der Heringslarvenbevölkerung der Innenjade. (Eng. summary.) *Helgoländ. Wiss. Meeresunters.* 6 (1), 52-70. (2,16).
62. Bückmann, A. 1950. Die Untersuchungen der Biologischen Anstalt über die ökologie der Heringsbrut in der südlichen Nordsee. II. *Helgoländ. Wiss. Meeresunters.* 3, 171-205. (2,3,7,10,11,15,16).
63. Bückmann, A., Harder, W., and Hempel, G. 1953. Unsere Beobachtungen am Hering, *Clupea harengus* L. (Eng. summary.) *Kurz. Mitt. Inst. Fischereibiol. Hamburg*, 3, 22-42. (6,10,12,18,27,33).
64. Burd, A.C. 1956. The North Shields fishery 1949-55. I.C.E.S. Herring Committee, Paper no. 56 (mimeo) (6,7,8).
65. Burd, A.C. 1958. Recruitment and the North Shields fishery. I.C.E.S. Herring Committee, Paper no. 67 (mimeo). (6,7,8,12,31).
66. Burd, A.C. 1962. Growth and recruitment in the herring of the southern North Sea. *Fish. Invest., Lond. Ser. 11*, 23 (5), 42 pp. (6,7,8,31).
67. Canagaratnam, P. 1959. Growth of fishes in different salinities. *J. Fish. Res. Bd Can.* 16, 121-30. (7,18).
68. Channon, H.J. and El Saby, M.K. 1932. Fat metabolism of the herring. I. A preliminary survey. *Biochem. J.* 26, 2021-34. (23).
69. Chestnoy, V.N. 1961. Vertical migrations of herring and the methods of their utilization in the fishing practice. (In Russian.) *Ryb. Khoz.* 37 (6), 53-7. (20,22).
70. Colton, J.B., (Jr.), Honey, K.A., and Temple, R.F. 1961. The effectiveness of sampling methods used to study the distribution of larval herring in the Gulf of Maine. *J. Cons. int. Explor. Mer*, 26, 180-90. (10,22,34).

71. Craig, R.E. 1960. A note on the dependence of catches on temperature and wind in the Buchan prespawning fishery. *J. Cons. int. Explor. Mer*, 25, 188-90. (13,15,16).
72. Craig, R.E., and Priestley, R. 1961. Photographic studies of fish populations. *Nature, Lond.* 188, 333-34. (20,27,32).
73. Cushing, D.H. 1955. Production and a pelagic fishery. *Fish. Invest. Lond., Ser. II*, 18 (7), 104 pp. (6,31).
74. Cushing, D. H. 1955. On the autumn-spawned herring races of the North Sea. *J. Cons. int. Explor. Mer*, 21, 44-60. (2,22,31).
75. Cushing, D. H. 1960. Fishing gear and fish behaviour. *Proc. world sci. meeting on the biology of sardines and related species, Rome 1959.* (Methodological Paper, 3.) 3, 1307-26. (6,10,20,26,27,34).
76. Cushing, D.H. 1961. On the failure of the Plymouth herring fishery. *J. mar. biol. Ass. U.K.* 41, 799-816. (31).
77. Cushing, D.H. 1962. Recruitment to the North Sea herring stocks. *Fish. Invest. Lond., Ser. II*, 23 (5), Part 2, pp.43-71. (1,6,7,13, 22,31).
78. Cushing, D.H., and Burd, A.C. 1956. Recruitment and maturity of the East Anglian herring. *Nature, Lond.* 178, 86-7. (6,7).
79. Cushing, D.H., and Burd, A.C. 1957. On the herring of the southern North Sea. *Fish. Invest. Lond., Ser. II*, 20, (11), 31 pp. (1,2,6,7,8).
80. Dannevig, A., and Dannevig, G. 1950. Factors affecting the survival of fish larvae. *J. Cons. int. Explor. Mer*, 16, 211-15. (28,33).
81. Dannevig, A., and Hansen, S. 1952. Factors involved in hatching and rearing fish eggs and larvae. (In Norwegian, Marine Laboratory, Aberdeen trans. no. 415.) *Fiskeridir. Skr. Havundersök.* 10 (1), 6-16. (8,10,28,33).
82. Das, N., Postuma, K.H. and Zijlstra. 1959. Preliminary results of otolith - studies. I.C.E.S., Herring Committee Doc. no.85 (mimeo). (30).
83. Das, N., and Tibbo, S.N. 1962. On the feeding and growth of young herring (*Clupea harengus* L.) in captivity. *J. Fish. Res. Bd Can.* 19, 981-3. (6,7).
84. Day, L. 1957. Vertebral numbers and first year growth of Canadian Atlantic herring (*Clupea harengus* L.) in relation to water temperature. *Bull. Fish. Res. Bd Can.* 3, 165-76. (2,16).
85. Devold, F., 1952. A contribution to the study of the migrations of the Atlanto-Scandian Herring. *Rapp. Cons. Explor. Mer*, 131, 103-107. (22,34).
86. Devold, F. 1953. Tokter med "G.O.Sars" i Norskehavet vinteren 1952/53. *Fiskets Gang*, 39, 235-9. (22,34).

