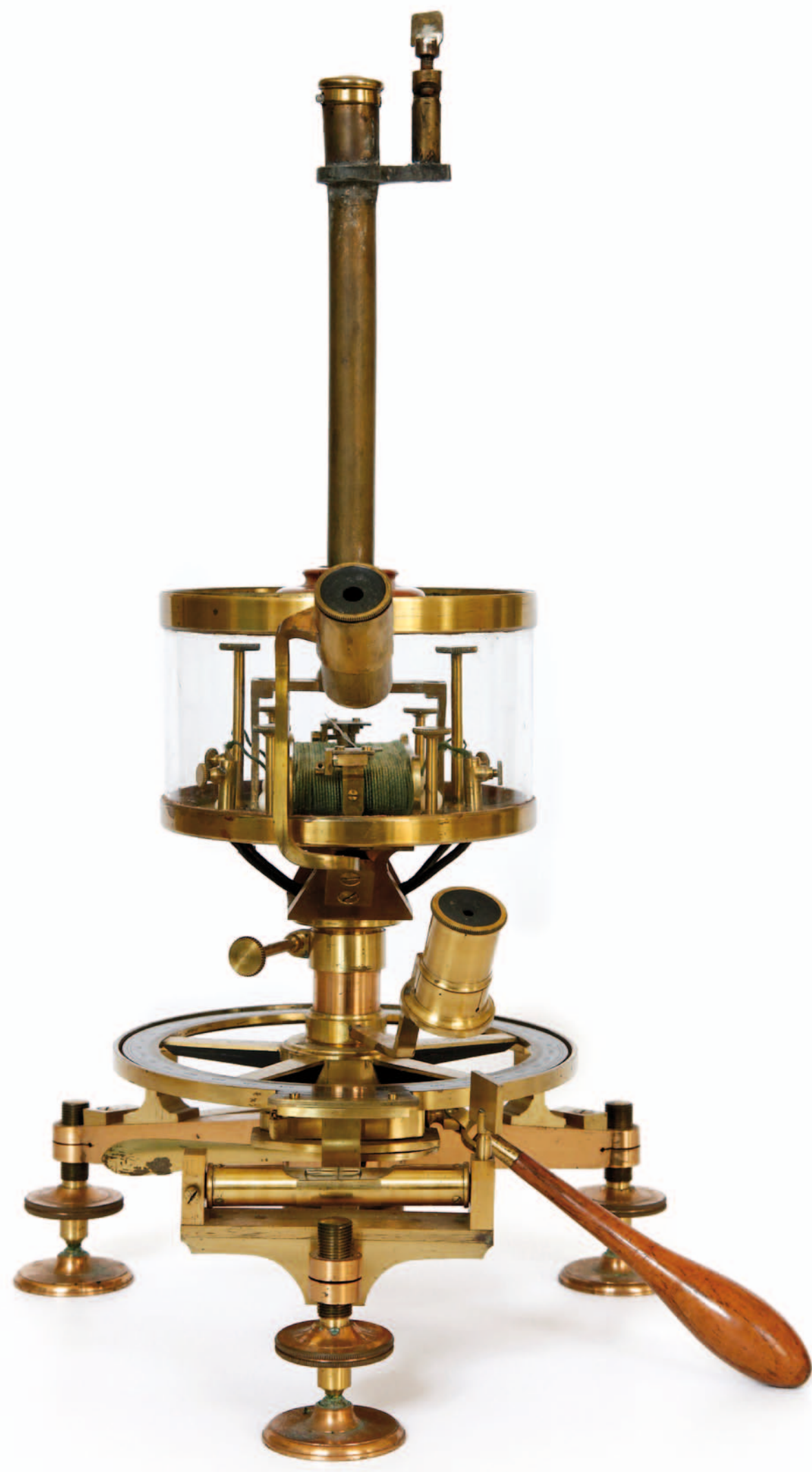


Unidentified apparatus by Johann Michael Eckling



It sounds possible that this apparatus quantifies electric current. This supposition is supported by the presence of two current coils. At the bottom of the appliance there are four electrical connections. You can supply the current coils with power independently. Unfortunately, this apparatus is not known to anybody, therefore it is pretty complicated to get information which could be useful for the identification of its significance. Fortunately we got a very bit of important advice. According to the "Technical Museum of Vienna" it sounds possible that it is a measurement device for the (horizontal) earth's magnetic field correspondent to the method of Gauss and Weber.

It is estimated that it was constructed in the 19th century. This presumption is supported by the fact that the material was brass, which was common for that time. Actually you are even able to be more precise in time and say that it was actually developed in around 1870.

This apparatus was developed by Johann Michael Eckling. According to the public record office of Vienna, J. M. Eckling is the owner of the privilege "Advancement of the former electro-galvanic-induction-apparatuses to assemble desirable conduction current". Actually he was a mechanic and lived (lives) in Vienna. Additionally, he produced equipment for communication and it is estimated that he lived between 1820 and 1890/1900.



Questions:

Why are there two current coils? Is it possible or important that they are able to create two magnetic fields?

Why are there four electric connections? Are they important for the magnetic field?



Project Seminar „Physical Apparatuses – in the past and today“



Why do we work with such historical apparatuses:

First of all, historical apparatuses represent the physical knowledge of our ancestors. The manual skills were enormous and they used expensive materials. Beyond that, those apparatuses still have their justification today. The light optical microscope for instance. It is very important for further developments of microscopes. Besides, many physical data proficiencies and knowledge would be lost without those historical appliances. To put it in a nutshell, the Project Seminar wants to show the beauty of historical appliances and wants to evince the further development in physics and technology in the past. Furthermore, it is supposed to point out the necessity of such apparatuses to avoid the extinction of certain technologies. Additionally, the seminar already has some tradition and also been successful. From 2010 – 2012 students copied the world view of Johannes Kepler for instance. They used blank sheet to reconstruct that invention and were supported by MAN and Siemens.

In our project Johannes Tezel, Luca Türk and Hiob Gebisso occupied themselves with the construction, functional principle and optical path of a light microscope and compared it to modern optical instruments like an electron scan microscope (electron-scan microscope) to find advantages and disadvantages.



Our project is the morse telegraph which consists of two relays and a switch from Siemens and Halske AG (1850). One of the main problems was that a tiny metal pin broke and had to be replaced. Fortunately, we were supported by MAN Diesel & Turbo. Moreover, the cables were damaged due to corrosion. We are going make a few tests in school and hopefully make the telegraph work again.



The Wagner hammer did not work at first, but after it had been disassembled, cleaned and after some old, used up parts had been replaced it did. Yet, after short periods of time it was overheating and even though a condenser was attached to slow the development of heat down, it cannot be used for longer periods of time. When the Wagner hammer is switched on, a magnetic field arises. As a consequence, the metal part above the inductor goes down, which means that the electric circuit is not closed as the contact cannot be made any longer and therefore the magnetic field is disabled. After the contact has been closed again the same procedure repeats itself. This principle is called back-coupling.