Problems for the 2nd International Young Physicists' Tournament

Olympiets Youth Center, Moscow, Soviet Union; March 24–April 2, 1988 [1]

Critical edition: translated, restored, and commented text [2]

Squamps are hunted from the inside only.
S. Lem [3]

1. Invent yourself [4]

Develop and construct a device for demonstrating the wave properties of sound in air. [5]

2. Noon

Is it possible to call "noon" the moment in the middle of the time interval between sunrise and sunset? Using a calendar, you will easily notice that throughout the year this moment "drifts" relatively to a certain moment of time. Explain the cause of this effect. [6]

3. Tides

Estimate the heights of the tides in the Black Sea on April 1, 1989. [7]

4. Rolling friction [8]

Investigate how the friction force depends on speed. To be more specific, consider the rolling of a wooden puck on wood (a wooden surface of a table.)

5. Clock [9]

You have visited a planet and you plan to return to it in ten thousand or even in a million years. What clock would you leave on this planet to measure precisely the time of your absence from the planet? [10]

6. Rainbow [11]

Is it possible that three or more rainbows can appear on the sky simultaneously?

7. Sparks [12]

When knives are sharpened on a grinding wheel, sparks fly away. Most often, a single spark bursts apart in all directions at the end of its flight. Explain the phenomenon.

8. Metro [13]

Suggest the methods and measure the speed of a metro electric train midway between two stations. The same is to be done for a bus in which you are going, if there are no reliable distance signs on the route.

9. Astronaut [14]

What maximum travel distance may an astronaut expect [15]

a. at the modern level of technical development?
b. in the far future, when practically all technical difficulties will be overcome?

10. Aqueous planet [16]

What amount of water may form a planet with a constant mass

a. far from the Sun;
b. in a distance of 1 *AU* from the Sun?

11. Mosquito [17]

At what maximum altitude can a mosquito fly?

12. Sand in a tube [18]

A glass tube is installed vertically and its lower end is tightly closed with a cap. [19] The tube is filled with some sand. During what time T will the sand flow out of the tube, when the cap is opened? Investigate the dependence of T on the following parameters: size of sand grains d, length of the tube L, diameter of the tube D, [20] at a constant degree of packing of sand (you have to introduce and validate this parameter on your own.) We ask you not to consider high degrees of packing for comparability of the results. It is preferred that 10 $cm<L<1$ m.

13. Electrolytic cell [21]

Prepare some saturated solution of table salt NaCl. [22] Immerse two carbon electrodes (sticks from a manganese-zinc battery *373* (*R20)* [23]) into it [24] so that their metal contacts are not immersed into the solution. Investigate

a. the current-voltage characteristic of the created electrolytic cell in the range of currents from 10 μA to 50 mA; [25]
b. how does the current-voltage characteristic change as the solution is diluted?

14. Fence [26]

A remote large object is separated from you by a picket fence. It happens that you can see the object if you do not stay near the fence, but go along the fence in a car. Explain this phenomenon. What speed is sufficient if a is width of a fence board, b is width of the gaps, L is distance to the fence ($L \gg a, b$), γ is angular size of the remote object, $\gamma \gg \frac{a+b}{L}$. [27]

15. Electron

An electron with a velocity of $v=3\cdot10^5$ *m/s* flies with an impact parameter *d* aside a metal ball with a radius of a few centimeters. [28] The charge of the ball changes with time under a law $q(t)=q_0\cos\omega t$, where $q_0=10^{-3}$ *C*, [29] $\omega=10^8$ s^{-1}. [30] Build a dependence plot of the deviation angle φ of the electron on the impact parameter *d*. [31]

16. Information

How many bits of information did you receive after having read the problems of a YPT? [32] How many bits of information would you receive when looking at a geographic map with the size of a paper sheet? [33]

17. Karlsson

With what rate [34] should Karlsson eat jam not to get thinner during the flight? [35]

Notes

[1] These dates are confirmed in detailed reports [Kvant 1989], [GTI 1991], [MGU 1989] published after the event, although [MGU 1989] is providing an extended schedule of March 24–April 5, 1989, including thus the *International Consultative Meeting*, held after the IYPT proper

[2] This edition does not include possible *Problems for Finalists*, *Problems for Captains*, or *Problems for Observers*, that might have been proposed at certain stages of the 2nd IYPT for rapid, immediate solution. There is currently little to no information about such problems at the 2nd IYPT, while their existence is plausible.