- 87.Devold, F. 1961. The life history of the Atlanto-Scandian herring. I.C.E.S. Herring Symposium, Paper no. 40 (mimeo). (13,15,22).
- 88.Devold, F. 1963. The life history of the Atlanto-Scandian Herring. Rapp. Cons. Explor. Mer, 154, 98-108. (1,6,13,31).
- 89.Dietrich, G., Sahrhage, D., and Schubert, K. 1959. Locating fish by thermometric methods. In "Fishing Gear of the World". 607 pp. Fishing News Books Ltd., London. (15,16,27).
- 90.Dragesund, O. 1958. Reactions of fish to artificial light with special reference to Large Herring and Spring Herring in Norway. J. Cons. int. Explor. Mer, 23, 213-27. (20,22,34).
- 91.Dragesund, O. 1960. Observations on the spawning of herring in captivity. Fauna, 4, 137-44. (8,16,33).
- 92.Dragesund, O. 1963. The Norwegian "Small" and "Fat" Herring Fishery size and age composition of the catches. Rapp. Cons. Explor. Mer, 154, 118-122. (1,13,31).
- 93.Einarsson, H. 1951. Racial analyses of Icelandic herring by means of the otoliths. Rapp. Cons. Explor. Mer, 128, 55-74.(Appendix I). (1,30).
- 94.Einarsson, H. 1958. The Icelandic herring and racial problems. Rapp. Cons. Explor. Mer, 143 (2), 45-52. (1,2).
- 95.Farrin, A.E., Scattergood, L.W., and Sindermann, C.J. 1957. Maintenance of immature sea herring in captivity. Prog. Fish. Cult.19,188-9. (6,16,33).
- 96.Farris, D.A. 1960. The effect of three different types of growth curves on estimates of larval fish survival. J. Cons. int. Explor. Mer, 25,294-306. (6,7,10,33).
- 97.Flüchter, J. 1963. Funktionsanatomische Untersuchungen am Kieferapparat der Heringslarven. (Eng. summary) Kurz. Mitt. Inst. Fischereibiologie Hamburg, 12, (in press). (2,10).
- 98.Fraser, J.H. 1961. Plankton and the Shetland Herring Fishery. I.C.E.S. Herring Symposium, Paper no. 14, (mimeo). (6,12).
- 99.Fraser, J.H. 1963. Plankton and the Shetland Herring Fishery. Rapp. Cons. Explor. 154, 175-178. (6,15).
- 100.Freytag, G. 1961. Heringschwarmgeräusche. Informationen für die Fischwirtschaft (from the Bundesforschungsanstalt für Fischerei, Hamburg), nr. 5/6, 139-40. (26).
- 101.Fridriksson, A. 1958. The tribes in the North Coast Herring of Iceland with special reference to the period 1948-1955. Rapp. Cons. Explor. Mer, 143, 36-44. (1,2).
- 102.Fridriksson, A., and Aasen, O. 1950. The Norwegian-Icelandic Herring tagging experiments. Fisk. Skrifter Havunders, IX (11), 1-43. (1,6,8,14).

103. Fridriksson, A. and Aasen, O. 1951. The Norwegian-Icelandic herring tagging experiments. Report No. 2. Rit. Fiskideildar 1952,1. (Reykjavik). (14).
104. Galkina, L.A. 1957. Effect of salinity on the sperm, eggs and larvae of the Okhotsk herring. (In Russian, trans. available from Office of Technical Services, U.S. Dept. of Commerce, Washington 25.D.C.) Izvestiya T.N.I.R.O. 45, 37-50. (8,18).
105. Galkov, A.A. 1958. Some data on the influence of the behaviour of the Atlanto-Scandian herring on its catch by the pelagic trawl. (In Russian.) Ryb. Khoz. 34 (11), 8-12. (3,15,27,34).
106. Girsá, I.I. 1961. Availability of food animals to some fishes at different levels of illumination. (In Russian, Marine Laboratory, Aberdeen trans. no. 717.) Trudy Sovesh. Ikhtiolog. Kom. Akad. Nauk. S.S.S.R. 13, 355-9. (6,20,22).
107. Graham, T. 1962. A relationship between growth, hatching, and spawning season in Canadian Atlantic herring (*Clupea harengus* L.). J. Fish. Res. Bd Can. 19, 985-7. (7,8,30).
108. Groody, T., Loukashkin, A., and Grant, N. 1952. A preliminary report on the behaviour of the Pacific sardine (*Sardinops caerulea*) in an electrical field. Proc. Calif. Acad. Sci. 27, 311-23. (27,36).
109. Haraldsvik, S. 1966. The spring-spawning group of herring in the North-Eastern North Sea. I.C.E.S. Herring Committee Doc. No. H:25 (mimeo) (1,35).
110. Haraldsvik, S. 1966. The autumn spawning group of herring in the North-Eastern North Sea. I.C.E.S. Meeting, 1966. Doc.No. H:26 (mimeo) (1,35).
111. Harder, W. 1952. Zur postembryonalen Entwicklung des Darmes beim Hering, *Clupea harengus* L. Z. Anat. EntwGesch. 116, 379-98. (10,11).
112. Harder, W. 1953. Zum Formwachstum des Herings (*Clupea harengus* L.) Z. Morph. Ökol. Tiere, 42, 209-24. (2,3,11).
- 112a. Harder, W. 1954. Die Entwicklung der Respirationsorgane beim Hering (*Clupea harengus* L.). Z. Anat. EntwGesch. 118, 102-23. (3,10,11,17).
- 112b. Harder, W. 1960. Vergleichende Untersuchungen zur Morphologie des Darmes bei Clupeoidea. Z. wiss. Zool. 163, 65-167. (3,6,10,11,16).
113. Hela, I., and Laevastu, T. 1962. "Fisheries Hydrography" 137 pp. Fishing News Books Ltd., London. (8,15,16,27).
114. Hempel, G. 1953. Die Temperaturabhängigkeit der Myomerenzahl beim Hering (*Clupea harengus* L.). Naturwissenschaften, 17, 466-8. (2,16).
115. Hempel, G. 1962. Verh. Dtsch. Zool. Gesell. Wien 579-591. (1,8).

