

RUSE STUDENTS MATHEMATICAL CIRCLE

The First International Mathematical Olympiad (IMO) in Romania, held in 1959, had a participant from the region of Ruse - **TODOR PENEV TODOROV** who came from the Dve Mogilii high school. For certain, such an achievement excited the mathematicians and the population of the city of Ruse and the entire region.

In 1960 the Regional Committee Bureau of the Bulgarian Communist Party took a decision concerning the radical change of Mathematics teaching at school and as extracurricular activities. Teachers, students and school leaders committed themselves to the problems and challenges of Mathematics. The network of Mathematics circles enhanced from 6 in the school year of 1959-1960 to 23 in 1960-1961. Both students and parents showed serious interest for Mathematics in general and particularly for the extracurricular activities where talented students were helped in growing up as individuals with sound mathematical knowledge and skills that guaranteed their further successful professional careers.

The Mathematics uplift had a logical consequence with the Ruse Students Mathematical Circle (RSMC) – an offspring of the Inspector in Mathematics, Mr. Kostadin Manasiev and the tireless enthusiasm, devotion and the deep mathematics knowledge of the teacher in Mathematics at the Evening Mathematical Gymnasium – Mr. Docho Todorov Dochev, an honored educator, who later became doctor in Mathematics, professor, Dean and Head of Mathematics Department at the Varna Economics University. On the initiative of these two mathematicians, true to the traditions of the Bulgarian Revival of Learning, many advertisements were spread out in Ruse for drawing students to math circles. Over 800 volunteers gathered in the backyard of the Evening Mathematical Gymnasium. Tens were expected, hundreds arrived. What exultation for the founders and an excitement for the enthusiastic teachers in Mathematics that was. How to start and manage such an interest? They eagerly formed 2 groups of 30-40 students for every 7th to 11th form.

THAT WAS THE BEGINNING

In the very beginning the quest for talented students in mathematics and the intensive work with them became an important public duty. It was the time for laying the **FORMATION, THE METHODOLOGY OF WORK** and the positive results did come soon.

The first math circles built the foundation of the Students Math Circle as a structure to the former Pioneer's Palace, and later it went under the guidance of the Regional Center of Mathematics and Engineering (RCME), the Regional Center of Math, Engineering and Astronomy (??) (RCMEA), now named "Center for Student Technical and Scientific Creative Work" (CSTCW).

The first members of the SMC were the best and most talented students from the 7th to 11th form studying at schools in the city of Ruse and Ruse region. The studies were 2 hours twice a week. A remarkable track was left by the first favorite teachers in math like Docho Todorov Dochev, Trifon Semkov, Krastyo Dzhapunov, Emil Petrov, Mitko Yotov Kunchev and Aneliya Penkova. Successful graduates from the SMC were awarded certificates that allowed them to be enrolled for the next year in the SMC. Participants who could not manage to graduate simply failed and the vacancies were offered to students with proven mathematical knowledge and skills at the latest mathematical Olympiad. The SMC had a wide-open door waiting any moment to be stepped by every enthusiastic student with talent in mathematics.

It was distinctive for Ruse SMC yet in the beginning of its establishment, that **specialized groups** were formed and efficiently functioned. The **concept for these groups certainly evolved and zigzagged** throughout the whole history of the SMC. At the beginning the groups were completed for each form. However, later, when the requirements for participants in national math contests and IMO grew, it became apparent that a winner could not be raised if a student studies mathematics according to the syllabus first and afterwards goes to intensive math course as extracurricular activities. That fact made the math instructors think of somewhat **advanced learning** of mathematics by students with outstanding abilities, aptitude and persistence for mastering their mathematical knowledge and skills.

And then they came to the idea to create a special elite group for all school forms with students having proven mathematical potentials, or being awarded for great achievements in mathematics at math contests, showing true love and profound desire for studying mathematics. Teaching of that group was in accordance with a specific program focusing on the individual student's work to intensively master the math knowledge introduced in higher school forms.

The admittance and inclusion in that group was hard enough. Besides awarded achievements in mathematics, a student had to be of competitive and sport spirit. The group was formed and filled up continually with talented students. It was an open system that allowed leaving it by anybody who could not withstand its advancing standards and he/she was recommended to join an ordinary math circle.

At the same time, students, who excelled their mates in the ordinary math circle, were admitted to the **elite group**, where **everybody helped each other** in acquiring deeper math knowledge and skills.

