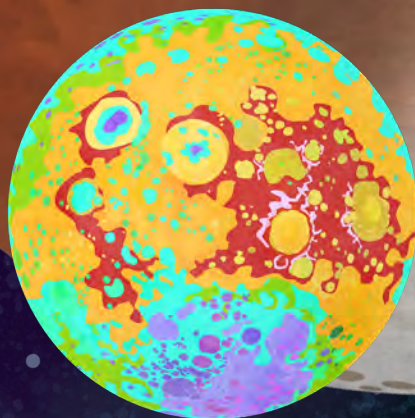
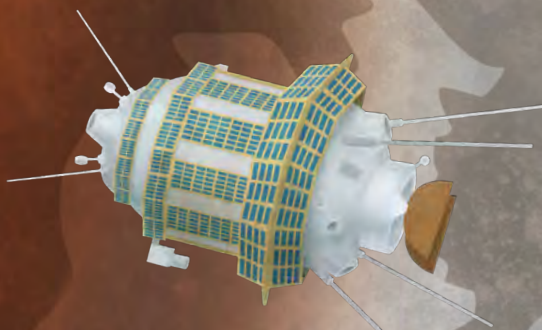
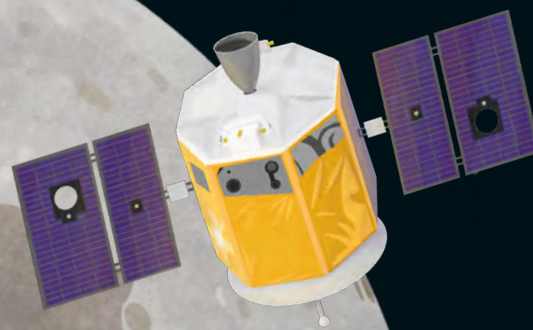
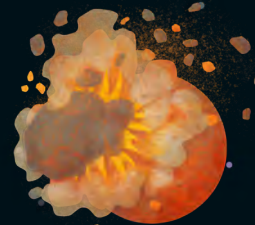


ATLAS OF LUNAR ADVENTURES



LET'S EXPLORE THE MOON IN SIX FOLDING MAPS

ATLAS OF LUNAR ADVENTURES



B4U PUBLISHING

LUNAR ECLIPSE

When, once in a while, the Moon steps into Earth's shadow, a great spectacle ensues which we call a lunar eclipse. The most beautiful part of this phenomenon comes before the total eclipse, however: during a partial eclipse, Earth's shadow gradually nibbles away at the disc of the Moon. The total eclipse occurs when the Moon is fully covered by Earth's shadow; at this moment, what little we see of the Moon is reddish or brownish.

PHASES OF THE MOON



PLANETSHINE

Planetshine is the dim illumination visible on the part of the Moon not lit by the Sun. It is produced by sunlight reflected on the Moon from Earth. The clarity of the planetshine is mainly determined by the phase the Moon is in: the thinner the Moon, the more noticeable the planetshine because the greater the light reflected on the Moon from Earth.

NIGHT AND DAY ON THE MOON

Days and nights on the Moon really drag on. Whereas Earth turns around its own axis with respect to the Sun in about 24 hours, it takes the Moon about 29 days to do the same. This means that one lunar night lasts about 14 Earth days (c. 354 hours).



ORBIT OF THE MOON

The Moon orbits Earth in about 27 days. But to complete its phase cycle, our celestial neighbour needs about two days longer than that. How quickly must the Moon orbit Earth to manage it in 27 days? It's quite a rush – it covers around a kilometre in a second, so 3,600 kilometres in an hour. That's the speed of today's fastest fighter planes.



PERIOD OF THE FULL MOON

The period of the full moon is really just a brief moment, which we can calculate precisely, to a matter of seconds. You can find out when this moment is by looking at a calendar or searching the internet. But by looking at the Moon with the naked eye, it is very difficult to estimate the exact time of the full moon. Two days before and two days after the full moon, the Moon looks round.