116. Hempel, G., and Blaxter, J.H.S. 1961a. The experimental modification of meristic characters in herring (*Clupea harengus* L.). *J. Cons. int. Explor. Mer*, 26, 336-46. (2,16,18,33).
117. Hempel, G., and Blaxter, J.H.S. 1961b. On the condition of herring larvae. I.C.E.S. Herring Symposium, Paper no. 34 (mimeo.). (6,10,23).
118. Hempel, G., and Blaxter, J.H.S. 1963. On the condition of herring larvae. *Rapp. Cons. Explor. Mer*, 154, 35-40. (6,10,33).
119. Hentschel, E. 1950. Die Nahrung der Heringslarven. *Helgoländ. Wiss. Meeresunters.* 3, 59-81. (6,10).
120. Hoar, W.S. 1952. Thyroid function in some anadromous and landlocked teleosts. *Trans. roy. Soc. Can.* 46, 39-53. (24).
121. Hodgson, W.C. 1957. "The Herring and Its Fishery". 197 pp. Routledge and Kegan Paul, London. (31,34,35).
122. Holliday, F.G.T. 1958. The spawning of the herring. *Scot. Fish. Bull.* no. 10. pp.11 -13. (8,27).
123. Holliday, F.G.T. 1960a. The control of maturation in the herring. I.C.E.S. Herring Committee, Paper no. 38, (mimeo.). (24,33).
124. Holliday, F.G.T. 1960b. The control of spawning in the herring. I.C.E.S. Herring Committee, Paper no. 39 (mimeo.). (6,7,8,24).
125. Holliday, F.G.T. 1962. Hermaphroditism in the herring (*Clupea harengus* L.). *Proc. roy. Soc. Edinb., Ser. B.* 68, 208-14. (8).
126. Holliday, F.G.T., and Blaxter, J.H.S. 1960. The effects of salinity on the developing eggs and larvae of the herring. *J. mar. biol. Ass. U.K.* 39, 591-603. (8, 10,18,23).
127. Holliday, F.G.T., and Blaxter, J.H.S. 1961. The effects of salinity on herring after metamorphosis. *J. mar. biol. Ass. U.K.* 41, 37-48. (3,11,23,29).
128. Holliday, F.G.T., and Parry, Gwyneth 1962. Electron-microscope studies of the acidophil cells in the gills and pseudobranchs of fish. *Nature, Lond.* 193, 192. (3,23).
129. Holstvoogd, C. 1957. The postembryonic development of the pronephros in *Clupea harengus* L. *Arch. néerl. Zool.* 12, 455-66. (3,10,11).
130. Hourston, A.S. 1958. Population studies on juvenile herring in Barkley Sound, British Columbia. *J. Fish. Res. Bd Can.* 15, 909-60. (6,27).
131. Hughes, R.B. 1959. Chemical studies on the herring (*Clupea harengus*). 2. The free amino acids of herring flesh and their behaviour during postmortem spoilage. *J. Sci. Fd Agric.* no. 10, 558-64. (29).
132. Höglund, H. 1948. On the Feeding Habits of the Herring Larvae and Post-Larvae. *Föredrag vid ICES' Plankton Committee 7/10 1948.* 5 s, 2 fig. + tab. (6,10).

133. Höglund, H. 1949. Tagging Experiments on Herring. Rapp. et Proc.-Verb. des Réunion. 127, 52-53. (14).
134. Höglund, H. 1951. Tagging Experiments on Herring. Rapp. et Proc.-Verb. 128, 52-52. (14).
135. Höglund, H. 1955. Swedish herring tagging experiments, 1949-1953. Rapp. et Proc.-Verb. des Réunion. 140, 19-29. (14).
136. Höglund, H. 1959. Sillen och sillfisket. Natur i Bohuslän, 193-209. (1,13,35).
137. Höglund, H. 1960. On the Herring in Bohuslän during the great Fishing Period of the Eighteenth Century. Herring Committee no. 150, (ICES, Moskva) 6 s + fig. (13,35).
138. Iles, T.D. 1964. The duration of maturation, stages in Herring. J. Cons. int. Explor. Mer, 29 (2) 166-88. (1,8).
140. Ivlev, V.S. 1960. On the utilization of food by planktophage fishes. Bull. math. Biophys. 22, 371-89. (6,7).
141. Jakobsson, J. 1961. Some remarks on the distribution and availability of the North Coast herring of Iceland. I.C.E.S. Herring Symposium. Paper no. 44 (mimeo). (6,13,27).
142. Jens, G. 1954. Untersuchungen über rhythmische Erscheinungen beim Heringsfang in der Nordsee. Arch. Fischwiss. 5, 113-19. (13,20).
143. Jensen, A.J.C. 1950. Changes in the quality of the herring in the course of the year and from year to year. Rep. Danish biol. Sta. 51, 3-18. (3,8).
144. Jensen, A.J.C. 1951. Migrations of the herring in the waters round Denmark. Rapp. Cons. Explor. Mer, 128 (1), 29-35. (1,2,22).
145. Jensen, A.J.C. 1958. Racial investigations on herring, especially adult herring in the Skagerak. Rapp. Cons. Explor. Mer, 143 (2) 95-98. (1,2).
146. Jensen, A.J.C. 1966. The fluctuations of the herring fishery in the Sound. I.C.E.S. Herring Committee Doc. no. H:17 (mimeo). (13,31).
147. Jones, F.R. Harden 1962. Further observations on the movements of herring (*Clupea harengus* L.) shoals in relation to tidal current. J. Cons. int. Explor. Mer, 27, 52-76. (15,26,27).
148. Jones, F.R. Harden, and Marshall, N.B. 1953. The structure and functions of the teleostean swimbladder. Biol. Rev. 28, 16-83. (3).
149. Judanov, I.G. 1966. Spawning efficiency and strength of the Atlanto-Scandian Herring in 1964 and 1965. I.C.E.S. Herring Committee Doc. no. H:11 (mimeo). (8,10,15).
150. Kabata, Z. 1963. Incidence of coccidiosis in Scottish herring, *Clupea harengus* L. J. Cons. int. Explor. Mer, 28, 201-10. (28).

