

KØBENHAVNER
mysteriet

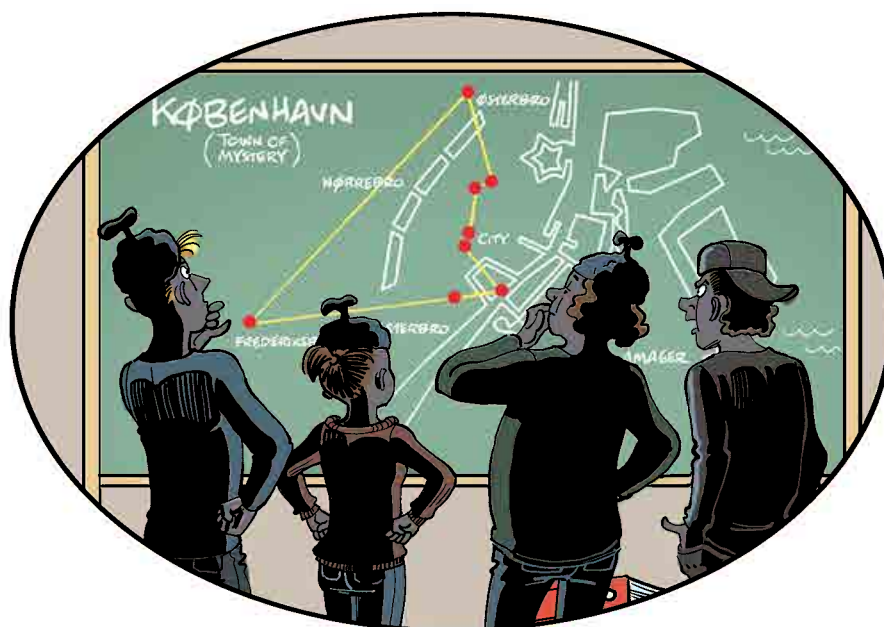
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KØBENHAVNER *mysteriet*

JAGTEN PÅ
NATURENS ENHED



E EUDOR



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Københavnsmysteriet

Af Sussi Bech, Frank Madsen og Jens Olaf Pepke Pedersen

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LECTURE
MONDAY 8 PM

The Ancient Greeks and Modern Physics

Prof. Pedersen
FREE
ATTENDANCE

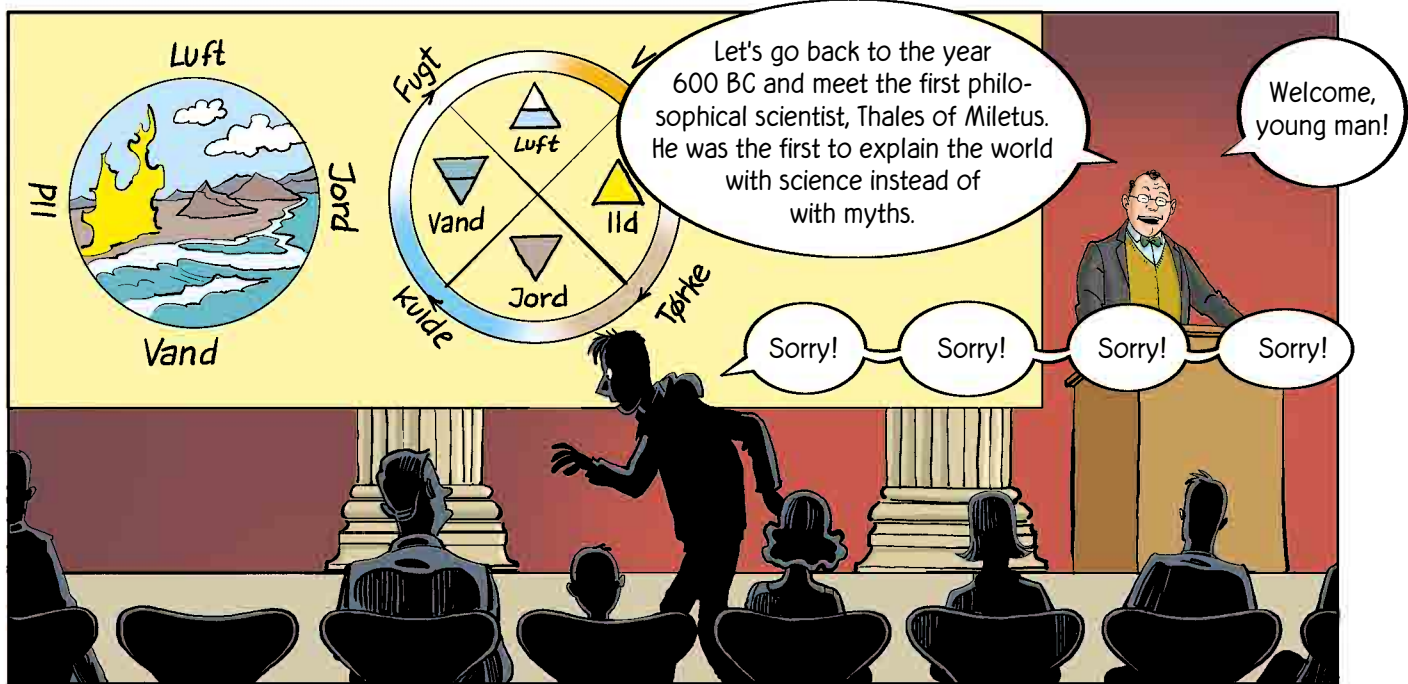
'Dear Thomas,
Meet me at The Glyptotek tonight at 8 PM. Take the empty seat at the front row and wait. You will not regret it.