That “secret” of Ruse SMC created astonishing prerequisites for setting up a number of peculiar national records for the extracurricular activities in Mathematics:

1. Peak years of achievements are **1964, 1968, 1969** and **1988** when Ruse SMC sent three participants in the International Mathematics Olympiads (IMO) to compete for the Bulgarian team:
1964 – Svetoslav Yordanov Bilchev, Dimitar Nichev and Petar Rashkov; 1968 – Dikran Dikranyan, Ivan Ginchev and Dimo Dimov;
1969 – Stepan Terziyan, Georgi Popov and Verzhiniya Hristova;
1988 – Dobromir Dimitrov, Kamen Alexiev and Zvezdelina Stankova.
2. Individual record unsurpassed by now is made by Tsanko Donchev who participated in three successive IMOs – in **1973, 1974 and 1975**, and by Svetoslav Kolev – a participant in three International Informatics Olympiads (IIO), in 2003, 2004 and 2005.
Tsanko Donchev was yet in the 7th form in 1972, the year of the competitive round for the IMO, when he was appointed to get the reward for the youngest and excellent participant.
3. It is a high achievement that 14 students of Ruse SMS participated twice in IMOs:- Svetoslav Bilchev, Petar Rashkov, Dikran Dikranyan, Dimo Dimov, Stepan Terziyan, Verzhiniya Hristova, Ilko Parvanov, Plamen Stefanov, Evgeni Belogai, Todor Mitev, Zvezdelina Stankova, Dobromir Dimitrov, Kamen Alexiev and Borislav Deyanov.
4. Other 14 students participated in one IMO:- Todor Todorov, Dimitar Kasabov, Garabed Minasyan, Svetlozar Rulinski, Dimitar Nichev, Lidiya Vashtinska, Radenko Radkov, Ivan Ginchev, Georgi Popov, Ognyan Enchev, Svetoslav Slavchev, Boris Kovachev, Yuri Kandilarov and Nikolai Mateev.

In outline, Ruse SMS has **45 participations in IMOs** represented by **29 alumni**. To that number there should be added the achievements of **6 students** in the Balkan Mathematics Olympiad:- Nikolai Mateev (1986), Zvezdelina Stankova (1986), Yuri Dimitrov (1989), Borislav Deyanov (1993) and Diana Miteva (participant in 2 Balkan Math Olympiads – held in Plovdiv and Ohrid, competing with 15,5-aged students).

In **1991 Svetoslav Bilchev and Petar Rashkov** issued an article in “**Mathematics Competitions**”, **Australia** including a comparison between Bulgarian and ex-Soviet Union cities for the number of participations in the first 30 IMOs. In absolute numbers Ruse takes the 4th place following Moscow, Sofia and St.Peterburg, but measured with relative coefficient of the participation number to the population number in thousands, Ruse is categorically on the top with 21,99 scores ahead of the next cities having relative coefficients not exceeding 16,98.

Gradually, the SMC gained authority among the people in Ruse and the whole country. The first Director of Ruse SMC became Emil Petrov, who organized and managed it with competency. The school widened its alumni by including pupils from the 3rd to 7th form as a very important foundation for reaching notable achievements in the higher school forms.

It should be noted that some math instructors, who traditionally dealt with higher-form students, started to teach pupils in the lower forms aiming to cultivate earlier the spirit of the **special elite group**, as it guaranteed reaching of remarkable achievements on math competitions.

Historically important for the SMC life was the year 1969 when its alumni came back as math instructors after graduating their higher mathematics education with honors. They actively supported the work at the SMC sharing their profound knowledge of mathematics and the experience from the IMOs. Some of them were: Svetoslav Bilchev, Docho Trifonov Dochev, Petar Rashkov, Ivan Ginchev, Stepan Terziyan, Ognyan Enchev, Biser Madzharov, Svetoslav Gaidov, Tsanko Donchev and many others as well. On their initiative and following the model of Malaya Krimskaya Academy, in 1970 **Ruse SMC** became the first Bulgarian **School Academy** including 3 departments: for pupils from 3rd to 5th form, students from 6th to 8th form and from 9th to 11th form.