151. Kamshtylov, M.M., and Gerasimov, V.V. 1960. An attempt at keeping young Murman herring in aquarium. (In Russian.) Proc. Symp. on the biological bases of the oceanic fisheries. pp. 84-7. (16,17,18,33).
152. Kirchhoff, H. 1958. Funktionell-anatomische Untersuchung des Visceralapparates von *Clupea harengus* L. Zool. Jb. 76, 461-540. (2,6).
153. Krefft, G., and Schubert, K. 1950. Beobachtungen über den Einfluss künstlicher Beleuchtung der Meeresoberfläche auf Fische. Fischereiwelt, 2nd year, 86-8. (12,20).
154. Krefft, G., and Schüler, F. 1951. Beobachtungen über die Tiefenverteilung von Heringsschwärmen in der nördlichen und mittleren Nordsee im August 1950. Fischereiwelt, 3rd year, 93-5. (22,34).
155. Krefft, G., Schubert, K. and Sahrhage D. 1955. Der augenblickliche Stand der Erforschung des Nordseeherings mit besonderem Hinblick auf die Frage seiner Überfischung. Arch. Fischw. ^{8/}wiss., 6 (3/4), 141-88. (1,13,31).
156. Kryzhanovsky, S.G. 1956. Development of *Clupea harengus* membras in the water of high salinity. (In Russian, Marine Laboratory, Aberdeen trans. no. 792.) Voprosy. Ikhtiologii, no. 6, 100-4. (10,11,18).
157. Kurata, H. 1959. Preliminary report on the rearing of the herring larvae. Bull. Hokkaido Reg. Fish. Res. Lab. 20, 117-38. (6,10,16,18,20,31).
158. Kändler, R. 1952. Über das Laichen des Frühjahrsherings bei Rügen und die Häufigkeit der Brut des Herbstherings in der Baltsee und südlichen Ostsee. Kieler Meeresforsch., 8 (2), 145-63. (8).
159. Kändler, R., and Dutt, S. 1958. Fecundity of Baltic Herring. Rapp. Cons. Explor. Mer, 143 (2), 99-108. (1,8).
160. Lagler, K.E., Bardach, J.E., and Miller, R.R. 1962. "Ichthyology." 545 pp. John Wiley and Sons Inc., New York. (26).
161. Lasker, R. Theilacker, G.H. 1962. Oxygen consumption and osmoregulation by single Pacific sardine eggs and larvae (*Sardinops caerulea* Girard). J. Cons. int. Explor. Mer, 27, 25-33. (10,17,23).
162. Liamin, K.A. 1959. Trudy PINRO (In Russian, Translation in Spec. sci. Rep. U.S. Fish Wildl. Serv., Fish., no. 327, 166-202.) (1,8,30).
163. Lishev, M.N., Rannak, L.A., and Lisivnenko, L.N. 1961. Condition of the Baltic herring stock in north-eastern Baltic and the Gulf of Riga. I.C.E.S. Baltic-Belt Committee, Paper no. 124 (mimeo). (6,10).
164. Loukashkin, A., and Grant, N. 1954. Further studies of the behaviour of the Pacific sardine (*Sardinops caerulea*) in an electrical field. Proc. Calif. Acad. Sci. 28, 323-37. (27,36).
165. Loukashkin, A.S., and Grant, N. 1959. Behaviour and reactions of the Pacific sardine, *Sardinops caerulea* (Girard) under the influence of white and coloured lights and darkness. Proc. Calif. Acad. Sci. 29, 509-48. (20,27,33).

166. Loukashkin, A.S., and Groody, T.C. 1955. On the Pacific sardine (*Sardinops caerulea* Girard) in aquaria: transportation, handling, maintenance and survival. *Proc. Calif. Acad. Sci.* 28, 339-53. (20,27,33).
167. Love, R. M. 1957. The biochemical composition of fish. In "The Physiology of Fishes." Vol. 1, Ed. M.E. Brown. 447 pp. Academic Press, New York. (29).
168. Lovern, J.A. 1951. The chemistry and metabolism of fats in fish. *Biochem. Soc. Symposia Cambridge Engl.* no. 6, 49-62. (23).
169. Lowenstein, O. 1957. The acoustico-lateralis system. In "The Physiology of Fishes." Vol. II, Ed. M.E. Brown. 526 pp. Academic Press, New York. (3,26).
170. Lüthmann, M. 1953. Über die Fettspeicherung bei Ostseeheringen und ihre Beziehung zum Fortpflanzungszyklus. *Kieler Meeresforsch.* 9, 213-27. (23).
171. Manteufel, B.P., Lishev, M.N., Radakov, D.V., and Yudanov, K.I. 1958. Observations on behaviour of *Clupea harengus* membras in the Gulf of Riga, when fished by trawl. (In Russian, Marine Laboratory, Aberdeen trans. no. 807.) *Trudy V.N.I.R.O.* 36, 19-24. (27,34).
172. Manteufel, B.P., and Radakov, D.V. 1960. On the study of adaptive importance of schooling behaviour in fishes. (In Russian) *Adv. mod. Biol. Moskow*, 50, 362-70. (27).
173. Marty, Ju. Ju. 1956. The fundamental stages of the life cycle of Atlantic Scandinavian herring. (In Russian, trans. in *Spec. sci. Rep. U.S. Fish Wildl. Serv.*, no. 327, pp. 5-68a, 1959. *Trudy P.I.N.R.O.* 9. (7,8,31).
174. Marty, Ju. Ju. 1959. Reproduction of marine herring in the light of the increasing intensity of fisheries. I.C.E.S. Herring Committee, Paper no. 65 (mimeo). (6,8,10).
175. McBride, J.R., Macleod, R.A., and Idler, D.R. 1960. Seasonal variation in the collagen content of Pacific herring tissues. *J. Fish. Res. Bd Can.* 17, 913-18. (2,3,9).
176. McMynn, R. G., and Hoar, W.S. 1953. Effects of salinity on the development of the Pacific herring. *Canad. J. Zool.* 31, 417-32. (8,9,18).
177. Mohr, H. 1960. Zum Verhalten der Fische gegenüber Fanggeräten. *Prot. Fischereitechnik*, pt. 6, 296-326. (27,34).
178. Mohr, H. 1961. Note on the behaviour of herring in a round tank. I.C.E.S. Comparative Fishing Committee, Paper no. 86 (mimeo). (20,27,34).
179. Mohr, H. 1962. Beobachtungen an Heringsschwärmen. *Allgemeine Fischwirtschaftszeitung*, no. 24 (16/6/62-no page nos.). (13,34).

