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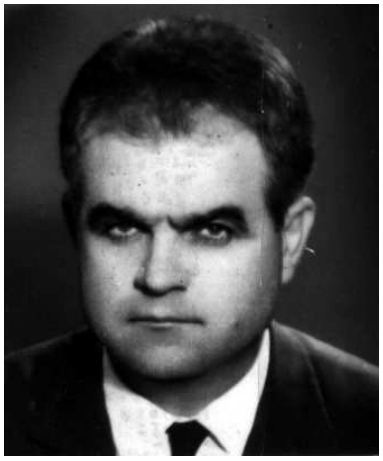
IN MEMORIAM
Dr LJUBIŠA A. MITIĆ
1920 – 2004.



Ljubiša Mitić

Dr. Lj. A. Mitić was born on November 10. 1920, in Kaličina, District Knjaževac. He attended the primary school in nearby Valevac, receiving his secondary education (gymnasium) in Knjaževac. As a non-commissioned officer of the then Yugoslav Army he was taken prisoner in the April 1941 war, by the Germans and conducted to Germany into captivity. There he remained in various camps until 22. August 1943, when he escaped, under dramatic circumstances, from captivity to Switzerland. There he entered the Lausanne University to study engineering. This was possible under international convention valid for the time of war.

Early in 1945, after France was liberated, Mitić had to discontinue his studies in Lausanne and to move, together with other Yugoslav adherents to the NOP (National Liberation Movement) to France. In Paris he was promoted to liaison and repatriation officer of the Yugoslav Military Mission and sent back to Germany, now occupied by the Allied Armies, to help in the repatriation of the liberated Yugoslav prisoners of war.

In October 1945, his task concerning the repatriation of our liberated prisoners accomplished, he returned to Yugoslavia. On arriving home he enrolled, in November 1945, in the Natural-Mathematical Faculty of the Belgrade University, Group for Astronomy.

While still a student he was entrusted by his Professor, Academician V. V. Mišković, with translating a French university textbook, LEÇONS D'ASTRONOMIE, by M. GREY, because of the lack, in those penurous postwar years, of an appropriate teaching aid. The textbook was meant for publication, but owing to all-out stringency then prevailing, it remained a manuscript, but even so it played a useful role with those interested in.

Mitić graduated in October 1950 and immediately joined, on Prof. Mišković's recommendation, the Belgrade Astronomical Observatory, on November 1st of that year. On joining the Observatory Mitić had first to help with sunspots recording and reducing, but soon he was assigned to the Time Service. There he took part in astronomical observations with the Small Transit Instrument and in their reduction and processing. It was in these commencing years that Prof. Mišković, then Observatory Director, suggested to Mitić to have closer look at what was exactly going on between the pendulum clocks, the Observatory's basic time keepers, as there were indications of their mutual interference. This mutual interference could be anticipated for two reasons¿ a) the pendulum clocks were, all of them (four keeping the sideral time and two the mean time) suspended on the same monolitic, concrete, block – and b) the pendulums were swinging with practically the same periods (one second), hence highly susceptible to be affected by the well known phenomenon of resonance.

After installing the high precision microscopes and making other necessary arrangements in the clock cabine, 13 m. deep in the soil, Mitić began col-

lecting data on the influence exerted by the swinging pendulums on the neighbouring pendulums, whether running or standing still, and suffering themselves the return effects. More than 20 different experiments were carried out, taking over two years (1954-1955) to execute.

Huge, highly interesting, measuring material was gathered, which required the right interpretation. It was for months that Mitić had to strain to identify the real elements of the agency producing the curves obtained by measurements, which gave only the outer manifestation of the phenomenon but did not by themselves provide the answer. There were not any preceding works of the kind in the world literature. Finally he pierced the secret and seized the clue to the solution, and was now able to reproduce theoretically the vast varieties of curves under investigation.