Regards
Your friend T'

No need to panic. They've just started.

Okay boomer!

Tonight I will show you how modern physics is based on ideas that arose in ancient Greece ...



Thales philosophized about the substance of matter and concluded that water must be the primordial substance of the world...



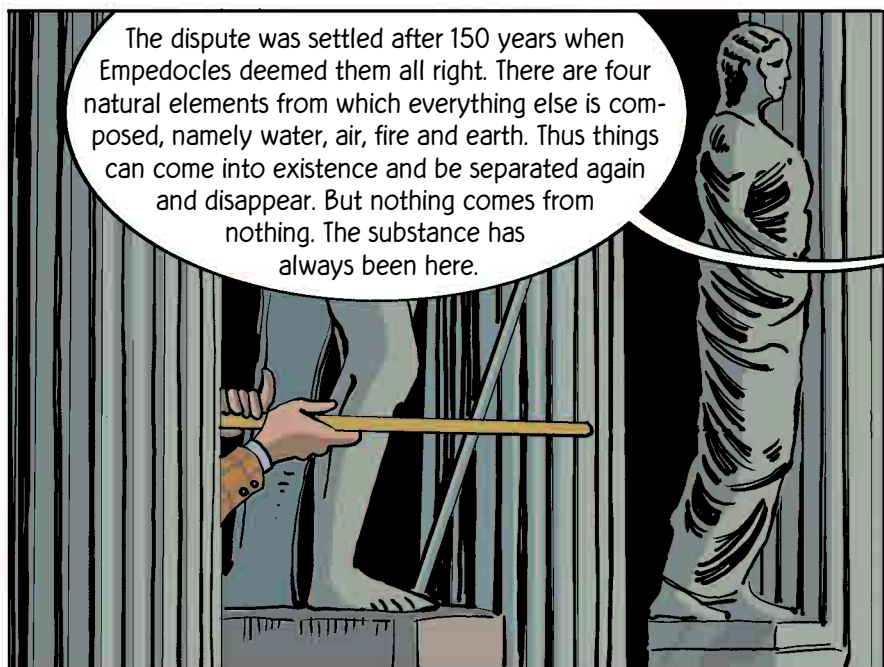
'Reserved' - but by whom? A greeting from my mysterious 'friend'? Is he sitting in this hall and watching me right now?



... and that everything is made of water in one form or another. But then came Anaximenes: He believed that everything was composed of air. 'No!' Heraclitus said...



Everything can be transformed by fire, so that must be the primary element of the universe! For Heraclitus, change was the only constant in life: everything flows, but is determined by the laws of the cosmos.