181. Morris, R. W. 1955. Some considerations regarding the nutrition of marine fish larvae. *J. Cons. int. Explor. Mer*, 20, 255-65. (6,10).
182. Morris, R. W. 1956. Some aspects of the problem of rearing marine fishes. *Bull. Inst. océanogr. Monaco*, no. 1082, 61 pp. (6,10,15,33).
183. Motoda, S., and Hirano, Y. 1961. Review of Japanese herring investigations. I.C.E.S. Herring Symposium. Paper no.13 (mimeo). (16,33).
184. Moulton, J. M., and Backhus, R.H. 1955. Annotated references concerning the effects of man-made sounds on the movements of fishes. *Coll. Repr. Woods Hole oceanogr. Ins^t*. no. 802, 8 pp. (26,34).
185. Murphy, G. I. 1961. Oceanography and variations in the Pacific sardine populations. *Californian Cooperative Oceanic Fisheries Investigations*, 8, 55-64. (31,34).
186. Naumov, V. M. 1956. " The ovogenesis and ecology of the sexual cycle of the Murmansk herring (*Clupea harengus* L.). (In Russian, trans. in *Spec. sci. Rep., U.S. Fish Wildl. Serv.*, no. 327, 203-62, 1959.) *Trudy P.I.N.R.O.* 9. (3,6,8,16,18,23,29).
187. Nikitinskaya, I. V. 1958a. On the onset of active feeding of the larvae of *Clupea harengus pallasii* Val. (In Russian, Eng. summary.) *Zool. Zh.* 37, 1568-71. (6,10).
188. Nikitinskaya, I. V. 1958b. On the variability of the larvae of the Sakhalin herring. (In Russian, trans. U.S. Fish and Wildlife Service, Boothbay Harbor, Maine.) *Nauch. Doklady Vyshey Shkoly, Biol. Nauk.*, no. 4. (9,10, 16,23).
189. Nikolaev, I.I. 1954. Depth distribution of *Clupea harengus* *membras* L. in the Baltic. *Zool. Zhurn.* 33 (3), 648-52. (22).
190. Nikolsky, G. W. 1957. " *Spezielle Fischkunde* " 632 pp. V.E.B. Deutscher Verlag der Wissenschaften, Berlin. (35).
191. Nikolsky, G. W., Chepurnov, A.V., and Shatunovsky, M.I. 1961. Regularities in variability of features in certain forms of North Atlantic herring. I.C.E.S. Herring Symposium, Paper no. 36 (mimeo). (3,6,7,10).
192. Nilsson, L. 1963. *Det stora sillfisket 1752-1808. Bohusläns Historia* 474 p. Stockholm, Göteborg, Uppsala, red. E. Lönnroth. (35).
193. Naevdal, G., and Haraldsvik, S. 1966. A preliminary report on electrophoretic studies on herring serum proteins. I.C.E.S. Herring Committee, Doc. No. H:24 (mimeo). (29).
194. Odense, P. H., Allen, Th. M., and Leung, T. C. 1966. The distribution of multiple forms of lactate dehydrogenase and aspartate aminotransferase in samples of two Canadian herring populations. I.C.E.S. Herring Committee, Doc. No. H:19 (mimeo). (29).