GALILEO GALILEI

The Italian astronomer Galileo Galilei, an extremely clever man, lived four hundred years ago. He was among the first to have the idea of pointing a telescope at the Moon. And he was delighted by what he saw on the face of our closest neighbour in the cosmos. He discovered that there are mountains and continents on the Moon, just as there are on Earth. He made careful notes on and drawings of everything he saw through his telescope. But at that time, no one believed his claims.



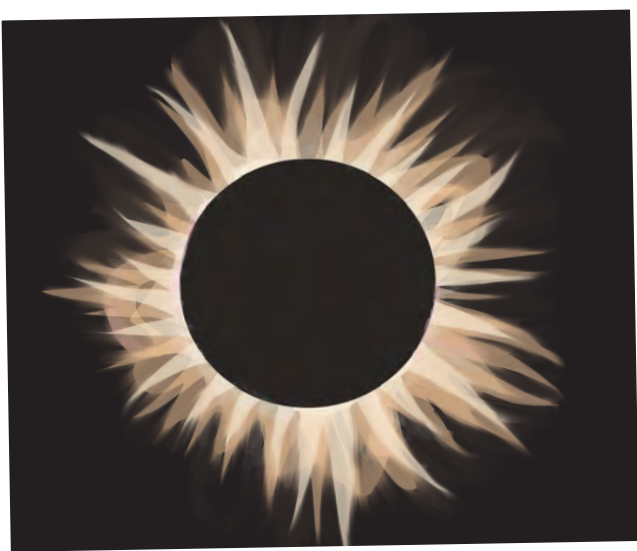
ECLIPSE GLASSES

When from time to time the Moon covers the Sun, a partial eclipse of the Sun occurs. It is very dangerous to look at the Sun without protection. If you do, you may damage your eyesight. So, to watch a partial eclipse people wear special glasses with very dark lenses.



LUNAR PHASE CYCLE

Together with the alternation of day and night, the rotation of the forms of the Moon was one of the first regularly repeating events in the sky that people noticed. Our celestial neighbour goes through all its phases in the course of the lunar phase cycle, which takes 29.5 days.

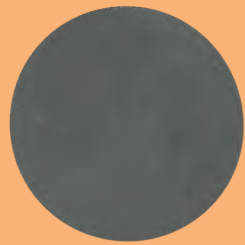


SOLAR ECLIPSE

If at the time of the new moon the Sun, the Moon and Earth come into exact alignment, one of the most spectacular of all astronomical phenomena occurs – a total eclipse of the Sun. During a total eclipse, the sky becomes so dark that the stars shine bright and an amazing silvery-blue aura called a corona appears around our daystar. Uncomprehending, nature prepares to sleep, and flowers close. The temperature drops. In windy conditions, the wind, too, drops during the eclipse. It is all over in a few minutes, when the Moon moves out of alignment with the Sun.

CRESCENT HUNT

I'm sure you've seen a thin, crescent moon. But did you know that the thinner the Moon is, the more difficult it is to spot in the sky? The brightness of a very thin crescent is low. Besides, it is closer in the sky to the Sun, which easily outshines it. Some astronomers like to compete for who can spot the thinnest crescent. This crescent hunt requires the right telescope or binoculars, very good eyesight, a good vantage point, clean air, plenty of experience and a healthy dose of luck.



NEW MOON

The first phase of the lunar cycle is the new moon. At this point, the Moon is between Earth and the Sun. As the illuminated hemisphere of our nearest neighbour is now facing away from Earth, when viewed from our planet, it is difficult to see with the naked eye. When the new moon is over, the Moon moves eastwards, away from the Sun.



WAXING CRESCENT

The further the Moon moves away from the Sun, the more we see of its illuminated hemisphere. A few days after the new moon, the Moon that appears over the western horizon is in the form of a thin crescent, and it is getting larger. We determine the Moon's age by the number of days that have elapsed since the new moon.



FIRST QUARTER

The waxing (ageing) crescent moon sets a little later each day. One week on from the new moon, we see it as a half-moon in a 'D' shape. We refer to this phase of the Moon as the first quarter. And, of course, as it passes through the first quarter, our celestial neighbour continues to wax (grow).



WAXING GIBBOUS

I'm sure you've noticed that sometimes the Moon's shape is not that of a crescent, circle or quarter – in fact, it appears to bulge. We see this shape in the course of the Moon's cycle twice – first, after the first quarter (when the Moon is waxing); then, after the full moon, when the Moon is waning.



