

TO THE STARS IN SEVENTEEN YEARS

In the International Year of Light, Dr. Bogdan Wszolek opened a private observatory in Rzepiennik Biskupi. He writes for us about how he fulfilled his dream and the future he's planned.

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Photo 1:
The RFT-5.4 (foreground)
and RT-9 (background)
antennas at the
observatory

Photo 2:
A bird's eye view
of the Queen Jadwiga
Astronomical Observatory
on its opening day.
Location:
49°47'N, 21°05'E,
h = 350 m
above sea level

I began dreaming of building my own observatory while studying astronomy at university (1976-1982). This desire gradually displaced my youthful dream of going out into space to conduct astronomical observations from there. In the onslaught of more urgent matters, however, I put it on the back burner, and it reappeared with new force only in 1996, when I visited the Special Observatory of the Russian Academy of Sciences in the Caucasus Mountains. Going there, I took with me Michał Drahus, then a 15-year-old lover of astronomy (now a professional astronomer, researcher of comets, and himself also an author for *Academia* magazine), whose early astronomical interest led him to join me. During a walk I said casually to Michał, "I need to build my own observatory." He nodded with great fervor, and I felt that the words had been said and there was no turning back! What kind of mentor would I have been in the eyes of my student if I had not kept my word?

Far down a muddy road

The choice of location for the observatory fell on an inaccessible hilltop plot of land in my home village, Rzepiennik. The nearest country road, barely passable for agricultural tractors, ended half a kilometer away from the construction site, and ditto for the power and water lines.

In autumn 1998, after the bushes and trees were cleared, the mud-splattered shipments of gravel and cement reached the site. We proceeded to build the foundations for the main building, mixing concrete on-site with a cement mixer powered by the engine of a tractor. Construction work could be carried out only during holidays, because we carried out the bulk of the work on our own. During the year we

saved up what we could, and in the summer months we bought the necessary materials and as economically as possible carried out the construction work. In 2000 we laid power lines to the site. For two weeks, three of my children and I dug a half-kilometer long cable trench, battling against stones and tree roots. Building materials were usually unloaded half a kilometer from their destination and then transported in batches using a rented tractor.

The problem of driving to the observatory was initially resolved only after its official opening. Through the efforts of the municipal authorities, in the summer of 2015 a 3.5-kilometer stretch of gravel road was laid, allowing access to the Queen Jadwiga Astronomical Observatory. Previously, for almost twenty years, I had maintained the dirt track myself. To fill in the deepest pits I had poured more than 600 tons of debris, which I obtained by demolishing a 100-year old building in Rzepiennik Biskupi. At the beginning of every summer I went out on the road with a spade, ax, and pickaxe and spent a week working hard to repair the damage done by other users from the autumn, through winter, to spring. Before the road became damaged again, I would manage to bring the heavier materials in and proceed with the construction.

The assistance of family members and some mysterious forces "from above" helped bring the construction of the observatory to its current state, which is nevertheless still not yet final.

Piecing together the instrumentation

Now the observatory hosts two modern satellite dishes (radio telescopes), a main building housing a library and lecture hall, two 5-meter rotating astronomical domes, an outdoor set of 14 educational noticeboards, and a battery of solar cells.

The nine-meter radio telescope was developed by Scientific Atlanta (USA) in 1999. Until 2010, it operated at the Satellite Service Centre in Psary near Kielce, where it was used for telecommunications



The opening ceremony of the observatory on 8 June 2015, including its officially being named after Poland's Queen Jadwiga, was graced with the presence of many well-known individuals. Lectures were delivered by Prof. Virginia Trimble, Father Prof. Michael Heller, and the Polish cosmonaut Gen. Mirosław Hermaszewski (the first and so far only Polish citizen to have been in space). The ceremony was also joined by members of the local community. The Polish Astronomical Society, the Astronomical Observatory of the Jagiellonian University, and the Astronomia Nova Association (AN) became patrons of the new observatory.

purposes. When it was slated to be scrapped, I was able to buy it at its scrap-metal price. It was installed in Rzepiennik in 2012, and two years later restored fully to its original control and started detecting radio emissions at the 21 cm wavelength. Ultimately, the instrument will be able to be used as a ground station to handle probes and space telescopes.

The second, 5.4-meter, antenna was produced for the US Army in 2004 by ViaSat (formerly Scientific Atlanta). It operated for NATO in Komorowo near Ostrów Mazowiecka until 2010. When it came into private hands four years later, once the military Satellite Centre for Regional Operations (SCOR) was decommissioned, I bought it, stripped it down, and transported it to Rzepiennik. In the future, it will serve as a ground station to handle space probes.

The antennas at the Queen Jadwiga Astronomical Observatory still require quite a bit of work before they can fully function as they were designed to. The main optical instrument at the observatory is a half-meter Newtonian telescope on a Dobsonian mount, constructed using professional optical equipment donated after WWII to the Jagiellonian University by the Polish émigré community in the United States. We mainly use it for teaching purposes. The observatory is also equipped with several portable instruments used during excursions. A telescope with an H α filter, lent to us by Astronomia Nova for solar

observations, is most commonly used for daytime school trips. The educational noticeboards, also on loan from AN, are mainly intended for casual visitors.

Further dreams

We plan to further develop the Observatory to better serve professional astronomical and astronautic purposes. In both areas, we are thinking of expanding both our instrumental base and our research and teaching activities. In terms of instruments, the radio antennas need to be fully adapted for operation and the optical instrumental base needs to be extended. I dream of constructing a 1.2-meter telescope for spectroscopic observation of the stars. I would also like to build another radio telescope and a test bed for rocket fuel and engines.

We want the scientific life at the center to become even more robust, by hosting thematic conferences and research meetings and analyzing astronomical data from our own observations or from available databases. In parallel, we plan to develop our infrastructure and techniques for popularizing knowledge about astronomy and astronautics among school children and tourists. We very much hope to encourage a greater number of qualified and committed individuals to get involved in these activities, so that all these dreams can become a reality someday soon. ■