Problems for the Young Physicists' Tournaments of 1989 first appeared in August 1988 in Evgeny Yunosov's article in *Kvant* magazine [Kvant 1988], submitted for publication before June 15, 1988. These problems, in the Russian language, were intended to be used at the Correspondence Rounds of 1988–1989 for local Soviet students.

The problems discussed during the event on March 24–April 2, 1989 differed significantly from the *Kvant* problem set, as confirmed by a typeset booklet titled *Young Physicists' Tournament: Summary Document of the 2nd all-Soviet and International Young Physicists' Tournament* (*Турнир юных физиков: итоговый документ II Всесоюзного и Международного турниров юных физиков*) printed shortly after the event [MGU 1989]. The booklet clearly states that the new problem set was indeed recognized by the LOC as the genuine problem set of the 2nd IYPT. There is *almost conclusive* independent corroboration for this fact from participants of the 2nd IYPT [Zelenko 2007], [Nosov 2009], [Yarovy 2009], [Kopelevich Shabat Yablonskiy 2010].

Nine problems (Nos. 4, 5, 6, 7, 10, 11, 12, 13, 14) were replaced with entirely different tasks, some others (No. 3, 9) had important factual changes, and there were more minor editorial amendments.

A few non-Soviet participants recall, however, working on particular problems (Nos. 5, 6, 13, 14) from the initial list, but can identify some of the new problems (No. 11) [Bachev Piperov 2010], giving grounds for a suggestion that the replacement happened quite shortly before the event.

Two of the new problems (Nos. 5, 9), are visibly identical to problems No. 1 and No. 9 of the *Problems for the Correspondence Collective Competition of Young Space Researchers' Tournament* (*Задания заочного коллективного конкурса Турнира юных исследователей космоса*) published a Evgeny Yunosov's article in *Kvant* magazine in February 1989, but submitted for publication before November 23, 1988 [Soyuz 1989].

The list of 17 problems in Czech language titled *Problems for Young Physicists' Tournament 1988—1989* was published within Zdeněk Kluiber's article in *Rozhledy mat.-fyz.* in May 1990, more than a year after the competition [RMF 1990]. The source document is not reported, while the translation is made most probably from the Russian. It may be speculated, with no solid grounds, that the editorial board of the journal might have contributed to the translation, reprinting also the list of problem authors, reminiscent of the same list in [MGU 1989].

The list of 17 problems in Czech language titled *Problems for International Young Physicists' Tournament. Russia — Moscow — 1989* (*Úlohy mezinárodního turnaje mladých fyziků. Rusko — Moskva — 1989*) was published by Zdeněk Kluiber in review book *Turnaj Mladých Fyziků* in 1996 [Kluiber 1996]. This Czech translation is found to be fully independent from the 1990 version, with quite different style, wording and factual nuances. In comparison to 1990 Czech, Slovak and Hungarian texts, it introduces different or extra parameters, details, specifications and numerical values in the problems Nos. 3, 5, 10, 13, 15. The source language, the source document and the year of this translation are not reported.

The Slovak translation, published in a 1996 brochure, is titled to be translated from 1990 Czech *Rozhledy mat.-fyz.* translation [TMF 1996], providing a direct reference to that source. There is furthermore all linguistic evidence that the Slovak text follows the 1990 Czech text closely, and may not be considered a translation from the 1996 Czech text, or vice versa. The Slovak is linguistically very close to Czech and, to a lesser extent, Russian.

In spite of minor factual differences, it might be assumed that 1990 Czech [RMF 1990], 1996 Czech [Kluiber 1996], and Hungarian [Rajkovits 2003] versions are the translations of a single Russian source text, or very close text editions.

An English version was published in 2006 by Silvina Simeonova in the *Proceedings of the 16th IYPT* on the basis of the text provided to the publishers by Zdeněk Kluiber [Proceedings 2006]. The year of translation and the source language are not reported. This version, however, is almost certainly translated from the 1996 Czech text because *all* notable distinctive details of the 1996 Czech text are reproduced in the 2006 English text, Zdeněk Kluiber is directly acknowledged by Silvina Simeonova as the source, and many linguistic nuances are similar in both versions.

The problems for the 2nd IYPT were originally prepared and distributed to the participants in Russian language, as it was the main working language at the entire event (non-Russian speaking teams were assisted by interpreters) [Zelenko 2007], [Nadolny 2008], [Yufryakov 2008], [Kopelevich Shabat Yablonskiy 2010].