The dispute was settled after 150 years when Empedocles deemed them all right. There are four natural elements from which everything else is composed, namely water, air, fire and earth. Thus things can come into existence and be separated again and disappear. But nothing comes from nothing. The substance has always been here.

Demokrit

Atom

Jern

Vand

ATOMER!

As the primordial substances were now in place, at 400 years BC Democritus could develop the atomic theory. Everything can be split into still smaller bits, right down to the indivisible atoms.

Our world is an infinite amount of atoms controlled by eternal laws. The atoms cannot be obliterated and things arise when they gather.

Neutron

Elektron

Proton

kvar

Neutron Proton

It took a long time before the atomic theory became accepted, and today we know that atoms can be split and consist of even smaller parts such as protons and neutrons. And they again consist of even smaller parts, called quarks.

KLAP! KLAP! KLAP! KLAP! KLAP! KLAP!

But the innermost nature of matter is still as hidden to us as it was to the ancient Greeks.

PFFFT!

ZZZZZ...

PLINK!

WHO did that?

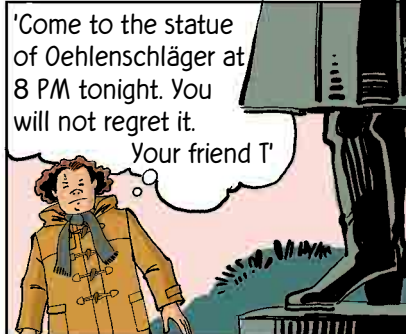
HEY!



Søndermarken,
Frederiksberg.
Tuesday 7:50 PM



'Come to the statue
of Oehlschläger at
8 PM tonight. You
will not regret it.
Your friend T'



A ticket for a tour of The
Cisterns at 8 PM? But that's in a
few minutes
from now?

