Abstract: The 2017 Nobel Prize in Physiology or Medicine was awarded to Jeffrey C. Hall, Michael Rosbash, and Michael W. Young “for their discoveries of molecular mechanisms controlling the circadian rhythm,” known more simply as biological clocks. Though not the first to find evidence of such mechanisms, nor did these find the entirety of such mechanisms, the award of the prize to these three recognizes both the scientific and medical importance of biological rhythms and the long process of searching for biological timing mechanisms. Arguably the finding of such mechanisms is the goal of scientific investigation of phenomena, the epistemological importance of which has been argued by philosophers of science. But how does research actually proceed to this end? Here the historian can be of some help. In the case of the biological clock, or biological timers more generally, a back and forth process mediating between observations and experimental manipulation of the phenomena of biological rhythms and rhythmicity, on the one hand, and heuristic modeling of the production of the phenomena, on the other hand, appears to have been at work. I leave it to the philosophers to argue whether this is often or always the case, or even whether this is a philosophically interesting problem; here I wish to establish the basic historical development of modeling biological clocks and provide some insights into choices of models and the consequences of these choices for research strategies.