- 195.Okonski, S., and Konkol, H. 1957. Daily migrations of herring shoals and their reaction to fishing gear. (In Polish, Eng. summary.) Prace Morsk. Inst. Rybackiego Gdyni, 9, 549-63. (20,22,27,34).
- 196a.Ostvedt, O.J. 1958. Some considerations concerning the homogeneity of the Atlanto-Scandian herring. Rapp. Cons. Explor. Mer, 143 (2), 53-57. (1,8,13,31).
- 196b.Ostvedt, O.J. 1963. Catch, effort and composition of the Norwegian winter herring fishery. Rapp. Cons. Explor. Mer, 154, 109-117. (1,13,31).
- 197.Outram, D.N. 1955. The development of the Pacific herring egg and its use in estimating age of spawn. Fish. Res. Bd Can. Pacific Biol. Stat., Circular no. 40, 9 pp. (9).
- 198.Parrish, B.B., and Craig, R. E. 1957. Recent changes in the North Sea herring fisheries. Rapp. Cons. Explor. Mer, 143, 12-21. (8,31).
- 199.Parrish, B.B., and Sharman D.P. 1958. Some remarks on methods used in herring " racial " investigations, with special reference to otolith studies. Rapp. Cons. Explor. Mer, 143 (2), 66-80. (1,30).
- 200.Parrish, B.B., Blaxter, J.H.S., and Holliday, F.G.T. 1958. Herring (*Clupea harengus* L.) in aquaria. I. Establishment. Mar. Res. Scot. no. 5, 11 pp. (33).
- 201.Parrish, B.B., Saville, A., Craig, R.E., Baxter, I.G., and Priestley, R. 1959. Observations on herring spawning and larval distribution in the Firth of Clyde in 1958. J. mar. biol. Ass. U.K. 38, 445-53. (8,10,20,31).
- 202.Parrish, B.B., Baxter, I.G. and Mowat, M.J.D. 1960. An automatic fish egg counter. Nature, Lond., 185, 777 only. (8,22)
- 203.Parrish, B.B. and Saville, B. 1965. The Biology of the North-East Atlantic Herring Populations. Oceanogr. Mar. Biol. Ann. Rev., 3, 323-373. (35).
- 204.Parry, Gwyneth, and Holliday, F.G.T. 1960. An experimental analysis of the function of the pseudobranch in teleosts. J. exp. Biol. 37, 344-54. (2).
- 205.Pavshtiks, E.A. 1956. Seasonal changes in plankton and feeding migrations of herring. (In Russian, trans. in Spec. sci. Rep. U.S. Fish Wildl. Serv., no. 327, 104-39.) Trudy P.I.N.R.O. 9. (6,15).
- 206.Pinto, J. dos Santos, and Andreu, B. 1956. Algunos aspectos des desarrollo inicial del ovario de sardina (*Sardina pilchardus* Walb.). Inv. Pesq. 5, 3-12. (10,11).
- 207.Polder, J.J.W. 1961. Cyclical changes in testis and ovary related to maturity stages in the North Sea herring, *Clupea harengus* L. Arch. néerl. Zool. 14, 45-60. (3,8).
- 208.Polder, J.J.W. and Zijlstra, J.J., 1959. Fecundity in the North Sea herring I.C.E.S. Herring Committee, Doc. no. 84 (mimeo). (1,8).

209. Polonskij, A.B. 1961. Verhalten des Herings im Winter. (In Russian, Rostock Inst. für Hochseefischerei trans. no. 1422.) Ryb. Khoz. 37 (2), 22-7. (13,15).
210. Posthuma, K.H. 1957. The vertical migration of feeding herring in relation to light and vertical temperature gradient. I.C.E.S. Herring Comm. (mimeo). (16,20,22,34).
211. Posthuma K.H. (Ijmuiden) 1959. The "transition zone" in the nucleus of herring otoliths. I.C.E.S. Herring Committee, Doc. 83 (mimeo) (30).
212. Radakov, D.V., and Solovyev, B.S. 1959. A first attempt at using a submarine for observations on the behaviour of herring. (In Russian, Fish. Res. Bd Can. trans. no. 338.) Ryb. Khoz. 35 (7), 16-21. (20,27,32).
213. Rannak, L.A. 1958. Quantitative study of the Baltic herring eggs and larvae in the northern part of the Gulf of Riga and principle factors determining their survival. (In Russian, Fish. Res. Bd Can. trans. no. 238.) Trudy V.N.I.R.O. 34, 7-18. (1,8,10).
214. Rannak, L. 1967. On biological groups of the spring spawning herring on the basis of otolith types. EESTI NSV Teaduste Akadeemia Toimetised. XVI Kõide. Biologia 16(1), 41-53. (30).
215. Richardson, I.D. 1952. Some reactions of pelagic fish to light as recorded by echo-sounding. Fish. Invest. Lond., Ser. II, 18 (1), 19 pp. (6,20,22).
216. Richardson, I.D. 1960. Observations on the size and numbers of herring taken by the herring trawl. J. Cons. int. Explor. Mer, 25, 204-9. (22,34).
217. Ridgway, G. J. 1958. Studies on the Serology of Pacific Herring. U.S. Fish and Wildlife Service, Bureau Commercial Fisheries, Alaska Region, Marine Fisheries Investigations, Operations Report pp. 1-13. (29).
218. Rogalla, E. H., and Sahrhage, D. 1960. Heringsvorkommen und Wassertemperatur. Inform. Fischw. 7, 135-8. (15,16,27).
219. Ryzhenko, M. 1961 " Severyanka " in the schools of herring and cod. (In Russian, Marine Laboratory, Aberdeen trans. no. 718.) Rybovodstvo i rybolostvo, 4, 29-30. (6,22).
220. Sahrhage, D. 1954. Beobachtungen zur Frage der Heringslaichplätze. Mitt. Inst. Seefisch. 6, 24-32. (8,16).
221. Sasaki, T., Watanabe, S., Oshiba, G., and Okami, N. 1958. Measurements of angular distribution of submarine daylight by means of a new instrument. J. oceanogr. Soc. Japan, 14 (2), 1-6. (20).
222. Saville, A., 1964. Estimation of the abundance of a fish stock from egg and larval surveys. Rapp. Cons. Explor. Mer, 155, 164-170. (8,10,31).
223. Scattergood, L.W. 1957. A bibliography of the herring (*Clupea harengus* and *Clupea pallasii*). Research Bulletin no. 26, 108 pp. Department of Sea and Shore Fisheries, Augusta, Maine. (28,35).

