37th INTERNATIONAL MATHEMATICAL OLYMPIAD
BOMBAY, INDIA
5th-17th JULY 1996
Report by ADAM McBRIDE (UK Team Leader)

Introduction

This report chronicles events leading up to and during this year's International Mathematical Olympiad (IMO). As will become clear in what follows, the IMO was an enormous success mathematically. Never before at an IMO has every member of a United Kingdom team won either a gold or a silver medal. Both collectively and individually the team deserves hearty congratulations. Great credit must also go to the reserves who made the others fight hard for their places in the team, as well as to the small band of dedicated colleagues involved in training the team. It will also become clear that conditions in Bombay were far from ideal, which makes the team's success even more remarkable.

The IMO was the climax of many months of activity throughout the U.K. involving thousands of mathematically gifted school pupils. The pupils received the encouragement, guidance and wisdom of a small army of teachers from the secondary and tertiary sectors, all of them prepared to give up many hours of their free time for no financial reward. Individual pupils won certificates, prizes or medals but perhaps the biggest winner was the subject of Mathematics.

Mathematical Competitions

At this juncture, a short commercial break is in order. In UK schools we have many youngsters with great mathematical potential. Some go on to realise their full potential but, alas, many do not. At the age of 12 or 13, bright pupils are thirsting for knowledge and relish a challenge. If these pupils are not stretched mathematically, their fertile minds may turn to other things and be lost to Mathematics. Mathematical competitions present hard–pressed teachers with ready–made "extension material" suitable for 30–40% of each age cohort. There is now a range of such competitions covering all years in secondary schools. Yet the existence of such competitions is not well known to many teachers and even less well known to pupils.

Many competition problems require remarkably little mathematical knowledge but rely for their solution on a little flair and insight. The satisfaction when the penny drops can be great, while the patience and determination developed through tackling such problems are essential attributes for success in life in general. Mathematics is not a spectator sport. Pupils need to take part and the old Olympic ideal says that taking part is more important than winning.We can't all be winners but we can all learn from the experience.

We have a long way to go before we can match the participation rates of countries such as Australia. Readers of this report are probably already in the fold. However, I would ask all readers to encourage colleagues in neighbouring schools to enter the fray. A small amount of effort can produce considerable rewards. I should like to see increased participation from schools in Scotland, Wales and Northern Ireland. It was unfortunate that there were no girls in the later stages of this year's IMO selection process and greater involvement by the ladies (both pupils and teachers!) should be encouraged. The younger pupils are when they get involved, the better. This is where we shall find the seed–corn for mathematicians of the future.

After that commercial, we are ready to proceed.

Selecting the UK Team

The selection process got under way in November 1995 with the National Mathematics Contest (NMC) run by the Mathematical Association. The NMC is a $1\frac{1}{2}$–hour paper containing 25 questions, of which the first 15 are meant to be accessible to most contestants while the last few are meant to stretch the field. On this occasion around 33000 pupils took part. Based largely on their performances in the NMC, around 600 pupils entered the British Mathematical Olympiad Round 1 (BMO1), a $3\frac{1}{2}$–hour paper with 5 questions held in January 1996. Thereafter 100 pupils were invited to take BMO2 another $3\frac{1}{2}$–hour paper with just 4 questions, held in the middle of February. From this group exactly 20 were selected for a residential Training Session at Trinity College, Cambridge at the end of March. Selection for this Training Session involved several criteria. In addition to those expected to be in the IMO team this year, a number of younger students were blooded as an investment for the future. The chosen 20 had 4 or 5 intensive 2–hour sessions each day dealing with Algebra, Combinatorics, Functional Equations, Geometry, Inequalities and Number Theory. In each session the emphasis was on tackling problems, with the bare minimum of exposition from the person leading the session. The whole programme was very successful and thanks are due to all those who gave so willingly of their time to prepare material and lead sessions.

