

2003 Samuel Beatty Contestant Report: Tianyi (David) Han

44th International Mathematical Olympiad in Tokyo, Japan

The International Mathematical Olympiad (IMO), which originated from Romania in 1959, is the most popular and challenging mathematical competition for high school students in the world. Six students are selected to represent each participating country. The competition lasts two days, and on each day, contestants are asked to solve three difficult math problems within 4.5 hours.

IMO 2003 was hosted by Tokyo, Japan and was held July 11-19. Students from 82 countries attended the competition. Because of its prestige and the challenging nature of the problems, I felt very fortunate to be selected as a member of the Canadian Team a second time. The team comprised of six students who ranked very high in the various national and international contests: Robert Barrington Leigh, Olena Bormashenko, Oleg Ivrii, János Kramár, Jacob Tsimerman and myself. Robert is from Edmonton, Alberta and the rest of us were from Toronto. Like me, the IMO was not new to Robert and Olena, who were members of the Canadian IMO team in 2002. On the other hand, it is interesting to note that the average age of this year's team may have been the youngest in the history of Canadian IMO teams, because there was one Grade 9 student (Jacob) and two Grade 10 students (János and Oleg).

The team was officially announced on June 3rd and the members were introduced at the annual CMS Awards Banquet which was held at the University of Waterloo on June 17th. On June 24th, we gathered in Calgary and started the IMO Training Seminar, which lasted two weeks. Traditionally, the seminar helps contestants get ready for the IMO both technically and psychologically. In the first four days, we were joined by some math-talented local students from Edmonton and Calgary, and we listened to morning lectures given by our coaches (Leader - Andy Liu, Deputy Leader - Richard Hoshino, Leader Observer - Robert Morewood, and Prof. Elena Braverman from the University of Calgary). In the afternoon, we wrote individual and team contests to warm-up and to get to know each other better. On June 28th, the team members moved to Banff for further training. Every day, we were given lectures and a written practice in the morning and three-hour mock Olympiads in the afternoon. Personally, I think the written practice was very helpful as it gave me the chance to discover some weaknesses that appeared in my

formal solutions. Also, our coaches chose topics that would improve our skills and give us a chance to fill the "holes". On the other hand, we were given a reservoir of IMO-level problems for self-training in the evening. At the beginning of the second week, our Leader (Dr. Liu) and Leader Observer (Mr. Morewood) started their trip to Tokyo to attend the International Jury and to be part of the selection process for the 2003 IMO problems. Meanwhile, the Chair of CMS IMO Committee, Prof. Bill Sands, and Prof. Terry Gannon from the University of Alberta joined the camp, and introduced us to some new mathematical ideas that might be helpful in solving IMO problems. Although we spent a lot of time working on math (from 9 a.m. to 6 p.m. every day), we still had various other activities. In Calgary, we visited the local zoo. In Banff, we appreciated the beautiful scenery and the very high quality of the accommodations. We had a chance to climb "real mountains" and to see the Columbia Icefield, which was also a reason why I felt very lucky to be a member of this year's team. Two weeks felt very short but were unforgettable to all of us. The 2003 IMO Team owes many thanks to BIRS, to the Samuel Beatty Fund, to the CMS, to our coaches, and to the local guests and other supporters who made it possible.

On July 10th, we flew to Vancouver and then to Tokyo, Japan for the actual IMO. A long flight of almost 14 hours and the 15-hour time difference between Tokyo and Banff made us all very exhausted. We knew that we would only have two nights to recover. We arrived in the airport of Tokyo at around 4 p.m., and met our guide who used to live in Calgary. After about a two-hour bus trip, we reached the National Olympics Memorial Youth Center where we stayed and wrote the competition. The contestants lived in three rooms in Dorm. B, while our Deputy Leader was housed in Dorm. A. Later, we also discovered that Dr. Liu and Mr. Morewood were separated from us, as usual, and were living in Dorm. D. Although the local weather was very humid we were very glad that we were in rooms with air-conditioning where we could get a good rest and be ready for the next two days. The accommodations in the National Youth Center were very modern and convenient for us, although we needed to get used to some Japanese customs, such as a public shower.

The IMO 2003 officially started with the Opening

Ceremony on July 12th. After a few opening speeches given by local organizers and the IMO Committee, each team was introduced when the members walked onto the stage with their uniforms or flag. Then we got the chance to wave to our Leader and Observer sitting in a separate section, before we watched the traditional Japanese cultural performance.

The actual competition started at 9 a.m. on the day immediately following the Opening Ceremony. After four and half hours' worth of hard work, we were still very excited and felt we had done very well, especially Jacob and Olena who appeared to have solved three and two problems respectively on that day. With a good night's sleep, we went to the second day's competition, and each of us appeared to have a good performance. We were very eager to know our results.

With the pressure behind us, the three days of excursions following the contest were very relaxing and enjoyable. We went to the park in Tokyo with our guide who was very helpful throughout our stay. We also played around at the National Youth Center, watching some local performances and trading Canadian pins and key chains for various souvenirs from other teams. On the second day, we visited some famous places in Tokyo including some ancient temples and museums, which gave us more educational information about the country. The last day was most exciting when we were given the opportunity to go to Tokyo Disney Resort – one of the largest Disneylands in the world with Richard Hoshino who had finished his coordination. Despite the local rainy weather, we played until we were exhausted (we came back around 11 p.m.) and had a very good time. In short, the excursions amused us and provided us with a chance to know the cultural background of a foreign country.

Although we were enjoying ourselves during these three days, our Leader's work just started. During the informal discussion with us about the problems in the afternoons of the two exam days, they had already got a general picture of our performance. Then they were busy marking our papers and preparing for the coordination with the judges. As we could see, they were working very hard to present the best parts of our uncompleted solutions for partial points. We were all very grateful to their effort on behalf of our team. At the end of each excursion day, we went to the score board to see the coordination progress. We then realized that we did extremely well, especially Jacob and Olena who appeared to have a very big

chance to get Gold. When we got back from the Tokyo Disneyland Resort, we got our final score. With a total of 119 points, Canada tied 12th out of 82 participating countries. This ranking matched the best performance since Canada started competing at the IMO. The top three teams were from Bulgaria, China, and USA.

Before the Closing Ceremony held on July 19th, we got to know our medal results: Jacob and Olena got Gold, while Robert, Oleg and I got Bronze, which was excellent. In the Closing Ceremony, we were awarded the medals and listened to speeches given by the Minister of Education of Japan and members of the 2003 IMO Committee.

This year, our teams broke two records in Canada's IMO history: Jacob was the youngest Gold medalist and Olena was the first female gold medalist in Canada, which made us very proud of them and Canada.

As Canadian IMO team members, the journey to Japan was unforgettable to all of us no matter what the result was. Personally, as a second-year team member, I am especially grateful to have been selected to represent Canada and very proud of our team's performance. I sincerely wish the best to future Canadian IMO teams. Finally, I will also express my sincere gratitude to the CMS, our Leader, Deputy Leader, Leader Observer, and all the others who helped and supported us in this year's IMO, particularly the Samuel Beatty Fund.