



A few words about the Young Physicists' Tournament

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I am very happy to be present at the glorious anniversary of the Tournament, and to welcome the participants, the colleagues, and the friends. This essay is to say a few words about the history of the Tournament.

Before the beginning

The IYPT, as an international competition, did not arise out of nothing. It was preceded by a long period of formation and development in the Soviet Union.

Back in 1979, a collective Physics Fight was held at the school affiliated with Moscow State University. Seven teams from Moscow attended this Physics Fight. We distributed the problems in advance and gave the contestants a sufficient time for home research.

I asked a few undergrads at Moscow University to help preparing these problems. In the end, we had 17 insane problems. Here are two examples of what the problems looked like,

- Oil tanker: “An oil tanker fell apart in the ocean. What would be the surface area of the oil stain one hour later?”
- Joke: “Strange things happen. If a black stick is put into snow, the snow will melt around the stick. Investigate the phenomenon.”

The participants enjoyed this type of competition, and it was decided to go on with such meetings. The name “Young Physicists' Tournament” was not yet invented at this early moment.

When I was preparing the next team-based Physics Fight, I was lucky – I cannot call it otherwise – to see and understand that an entirely new intellectual competition was born that differed fundamentally from the Physics Olympiads or the research conferences for students.

Physics Olympiad is a “short running event” and always stressful. In a few hours, one has to

extract out of himself everything he had earlier learned and had understood.

In a conference, students do research projects, and interesting reports are presented. However, it often happens that only the student and his advisor fully understand such a report. It would be great, I thought, if many students work on just the same selected problems and later discuss these problems. All teams would be then enough familiar with the topic.

In a theoretical Physics Fight, no task was experiment-oriented, and only a few hours were given to prepare reports. There's little team work, little scientific enquiry, and all looked just like another problem-solving test. However, I noticed that a Physics Fight could be an interesting discussion platform, if improved.

Continuation

The name “Young Physicists' Tournament” was then born. I wrote the first set of regulations for the Tournament, and the next competition (the 2nd YPT) was held with the new name.

I must say that no one had to persuade participants to join the 2nd YPT.

The creation of the new type of competition was met with great enthusiasm by physics teachers at Moscow schools with advanced physics curriculum, by people from the Physics Department at Moscow State University, and by the editorial office of the journal “Kvant”.

Many of them understood, no worse than I did, how attractive was the Tournament. They did not only help me to organize it, but directly and unambiguously demanded the continuation.

It is necessary to clarify that the first YPTs encompassed Moscow and its suburbs, and were made possible only due to the support of Physics Department, Moscow State University. The University offered us rooms, and people from the Physics Department took active part in the jury. All of preparation and organization of these first competitions relied on pure enthusiasm, did not require any intervention by education officials, and did not need any money. Evgeny Velikhov, vice-president of the Soviet Academy of Sciences, offered us support and patronage.

Let's go international

Gradually, thanks to the journal “Kvant”, the information about the Tournament became widely known across the country. At the same time, Perestroika was announced by Mikhail Gorbachev.

At some point I got a phone call from someone I never knew before. This person was very interested in the Tournament and asked endless questions. I suspect that he had been following the progress reports about the Moscow-based YPTs in the journal “Kvant”. We first met at a station

of Moscow metro. He was Zdeněk Kluiber, later the leader of the Czechoslovak delegation, who, very sadly, is no longer with us. Zdeněk soon became a real pillar of the IYPT movement and considered the Tournament as the most important business of his life. His contribution to the IYPT is tremendous. At a later point, the first anniversary, the 10th IYPT was held in Zdeněk Kluiber's home country, in the city of Cheb, in an atmosphere of exceptional solemnity that left indelible memories. I am pleased to call Zdeněk a Tournament Knight.

Following discussions and preparations, with the assistance of the Komsomol's Central Committee and of the Soviet Ministry of Education, the 1st Soviet and International YPT was held in Moscow in March-April 1988. It was attended by 28 teams from different cities and republics of the Soviet Union, the delegations of Bulgaria and Czechoslovakia, and an observer from the German Democratic Republic.

An important role in organizing this event was played by Lyudmila Shvetsova, secretary of the Komsomol at the time. She is now the vice-speaker of Russian State Duma and sends her warm greetings to all participants of this Tournament.

Meanwhile, in the sense of internationalism, the 1st IYPT was very modest, because only two non-Soviet teams took part in it. But the start was given, everything was in place, and we enthusiastically began to prepare for the 2nd IYPT.

The 2nd IYPT also took place in Moscow from March 24 to April 2, 1989, and was combined with the 11th YPT. At this time, the national Soviet part and the International part of the IYPT were separated. First, the Soviet Tournament was held, in which both national and international teams fought as rivals. So to speak, this was done to introduce them into the subject. Then, there was the International Final. It was attended by eight teams, and we have kept the full list of participants of the 2nd IYPT.

It became clear after this Tournament that the international development of the IYPT was irreversible, and it was necessary to consolidate this fact by official documents. The International Organizing Committee was then organized at a meeting in Moscow in 1989.

Starting from the 3rd IYPT, the Tournament went confidently on the international scene, and the number of participating countries was continuously increasing.

Surviving the collapse

The 3rd and the 4th IYPTs were held in the USSR, while the 5th and the 6th IYPTs were already in independent Russia.

Therefore, just in between of the 4th and the 5th IYPTs a giant Empire collapsed. Lots of things collapsed and fell apart – which is quite normal – but the IYPT did survive, and virtually did not

notice this historical cataclysm.