The climax of the Trinity Training Session was the Final Selection Test (FST) held on the last morning. This was a mock IMO–type paper with just 3 questions to be attempted in $4\frac{1}{2}$ hours. After the marking of FST, it was time to select the IMO squad in the light of all the information available. Usually a squad of 7 is chosen and one of these eventually becomes the non–travelling reserve. This year it proved impossible to separate a number of people at that stage and so we ended up with a squad of 8. They were told that they had to fight for a place in the team of 6 during subsequent weeks. A correspondence course started in mid–April. The squad received a set of 7 or 8 questions every 10 days, with solutions having to be submitted in accordance with strict deadlines. Towards the end of May, our selection was finalised as follows:

Team:	David Bibby (Ysgol Rhiwabon, Ruabon, North Wales)
	Michael Ching (Oundle School, Oundle nr. Peterborough)
	Toby Gee (John of Gaunt School, Trowbridge, Wilts.)
	John Haslegrave (King Henry VIII School, Coventry)
	Hugh Robinson (King Henry VIII School, Coventry)
	Paul Russell (St Bride's High School, East Kilbride, Scotland)
Reserves:	Adrian Sanders (King's College School, Wimbledon)
	Bennet Summers (St Paul's School, London)
Team Leader:	Dr Adam McBride (University of Strathclyde, Glasgow)
Deputy Leader:	Mr Philip Coggins (Bedford School)
Observer:	Dr Gerry Leversha (St Paul's School).

(Many countries have Observers at the IMO to allow interested parties to see what is involved in being either the Leader or Deputy Leader. On this occasion Gerry shadowed Philip.)

Final Preparations

The correspondence course continued well into June. During the period 21st to 23rd June, the entire squad gathered at University College, Oxford in conjunction with the Sharp Summer School being run there by Tony Gardiner. As well as tackling more problems, we dealt with travel plans, medical matters and other domestic arrangements. Another aim was to develop team spirit and allow us all to get to know each other better. An important cultural interlude allowed the company to watch England performing in Euro '96.

The Oxford weekend provided a fitting conclusion to our preparations. Special thanks are due to Christopher Bradley and Tony Gardiner for major contributions to the mathematical training and to Philip Coggins for helping with the correspondence course and for meticulous attention to details regarding the many items, medical and otherwise, which we needed to take with us.

The attitude of the squad and the quality of the work produced was excellent throughout. Great credit goes to all concerned. Particular mention must be made of our reserves. Adrian and Bennet did indeed make the others fight very hard for their places and thereby contributed substantially to the UK cause. Both remained fully involved throughout and they will be ready to enter the fray again next year. Bennet was responsible for designing the UK T–shirt, a rather nice blue creation which was remarked on most favourably by many people in Bombay. "The boys in blue" certainly stood out from the crowd.

Timetable of the 37th IMO

The Jury, comprising the Team Leaders of all competing countries, met for the first time on 6th July and spent the next three days selecting the problems for the two papers and approving the translation of the papers into all the required languages (43 in all). The Team, Deputy Leader and Observer arrived on 8th July and the Official Opening

Ceremony was held the next day. The two examination papers were scheduled to take place between 9 a.m. and 1.30 p.m. on 10th and 11th July. Thereafter the contestants could relax while Leaders and Deputy Leaders embarked on marking and co–ordination. Three days were allocated for this but only two were needed. There was a gymnastic display followed by a banquet on 15th July and the Closing Ceremony, including the presentation of medals, took place the following day.

The Problems

All contestants sat two papers on consecutive days. Each paper contained three questions, each question being worth 7 points.

On each day the time allowed was $4\frac{1}{2}$ hours.

The questions were proposed by the countries indicated.

FIRST DAY

1. Let ABCD be a rectangular board with $|AB| = 20, |BC| = 12$. The board is divided into 20×12 unit squares.

   Let r be a given positive integer.

   A coin can be moved from one square to another if and only if the distance between the centres of the two squares is $\sqrt{r}$.

   The task is to find a sequence of moves taking the coin from the square which has A as a vertex to the square which has B as a vertex.

   (a) Show that the task cannot be done if r is divisible by 2 or 3.

   (b) Prove that the task can be done if $r = 73$.

   (c) Can the task be done when $r = 97$?

   (Finland)

2. Let P be a point inside triangle ABC such that

   $$\angle APB - \angle ACB = \angle APC - \angle ABC.$$

   Let D and E be the incentres of triangles APB and APC respectively.

   Show that AP, BD and CE meet at a point.

   (Canada)

3. Let $S = \{0, 1, 2, 3, \ldots\}$ be the set of non–negative integers. Find all functions f defined on S and taking their values in S such that

   $$f(m + f(n)) = f(f(m)) + f(n) \text{ for all } m, n \text{ in } S.$$

   (Romania)

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4. The positive integers a and b are such that the numbers $15a + 16b$ and $16a - 15b$ are both squares of positive integers.

    Find the least possible value that can be taken by the minimum of these two squares.

