during which most of the yolk is absorbed..... The second period of the absorption of the yolk extends in the shad over about twice that of the first, or about ten days. The function of the yolk-sack, during the first period, appears to be to build up the structure of the growing embryo ; during the second, not so much to build it up as to sustain it in vigorous health until it can capture food to swallow and digest, so that it may no longer be dependent upon the store of food inherited from its parent. Minute conical teeth appear on the lower jaws and in the pharynx of the young shad, about the second or third day after hatching ... I have never observed food in the alimentary canal until ten or twelve days after the young fish had left the egg. At about the beginning of the second week considerable may be seen in the living specimens. But the intestine is often not yet very densely packed with food even at this period. At the age of three weeks an abundance of food is found in the intestine.' A young fish a month old, or even three weeks old in some species, begins to assume the fish-like form, the fins losing their embryonic or larval form, and the external and internal structure of the growing creature changes to a more mature condition. Between the earliest or immature larval stage and the more mature stage, when the form of the adult begins to be recognizable, there is often a peculiar post-larval stage, characterized in some marine species by the most extraordinary transient developments, which often give the young fish a most grotesque appearance.

Broadly speaking, then, there is a larval and a post-larval condition, the latter insensibly passing into the still small, but externally mature condition called by fishculturists the fingerling stage. The latter is often called the yearling stage, although the fish may not be a year old. Indeed the rate of growth in any particular batch of fishes varies very much. Frank Buckland drew attention to this in his little work entitled 'Fish Hatching' (London, 1863), and quotes an authority as saying that of three specimens of young salmon taken from the Stormontfield ponds in Scotland, on April I, 1863, all of the same age, one was 61 inches long and weighed 646 grains; another was 35 inches long and weighed 135 grains; and the third was 25 inches long, and weighed 23 grains. The last had the dark parr bands along the sides, the second had indications of small scales, and in the largest the scales were large, silvery and in an advanced stage of growth. As Buckland remarked, young tish whether kept in hatchery tanks, reared in large ponds or turned into streams, vary very much in growth ; some individuals growing more rapidly and attaining a greater size than others. In a study which I made at the Marine Biological Station of Canada of three batches of Pacific salmon fry this year, I found a similar though not quite so marked a difference in growth. The specimens in each series (five or six dozen fish in each series) were presumably about the same age, and in one series they varied from 42 millimeters  $(1\frac{1}{15})$  in 31 millimetres  $(1\frac{1}{16})$  in length. In another batch (belonging to the brood of another year) they varied from 65 millimetres  $(2\frac{3}{5})$  to 38 millimetres (1 13 in.) and in another year's series they varied from 47 millimetres (111in.,) to 34 millimetres (13in.) The well known authority on angling, Mr. Stoddard states, that the nature of the food greatly influences growth : 'Trout were placed in three separate tanks, one of which was supplied daily with worms, another with live minnows, and the third with those small dark coloured water flies which are to be found moving about on the surface under banks and sheltered places. The trout fed with worms grew slowly, and had a lean appearance ; those nourished on minnows, which, it was observed, they darted at with great voracity, became much larger; while such as were fattened upon flies only, attained in a short time prodigious dimensions, weighing twice as much as both the others together, although the quantity of food swallowed was in nowise so great.' Under natural conditions, however, where the food available for all the individuals in a brood of young is practically the same, the difference in size must be mainly due to inherent variability, dependent upon very obscure causes. Such variation in trowth, which is so noticeable within the limits of one species considered separately, is no less marked when we compare several different species together. One kind or species attains a known average size at a certain stage in the growth of the young. Thus a newly hatched salmon measures a little more than half an inch in length ; at the fourth week the larva has doubled its length, and in the third month it attains two inches, while in the fourth month it is no less than two and a half to nearly four inches long,