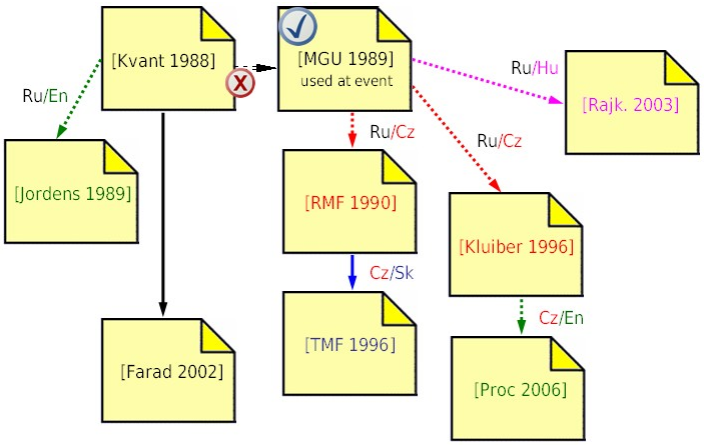
There is indirect evidence that copies a text similar or identical to [MGU 1989] were distributed to non-Moscow Soviet participants in early 1989 [Nosov 2009].

Two-page typeset document titled *Young Physicists' Tournament / Questions for the Collective Competition by Correspondence* was provided to the Dutch delegation leader Hans Jordens by Evgeny Yunosov in 1988 or 1989 [Jordens 1989]. This document, the official English translation of the *Kvant* problem set, has minor deviations from the source: numerical values are missing in formulae, some details read differently, inaccuracies in translation exist.

So called *Problems for the 2nd IYPT* appeared in 2002 on Evgeny Yunosov's *Faraday Tournament* website [Farad 2002]. However, they exactly reproduced the list of the Problems for the Collective Correspondence round published in *Kvant*. Most likely, the name of the problem set was given by mistake. Besides, the *Faraday Tournament* publication had included the list of physical demonstrations that have been discussed at the 2nd IYPT.

The primary "standard" source is the Russian text of [MGU 1989], compared against the available Russian [Kvant 1988], [Farad 2002], [Nosov 2009], Czech [RMF 1990], [Kluiber 1996], Slovak [TMF 1996], Belarusian [Zelenko 2007], Hungarian [Rajkovits 2003], and English [Proceedings 2006] accounts and translations. Every notable discrepancy among language versions is being discussed.

An early draft of this translation has been performed in October 2007 from Slovak and Russian texts.



The history of text transmission: colors indicate the languages of the sources (black for the Russian, red for the Czech, blue for the Slovak, green for the English, pink for the Hungarian); dotted lines indicate that *notable* factual inaccuracies were introduced with translation or copying; the tick indicates the version taken as "standard" for the current edition; the cross indicates that the amendments were *major* (many problems replaced)

[3] Translated from Polish by Michael Kandel (Stanisław Lem. *The Star Diaries*. New York, Avon Books, 1976.) Original version: „*na kurdle poluje się od środka*", "a kurdl is hunted from the inside" (*Polowanie na kurdle. Instrukcja dla cudzoziemców* // Stanisław Lem. *Podróże Ijona Tichego. Podróż czternasta* (zbiór *Dzienniki gwiazdowe*, Iskry, 1957). The Russian version of the epigraph reads «*На курдля охотятся изнутри*» and quotes the translation either by Z. Bobyr (Путешествие четырнадцатое / Пер. З. Бобырь // Лем, С. Звёздные дневники Ийона Тихого. — М.: Мол. гвардия, 1961. — С. 17—41) either by D. Bruskin (Путешествие четырнадцатое / Пер. Д. Брускина // Лем, С. Возвращение со звёзд; Звёздные дневники Ийона Тихого. — М.: Мол. гвардия, 1965. — С. 43—67.) This epigraph is present only in the *Kvant* text [Kvant 1988] and in the brochure [MGU 1989], appearing as an epigraph to the entire tournament

[4] The Russian traditional title «Придумай сам» has been internationally translated as "Think up a problem yourself" at the 6th IYPT, the 7th IYPT, and the 8th IYPT, but later most commonly as "Invent yourself" (at the 9th IYPT, the 10th IYPT, and the 11th IYPT.) "Invent yourself" is also used in the Soviet OC's translation for the 4th IYPT. Other versions are: "Invent for yourself" (13th IYPT), "Your invention" (Soviet OC's translation for the 3rd IYPT), "Think for yourselves" (Soviet OC's translation of the *Kvant* text for 1989) [Jordens 1989], "Invent it yourself" (1992 translations for the 5th IYPT)