    (Russia)

5. Let $ABCDEF$ be a convex hexagon such that AB is parallel to ED, BC is parallel to FE and CD is parallel to AF.

    Let R_A, R_C and R_E denote the circumradii of triangles FAB, BCD and DEF respectively.

    Let p denote the perimeter of the hexagon.

    Prove that
    $$R_A + R_C + R_E \geq p/2.$$

    (Armenia)

6. Let n, p and q be positive integers with $n > p + q$.

    Let $x_0, x_1, \ldots, x_n$ be integers satisfying the following conditions:

    (a) $x_0 = x_n = 0$

    (b) for each integer i with $1 \leq i \leq n$,

    either $x_i - x_{i-1} = p$ or $x_i - x_{i-1} = -q$.

    Show that there exists a pair (i, j) of indices with $i < j$ and $(i, j) \neq (0, n)$ such that $x_i = x_j$.

    (France)

You are invited to send in solutions, enclosing an SAE please, to:

>   *Adam McBride, Department of Mathematics,*
>   *University of Strathclyde, Livingstone Tower,*
>   *26 Richmond Street, GLASGOW G1 1XH.*

How the UK Team Performed

A total of 424 contestants from 75 countries took part.

The UK team finished 5th out of 75 with 161 points (out of 252).

Each of the 6 team members won a medal, the haul being

2 Gold Medals and 4 Silver Medals.

Individual scores were as follows:

	Q1	Q2	Q3	Q4	Q5	Q6	Total	
David Bibby	7	5	7	7	0	7	33	Gold
Michael Ching	7	0	7	7	0	7	28	Gold
Toby Gee	4	7	6	7	2	1	27	Silver
John Haslegrave	7	0	7	4	1	7	26	Silver
Hugh Robinson	7	1	3	7	1	7	26	Silver
Paul Russell	7	1	5	7	0	1	21	Silver

David Bibby was 14th equal and Michael Ching was 33rd equal (out of 424).

The top ten teams were

Romania 187	United States 185	Hungary 167	Russia 162
United Kingdom 161	China 160	Vietnam 155	
Republic of Korea 151	Iran 143	Germany 137.	

The IMO is a competition for individuals. Officially there is no team competition, but unofficially great interest attaches to the team totals. In this respect, our achievement in coming 5th is remarkable. All the other countries listed above invest considerable sums of money in the training of their teams. Training camps lasting for weeks and months rather than days are common. By comparison, our operation runs on a shoestring. Although we are thoroughly professional in the mathematical sense, we remain amateurs in the sense of the true Olympic ideals. Looked at in this light, our performance can be regarded as a triumph of a David (and Hugh, John, Michael, Paul and Toby!) over Goliaths.

Overall Performance of All Contestants

The papers proved to be tough. Only one contestant (from Romania) scored the maximum of 42. No one scored 41 or 40, one contestant scored 39 and another 38. The range of scores for the various medals was:

Gold	From 28 to 42	(35 contestants)
Silver	From 20 to 27	(66 contestants)
Bronze	From 12 to 19	(100 contestants).

It is worth commenting on Q5. Of the 424 contestants no fewer than 308 scored 0 on this question and the average score (out of 7) was 0.49! That makes our team total of 4 almost respectable. Geometry is found hard by students from all countries. (Various reasons could be put forward!) Interestingly enough, of the 104 problems submitted in advance for possible use in the competition, 43 were on geometry. This total included two composed by Dr David Monk (formerly of the University of Edinburgh) and one by Dr Christopher Bradley (Clifton College, Bristol), all three of which made the short list but none of which was eventually used.

Organisation of the 37th IMO

It must be said that conditions in Bombay were far from ideal. It must also be said that the local organisers did a marvellous job. The problems which arose were outwith their control and they spared no effort to minimise the inconvenience.

Originally the IMO was to take place in New Delhi and plans were well advanced at that venue. However, it appears that six different government agencies were competing to run the show and a total bureaucratic stalemate ensued. Eventually it was decided that the IMO would move to Bombay, where there was only one relevant agency to deal with. The decision was taken in mid–March and left the locals with 104 days to get their show on the road, starting completely from scratch. That they succeeded was little short of a miracle. They had to make do with whatever accommodation could be found and that for the contestants was extremely basic (to put it mildly). The Leaders were 25 miles out of town. This meant frequent long bus journeys, courtesy of a shambolic bus company which was likely to go bankrupt at any minute. Then there was the monsoon which produces much more rain in Bombay than in New Delhi. Finally the ambience of Bombay was dreadful. Most of the city is a gigantic slum with abject poverty and appalling squalor all too visible. Yet despite everything (including many instances of upset stomachs, sickness and diarrhoea), we survived to tell the tale of an unforgettable IMO.

