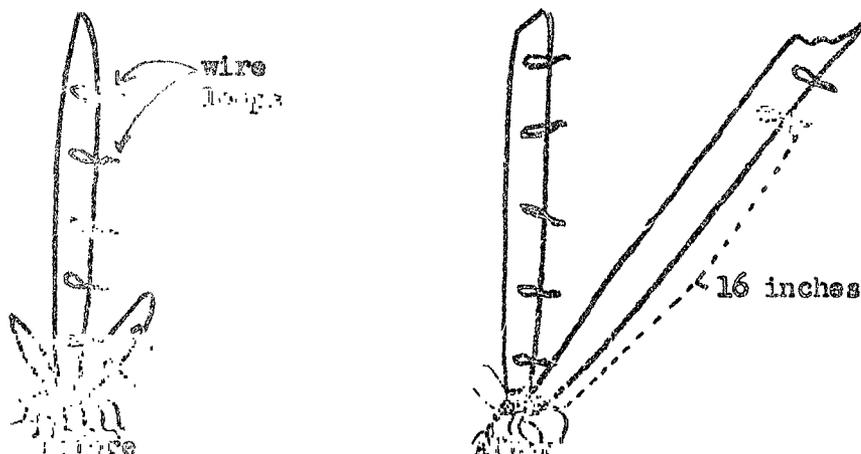


F. Aufwuchs Succession

The rates of growth and succession of aufwuchs have been measured on slides submerged in the spring and by a count of distribution of plants and animals along the long *Sagittaria* blades. Since *Sagittaria* blades grow from the bottom, it has been possible to measure their growth rate as a means of determining the age of the attached aufwuchs at any place on the blade. The distance from the base of the plant indicates the time since the succession began.

As shown in Figure 7, the rates of growth of single blades is far from equal. Small wires were inserted in a young blade and an older blade in the same clump. After 26 days one blade had shown a rapid 182% growth pushing the attached wires with the tip whereas the other older blade had hardly grown. Apparently a blade shoots out, and then as the aufwuchs covers it growth ceases and goes into new blades. Thus one gets old and younger blades of nearly the same length next to each other, one being clean, the other being covered with the periphyton community.

Fig. 7. 26 day growth of marked blades of *Sagittaria* April 5, 1934



For a whole clump of blades, however, there is an average growth which tends to average out these spurts. Therefore by cutting 50 blades into segments of 2 inches length and placing all the first segments together, all the second segments together, etc, one may relate the attached average aufwuchs to the average rate of clump growth. Knowing the area of the blades scraped in each segment group and knowing previously the percent growth of *Sagittaria* from the planting experiments, one converts length into time and periphyton counts into area estimates. If plants are in steady state the percent loss at the tip of the clump is the percent growth. A count of the last segments when prepared over the spring area gives an estimate of rate of aufwuchs growth and thus of the components of the typical blade type organisms. As an illustration of these methods a curve of width versus time and thus also length is shown in Figure 8. Estimates of midge growth rate from this curve are discussed below. Some rough curves of succession on glass slides are given in Figure 9. The irregularities in this last Figure may be due to the positions of the slide boxes in different currents and depths. Further work on this is being carried on by Dr. Yount.

The succession patterns are much like planktonic populations with bacteria first, small algae next, then larger algae, and finally herbivores and carnivores as something of a pseudo-climax is attained. Thus one has continual succession in the micro-environments of the overall steady state. Similar microcosms should be looked for in tropical oceanic plankton.