What exertions Mitić had to sustain in the course of these experiments may be judged by the fact that he alone had to carry out all the measurements as there were no aids. Some of the experiments having to be done continuously at fixed, close, mostly two hours intervals. Accordingly, there then could hardly have been any sleep for him.

The complete study of the problem of mutual interference of our pendulum clocks, once completed, was submitted to the relevant University Commission. It was at once judged deserving the rank of a doctoral dissertation. The dissertation was defended on June 20, 1959, and shortly thereafter published in French as a separate volume of PUBLICATIONS DE L'OBSERVATOIRE ASTRONOMIQUE DE BELGRADE, No. 6, 1961, under the title COOSCILLATIONS DES PENDULES ASTRONOMIQUE, numbering 152 pages.

Now, another far-reaching problem imposed itself on the Observatory in connection with the installing of three fundamental instruments (Large Transit Instrument, Large Meridian Instrument, Large Vertical Circle) in their newly built pavilions. There was the question of who would be entrusted with rendering them fit for regular observations. That extremely delicate and responsible task regarding the Large Transit Instrument was entrusted to Mitić, whereby he became the head of the Research Group for Absolute Right Ascensions.

To begin with, Mitić was sent to the Pulkovo Observatory to study on the spot the praxis of the absolute right ascensions determination with their famous Large Transit Instrument. Mitić spent there four months (August- November 1959), collecting precious experience on which to rely in his forthcoming work in Belgrade.

On returning from Pulkovo he had to thoroughly study the literature bearing on the subject concerned, the instrument's organs had to be investigated in detail, the plans for erecting the meridian marks to be conceived. Incidentally, a serious blunder had been commited in the first postwar years, prior to Mitić having become an associate of the Observatory, which required urgent adjustment. Namely, the asphalt road was originally allowed to pass hard-by the pavilion of the Large Transit Instrument and, worse, to cross the instrument's meridian. At Mitić's request the road was at once shifted as far from the pavilion to the west as local circumstances permitted, thus saving the instrument from trembling caused by the passing-by vehicles. At the same time was removed the disturbing effect of the terrestrial refraction on the observations, originating from the asphalt road crossing the instrument's meridian

An important improvement was realized concerning the instrument itself, according to Mitić's suggestions. The relieving system, such as originally applied by its manufacturer at ASKANIA, was radically simplified, making thereby the instrument much more handy. At the same time arrangements were brought in for the instrument inclination to be controlled by the mercury mirror, yielding superior results to those obtainable by the spirit level. In these essential technical interventions a priceless collaboration and assistance was received from the widely reputed Chief of the Observatory's Technical Service Lj. Paunović.

The time was now ripe for the instrument ensemble to be put to general test. An experimental, true differential one, catalogue was observed and it was found in an unmistakable way, that the so called mean error of the star positions, as the ultimate criterion of the instrument's quality, was quite on the level prescribed for fundamental instruments. All the exertions, lasting for years, yielded finally the aspired and sought results.

However, the Large Transit Instrument is designed for absolute right ascensions and not for the far easier obtainable differential ones. The determination of the absolute R.A.s is conditioned by the knowledge of the absolute azimuth of the instrument, for which meridian marks are indispensable. This question was manysidedly studied in view of the fact that the meridian marks, while being one of the crucial elements in this kind of astronomical observatories throughout the world, including those most famous. The main source of their being unreliable: the unsufficient stability of their pillars and the jolting of the meridian mark image in the field of view of the main instrument, a consequence of the strong terrestrial refraction.

It was Mitić's an a priori resolve to construct such meridian marks, not only equal to the best then existing in the world, but possibly better. Besides studying this problem through the existing literature he considered it obligatory to inspect on the spot with his own eyes the meridian marks of the most reputed European observatories. He therefore visited the Greenwich, Paris, Uccle, Hamburg and Vroclav observatories, in addition to having already been at the Pulkovo Observatory. As a result, the Belgrade meridian marks were built distinct, compared with other existing, by moisture being prevented from penetrating into the foundations of their pillars by appropriate insulation, whereby their stability was essentially enhanced, and by the light emitted by the meridian marks proper being protected by the vacuum tubes all along its path to the main instrument. By this latter means the terrestrial refraction, the strongest spoiler in the process of absolute R.A.s determination at all the observatories, has been practically completely eliminated. This arrangement, unique in the world, made possible the setting by the instrument's movable micrometer wire

to attain its theoretically highest precision.

