

small weeds growing on a flat, muddy rock, had filled itself with *Chironomus* pupae only, as had still another of the same size. A third specimen from this situation had eaten more larvae of *Simulium*\* than of *Chironomus* and a fourth had also eaten *Simulium* larva and another dipterous larvae unknown to me. I may add here that other young trout, in a small swift rivulet near the Lake hotel were feeding continuously August 9, on floating winged insects, mostly, if not all, *Chironomus* and smaller gnat like forms." All the foregoing observations indicate what an important part in the food of the trout the larvae of a single kind of insect such as *Chironomus*, which live chiefly in the deeper waters in the soft, silt-like mud and decayed vegetable matter at the bottom, constitute.

Interdepend-  
ence of:  
Food  
Factors

Not only are the fresh-water fishes dependent to the extent to which I have referred upon insect life for their subsistence, but directly and indirectly, as is the existence of all aquatic life, on many conditions and factors existing in the water. They are affected by the physical and chemical conditions of the water. These conditions very directly affect the food of the fishes. Not only the insects themselves, but also the lower forms of life upon which they subsist, are dependent upon the physical and chemical factors and the nature of their environment. Certain insects cannot live where there is an absence of shore vegetation. In fact, the presence of aquatic plant life is essential to the existence of the majority of the insect larvae frequenting, as most of them do, the shallower littoral regions. These facts, relative to the intimate dependence of the whole chain of organic aquatic life, of fishes, of insects, and of the lower forms of animal and vegetable life, in which the higher forms feeding upon the lower forms depend upon their presence, and, therefore, upon the factors governing such presence, serve to indicate the complexity of this problem of the food of fishes.

Fish Life  
and Avail-  
able Food

In view of the foregoing statements and observations, it would almost seem an act of presumption if any great stress were laid upon the fact that fish life depends upon the nature and quantity of the available food, assuming the other factors to be favourable. Yet if you will only reflect for a few moments upon the methods we are employing in regard to fish culture, concerning which further reference will be made later, does not the underlying principle of the present methods and its inherent faith resemble those of the small boy who attempts to keep gold fish in a bowl of pure water?

\* The well known Black Fly whose larvae live in running water attached to stones.