

Expedition Hillock or the Exposure of Magnetic Hill's Mystery.

VLASTIMIL HAVRÁNEK

In December 2005 there was a report about a curious hill near Moravian Trebova on the TV Nova broadcast. The TV commentator and the local teacher of physics were demonstrating how things were moving uphill by themselves. A plastic bottle and a ball were rolling uphill on the road and an unlocked car rolled away in the same direction. Not only a viewer in front of the TV screen but some of the local drivers that were alerted by the reporter wondered about this.

'So we already have a magnetic hill in our country', I remarked with a certain trace of irony when the Physics teacher at a local grammar school explained at the end of the report that everything could probably be caused by a very strong magnetic field arising from the local geological bedrock.

I have already heard of a similar hill in Greece from my friends before and I have read some articles concerning a 'Magnetic Hill' or 'Antigravity Hill' in the Philippines, Canada, the U.S.A and elsewhere. To be honest, I have never believed it despite the photos that looked so real many times.

Owing to the hill near Moravian Trebova, the chance to clear up the mystery occurred. We started to prepare the action that had acquired the temporary and then the official name 'Expedition Hillock', together with a group of twenty volunteers – students of the first year at Kalvan's Gymnasium (grammar school in Britain) in Kyjov. When we were discussing the possible causes of this strange phenomenon, three hypotheses were finally determined and we prepared our own measurement devices that were used for the further verifying of these hypotheses.

- 1) There is an extremely strong magnetic field (the explanation from the TV Nova report).
- 2) There is a perturbation of the gravitational field (another frequent view on the Internet)
- 3) We are dealing with an optical illusion (our hypothesis).

To be sure, we performed an experiment on a slope near our gymnasium in Kyjov before the expedition. We verified that our devices were working properly and we gained comparative data for measurements near Moravian Trebova.

Earth Magnetic Field Measurement

Using an instruction manual from the Internet, we manufactured a tangential compass for the measurements of the magnetic field's horizontal component. We have read that the normal value of the tangential component of the Earth's magnetic field induction in our area is nearly $B_h = 20 \mu\text{T}$. This value absolutely could not create a mag-

netic force that would overcome the Earth's gravitational force and lift the plastic bottle or the soccer ball, things that are made of non-ferromagnetic materials, uphill. If these objects were pushed uphill by a real magnetic force, then the Earth's magnetic induction at this place would be much higher than 20 mT and we would discover it using our compass, indeed.



We performed five independent measurements during the expedition test experiment in Kyjov. We obtained an average value $B_h = 18.2 \mu\text{T}$ that proved the great accuracy of our compass. A series of 5 measurements were performed separately at three different places on the mysterious hill near Moravian Trebova. The resulting average values of magnetic field induction were $20.0 \mu\text{T}$, $20.0 \mu\text{T}$, $19.4 \mu\text{T}$, respectively. We observed that the magnetic field at this place is almost exactly that which is expected.

Measuring of the Earth's Gravitational Acceleration

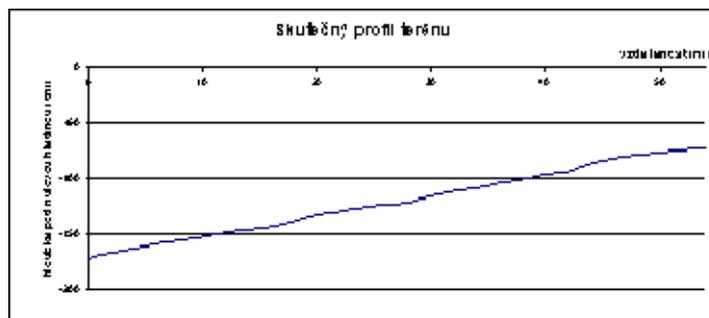
To determine whether there might be an anomaly in the Earth's gravitational field, we manufactured a reverse pendulum, a device providing measurements of gravitational acceleration with great accuracy. Everyone knows that the value of normal earth gravity acceleration is $g = 9.83 \text{ m}\cdot\text{s}^{-2}$. Unfortunately a strong wind, which was blowing near Moravian Trebova during the measurement, complicated our experiment. Despite the wind, we measured the value $g = 10.01 \text{ m}\cdot\text{s}^{-2}$, which absolutely does not point to any gravitational anomaly in this area. In calm air it is highly improbable that we would obtain a value that would be any further from the normal one.



Terrain Topography Measurement

We mostly relied on the results from this part of the expedition, so we prepared two independent experiments. In the first one a rope was strained between two frames and

we assured ourselves, using a water level, that the rope created the reference from which the vertical distances to the roadway were measured in 2 metre intervals. This was the way we drew up the surface topography. We discovered that the roadway was sloping down at every 10 metres by 20 centimetres in the same direction as the objects were rolling and the cars were moving. The slope of the roadway is 2% and the objects' movement is not a mystery any more. The second measurement was done with the use of a laser level and the results we reached were almost the same.



Conclusion

We have discovered during our weekend expedition that the hill on the road E442 near Moravian Trebova is neither a 'Magnetic hill' nor an 'Antigravity hill'. There are not any paranormal phenomena occurring around and everything is totally normal. In spite of this fact, there is still something interesting at this place. When looking in certain directions, it seems the slope of the roadway is opposite to the real one. This optical illusion is caused by the curious profile of the surrounding terrain. Even if the upper side view of the roadway shows the real slope of the terrain, the lower side view gives absolutely the opposite feeling and people can be deceived easily. You can assure yourself of that regarding the attached photo. Even if it is not obvious in the photo, the cars are driving uphill.

We will not probably have the opportunity to check the mysterious hills abroad personally but it is quite probable that one is dealing with the same problem as in the case of Moravian Trebova. We did not experience any sensation; nevertheless, at the end of the expedition we had a very good impression that we cleared up the mystery.

All the information about this expedition can be found on our websites:
www.expedicekopecek.ic.cz.