[5] In [Jordens 1989], the problem reads: "*Think for yourselves.* Make a device for demonstrating wave properties and sound propagation in air." "*And"* (not "of") might have been a misprint. In the problems for the Correspondence Round [Kvant 1988], the laws of sound propagation were mentioned: "Develop and construct a setup for visual demonstration of the wave properties of sound propagation in air, and the laws of it". The wording is made overall shorter in [MGU 1989]

[6] In [Jordens 1989], the problem reads: "*Noon.* Can we call "noon" the moment exactly at the middle of the time-stretch between sunrise and sunset? With the help of a calendar you can easily make sure that this moment wanders during the year. Explain the cause of this effect"

[7] On "December 12, 1988", according to the problems for the Correspondence Round [Kvant 1988], [Jordens 1989], as well as the 1996 Czech [Kluiber 1996] and 2006 English texts [Proceedings 2006]. This detail is important for identifying the sources of each translation and the history of corrections in the original Russian texts

[8] A different problem at the Correspondence Round [Kvant 1988]: "*Puddle and wind.* Measure the parameters of the waves that are excited by wind in a shallow basin. Investigate the dependence of wavelength on the speed of wind." In [Jordens 1989], the problem reads: "*The puddle and the wind.* Determine the parameters of the waves caused in a puddle by the wind. Study the dependence of the wave length on wind speed"

[9] A different problem at the Correspondence Round [Kvant 1988]: "*Chladni patterns.* Research the Chladni patterns for a disk and for a square." In [Jordens 1989], the problem reads: "*Khladni figures.* Study the Khladni figures for the disk and for the square"

[10] "What kind of clock you have to leave on the planet for precisely measuring of the time during your absence from the planet", according to the 2006 English text [Proceedings 2006]. The Russian source for the problem [MGU 1989] is almost fully identical to the problem No. 1 in [Soyuz 1989]

[11] A different problem at the Correspondence Round [Kvant 1988]: "*Soap bubble.* What determines the "lifetime" of a soap bubble? Why does it pop and how does it happen?" In [Jordens 1989], the problem reads: "*Soap bubbles.* What determines the "lifetime" of a soap bubble? Why does it burst and how does that happen?"

[12] A different problem at the Correspondence Round [Kvant 1988]: "*Leskov.* Explain how has the forger Maroy shortened English bolts. (N. S. Leskov. "The Sealed Angel".)" In [Jordens 1989], the problem reads: "*Leskov.* Explain how the blacksmith Maroy shortened the English bolts. (Leskov N., "Запечатленный ангел", "Commemorated Angel")"

[13] The station names were specified in the problems for the Correspondence Round [Kvant 1988]: "Suggest methods and measure the speed of an underground train between the stations *Universitet* and *Prospekt Vernadskogo* (it is for the Muscovites.)" The entire problem reads shorter in the 1990 Czech and Slovak, and even more shortened in 1996 Czech and in both English translations: "*Underground.* Determine the speed of the underground train between two stations" [RMF 1990], [TMF 1996] and "*Metro.* Determine the speed of the train between two metro stations" [Kluiber 1996], [Proceedings 2006]

[14] The Russian source for the problem [MGU 1989] is fully identical to the problem No. 9 in [Soyuz 1989]

[15] In the problems of the Correspondence Round, the time of 50 years was specified [Kvant 1988]: "*Astronaut.* What maximum travel distance may an astronaut expect in 50 years of flight?" In [Jordens 1989], the problem reads: "*Astronaut.* What is the maximum distance of space travel during 50 years of flight?"

[16] A different problem at the Correspondence Round [Kvant 1988]: "*Moon atmosphere.* Imagine you have managed to create an atmosphere on the Moon with the composition as on the Earth. Describe its parameters and properties. How fast would it "get thinner" and how to maintain such an atmosphere?" In [Jordens 1989], the problem reads: "*The Lunar atmosphere.* Imagine you can make atmosphere in the Moon similar to that of the Earth. Describe its parameters and properties. How quickly will it disappear and can one conserve it?"

[17] A different problem at the Correspondence Round [Kvant 1988]: "*Mushroom.* It is surprising but sometimes mushrooms and even grass grow through a layer of asphalt. Explain these phenomena." In [Jordens 1989], the problem reads: "*Mushrooms.* It's surprising, but sometimes mushrooms and even grass grow through asphalt. Explain this phenomenon"

[18] A different problem at the Correspondence Round [Kvant 1988]: "*Weather forecast.* "A fall of a barometer means bad weather" — why this statement is most often correct?" In [Jordens 1989], the problem reads: "*The weather forecast.* Barometer falling means bad weather. Why this is usually valid?"

