

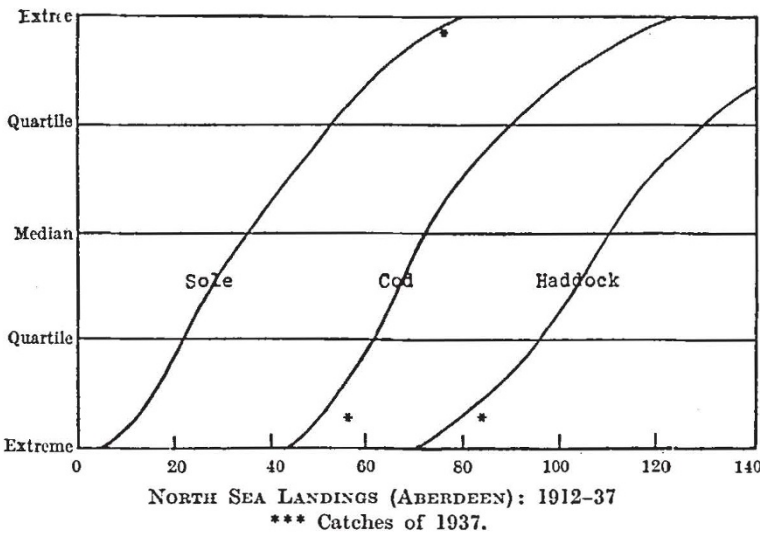
Fishery Statistics

WHEN we compare the catch of fish of one year with that of another, we find one greater or less than the other, and that seems at first sight the end of the matter. But if we analyse each year's total into its monthly parts we see in every case a certain seasonal periodicity; and it follows that we may expect to find not only differences of total quantity, but also of phase and amplitude, the two ways in which one periodic function differs from another. Let us reduce the monthly quantities to percentages of their annual totals, and then compare the periodicity of one year with another or with a mean. To show, briefly, how orderly and how instructive the rough market statistics are, let us merely compare one year's monthly data with another's:

ABERDEEN LANDINGS OF NORTH SEA PLAICE; MONTHLY PERCENTAGES OF ANNUAL CATCH

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1932 ..	7.7	9.5	8.4	9.9	7.9	8.7	7.4	9.4	9.7	9.3	7.2	4.9
1937 ..	3.3	3.6	3.9	6.2	6.8	7.7	9.2	14.5	17.5	11.4	8.8	7.1
Difference	4.4	5.9	4.5	3.7	1.1	1.0	-1.8	-5.1	-7.8	-2.1	-1.6	-2.2

The monthly discrepancies yield a nearly regular fluctuation, and show at a glance how the phase of the periodic function was accelerated in one year and retarded in the other.



While writing on this point let me mention another, though it is no more than a statistical gadget; I think it is new, and Mr. Udny Yule says it is new to him. We want to compare, say, last year's catch with twenty previous years, and not in order of time but of mere quantity. We take, as usual, the extremes, quartiles and median of the series; we shall find these five points enough to draw, approximately, a curve of distribution of the whole. It will obviously be an S-shaped curve; and we may mark it with an asterisk to direct attention to a particular year. The annexed chart thus shows at a glance how 1937 was all but the best year for cod and haddock, and all but the worst year for soles, in six-and-twenty years.

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Symphyogenetic Development

THERE has existed a need for a term to express the idea of the interaction of hereditary and environmental factors in producing the development of an organism. It must be a term to signify that the organism is the resultant of the integration of the two sets of factors. It must convey the idea that has been almost universally accepted by writers in the field of development that the organism is always 'becoming something' and 'tending somewhither', because it is a result of an interrelation between an environmental milieu and hereditary potentialities which together constitute the necessary materials and conditions to produce a living thing through their interaction. The term *symphyogenetic development* seems to be suitable for expressing this idea.

Symphyogenetic is derived from the three Greek stems, σύν, meaning *with*, φύειν, meaning *to grow*, and γίγνεσθαι, meaning *to come into being* or *to be*. Literally, it conveys the idea of something coming into being and growing as a resultant of the interaction of two or more factors, and thereby undergoing development. The word symphyogenesis has had a previous usage. The "Century Dictionary and Cyclopedia" gives its meaning as follows, "In bot. the forming by union of previously separate elements". The "Webster's New International Dictionary" defines it thus, "Bot. Development of an organ by the union of previously distinct organs". The present proposed usage of symphyogenetic does not violate either of these definitions of symphyogenesis.

To define symphyogenetic in terms of its proposed use, where it is to be employed as a modifier of development, it would mean, *the combining of hereditary determiners and environmental factors to produce the characteristics manifested in an organism's structure and behaviour*. Symphyogenetic development would be used in contrast to maturational development, which emphasizes the ordering of the hereditary determiners for producing the sequential regularity of development, other things being equal. Its usage would be in contrast to epigenetic development, which emphasizes the production of differentiations in development as a result of the influence of environmental factors acting upon a relatively simple structure in the beginning. Obviously it is in contrast with the ancient idea of preformism.

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