- 224.Schäfer, W. 1955. Über das Verhalten von Jungheringsschwärmen im Aquarium. Arch. FischWiss. 6, 276-37. (26,27,33).
- 225.Schärfe, J. 1953. Über die Verwendung künstlichen Lichtes in der Fischerei. Prot. Fischereitechnik, 8, 1-29. (13,20,35).
- 225a.Schärfe, J. 1955. Observations with echo-sounding on the behaviour of a herring shoal towards a bottom trawl. I.C.E.S. Comparative Fishing Committee, Paper no. 42 (mimeo). (32,34).
- 226.Schubert, K. 1950. Der Heringsfang im Juli in der Nordsee. Fischereiwelt, 2nd year, 149-51. (16,22).
- 227.Schüler, F., and Krefft, G. 1951. Versuche zur Beeinflussung von Meeresfischen durch Schalldruckwellen und künstliches Licht. Fischereiwelt, 3rd year, 8-10. (20).
- 228.Shaw, E. 1962. The schooling of fishes. Sci. Amer. 206, 128-38. (27).
- 229.Shewan, J.M. 1951. The chemistry and metabolism of the nitrogenous extractives in fish. Biochem. Soc. Symposia Cambridge Engl. no. 6, 28-48. (29).
- 230.Shewan, J.M. 1955. The nitrogenous extractives from fresh fish muscle. 3. Comparison of several flat fishes and members of the herring-mackerel group. J. sci. Fd Agric. no. 2, 99-104. (29).
- 231.Silliman, R.P. 1950. Thermal and diurnal changes in the vertical distribution of eggs and larvae. Spec. sci. Rep. U.S. Fish Wildl. Serv., no. 15, 181-200. (10,22,34).
- 232.Sindermann, C. J. 1956. Diseases of fishes of the western North Atlantic. IV. Fungus disease and resultant mortalities of herring in the Gulf of St. Lawrence in 1955. Dept. Sea Shore Fish. Maine Res. Bull. 25, 1-23. (28).
- 233.Sindermann, C.J. 1957. Diseases of fishes of the western North Atlantic. VI. Geographic discontinuity of myxosporidiosis in immature herring from the Gulf of Maine. Res. Bull. Dep. Sea. Shore Fish. Me, no. 29, 1-20. (28).
- 234.Sindermann, C.J. 1958. Anti-Mammalian erythrocyte properties of sea herring serum. Anat. Rec. 131, 599. (23,29).
- 235.Sindermann, C.J. 1961. Parasite tags for marine fish. J. Wildlife Mgmt. 25, 41-47. (28).
- 236.Sindermann, C.J. 1962. Serology of Atlantic clupeoid fishes. Amer. Nat. 96, 225-31. (29).
- 237.Sindermann, C. J. 1963. Use of plant hemagglutinins in serological studies of clupeoid fishes. Fishery Bull. U.S. Fish Wildl. Serv. ? (29).
- 238.Sindermann, C. J. 1963. Disease in marine populations. Trans. N. Am. Wildl. Conf. 28, 336-56. (28).
- 239.Sindermann, C. J., and Mairs, D. F. 1958. Serum protein changes in diseased sea herring. Anat. Rec. 131, 599-600. (23,28,29).

240. Sindermann, C. J., and Mairs, D. F. 1959. A major blood group system in Atlantic sea herring. *Copeia* 3, 228-31. (29).
242. Sindermann, C. J., and Mairs, D. F. 1960. Comparative serology of five species of Atlantic clupeoid fishes. *Anat. Rec.* 137, 393. (23,29)
243. Skoglund, G. 1953. Skrammer ekold fisken? *Ostkusten*, 25 (6), 14. (26,34).
244. Smith, W. C. 1951. A review of the herring fishery in Manx waters during the period 1923-1950. *Port Erin.* (13).
245. Smith, K. A. 1961. Air curtain fishing for Maine sardines. *Comm. Fish. Rev.* 23 (3), 14 pp. (13,15,20,34).
246. Solovyev, B. S. 1959. On vertical distribution of herring at the end of its feeding season. (In Russian.) *Ryb. Khoz.* 35 (3), 9-12. (16,22).
247. Solovyev, B. S., and Degtyarev, A. A. 1957. Diurnal vertical migrations of the Atlanto-Scandian herring during the pre-spawning and spawning seasons. (In Russian.) *Ryb. Khoz.* 33 (11), 81-4. (8,22,34).
248. Steele, J.H. 1961. The environment of a herring fishery. *Mar. Res. Scot.* no. 6, 19 pp. (6,13,14,15).
249. Svetovidov, A.N. 1952. *Zool. Inst. Akad. SSSR., New Ser. No. 48*, 331 pp. "Fauna S.S.S.R. Fishes" 2, no.1 Clupeidae. (In Russian) (2,4).
250. Tester, A.L. 1955. Estimation of recruitment and natural mortality rate from age-composition and catch data in British Columbia herring populations. *Journ. Fish. Res. Board Canada* 12 (5), 649-81. (31).
251. Tibbo, S.N. 1957. Herring populations on the south and west coasts of Newfoundland. *Bull. Fish. Res. Bd Can.*, 111, 153-64. (1,2,7,8,13).
252. Tibbo, S.N., and Brawn, V.M. 1960. Exploration for herring in the Bay of Fundy and Gulf of Maine. *J. Fish. Res. Bd Can.* 17, 735-7. (13,27).
253. Tibbo, S.N., Legaré, J.E.H., Scattergood, L.W., and Temple, R.F. 1958. On the occurrence and distribution of larval herring (*Clupea harengus* L.) in the Bay of Fundy and Gulf of Maine. *J. Fish. Res. Bd Can.* 15, 1451-69. (10,34).
254. Tikhinov, D.P. 1960. Supplementary data on the reaction of herring to electric light. (In Russian, Marine Laboratory, Aberdeen trans. no. 594.) *Ryb. Khoz.* 4, 13-14. (20).
255. Toom, M.M. 1958. Experiments in the incubation of Baltic herring eggs. (In Russian, trans. available from Office of Technical Services. U.S. Dept. of Commerce, Washington 25, D.C.) *Trudy V.N.I.R.O.* 34, 19-29. (9,10,28,33).
256. Ulrich, B. 1951. *Unterwasserbeobachtungen von Heringsschwärmen. Fischereiwelt*, 3rd year, 164-65. (27).
257. Valdez, V., and Cushing, D.H. 1959. The effect of tidal stream on the presence of an extensive layer of midwater fish traces. I.C.E.S. Herring Committee, Paper no. 45 (mimeo). (15,20,27).