FULL MOON

About 14 days after the new moon, the hemisphere we see is fully illuminated. This is the full moon – and it usually appears as soon as the Sun sets. The period of the full moon receives much more attention than the other lunar phases. When full, the Moon is at its brightest, shining all night.



WANING GIBBOUS

When the period of the full moon is over, the right-hand edge of the Moon's disc is gradually nibbled away. Now we say that the Moon is waning. It rises ever later and sets only after the Sun rises. It has a bulging shape as it does before the full moon, but this time from the left, not the right.



LAST QUARTER

When we see a half-moon in the shape of a 'C', the Moon has entered its last quarter. At this time, the Moon rises around midnight and reaches the western horizon in daylight, around midday. This means that it is clearly visible in day-time, too.



WANING CRESCENT

About 25 days after the new moon, all that remains of the half-moon is a thin crescent adorning the eastern horizon before daybreak. It rises a little later each day and soon disappears in the glare of the rising Sun. At this time, a beautiful planetshine supplementing the unilluminated part of the Moon is a common sight.

THE MOON AND HUMANKIND

Humans have been fascinated by the Moon since time immemorial. Some like it, some fear it, some study it their whole life long. In the time before fire was discovered, our nearest neighbour in space made it easier for our ancestors to hunt and travel at night. Regular changes in its phases once served reliably as a celestial calendar. The Moon is still a great source of inspiration for poets, painters and composers. Often, however, it has been assumed that our nearest neighbour has a much greater influence on human life than is actually the case. In Ancient Egypt, for instance, there were people who believed that the Moon ate a pig every two weeks.

MOON LEGENDS

Many myths and legends tell us that the dark spots on the Moon are scars sustained in various battles and skirmishes. Mexican legends claim that the Moon's face was scratched by a rabbit, Peruvians believed that it was mutilated by a fox, in Argentina it was said that the marks had been made by the claws of a jaguar, while certain ancestors of the Romanians believed that someone had thrown a cowpat at it. It is still common for the Moon to be imagined as a human face – indeed, this has become a symbol of the Moon on calendars.



CRATERS OF THE MOON

Using the first telescopes, scientists established that there are many such circular mountain ranges on the Moon, and they started to call them craters. As many of them were remarkably like volcano craters on Earth, some scientists reached the conclusion that they were formed by great volcanic explosions. Later, however, astronomers determined that almost all the Moon's craters were made by huge cosmic rocks striking its surface.



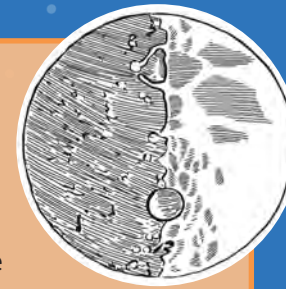
LUNAR CALENDAR

Humans first used changes in the phases of the Moon as a means of measuring time a long, long time ago, perhaps even in the Bronze Age. But there is one big drawback to a lunar calendar: it is based on changes in the seasons, which are dependent on Earth's orbiting of the Sun. Another drawback is that if we count calendar months by the time it takes Earth's little companion to switch through all its phases, the length of each month will vary. For this reason, people stopped using lunar calendars.



DRAWINGS OF THE MOON

As the stargazer Galileo Galilei was drawing the Moon, he saw what appeared to be huge circular mountain ranges between the light and the dark. Galileo had no idea how these strange mountain ranges could have originated. Today we know that he was looking at huge craters.



TELESCOPE

A telescope is a cool thing! Invented by the Dutch in the early 17th century, it is an instrument with a set of glass lenses and mirrors that allow us to see distant objects as though they were much closer to us. Stargazers soon began to use telescopes to observe the stars and planets. The first telescopes were quite small and weighed only a few kilograms, whereas the largest ones of today are colossal and weigh hundreds of tons.



