



Little Village, Big Science

Essay Questions



One: Science in the 1870s versus Science in the 2000s

Science was a very different enterprise when the first scientists arrived in 1871 to set up shop in the village. In those days, scientific equipment was much less elaborate – a biologist could do cutting edge work with a good microscope, a rowboat, and a collecting bucket. Today biologists employ an array of machinery for teasing apart cells, sequencing DNA, measuring emissions of trace gases, running computer simulations to model the workings of whole ecosystems, and diving to the depths of the ocean.

In the 1800s, it was possible for a diligent biologist to be familiar with the important papers published in his or her field, and to know the literature of some unrelated fields. Scientists today can hope to read only a tiny portion of the professional literature that deals directly with their research interests.

If you were going to be a research biologist at a Woods Hole laboratory, would you rather work in the 1880s when you could be more of a generalist, or in the 21st century when you would be expected to know a lot more about a much smaller area of inquiry?

What questions might you be studying in Woods Hole the 1880s, and what might you be studying in the village today? (Some of the questions from each era can be found in the aquarium displays.)

In your opinion, what are the advantages and disadvantages of being a research biologist in each era?

Two: Saving the Salmon or Studying squid brains

Scientists working at the government-sponsored Fish Commission Laboratory established in Woods Hole in 1871 were charged with determining the cause of a decline in fish stocks in New England waters. Biologists employed by government agencies are generally responsible for investigating questions that have an impact on commerce or human health. Today, NOAA Fisheries scientists in Woods Hole study the status of commercially important fish stocks. They investigate the reasons why some species are facing extinction, and they look for ways to protect marine mammals.

Scientists at the privately owned MBL were free from the beginning to pursue any research questions that they found interesting or important. For much of the 1900s, dozens of biologists came to the MBL every summer to study the squid axon, a huge nerve cell that allows scientists to probe the question of how nerve cells work.

Looking at the aquarium exhibits, make a list of research questions that Woods Hole scientists have studied or are studying. Which of the questions do you find most interesting, and why? Which strike you as uninteresting, and why?

If you wanted to have a career in biological research, would you rather be a government scientist charged with figuring out why salmon populations are disappearing in U. S. waters, or would you rather work at a private lab where you might have more leeway to study questions that are interesting but that may not have immediate practical application?