

A place for the observation of nature: the *observatorio*

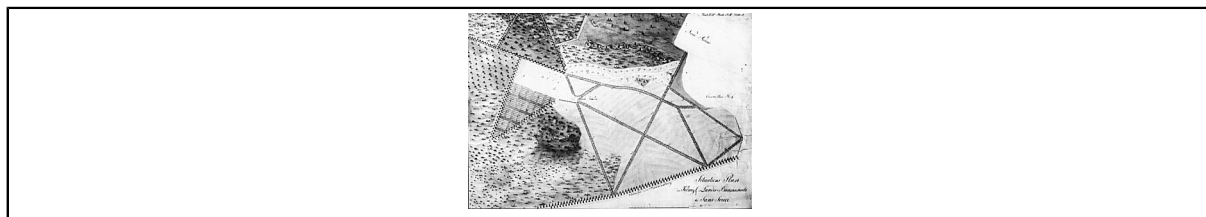
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Observation was one of the most prominent techniques of 19th-century science. It not only provided a means to understand the *Bildung* (formation) of material objects but also a means to understand the *Bildung* and development of society and nature as such. Accordingly many promoters of the various spheres of knowledge put a strong emphasis on drawing as a method to visually describe the observed. Education in the early 19th century furthermore was an education and training of the eye.

This has not been different in the botanical sciences. In it, it was the visibility of structural details which counted most, either by use of microscopes or by the active engagement with the visible details of plants. As plants as the object of study embodied their complete history and development anatomical details and the physical life were almost as easily comprehensible as the objects of study themselves. The observational study of plants also had been one of the most fundamental intentions connected to an *observatorio* established by the *Society for the advancement of horticulture in the Royal Prussian States*, founded in 1822 in Berlin.

Its main area was installed within a forest close to Sanssouci garden as the trees provided shelter from prevailing winds and sunburns. In addition to favourable climatic conditions the different soil types were thought to substitute the lacking provincial institution at different venues within the Prussian provinces.

The numerous experimental fields were used, next to utilitarian purposes, for the propagation of scientific knowledge and the enrichment of both arts and sciences by way of authentic trials and observation. Even though the society in its own understanding did not have any scientific tendencies and accordingly did not necessarily aim at a meticulous experimentation in terms of precise measurements it nevertheless implemented many cultivational and experimental trials. Its ostensible aims were to test and verify those things that naturally were occurring in practice and to read off the qualities of the many comparative samples of cultures.



The beds of the observatorio close to Sanssouci garden according to a plan of Lenné.

The *Versuchsfeld* or *observatorio* was an essential part of the society's doings as well as it later was of relevance in the foundation of physiological institutes in Prussia in the 1830s and 1840s which often had been labelled *observatorio*.

It was mainly used for elaborate trials and experiments and to answer the many questions regarding the nature of plants which were of interest to science and arts alike. As the name *observatorio* clearly suggests much of the research therein was rather connected to observation and description than to scientific measurement. Within the beds of the *observatorio* the many plant species grown could be observed in terms of their respective developmental stages. As the outer structural details were thought to correspond the inner processes of the physical life of plants observation was one way to understand those processes and link them both to known anatomical details and environmental factors. The *observatorio* therefore offered a room for the objective view of the many observers.

Physiology hence was and even more so became a demonstrative and descriptive science within the garden as the objects of study - natural bodies and actual existences - carried the results of their successive physical life visibly along. The trained eye of the observer only had to read off the details of the varying forms of plants. As a scientific discipline composed of experiences, physiology was made *anschaulich* or demonstrative. The garden as the extensive field of and for observation became a workshop for the examination of nature and its various species. As a spatial entity it offered more for the understanding and study of nature than any textbook of the time ever could.

Early physiology was a practical "art of observing" which was empirically pursued by botanists and gardeners alike. Not only did the beds of the *observatorio* provide for a circumstantial, elaborate and simultaneous observation of the various species under cultivation. It also, and much more, offered an *Anschauung* of the physical processes of plant life - for every visitor, laymen or scientists. In this respect the *observatorio* also highlights its innermost dual function: it was designed both for research and popularising scientific illustration.

At the time prior to the establishment of plant physiological institutes the garden had been the most prominent laboratory of plant physiological research. While the microscope and other technical devices were used to study the subtler parts of plants in order to understand anatomical and morphological details and characteristics the garden played a key role in understanding the physical life, i.e. the physiology of plants.

Although not a physiological laboratory in the strict sense the garden provided the visual *Veranschaulichung* or demonstration for physiological research. The garden as an enclosed albeit open cultivated area allowed for all controll necessary and advisable to carry out experimental trails. As a place mimicking nature the area of the garden was as close to nature itself as to its imposed culture. The garden therefore not only acted as a vehicle for practical exercises in the fields of the demonstrative sciences. It also assisted to establish the means to visually and physiologically interrogate, observe and describe nature. As much as the study of plant anatomical, morphological and structural details by use of microscopical research facilitated the science of botany the more this seems relevant for physiological enquiries: plant physiology did progress by seeing and the *Anschaung* of the living processes within the vegetable kingdom.

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