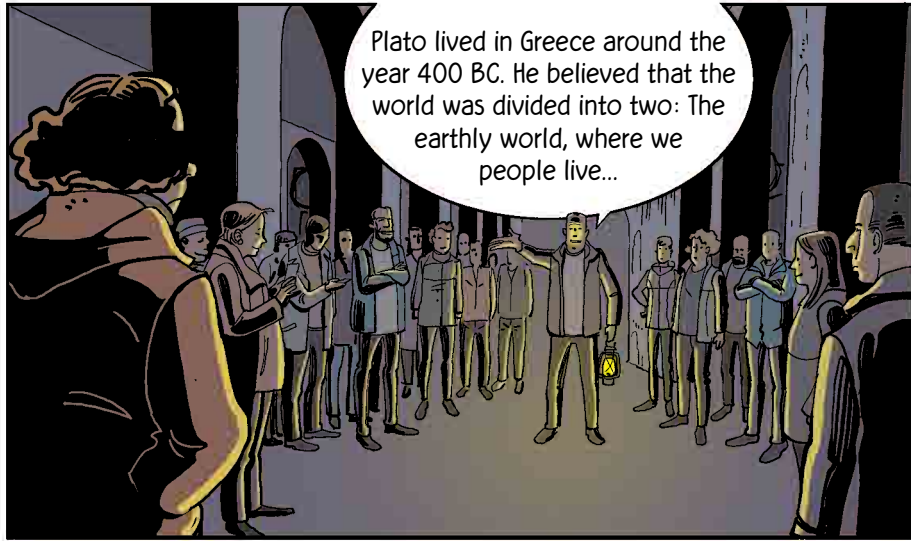


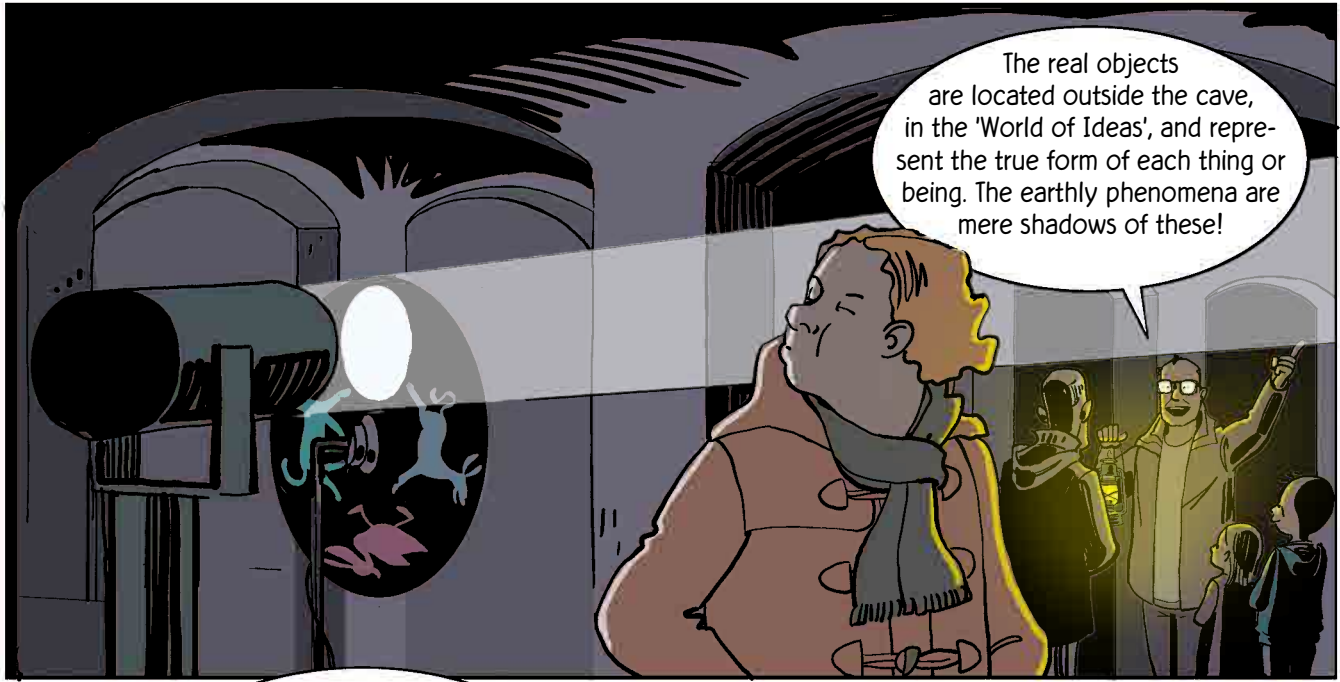
Hey! Wait!
(puff!) I have
a ticket ... for
the tour ...
(moan!)

Easy, boy!
The've only just
begun.

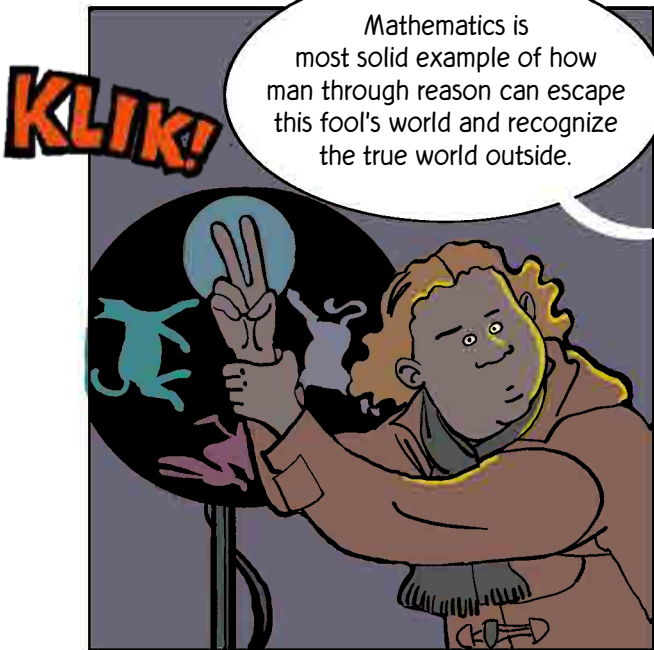
Welcome to this
unique event where we have
been allowed to use The Cisterns
as a setting for our little lecture
on Plato's Allegory of the
Cave!







