



The Magazine of the Polish Academy of Sciences
No. 1 (13) 2007
Quarterly
ISSN 1731-7401

Edited by:

Polish Academy of Sciences
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Publication costs partly covered by
the Ministry of Science and Higher Education

DTP by Edit Sp. z o.o.

DTP Operator: Magdalena Giera

Tick-tock!

This year's first issue of Academia is a journey through time. Polish Academy of Sciences staff will lead us through nearly 8,000 years, across countries and continents, to where researchers from various fields are seeking to answer questions about the past, present, and future.

*We'll begin in Egypt's Dakhleh Oasis, where archeologists from Poznań are working to decipher the **Petroglyphs' Code** (p. 4), concealed in rock art images some 7,000 years old. These fascinating sandstone engravings of women, giraffes, elephants, and gazelles contain clues to the lives and beliefs of the Sahara's Neolithic inhabitants.*

*In another African locale, the Sudanese village of Banganarti on the Nile River, a Polish archeological mission has been uncovering a 6th-century Church of the Archangel Raphael, hidden away in the Saharan sands. Wall paintings discovered in a Lower Church, including the already famous **Madonna of Banganarti** (p. 28), mark a milestone in our grasp of Nubian art history.*

*Next we ply ahead to the remains of 9th- and 10th-century "sunken houses" in Iceland – early Medieval homes which PAN archeologists are capturing using new excavation imaging techniques (p. 38). But note that preserving fragile treasures against time's incessant toll is likewise an aspect of many other fields: on p. 34 we describe methods being developed to prolong the **Latent Life** dormant in especially delicate tree seeds. Freezing isolated tissues using liquid nitrogen will likely enable them to remain preserved for hundreds of years.*

*In **100 Years of Bees** (p. 12), we take a look at a long chapter in the history of these beautiful and diverse insects within Central Europe, where numerous species have died out over the past century under pressure from man and environmental change. At the same time, researchers also turn out to be still discovering new bee species.*

Drawing nearer to the present, we will focus in on one particular aspect of Poland's transformation in 1989–2006: the reform of formerly state-run agricultural facilities (PGRs). As a vestige of the Communist system these farms fell into decline, although more and more have come to form the basis of post-WWII Poland's first large-scale farming enterprises (p. 32).

*While such time-travel in the mind's eye requires only a broad notion of scale, we should bear in mind that scientists can presently measure time better than any other physical value – with a relative error of only 10^{15} . Moreover, a new development, the **Optical Atomic Clock** (p. 16), may boost this accuracy to beyond 10^{18} !*

Making a last push ahead, our trip will reach its final destination in Poland AD 2025. Researchers peering into Poland's future are drafting a development strategy for this time-frame, with the main aim of stimulating a knowledge-based economy and society (p. 36). Here at Academia, by spotlighting the most intriguing Polish Academy of Sciences research, we are striving to do our part to help make that goal a reality.

ACADEMIA staff

Birds' lives follow the rhythm of the seasons: waxwing such as these appear in Poland in autumn and winter, while on migration



Lukasz Zandrecki / Agencja Gazeta