What if not a public acknowledgement of Ruse SMC authority are the **Winter Mathematics Competitions (WMC) established 26 years ago** on the initiative of the Union of Bulgarian Mathematicians (UBM) and the management of Ruse SMC in the face of Prof. Docho Dochev as the greatest **mathematics event**. The WMCs were held for the first time in Ruse on May 17th, 1982. They were the first national student math competitions. For the first time a competition in Informatics was held with the participation of 18 students from 9 regions. In 1984 the WMCs included the first competition in Mathematics and Computer Linguistics (MCL).

Lately, the Informatics contests were enhanced with other events like Spring Tournament-Plovdiv, Republic Olympiad, International Olympiad, Balkan Olympiad, Spring Tournament-

Blagoevgrad, Spring Tournament-Yambol, Winter Tournament-Shumen.

Ruse SMC has **8 participations in the International Informatics Olympiad** :

- Teodor Tonchev (1989 and 1990) – gold medals in Pravets, Bulgaria and Minsk, ex- Soviet Union;
- Boris Dimitrov (1994) – silver medal in Stockholm, Sweden;
- Georgi Dimitrov (1995) – bronze medal in Eindhoven, The Netherlands;
- Petar Sabev (2000) – in Pekin, China;
- Svetoslav Kolev (2003) – bronze medal in USA, (2004) – silver medal in Greece and (2005) – silver medal in Poland.

Other **6 participations – in the Balkan Informatics Olympiad (BIO)**:

- Georgi Dimitrov (1995) – bronze medal in Varna, Bulgaria;
- Petar Sabev (2000) – bronze medal in Skopje, Macedonia;
- Stoyan Hristov ((2001) – silver medal in Albania;
- Svetoslav Kolev (2003) – silver medal in Romania, (2004) – silver medal in Bulgaria
- Georgi Gurchev (2007) – bronze medal in Belgrd

One can be amazed by the apostle devotion of Assos.prof. Katalina Grigorova who is a faithful lecturer and leader of the teams in Informatics working side by side with Assist.prof. Plamenka Hristova and Daniela Todorova, PhD.

The **competitions in Mathematical and Computer Linguistics (MCL)** have been also enhanced. In historical aspect it should be noted that in 1982 an experimental competition in MCL was held in Plovdiv and in Stara Zagora – the first international tournament in MCL. The first competition in MCL was conducted with students from foreign language schools in 1984, in Plovdiv.

Participants in IOs in mathematics and linguistics in Moscow were:

- Nikolay Barzev - 1990.;
- Lina Petrakieva - 1991.;
- Ivan Dobrev – 2001 second place and 2002 first place;

In the IO's in MCL , the participants were as follow:

- Ivan Dobrev – 2003 Borovets third place, 2004. Moscow first place and 2005 first place;
- Radina Petrova – 2004 Moscow;
- Denica Dimitrova – 2004 Moscow;

Definitely for the recent years **Ruse Mathematics and Computer Linguistics School is one of the most successful schools in this field throughout the country**. It owes its results to the tireless efforts of its managers – **Galya Docheva (1984-1989), Boryana Kuyumdzhieva and Assist.prof. Iliana Raeva (since 1986)**.

A new form of extracurricular activity is the performance of student-to-student contest in Informatics that is organized for the 4th year by students. Representatives from the students' section of the UBM compose the problems; they are also questors and appraisers. The contest is financially supported through the incomes of Ruse SMS.

All of these results are thanks to the tireless efforts of teachers like the honoured educator Matei Popov, Yordan Yordanov, Kosta Stefanov, Lyubomir Dinkov, Yotov Kunchev, Nikolai Nechev, Vyara Popova, Petra Zlateva, Katinka Kuzmanova, Ivan Vasilev, Tsanyo Tsanev, Michail Tamnazov, Emil Petrov, Stoicho Ivanov, Ivanka Mineva, Petar Kirilov Petrov, Mitko Hristov Kunchev, Ganka Dimitrova, Todorka Tsvetkova, Aneliya Penkova, Stoyan Dochev, Angel Marinov, Margarita Manukova, Marina Atanasova, E. Sabeva, E. Avramova, Miroslava Kostadinova, Rosen Chaparov, Boryana Kuyumdzhieva, L. Stankov, Lidiya Racheva, Yordanka Dimitrova, Nedka Dimitrova and the inspectors in mathematics – Kostadin Manasiev, Trifon Semkov, Danyu Mihailov, Diana Milanova, and the university lecturers – Prof. Docho Dochev, Assoc.prof. Svetoslav Bilchev, Assoc.prof. Petar Rashkov, Assoc.prof. Docho Trifonov Dochev, Prof. Stepan Terziyan, Assistant professors Stefcho Dokov, Rumen Raev, Rumen Raev, Todor Mitev and Yuri Kandilarov, the directors of the Centers for Student's Technical and Scientific Researches (CSTSR) – Parvanov, Svetoslav Mirchev, Petinka Ilieva and Velislav Yonchev.