The real objects are located outside the cave, in the 'World of Ideas', and represent the true form of each thing or being. The earthly phenomena are mere shadows of these!



KLIK!
Mathematics is most solid example of how man through reason can escape this fool's world and recognize the true world outside.



Let us now do the same! Follow the light!

KLAP! KLAP! KLAP! KLAP!



Weird story! Why was I lured down here to listen to that babble? And why didn't my mysterious 'friend' show up?

Could he be the talking head with the bat light?



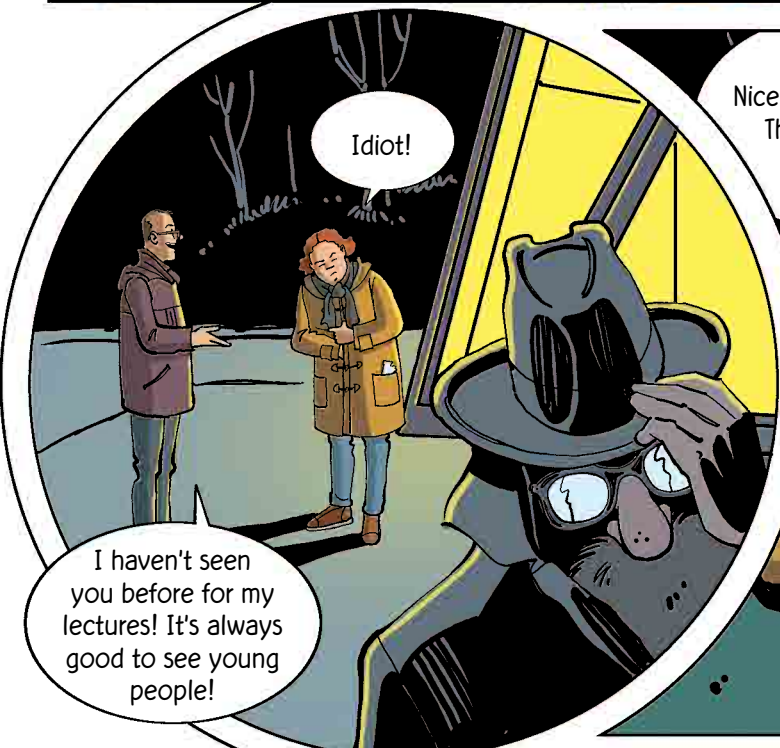
When all those fools have evaporated, I'll ask him straight away!

Thanks for a terrific lecture!

You're welcome!

Oops! Careful, Mr!

Let the rest of us come through!



Idiot!

I haven't seen you before for my lectures! It's always good to see young people!



Nice try, my 'friend'! Thanks for the letter!

'Your friend T' ... No, I didn't send that letter! Were you supposed to meet this person here during the lecture?



