

S100: Science: a foundation course
S100/01: Science Course Unit 1: Introduction

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Clip transcript: 'What is a laboratory?'

Michael Pentz:

But this laboratory, which incidentally we shall be visiting in a later programme, is a chemistry laboratory and this man is a physical chemist. What he is doing is analysing an element with an instrument called a mass spectrometer. An electronic instrument records his measurements. Both these scientists – the biochemist and the physical chemist, work in modern laboratories – but laboratories weren't always like this.

This is one of the places where it all began, one of the earliest laboratories. It's the Octagon Room at the old Royal Observatory in Greenwich. As you can see, it was a, is, a most elegant room, designed by Christopher Wren and built in the late seventeenth century. Though would it be right to call this a laboratory? I think so. I think it was a laboratory in the sense that it was a place where a particular piece of nature could be observed in abstraction from all the rest. The observations that were done here, of course, were the simplest of astronomical observations. But you may say after all there is a difference between an observatory and a laboratory - between observation, and experiment. The first implies looking at some natural process, more or less passively to see what happens. The other implies some sort of active intervention, some modification of a natural process. But even the simplest observation contains some element of experimental design and no experiment can be done without observation.

The seventeenth century gentleman whom we saw peering through this telescope was perhaps simply observing the moon but to do so somebody had to design this room. Somebody had to design this instrument which could bring an image – the desired image furthermore – to the eye of the observer.

The biochemist, doing his experiment on enzymes had abstracted them from the organism which produced them and he has set up in the laboratory controlled artificial conditions in which he could observe certain processes to the exclusion of all others. Well you can in fact do experiments practically anywhere; in the Octagon Room, in a sophisticated modern laboratory like this one, or in your own back kitchen.