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In order to avoid the arduous work of drawing the scales thus enlarged, a labour-saving method is adopted as follows: With the aid of a prism, the microscopic picture is thrown on to a piece of paper on the table beside the microscope. On this picture a slip of paper is laid, upon which are marked off the different distances from the centre of the basal line to the annual rings (see fig. 3 V , r , and r_1). By means of

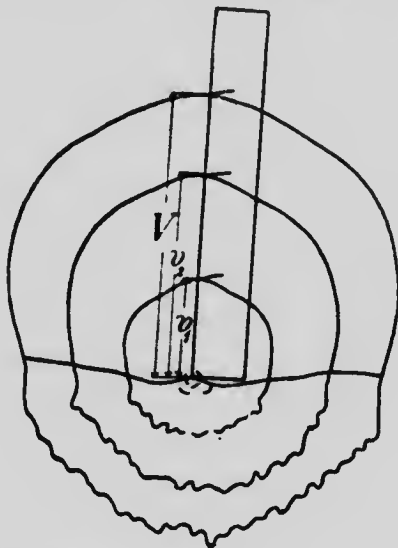


Fig. 3.

a special apparatus, it is then easy to calculate the length of the fish during the different winters.

During the international herring investigations, some thousands of fish from different waters have been measured according to these methods, and calculations made as to the size of the individuals, at the different periods of growth through which they have passed, thus furnishing a very large number of figures for calculation of the average growth of the herrings in different regions.

Some examples will show what can be attained by such investigations. Fig. 4

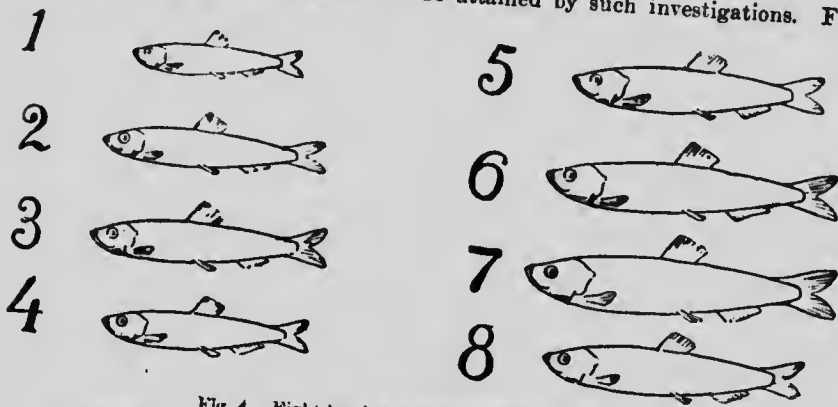


Fig. 4. Eight herring of equal (4 years) age from

1. White Sea.
2. Lysefjorden (West Norway).
3. Zuider Zee.
4. East Coast of Sweden.

5. Western part of North Sea.
6. Atlantic Ocean.
7. Iceland.
8. West Coast of Norway (Spring herring).