It is for these bright prospects that the Pulkovo Observatory took on itself the painstaking task of manufacturing, quite gratuitously at that, two costly meridian mark lenses of appropriate focal lengths for our newly constructed meridian marks. For this extraordinary generosity of the Pulkovo Observatory lasting gratitude is owed not only of Mitić but of the Belgrade Observatory as institution.

This is the first, and so far the only, time, that our Observatory has received substantial technical support from a famous foreign observatory as an aid in solving a long-standing, essential problem of Fundamental Astrometry.

Testimony to the interest of the astronomical community in our vacuum meridian marks is, among others, the visit of the President of the IAU Commission 8 (Positional Astronomy) G. van Herk who surveyed them closely, as well as the visit of Dr. J. A. Hughes, a leading astronomer of the United States Naval Observatory, Washington, who took on that occasion several photographs of them.

For various reasons, both objective and subjective ones, our Large Transit Instrument remains, to our days, unused. It is the duty of our Observatory, but equally of our wider community, to provide means and ways for this precious instrument worldwide, to furnish results it is capable of achieving, consistent with the notion "fundamental instrument".

To complete this report may it be recorded that Mitić was charged by the Observatory in 1960-ies to purchase three essential auxiliariary, highly precise, measuring devices, indispensable as regards all our three fundamental instruments mentioned above, for their constants to be kept under standing strict control. The need for this purchase fell at a delicate time for the Observatory as its success was to have a positive effect on the Observatory's standing; in the contrary case the effect would have been opposite. Mitiś's responsibility was therefore extremely delicate. However, Mitić succeded in procuring these three auxiliary devices from abroad, since they were not produced in our country. The question was of: contact interferometric examinator of the instrument pivots (from the USSR), a level examinator (from the USSR) and a collimator, type OPTON, (from Germany).

From the very first day of his joining the Observatory until his retirement on January 31, 1986, Mitić was standing member of the Editorial Board of the Observatory's publications. Even after he retired he continued collaborating by revising the papers submitted for publication, correcting inaccuracies in them and, when necessary, translating into English some of them. This editorial activity of Mitić met with recognition on the part of his colleagues and the Observatory awarded him a solemn prize for 2003 for his "contribution to the development of the Astronomical Observatory".

Mitić was a member of the IAU Commission 8 (Positional Astronomy). He took part in the IAU General Assembly in 1955 in Dublin and in the IAU General Assembly in 1961 in Hamburg. In connection with the specific tasks he was charged with by the Observatory, he spent, in addition to the already mentioned Pulkovo Observatory, a month at the Vroclav Observatory and also a month at the Bukarest Observatory.

Dr. Mitić was fluent in English, French and German, employing Russian, which afforded him corresponding benefits in the diverse, some of them even pioneering works he had to discharge at the Observatory. His linguistic knowledge made possible to him a broad access to the scientific literature and an easy maintenance of communication both with fellow-astronomers and institutions throughout the world.

POPULARISATION. Mitić translated into Serbian a book, simultaneous by admirably scientific, yet written masterly popularizing: "LIFE ON OTHER WORLDS". The book deals with the currently topical question of the possibility of life existing elsewhere in the Universe besides on our Earth. The book's author is the then Director of the Greenwich Observatory, a world-renowned astronomer, Sir Harold Spencer Jones. The translation was published in 1954 by Narodna Knjiga in Belgrade.

Mitić himself authored the booklet, intended for general readership "Na Drugim Svetovima" – published in 1960 by RAD, also in Belgrade.