All decisions concerning the competition were in the hands of the Jury which consisted of the 75 Team Leaders, each of whom had one vote. We were each supplied with a thin plastic object shaped like a table–tennis bat with our own 3–letter code marked on it. The UK code was UNK so that I was "The Man from UNK"! Votes were frequent and consisted of the chairman counting the number of raised bats. The flexible nature of the bats meant that they also served as much–needed fans. The business of the Jury was conducted mainly in English but Russian translations were supplied when needed. Our main tasks were to select the problems for the paper, approve the various translations, confirm the marks scored, award medals and deal with any other matters related to the IMO regulations. We were fortunate to have Professor A M Vaidya (Chairman) and Dr S Shirali (Convener of the Problems Committee) to get us through our business in a relaxed but highly efficient way.

The other major task for the Leaders and Deputy Leaders was the marking of the scripts. We each marked the scripts of our own team and then had to justify our marking before a panel of Co–ordinators. Despite occasional disputes which had to go to arbitration, the process was completed a day ahead of schedule. Behind the scenes a team led by Dr S P Arya produced regular computerised updates of the marks scored. All concerned deserve great praise for their efficiency and their unfailing courtesy.

Daily Diary

A picture of how the IMO unfolded can perhaps be conveyed best via a brief summary of what happened every day, as seen through my eyes.

5 July Leave home at 05.30 to catch the shuttle to London. Arrive in Bombay at 23.45 local time with the thermometer registering 84°F. Long queues at immigration. Lots of officials standing around doing nothing. Outside chaos reigns. All 42000 taxi drivers are on strike over a hike in the price of petrol. All autorickshaws are also at a standstill. Fortunately I am being picked up by IMO staff. It is now 01.00 but the streets are full of people and dogs. Drive to hotel takes an hour and gives me my first sight of the slums. Our 5–star hotel is on the shores of the Arabian Sea. To bed at 02.30.

6 July After breakfast, collect the short–listed problems and solutions. Also collect a nice brief–case, an umbrella and two T–shirts, all specially customised with the IMO logo. First jury meeting adjourned after an hour to allow us to try more of the problems. Pattern continues throughout the day. By evening 7 out of 30 problems on the short list have been discarded. After dinner, work through 9 geometry problems, including 3 of our own.

7 July A long day. Spend 5 hours finalising the paper via a convoluted sequence of votes, at least two of which seem mutually contradictory. It is suggested that we then prepare the version in English. I suggest that it is crazy to do this in a meeting of 75 people and ask for an adjournment. The English–speaking Leaders do some surgery on Q1 and bring back two versions. There is an argument over using "20×12" versus "240"! 20×12 wins.

8 July First we agree the versions of the paper in French, German, Russian and Spanish. Then comes business of the IMO Advisory Board, the body responsible for planning future IMO's. We hear that the USA will host the IMO in 2001. We discuss an IMO logo and the rules for elections to IMOAB. In the elections the successful candidates are the Leaders of Turkey and Hungary (the latter described in *The Times of India* as the Jesse Owens of Mathematics because of all the medals he won as a competitor many years ago.) Next we peruse all the other translations of the paper prepared by Leaders. I spot errors in the versions in Estonian, Icelandic and Swedish (easier than you might think, even if you don't understand all the words!)

9 July Quiet morning then off to the Opening Ceremony. Journey there and back takes 2 hours along congested, poorly maintained roads. The people and dogs are now augmented by cattle and the odd buffalo or elephant. Drivers are crazy; horn first, brake second! Ceremony starts with some speeches. I see Philip, Gerry and the team from the balcony. (The Leaders now know the contents of the papers and are segregated from the teams.) My UK T–shirt designed by Bennet is thrown up to me. After speeches, a long pause. The punters get restive. Eventually we have a display of classical Indian dancing, including a special choreographed version of an old Indian mathematical problem related to the theorem of Pythagoras. Meet a representative of the British Deputy High Commission, a useful contact. BBC are there too apparently but we fail to rendezvous. Back to base, to the accompaniment of an over–loud Dustin Hoffman video.

