



Scanning electron microscopy in taxonomical studies

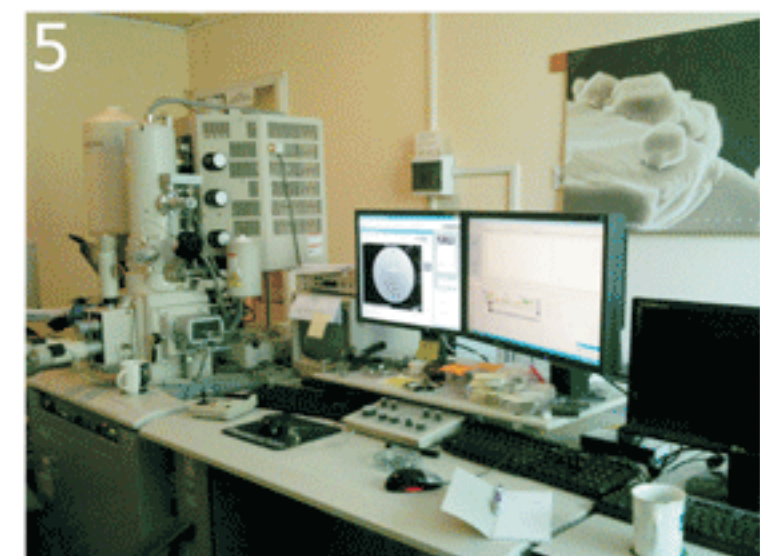
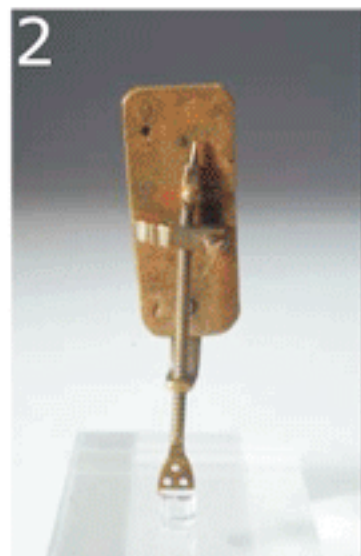


"Rarely are new vistas opened to the human eye. The undersea world and perhaps air flight, outer space, or the moon have provided us with fascinating visual encyclopaedias. The invention of the compound light microscope by the Janssens, manufactures of eyeglasses, in 1590 opened the door to the microscopic world....." In the next century in 1668 Antonie von Leuwenhoek developed a simple (one lens) microscope" J. J. Bozzola and L. D. Russell 1991).

Some important historical events related to the development of the electron microscope

- 1873 Abbe and Helmholtz independently showed the resolution depends on the wavelength of the energy sources. This finding provided the theoretical promise of developing an electron microscope.
- 1924 De Broglie (1929 Nobel Laureate in Physics) demonstrated that electrons have properties of waves.
- 1926 Bush demonstrated that the path electrons could be deflected by magnetic lens in the same way that light could be deflected by an optical lens.
- 1932 Knoll and Ruska developed the first electron microscope in Germany. No biological application was envisioned.
- 1937 Metropolitan Vickers was the first commercial enterprise to develop a prototype of an electron microscope.
- 1938 van Ardenne constructed the first scanning electron microscope.
- 1938-39 The Siemens Corporation introduced the first commercial transmission electron microscope.
- 1958 The Stereoscan, a scanning electron microscope readily used by biologist, was introduced by Cambridge Instruments.
- 1980s H. Rohrer and G. Binnig (1986 Nobel Prize Laureates) developed the scanning tunnelling electron microscope.
- 1990 Commercial scanning electron microscopes currently marketed AmRay (United States), Cambridge.

We present one of the most important parts of our research, photographic documentations, which confirm phenotypic characters of microorganisms included in taxonomic descriptions. A group of Phycologist (Duangjan K., Wołowski K., Piątek J., Lenarczyk J., Wojtal A., Łukaszek M.) is the first to present a few results of work with scanning electron microscopy.



1- Hooke's microscope (1665), 2 - Van Leeuwenhoek microscope from museum Boerhaave, 3 - Jeol's first commercial transmission electron microscope, 4 - Electron microscope constructed by Ernst Ruska (1933), 5 - Hitachi S - 4700 SEM, Scanning Microscopy Laboratory of Biological and Geological Sciences, Jagiellonian University, (1 - 4 from wikipedia; 5 by Duangjan).