[19] The original Russian text is ambiguous, as the word «заслонка» can mean both a flat cap and a butterfly valve, which would imply more tunable parameters to investigate. Despite the wording «открыть заслонку» (*open*, not *remove* the item in question), it may be speculated that a device capable of throttling flow would be discussed in much more detail and its parameters would be introduced in the problem itself, similarly to the parameters of the glass tube. "Closed with a valve", according to the 1996 Czech and the 2006 English text. Just "tightly closed", according to the Slovak text

[20] The parameter "diameter of the tube *D*" does not appear in the Slovak text. The 2006 English text names it "diameter of the tube *B*"

[21] A different problem at the Correspondence Round [Kvant 1988]: "*Photoflash.* Lighten your teeth with a photoflash and observe their glow in the darkness (for that, you have to take off the cover of the camera flash, defend your eyes well, and open them immediately after the flash). Explain and research the phenomenon of afterglow." In [Jordens 1989], the problem reads: "*Photoflash.* Illuminate your teeth with a photoflash and observe

their luminescence in the darkness. For this purpose you must remove the cover from the photoflash, close your eyes well and open them just after the flash. Explain the phenomenon of afterluminescence"

[22] The sizes of the reservoir are introduced explicitly specified in the 1996 Czech and in the 2006 English text: "Prepare saturated solution of salt (NaCl) in the tank with sizes: depth 3 *cm*, width 10 *cm*, length 15 *cm*"

[23] The specification "sticks from manganese-zinc element *R20*" does not appear in the Slovak text. The Hungarian text names it "*373* (*R20*) manganese-zinc element"

[24] The 1996 Czech and the 2006 English text introduce and specify the distance of 4 *cm* between the electrodes

[25] "From *10 μA* to *50 μA*", according to the Hungarian and the 2006 English text

[26] A different problem at the Correspondence Round [Kvant 1988]: "*Triboluminescence.* How much sugar would you need to read a message (a few words) from your predecessor in a dark dungeon? You are out of matches and you have already thrown away your lighting." In [Jordens 1989], the problem reads: "*Triboluminescence.* How much sugar do you need to read a message (several words) from your predecessor in an underground vault? You have no matches and you have thrown out the lantern"

[27] The 1990 Czech text reads "$\gamma \gg \frac{a+b}{L}$", but the Slovak text relying on this Czech source reads "$\gamma \ll \frac{a+b}{L}$". The Hungarian version states "*γ>>(a+b)/L".* The 1996 Czech and the 2006 English texts do not introduce the variable *γ* and pose any conditions, but just say "the angular size of the remote object is $\left(\frac{a+b}{L} \right)$" [Kluiber 1996],"the angle size of the remote object is *((a+b)/L)*" [Proceedings 2006]

[28] Not "a few centimeters", but "1 *cm*", at the Correspondence Round, according to *Kvant* magazine [Kvant 1988]

[29] "$q_0=10^{-3}$ *C*", according to 1990 Czech, Slovak and Hungarian texts. The value disputably reads either $q_0=10^{-3}$ C either $q_0=10^{-8}$ C in [Kvant 1988], *q*=10 Coulombs in the 1996 Czech text, and *q=10 C* in the 2006 English text. The value is entirely missing in [Jordens 1989]

[30] "$\omega=10^{-8}$ s^{-1}", according to the Hungarian text. "$\omega=10^{8}$ s^{-1}", according to the *Kvant*, 1990 Czech, 1996 Czech, Slovak and the 2006 English text. The value is entirely missing in [Jordens 1989]

[31] The *Kvant* version of the problem included the final question "Can this phenomenon be used to explain Compton scattering?" It is missing in [Jordens 1989], as well as in 1990 Czech, Slovak, Hungarian, 1996 Czech and 2006 English texts

[32] The *Kvant* version read: "How much information (in bits) did you receive after having read these tasks of the Correspondence Round?" The 1996 Czech version read: "How many bits of information you have received when reading these tasks?" The 2006 English version read: "How many bits information have you obtained by reading this question?"

[33] The *Kvant* version read: "How much information (in bits) you would receive when looking on a geographic map with a size of a one page of text?" The 1996 Czech version read: "How many bits of information you would receive when looking on a one-page geographic map?" The 2006 English version read: "How many bits you obtain with view of a plane geographical map?" The Slovak version reads: "How many bits of information you would receive when looking on a geographic map with the size A4?"

