majority of the minerals used by the plant come from the captured prey. Nearly all carnivorous plants grow in mineral-poor habitats(1) and it would certainly be of value for them to capture a mineral source.

If the conjectures above are correct, should we call carnivorous plants carnivorous? Certainly all animals to which the term applies gain almost all of their energy from the prey they capture and this would constitute an important difference between carnivorous plants and carnivorous animals.

Oddly enough, there are animal systems which seem parallel in their feeding habits to the carnivorous plants. Coral polyps with algae growing inside them grow in very mineral-poor waters with very little food to eat. It has been shown that the "carnivorous" behavior of the polyp captures an important source of minerals for itself and the algae but that the energy supply of both the polyp and algae is nearly all from the photosynthesis of the algae growing in and alongside the polyp (15). Is the polyp carnivorous? The ecologists who made this study decided it was both a carnivore and a herbivore (although it did not ingest the algae!). Perhaps we should consider carnivorous plants both carnivorous and autotrophic and avoid burdensome troubles such as having to change the name of this newsletter.

(Ed. note--We could engage in the German language habit of building impossible compound words and retitle CARNIVOROAUTOTROPHIC PLANT NEWSLETTER; or how about AUTOTROPHOCARNIVOROPHYTE NEWSLETTER? By the time a potentially interested subscriber would have decoded and analyzed it, he would have missed a year's subscription! And if you do not send in your renewal today, you may miss how all this turns out.)

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BACTERIOLOGICAL AND ECOLOGICAL OBSERVATIONS OF THE NORTHERN PITCHER PLANT, SARRACENIA PURPUREA L. Summary of thesis. John Lindquist

Studies were made on the pitcher plant, Sarracenia purpurea, growing in bogs near Cambridge and Drummond, Wisconsin. The well-known habit of the plant to supplement its nutritional needs by the entrapment of insects was observed.

The pH of the pitcher fluid of field plants ranged from 3.1 to 7.2, and carbon dioxide was considered an important factor in the acidity. The microbial flora of the pitcher fluid was generally typical of plant and aquatic habitats. Proteolytic and chitinolytic bacteria were isolated and included members of the genera Pseudomonas, Chromobacterium, Serratia, Aeromonas and Cytophaga. Digestion of insects was accompanied by increases in gram-negative and proteolytic bacteria, protease and ammonia, and the digestive process appeared to be largely mediated by the bacteria. Ammonia released by microbial deamination was considered an important source of nitrogen for the plant.

Photosynthetic bacteria, generally identified as Rhodopseudomonas acidophila, were found in each of the 22 leaves tested for these bacteria. Nitrogen-fixing bacteria, identified as Klebsiella pneumoniae and Citrobacter sp. were isolated from the pitcher fluid, but no nitrogen fixation was detected in the fluid when tested by the acetylene-reduction method. Other bacteria found in the pitcher fluid include Flavobacterium, Microcyclus, Clostridium, Streptococcus, Escherichia coli and a pectin-hydrolyzing strain of Enterobacter aerogenes. Yeasts, molds, algae, protozoa and rotifers were also observed.