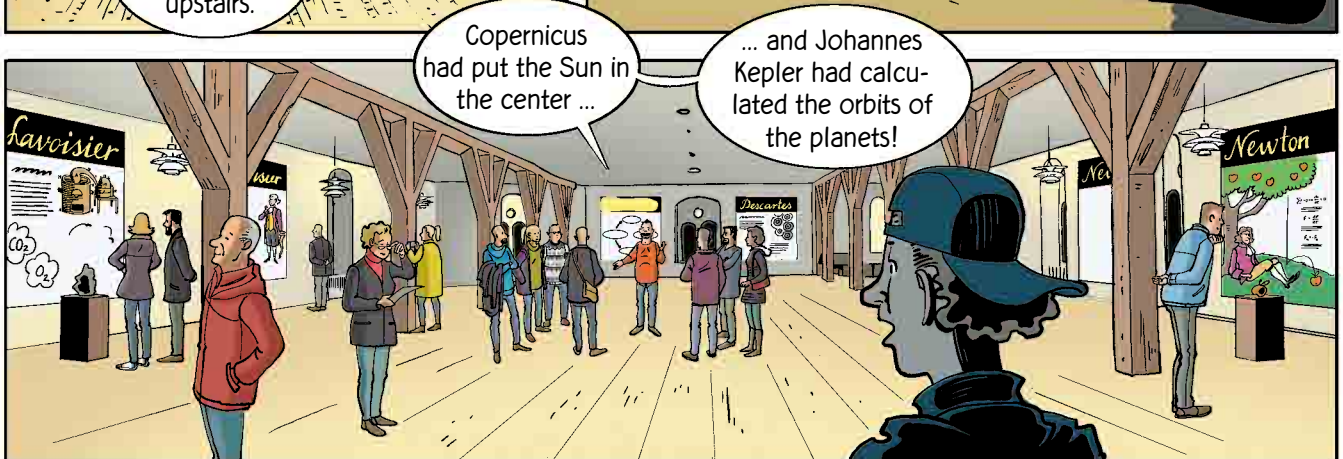
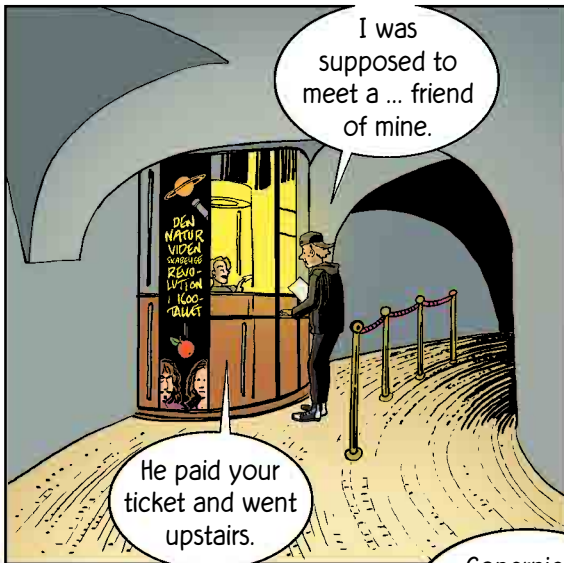
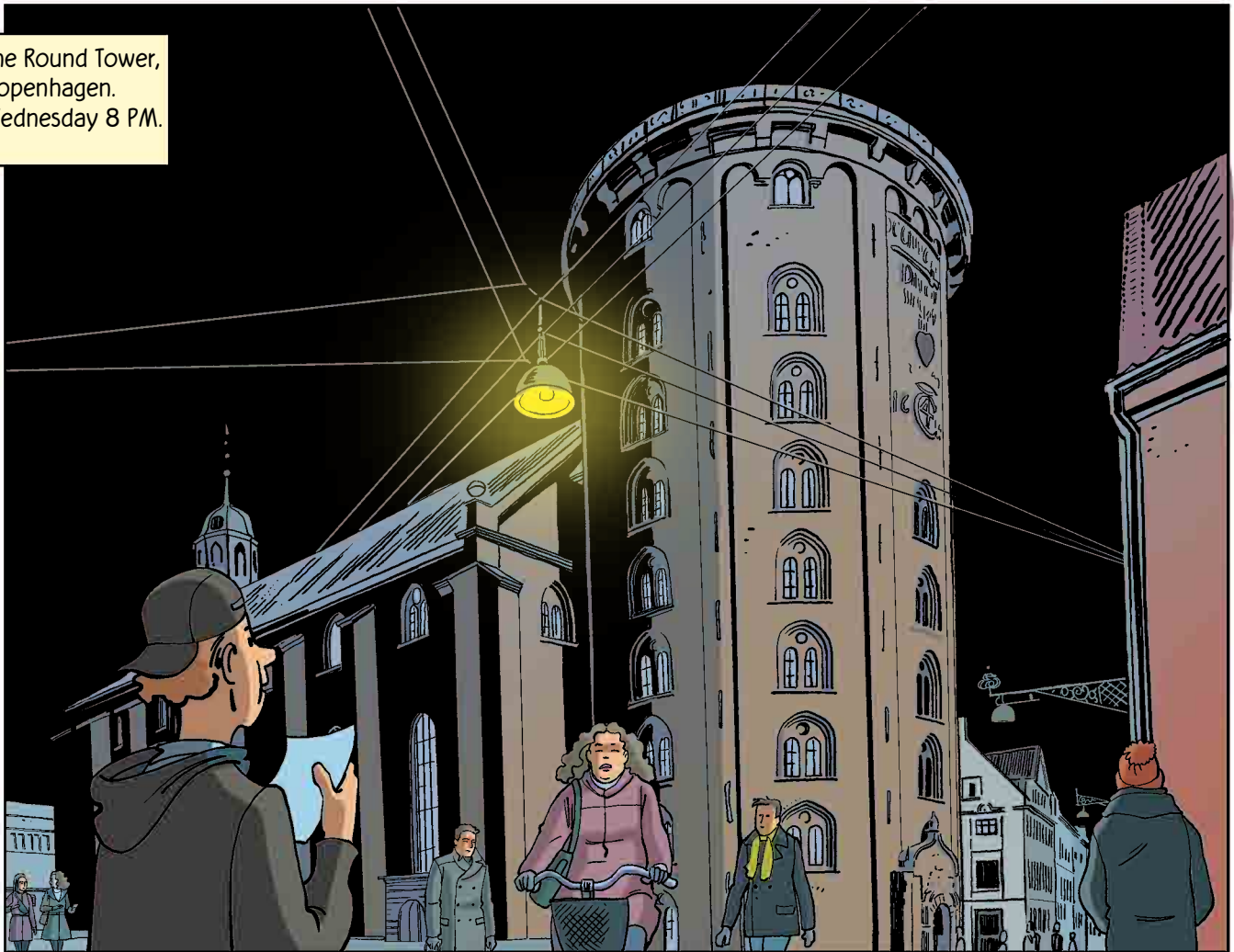
Careful or you'll lose that other letter, you have in your pocket!