[34] Original Russian «сколько варенья должен съедать Карлсон» should be understood in dynamic sense: "kilograms per minute of flight." The Slovak, Hungarian, 1989 English, both Czech and 2006 English translations provide a literal translation "how much jam." There is particular confusion among sources in spelling the name of Astrid Lindgren's *Kalsson*, with examples as *Carlson* ([RMF 1990], [TMF 1996]) and Kalson ([Kluiber 1996], [Proc 2006])

[35] An additional phrase explaining that "Traditionally, problem No. 17 has a humorous tone" is present in [Kvant 1988] but removed in [MGU 1989], and in the following 1990 Czech and Slovak texts. English translation [Jordens 1989] puts emphasis on the solution itself: "Usually the solution to the problem number 17 has a humorous angle." The 1996 Czech and the 2006 English texts specify that Karlsson (spelled *Karlson*) comes from an Astrid Lindgren's story and read, "We hope that you understand the solution of this problem by humor point of view"

Sources

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[Farad 2002] Evgeny Yunosov's *Faraday Tournament* official website (http://www.farad.ru, in Russian, retrieved in 2002)

[Kluiber 1996] *Úlohy mezinádodního turnaje mladých fyziků. Rusko — Moskva — 1989* // Zdeněk Kluiber. Turnaj Mladých Fyziků. Informace o nádodní i mezinádodní soutěži studentů výrazně talentovaných pro fyziku. Gaudeamus-MAFI, Hradec Králové, s. 22—23

[Proceedings 2006] *Problems for the 2nd IYPT*. In: Proceedings of the 19th IYPT 2006 (eds Silvina Simeonova, Myeung Hoi Kwon, Zvezdi, Sofia 2007), pp. 233–234

[Zelenko 2007] Private communication with Eugene Zelenko, Belarusian participant in 1989

[Yufryakov 2008] Private communication with Konstantin Yufryakov, Russian participant in 1989

[Nosov 2009] Private communication with Igor Nosov, Turkmen participant in 1989

[Yarovy 2009] Private communication with Ruslan Yarovy, Ukrainian participant in 1989

[Nadolny 2008] Private communication with Andrzej Nadolny, Polish delegation leader in 1989

[Bachev Piperov 2010] Private communication with Rumen Bachev and Stefan Piperov, Bulgarian participants in 1989

[Kopelevich Shabat Yablonskiy 2010] Private communication with Grigory Kopelevich, Vasily Shabat, and Alexander Yablonskiy, Russian participants in 1989

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[Soyuz 1989] Е. Н. Юносов. *«Союз» открывает турнир* // Квант, № 2, 1989, стр. 45, 61

[GTI 1991] T. D. Korneeva *et al*. Young Physicists' Tournament (YPT): A collective competition. Gifted Talented International, 7, 1–2, 86–95 (1991)

Translated, edited and commented by Ilya Martchenko. Originally translated and released from many secondary sources in October 2007, the authoritative Russian source found, shared by Vadim Manakin and Pavel Viktor in April 2011, revisions made until May 2011. This edition would never have been prepared without the early work in copying, translating, publishing and preserving problems, made in different years by Evgeny Yunosov, Pavel Viktor, Vadim Manakin, Zdeněk Kluiber, Jozef Brestenský, Zsuzsanna Rajkovits, Hans Jordens, Jaroslav Zhouf, and others, without cornerstone information from Eugene Zelenko, Igor Nosov, Ruslan Yarovy, Konstantin Yufryakov, Grigory Kopelevich, Vasily Shabat, and Alexander Yablonskiy on the ultimate problem set at the 2nd IYPT, and without proofreading and valuable suggestions made by Matej Ftáčnik, Tymofii Nikolaienko, Timotheus Hell, and Dahl Winters.

Authors of the IYPT problems were often reported in late 1980s and early 1990s. The *Kvant* text names them: V. B. Braginski, P. V. Elyutin, A. N. Korotkov, A. Yu. Kusenko, E. N. Yunosov. The 1990 *RMF* text and the *Summary Document* provide the list of V. B. Braginski, S. D. Varlamov, P. V. Elyutin, A. N. Korotkov, A. Yu. Kusenko, M. M. Tsypin, E. N. Yunosov, reminiscent of the authors who contributed to nine new problems at the 2nd IYPT, not present in the *Kvant* text.

Everyone who may shed more light on early IYPTs is kindly invited to contribute.