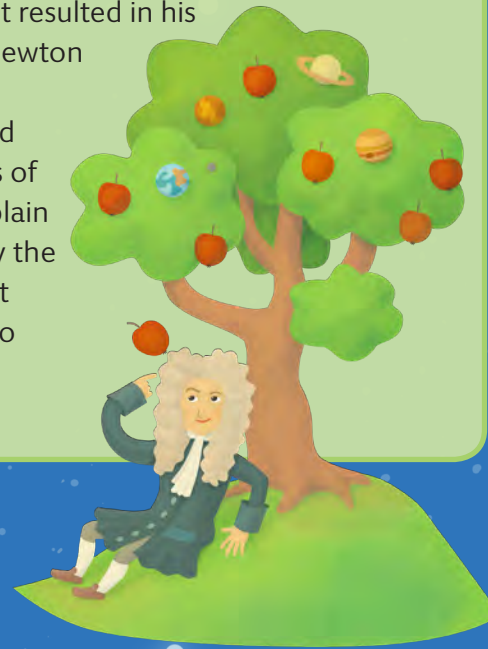
MOON MADE OF CHEESE

Once upon a time, some people believed that the Moon was made of green cheese. This crazy notion even appears in certain myths and fairy tales. It stems from the similarity in appearance between a round cake of cheese and the Moon, whose craters remind us of the holes in Emmental.



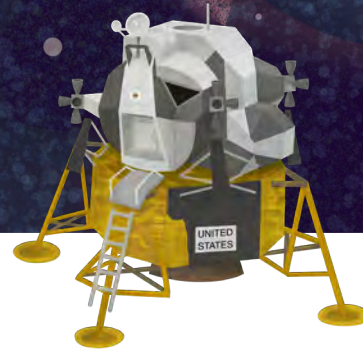
ISAAC NEWTON

The story goes that English physicist Isaac Newton was sitting in a garden one day when an apple fell on his head. This incident resulted in his discovery of gravity. Later, Newton worked out three laws that describe everything we need to know about how all kinds of things move. These laws explain why apples fall to Earth, why the Moon orbits Earth, and what speed we need to travel at to reach the Moon.



SMALL MOON

The Moon isn't as large as it may appear to us from Earth at first sight; if you hold out your hand in front of you, you'll find that you can cover the Moon with your little finger, no problem, even when the Moon is full. Incidentally, the Sun looks the same size as the Moon in Earth's sky – although it's actually 400 times bigger.



ATLAS OF LUNAR ADVENTURES

LET'S EXPLORE THE MOON EUROPE IN SIX FOLDING MAPS

Written by Pavel Gabzdyl

Illustrated by Tomáš Tůma




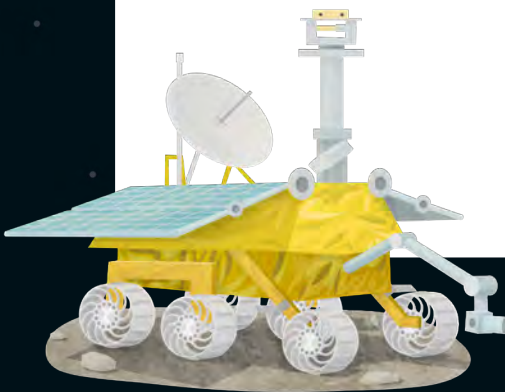
Look at the night sky. What do you see? That's right, the large, round, pale head of the Moon. When full, it shines in all directions. From time immemorial, this silvery pilgrim on high has teased and fascinated humanity. Dreamers, romantics, adventurers and hard-headed scientists have all longed to learn its secrets. It's the same with you, isn't it? So, what are you waiting for? Climb aboard! Our great expedition to the cosmos is about to begin! On six foldout maps, travel the length and breadth of the Moon. In six chapters, learn about the first astronauts, the first travellers to the Moon, the first space shuttles and even today's state-of-the-art space vehicles. So put on your spacesuit, fasten your seatbelt and three... two... one... we have LIFT-O-O-FF-F!

In the atlas you'll find:

- 6 foldout maps with the Moon and rockets
- interesting facts about exploration of the Moon
- people on the Moon
- four supplementary booklets with more information about Moon and travelling to the Moon
- the future on the Moon

booklets
with additional
information

 **WARNING: CHOKING HAZARD**
Small parts. Not suitable for children
under 36 months.



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