10 July First day of the competition. Breakfast at 06.30 before our usual 2–hour bus ride (videos now barred after a mutiny!). Arrive at exam hall in Bombay Atomic Research Centre (BARC). Mathematics seems to belong to the Department of Atomic Energy!

During the first hour of the $4\frac{1}{2}$–hour paper, students can send written queries by messenger to the Jury. These are answered in strict rotation and written replies taken back to the students. Today we get 21 queries. After a welcome cup of tea, some brave souls set off to see the city centre. I return to base for a quiet afternoon. Send a FAX of congratulations to my students at Strathclyde who are graduating that day. Thoughts turn to home. Reverie broken by arrival of scripts from morning exam. Quick glance suggests Q1, Q3 are solid, Q2 distinctly dodgy. Mark Q2 after dinner. Think of marking Q1. Go to bed instead.

11 July Second day of the competition. Jury receives 51 queries, mainly seeking clarification about the meaning of minimum when applied to two equal numbers. Leaders supposed to go on a bus trip to Lonavala, 108 kms south of Bombay. I opt to stay at the BARC campus. Meet up with Philip and Gerry. Inspect the student accommodation. Fairly primitive. Meet team after exam. (This is the first time I've been able to speak to them since we left the U.K.!) Over lunch it becomes clear that Q5 is a disaster all round but the lads seem happy with their performance otherwise. Encourage team to socialise with other teams now that the hard work is over. Will be difficult given the surroundings. Philip and Gerry move to my hotel for the rest of the proceedings. Team left at BARC with their guide, a local postgraduate student. I feel for them. Chaos at the hotel as some Deputy Leaders are in a separate hotel from their leaders (3 km apart). Philip shares a room with me. Gerry finds himself sharing with the Portuguese Leader! The key for our room snaps in my hand! A replacement is sought. The scripts arrive and we get stuck into them after dinner. The heavens open and thunder rolls. Ahead lie two days **without** a bus ride. Bliss!

12 July First day of co–ordination. Hard work but successful beyond our wildest dreams. Off to a flying start with Q2, getting more marks than we expected. Q6 epitomises the team spirit. Michael's solution is beautifully clear and gets 7 easily. Paul and David have used similar methods to Michael and, although we have to work harder, a virtuoso performance by Philip gets 7 for both. The other three solutions involve different approaches but we are on a roll and wrap up a total of 30. Earlier Q4 proved a block–buster with a total of 39 out of 42. Telephone system is such that we can't contact team but they can contact us. They phone around 7 p.m. to find out about Q6. (The marks for Q2, Q4 have already got down to BARC.) I can hear Toby but he can hardly hear me but we get there. We have 83 points at the end of the day. Looks like a top 10 finish and medals for everyone (but of what kind?). Things are getting very exciting. After dinner mark Q1, another cracking performance. Confirm Q5 is a disaster. Any marks at all will be a bonus. Q3 looks good. Get our replacement key. Retire to bed. Don't sleep well. Too pumped up.

13 July A truly wonderful day. From 09.30–11.00 work on Q3. Aim for at least 30. Supposed to co–ordinate Q1 at 11.00 but things are behind schedule. Get going at 12.10. Goes very well. After lunch Q3 is hard work but suddenly all the lights go out. Total darkness loosens everyone up and we get 35. Great! That leaves Q5. We get 4, which is 4 more than China. Unbelievable! Excitement is now at fever pitch. As more and more scores go up on the boards, things look better and better. The Australian leader

and I do rapid calculations to predict cut–offs for medals. By dinner, we are heading for 6th place and the worst case scenario for medals is 1 Gold and 5 Silver. Will we get another Gold? It looks as if Michael will just squeeze in. At dinner, the Irish Deputy Leader comes over to tell us that China have done badly on Q6 and that we have beaten them by one point. We are 5th! The team phone. Struggling to make myself heard, I give them the predictions which seem certain to be confirmed at the final Jury meeting. What a triumph! Relax with other Leaders and Deputy Leaders. Reports of several tummy bugs and one or two people are really quite ill. I'm feeling pretty good! Receive congratulations from many other countries. Despite the fierce competition, the IMO engenders great sportsmanship and friendliness. All countries exchange gifts such as pens, key–rings, books of problems, even coffee from Colombia. A truly wonderful day. Can't sleep. Even more pumped up.