Ruse eminent educators in Mathematics, Informatics and Mathematical Linguistics have been always keeping close contacts with colleagues from Sofia and other places throughout the country. The extracurricular activities in Mathematics owe much to the contributions of academicians L.Iliev, P.Kenderov, Blagovest Sendov and Associate Member Stefan Dodunekov.

Risking that a talented Bulgarian mathematician might be missed, here is the list of members of the SMC, who are now working or studying worldwide at famous universities, scientific centers, banks, firms, etc.: Ognyan Enchev, Svetoslav Gaidov, Zdravko Milushev, Rositsa Dodunekova, Zvezdelina

Stankova, Yanka Stereva, Evgeni Belogai, Georgi Popov, Biser Madzharov, Elmira and Ivelina Popovs, Lyudmil Katsarkov, Sivia Encheva, Stefcho Dokov, Nikolai Genov, Boris Kovachev, Georgi Dimov, Tanya Stoyanova, Evgeni Nikos, Iskra Strateva, Plamen Stefanov, Deyan Palezhev, Nikolai Stoikov, Razvigor Osikovski, Lachezar Stoyanov, Nikolai Mateev, Borislav Deyanov, Miroslav Karamanev, Lyubomir Borisov, Teodor Tonchev, Georgi Tuleshkov, Gencho Nankov, Romyana Tsenkova, Daniela Todorova, Vladimir Badzhachev and many others.

On the occasion of the 40th anniversary of Ruse SMC Zvezdelina Stankova – one of the first 15 talents of Bulgaria, who were granted American scholarships for studying in the US, doctor of Mathematics in Harvard, participant in two IMOs – 1987 in Cuba and 1988 in Australia, as well as in the Balkan Olympiad in 1986, wrote to Assoc.prof. Svetoslav Bilchev about the years of training at Ruse SMC and her participation in the IMOs the following:

I would like to underline that if I was not a member of Ruse SMC I would not be able to make such profound achievements in Mathematics. In fact my interest for Mathematics was stimulated and expanded a lot during my training at the SMC. My performance at the IMOs and later in the **USA at the Brinmor College and Harvard University** had been always laid on the deep and extended basis of Math knowledge and skills acquired at Ruse SMC.

Another important thing that should be noted is the establishment of **San Francisco Bay Area Math circles**, resembling the Eastern-European Math circles, and especially Ruse Students Mathematical Circle. Together with Russian and American mathematicians and teachers we created a number of Math schools, the most successful being the **Berkeley Math Circle** where classes are conducted 2 hours each Sunday at the California University in Berkeley. For the latest 3 years since the Math schools were founded, we managed to raise the level of Math knowledge and the interest of the young mathematicians to such an extent that last winter 10 of all 30 students, who had been invited to attend a training camp in USA in connection with the International Math Olympiad, were our Bay Area students. For the last 3 years we had always had a participant in the American team trained for the IMO, and last summer we had even two participants – they brought 3 gold and 1 silver medals from the IMO. I am one of the leaders of the US Math team during the last 3 years.

Similar Math circles were relatively unknown in USA and we were the pioneers who developed highly organized and recognized Math schools in USA. It would not be immodest to say that I am the main Organizer and coordinator of the complete project and that the whole model was based on my unpretentious experience gained at Ruse SMC.

The full text of the program of our Math school can be found on <http://mathcircle.berkeley.edu/>, including the academic curriculum, the main themes, lecturers and even concise contents of the lectures.

This letter is some kind of an evaluation of our efforts and it shows that our experience gathered by the year of 1989 was implemented almost one-to-one on the American land into the American conditions, where more attention is paid on a moderate student or a weaker one than on future Math talents. Currently, American Math circles are on the way that we had passed long ago utilizing not only our model in details but the minds born in our country.

In August, 2000, in Japan, Alexander Soifer from Colorado University proudly stated that for years he had been in one team with Zvezdelina allotted to evaluate the results of the participants in the highest rounds of the Math Olympiad in USA.

What a recognition for the Bulgarian Mathematics, for Ruse Students Math Circle, for its talented students, instructors and leaders!