The secret of this stability was simple: I was able to convince the followers of the IYPT in a quick transition to the capitalist way of organization, "We have to pay for anything." (Saying honestly, it was not too hard to do so.) The Russian and foreign delegations were invited to pay the needed registration fee for participation.

Early Knights

Lots of noble names are on the first IOC-1989, and some of them were destined to become the Tournament Knights.

They and others were the outstanding people who deeply embraced the ideas of the IYPT joined the work in their respective countries or regions, and contributed to the international movement. I would like to name some of them.

- Hans Jordens, who organized the 7th IYPT in Groningen. It was the first IYPT held outside Russia. We lived on a river boat, navigated on the channels, and observed the beautiful country of the Netherlands. This was memorable and wonderful. It was on Hans Jordens' river boat, when the IYPT sailed out into the World Ocean;
- Zdeněk Kluiber, in Czech Republic, whom I mentioned before;
- Tatyana Korneeva, my most intimate friend and closest colleague with the IYPT (and besides my spouse);
- Anne Holvast, who led the Dutch delegation to the IYPT for several years;
- Andrzej Nadolny, Poland, who later organized the 8th IYPT;
- Zsuzsanna Rajkovits, Hungary, who stood together with Lajos Skrapits and never left the IYPT;
- Leonid Markovich, Belarus;
- Valery Koleboshin, who was joined by the Knight Pavel Victor, in Ukraine;
- Gia Laskishvili, in Georgia, who later organized the 9th IYPT;
- Stephen Martin and Nancy Alderson, in Great Britain;
- Valentin Lobyshev, in Russia;
- Rudolf Lehn, in Germany, who joined the IYPT later, but won an absolute authority as a Knight.

There are many more Knights that I can name now. I offer them my compliments and thanks.

And certainly the main wealth of the Tournament is its young participants. For many of them, the IYPT was an important stage in their growth and education.

I will not now say more about the history. Moreover, the role of the historian is very successfully taken over by Knight Ilya Martchenko. We wish him continued success.

I think it is now appropriate for me to name three main features of the Tournament.

Features of the IYPT

Problems: The tasks for the Young Physicists' Tournament are always open-ended problems. Their most important feature is being relevant at many various levels. Such problems can be addressed by students, physics teachers, serious scientists, and entire scientific groups. Each can achieve notable results at their level.

The Tournament has now matured and settled down, and rightly so. When it was just born, it was inherent in the excitement of youth, which manifested itself in the selected problems. Here are good examples of this:

- "Quietest snow": everyone knows what a snowfall is; the question is to determine the intensity of the sound produced by a snowfall. I know an approximate answer to this question.
- "Ostrich egg": How long would it take to cook a hard-boiled ostrich egg? Has anyone tried this? How to solve this boundary value problem of heat conduction in partial differential equations? Not for a ball or an ellipsoid, but for the eggs. However, the task is no longer too complicated with the computers.
- "Orlov trotter": The horse is covering the standard racing distance on skates, on an ice track. What would be the record time? This question is of course insane. No one solved this problem, but an estimate says: the root of two times faster than if the horse would be running.

Team work: The Tournament is about team work. An entire team works on the tasks. The team work allows maximum creative potential to develop for each team member; to conduct sophisticated laboratory tests; to help attract those who can really help in solving the problems.

This reflects the current situation in global science, and especially physics. It was possible to build the Large Hadron Collider only by a huge team of scientists and engineers, and today we hear of the great discoveries that could dramatically change our view of the physical picture of the World.

Debates: The Tournament is also all about debates. When the long and laborious process of solving a problem is completed, the Tournament goes into the immediate competition, when the teams meet at Physics Fights. The Rep-Opp-Rev framework is a great way to implement this idea.

None of these factors would work separately. But when they are harmoniously merged into a whole, they make what is called Young Physicists' Tournament.

Introducing the Young Naturalists' Tournament

Over the past 3 years, Knight Elena Derevyagina and I organize a special YPT in Voronezh (a city in Russia in 600 km from Moscow.) It has a long name: Junior League Young Physicists' Tournament. In fact, it is an YPT with simplified rules and aimed at students aged 12 to 16. Some problems are taken from the IYPT.

It was an experiment.



The IYPT introduced to Prince Philip, Duke of Edinburgh, in Cambridge, UK.

I formulated the conclusion of this experiment in the following manner: "The IYPT should have a young brother, named Young Naturalists' Tournament (YNT.)"

The outline of the YNT: The methodological framework is same as at an YPT with Rep-Opp-Rev scheme. The participants are under 16. A team consists of six students and two teachers. The topics are from physics, chemistry, biology, and mathematics. All problems (except mathematics) must involve observations and experiments. The Tournament is open, i.e. the teams from any country can join. The Tournament is launched in September 2012, the Russian Finals are in December 2012, International Finals are in April 2013.

The YNT would bring something into the current IYPT: motivated and experienced participants, talented young men and women who are fascinated with science.

The presentation of this new Tournament will be held in September 2012. This will be done on the webpage <http://iynt2013.com>, on the pages of the journal "Potential", and via letters to the organizers of various national YPTs.

Great things from a great distance

As for myself, starting from the 11th IYPT, I moved away from the Tournament over the years. "You can never step into the same river twice," said Heraclites. However I always followed, with a great interest, its development, and was happy to hear about each its success.

"Great things are better seen from a great distance." 25 years is a sufficiently long temporal distance to see the enormous scale of the Tournament.

I am very grateful to the organizers for the invitation to this anniversary Tournament. I am happy because this allows me to dip into its creative atmosphere, meet my heart dear colleagues and friends.

Today, when seeing the delegations of 28 countries here, I feel proud that I was involved in the birth of this wonderful event, and I have no doubts in its future.