258. Verheijen, F.J. 1953. Laboratory experiments with the herring *Clupea harengus* L. *Experientia*, 9, 193-97. (6,20,26,34).
259. Verheijen, F.J. 1956. On a method for collecting and keeping clupeoids for experimental purposes....Pubbl. Staz. zool. Napoli, 28, 225-40. (26).
260. Verheijen, F.J. 1959. A peculiar nystagmus and a corresponding foveal structure in the eye of the herring (*Clupea harengus* L.). *Experientia* 15, 443-44. (20,26).
261. Volodin, V. M. 1956. Embryonic development of the autumn Baltic herring and their oxygen requirement during the course of development. (In Russian, Fish. Res. Bd Can. trans.no. 252.) *Voprosy Ikhtiologii*, no. 7, 123-33. (8,9,10,17).
262. Waldmann, J. 1961. Untersuchungen an Heringslarven und Zooplankton des Greifswalder Boddens in den Jahren 1958 und 1959. (Eng. summary.) *Zeit. Fisch. Hilfswiss.* 10, 523-36. (6,16,31).
263. Wilkins, N.P. 1966. Haemoglobin polymorphism and its ontogeny in herring (*Clupea harengus*) and sprat (*Sprattus sprattus*). *Comp. Biochem. Physiol.* 17, 1141-1158. (29).
264. Williamson, M.H. 1961. The relation of plankton to some parameters of the herring population of the north-western North Sea. I.C.E.S. Herring Symposium, Paper no. 11 (mimeo). (6,13,31).
265. Williamson, M.H. 1963. The relation of plankton to some parameters of the herring population of the north-western North Sea. *Rapp. Cons. Ex Explor. Mer*, 154, 179-185. (6,13,31).
266. Wood, H., Parrish, B.B., and MacPherson, G. 1955. Review of Scottish herring tagging experiments 1948-1953. *Rapp. Cons. Explor. Mer*, 140, 35-54. (14,27,35).
267. Wood, R.J. 1958. Fat cycles of North Sea herring. *J. Cons. int. Explor. Mer*, 23, 390-98. (7,8,23).
269. Woodhead, P.M.J., and Woodhead, A.D. 1955. The reactions of herring larvae to light: a mechanism of vertical migration. *Nature*, Lond. 176, 349-50. (20,22,27).
270. Wynne-Edwards, V.C. 1962. "Animal Dispersion in Relation to Social Behaviour." 653 pp. Oliver and Boyd, Edinburgh and London. (6,22,27).
271. Yamamoto, T.S. 1958. Biochemical property of the membranes of the herring egg with special reference to the role of the micropyle in fertilization. *J. Fac. Sci. Hokkaido Univ., Ser. 6, Zool.* 14(1), 9-16. (8).
272. Yudaev, H.A. 1950. The content of histidine, carnosine and anserine in the muscle of several fish. *Trans. Akad. Sci. U.S.S.R.* 70, 279-82. (29).
273. Zaitsev, Y.P., and Radakov, D.V. 1960. Submarines in fishery research. (In Russian, Marine Laboratory, Aberdeen trans. no. 659.) "VNIRO and PNIRO. Soviet fisheries investigations in north European seas." 468 pp. Moscow. (20,27,32).

274. Zijlstra, J.J. 1958. On the herring "races" spawning in the Southern North Sea and English Channel. Rapp. Cons. Explor. Mer, 143 (2), 134-45. (1,2,7,31).
275. Zijlstra, J.J. 1961. On the recruitment mechanism in the North Sea herring. I.C.E.S. Herring Symposium, Paper no. 29 (mimeo). (8,27).
276. Zijlstra, J.J. 1963. On the recruitment mechanism of North Sea autumn spawning herring. Rapp. Cons. Explor. Mer, 154, 198-202. (1,2,7,13,30,31).
277. Zusser, S.G. 1958a. A study of the causes of diurnal vertical migration in fishes. (In Russian, trans. by U.S. Fish and Wildlife Service, Boothbay Harbor, Maine, U.S.A.). Ikht. Kom. Akad. Nauk. S.S.S.R. no. 8, 115-20. (16,20,22,27).
278. Zusser, S.G. 1958b. A contribution to the study of fish behaviour. Proc. Indo-Pacific Fish. Coun. 3, 34-37. (6,20,27).

Supplement.

279. Hempel, G. and Blaxter, J.H.S. 1961. Einfluss von Temperatur und Salzgehalt auf Myomerenzahl und Körpergrösse von Heringslarven. Z. Naturaf., 16 B (3), 227-28. (2,10,16,18).
280. Sindermann, C.J. 1957. Diseases of fishes of the Western North Atlantic. V Parasites as indicators of herring movements. Dept. Sea Shore Fish. Maine Res. Bull. 27, 1-30. (28).