14 July A bus is supposed to turn up at 09.30 to take people shopping. It hasn't appeared by 11.00 and most abandon the trip. The afternoon sees people relaxing (in the pool and jacuzzi, playing bridge and snooker). I tell the team they are welcome to come up to our hotel but the thought of a 2–hour journey each way persuades them to stay at BARC. Final Jury meeting is shortest on record. Results confirmed. Several votes of thanks to the chairman, the Problems Committee and the staff of the IMO Office for making the 37th IMO such a mathematical success.

15 July Nothing scheduled until 16.00 downtown. Spend morning writing postcards, sending a FAX to Tony Gardiner at ICME in Seville and issuing a News Release via the British Deputy High Commission. Philip, Gerry and I decide to head off at noon, catch a train and find out if there is another side to Bombay. Take taxi to Malad station (7 miles, around £4). Get a train to Churchgate (21 miles but costing only 15 **pence**!). Indian trains are chaotic. All the doors are open and people are hanging on to the outside. We stand most of the way, manage to avoid falling out and enjoy the ride. We go looking for shops but fail miserably only finding a political demonstration and the thrill–a–minute World Trade Centre. Take taxi to Homi Bhabha Auditorium. Meet the team as they arrive. Haven't seem them for four days. Congratulate each of them individually. We are treated to a spectacular display of Mallakhamb, a form of gymnastics centred on a pole 260 cms high with a circumference of 55 cms at the base tapering to 20 cms at the top. Mallakhamb is claimed to be "a scientific and systematic method of acquiring a sound body and mind." The performers are a dozen girls whose ages and heights are in arithmetic progression (6 years to 18 years and 4 feet to 6 feet) and an isomorphic group of boys. The exercises on the pole get more and more daring and culminate in human pyramids in which people hold on to the pole with their toes. The performance is greeted with enormous enthusiasm by everyone. A magic show follows but this is a total anti–climax. We then adjourn to a posh hotel for a "banquet" (in reality a stand–around buffet). At last everybody involved in IMO (contestants, guides, co–ordinators, Leaders and Deputy Leaders) can get together socially and a carnival atmosphere develops. The Irish Deputy Leader (from Aberdeen) leads the company in a rendition of "Cockles and Mussels", to be followed by various other teams, notably the Colombians and the Indians. All too soon the dreaded buses arrive to take us back to base. Hope the party will continue at BARC.

16 July Transport to the Closing Ceremony is a shambles. Things get under way late. Even then at least one of the platform party is stranded somewhere in a bus. The lads receive their medals one by one. I try to capture each presentation on film. Speeches follow. Then group photos on the stage with all of us sporting our blue T–shirts. "The boys in blue" create quite an impression. We abandon the dancing that follows in favour of setting off for BARC. Horrendous journey lasting $2\frac{1}{2}$ hours through colossal traffic jams. Reach BARC around 21.15. Grab a quick bite then catch the first available bus to the airport. All day long the rain pours down.

17 July Reach airport just after midnight. Have $3\frac{1}{2}$ hours to kill but we are no longer at the mercy of the bus company. Take off at 03.45, stop off at Delhi around 06.00, land at Heathrow at 11.30. Meet some of the parents. Go our separate ways. Home at 15.00 for a drink of nice cool tap water, a square meal and 13 hours of sleep.

Concluding Remarks That was IMO96, an unforgettable experience. It only remains to thank

- all the pupils who took part at any stage
- all the teachers who encouraged the pupils and supported our endeavours
- Peter Neumann for skilfully guiding the British Mathematical Olympiad Committee at a time of change
- the Problems Group, especially Christopher Bradley and David Monk, for creating so many interesting problems
- Alan West and Brian Wilson, organisers of BMO1 and BMO2 respectively
- all those who helped with the marking of BMO1
- all those who contributed to the Trinity Training Session, particularly Christine Elliott for her excellent organisation
- all our sponsors, especially Trinity College, Cambridge for hosting the March training session and the Royal Society for hosting the September celebration
- DfEE for a grant covering travel to and from Bombay
- Tim Cross for producing the 1996 BMO booklet, copies of which are now all over the world
- Tony Gardiner for his myriad contributions
- Philip Coggins for assistance with the correspondence course and, along with Gerry Leversha, for help of all sorts before and during the visit to India.

Finally, let us congratulate the squad of 8 for a magnificent effort and the team of 6 for producing an outstanding performance and for being excellent ambassadors for the United Kingdom. They did us proud and it was a great honour and a great pleasure for me to be their Leader.