Other letter ..? But how did it get there ...? Oh, now I get it!



The bully who pushed me! "Dear Thorbjørn. Good to see you. Here is the time and place for our next meeting."

The Round Tower, Copenhagen.
Wednesday 8 PM.



Modern chemistry replaced alchemy. Antoine Lavoisier based his theories on experiments and measurements in his laboratory. He discovered hydrogen and oxygen among others.

Lavoisier

O Named Oxygen in 1778 AD.
H Named Hydrogen in 1783 AD.
H+O Water is a compound of the two elements.
ON CONSERVATION OF MASS
 Discovered that substance in a closed system cannot be created or destroyed. It can change form, but the mass is conserved.



In 1789 he published the textbook 'Elementary Treatise on Chemistry'. He defined an element as a substance that cannot be broken down into other substances, drew up the first list of the known elements and predicted the existence of silicon. He was guillotined on 8 May 1794.



That's all very fine, but before we go into further details, I just want to hear, WHICH of you guys sent me this anonymous letter...



Patience, young man! Let's save the questions for later!

Also on the field of physics new thoughts emerged. René Descartes developed a unitary theory in which all matter in the universe was small particles that collided and formed a system of vortex structures.

Descartes

"Everything is particles in motion."

3 ELEMENTS:
FIRE Fast, light particles
AIR Less fast particles
EARTH Slow particles

All motion occurs as particles exchange positions.
 Empty space does not exist. Everything is filled with particles. Even the universe.
 The planets move in bands of particles.

"I think, therefore I am."

Even the planets moved in circling bands of vortices, he thought. For a long time, his theory was the most widely accepted explanation of the Sun's and the planets' movements.



But in 1787 the Englishman Isaac Newton published 'The Mathematical Principles of Natural Philosophy', where he presented his gravitation theory, which simultaneously figured out why an apple fell the earth and why the planets moved in orbits around the Sun.

Newton

Laws of Newton

$$\sum F = 0 \Rightarrow \frac{dv}{dt} = 0$$

If a body is not influenced by a force, it will remain at rest or continue at a constant velocity in the same direction.

$$F = \frac{dp}{dt}$$

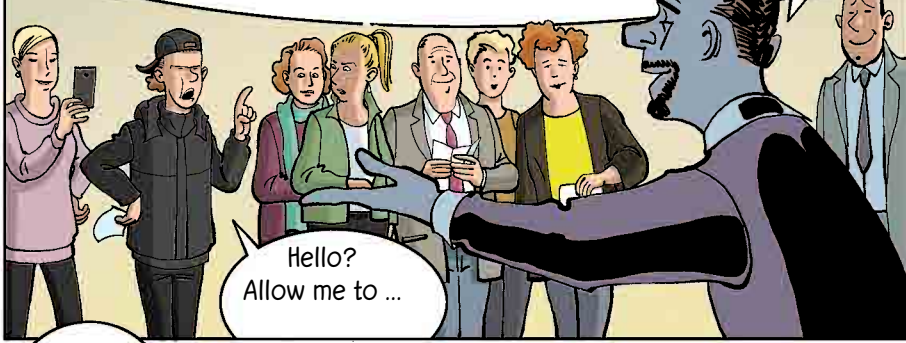
If a body is subjected to a force, it changes its velocity.

$$F_a = -F_b$$

Two bodies influence each other with equal, but opposite forces. (Action-reaction)



Newton's discovery of gravity demonstrated how everything in the whole universe obeyed universal, mathematical laws. For the first time there was one theory that united earthly and heavenly phenomena in one theory ...



... and all that thanks to one little apple, that ...



WOOOSH!

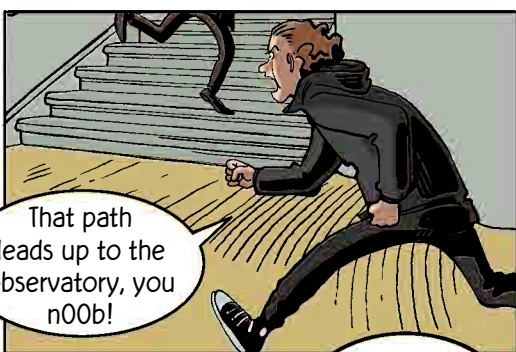


HEY!

HAHAHA!



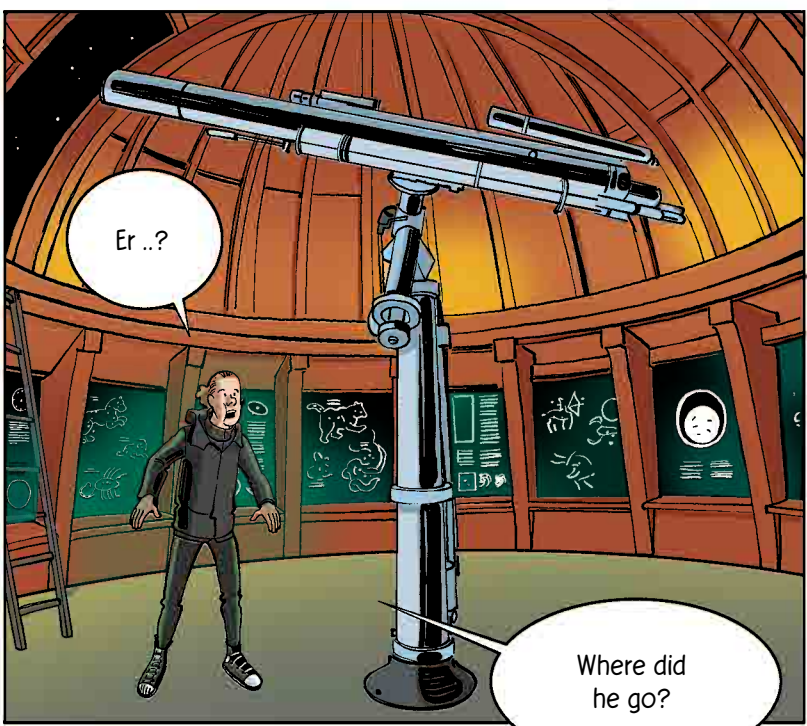
HAHAHA!



That path leads up to the observatory, you n00b!



Now you can't get away!



Er ...?

Where did he go?