

**After-dinner speech by Ryszard Herczyński, 6.9.2001**

Let me start by thanking Konrad Bajer and Keith Moffatt for this opportunity to speak to you. Both Konrad and Keith are members of the same Cantabrigian family. Konrad obtained his Ph.D. from Moffatt, Keith from Batchelor, George from the 'Pater Familiae', G.I. Taylor. This sounds already like a biblical story: Abraham begat Isaac, Isaac begat Jacob, Jacob begat Judas and his brethren, and so on.

Only Taylor had never got Ph.D., apart the usual honorary ones. There was no Ph.D. degree when G.I. graduated from Cambridge University nor did he have a mentor in fluid mechanics. G.I. chose for himself this subject, and excelled in asking pertinent and important questions. Thus, already in his 1917 paper, in the language of the day, he wrote about singularities occurring in turbulence, the very subject you came to discuss in Zakopane.

And it was here in 1963 that the Sixth Fluid Dynamics Symposium was held, organised by the Polish Academy of Sciences. That meeting, 38 years ago, was a rather modest affair, but it was a turning point of a kind. It was the first conference in the series to be attended by scientists from the West. Western participants were greeted without applause but with deep satisfaction. We all understood the importance of breaking the imposed isolation of Polish mechanics. That scientist who had the courage to cross the Iron Curtain first was George Batchelor. He drove from England in a huge, old car, with his entire family and his doctoral student, Keith Moffatt.

I had met George and Keith two years earlier, when I came to Cambridge for a year-long visit. As a child, I read sentimental stories about Cambridge, about Newton and the apple. These stories I kept in mind during the war, and the real Cambridge fully confirmed my almost mythical expectations. It was then a tranquil, welcoming place. A student going to London or elsewhere for a weekend would leave his or her bicycle at the railway station, without a chain or padlock, and would be sure to find it waiting in the same place upon return. Since then, Cambridge has become a major tourist attraction, and tranquility has become a rare commodity. To preserve their normal rhythm of life, colleges are forced to limit the number of visitors. Some charge admission, other close their gates to outsiders altogether. The old atmosphere of openness and trust is giving way to the brave new world.

And the perspectives are bleak. No computer is needed to estimate that if every citizen of, say, the United States and Russia were to visit Cambridge once in his or her lifetime, and for one day only, twenty thousand American and Russian tourists would arrive there every day. The

only visible shield is mass culture which ignores past art, past architecture, and to an even greater extent ignores science and places where it was and still is born. Fortunately most US and Russian citizens - and also most citizens around the world - are as little interested in seeing Cambridge, UK, as are their Presidents, Mr. Bush and Mr. Putin. Thus God save Cambridge and let us pray for the spread of mass culture.

More seriously, Cambridge and some other old universities symbolise for me the best tradition of pursuing science and learning. George Batchelor and G.I. are examples of high ethical standard of scientists. It seems that these traditions and standards are now challenged, that scientific curiosity gives way to demands for speedy careers, that publication of results preceded by careful analysis of previous accomplishments and ending with a thorough discussion, as still found in the papers of JFM, are replaced by notes formulating results whose importance should be taken for granted. The cumulative character of science, its main achievement since the Baconian revolution, is thus endangered.

My stay in Cambridge triggered, I dare to think, close relations between George and the Polish fluid mechanics community. Of course, I can hardly claim credit for this because it was mainly the work of George and his group and of Władek Fiszdon and his team in Poland. I am happy that these relations are still maintained.

Many years after the conference in Zakopane, I asked George if, being 25 again, he would still choose fluid mechanics, this classical and (as one may say) nearly fossilised branch of physics, as his field of research? The answer came immediately, in his usual style. Yes, if G.I. Taylor were around.

My question shows that I missed the point that the art of our trade lies in part in finding new ways of asking the same questions. Even the question raised by Newton about the falling apple is not yet fully answered. The fluid mechanics you are discussing here, although I know little about it, seems to me the most attractive subject, both in its scope and its methods. It would be, of course, great to have some new Taylor to pave the way forward. I believe that he will come. Perhaps he is already among you.

All this goes to say that we should not tire of unsolved problems, nor of asking the same questions, 'why' and 'how'. These are the apparently naïve questions that annoying children ask over and over again. Until, that is, they learn to take things for granted. But it is a true gift to retain a childlike wonder and curiosity, and to derive an undiminished pleasure from figuring things out. This is the gift G.I. was blessed with. Let me wish you a meeting that keeps this spirit of doing science alive, with many naïve questions and hopefully some not entirely naïve answers.

My own life in fluid mechanics has been bi-polarised to some extent between Warsaw and Cambridge; but Fluid Mechanics is of course a world-wide activity, and it is a particular pleasure for me to see such strong representation at this meeting from so many countries of the world – USA, Japan, Australia, France and many others. Welcome to Poland and to Zakopane, and I wish you all every success in your continuing efforts to bring deeper understanding to fluid dynamics, in all its richness and diversity.

#### **Extract from reply by Keith Moffatt**

The choice of Zakopane for this Symposium brings back very happy memories of a previous (1963) meeting in Zakopane that I was privileged to attend. This was one of the early biennial meetings on Fluid Mechanics organised in Poland by Władek Fiszdon and his colleagues at IPPT (Warsaw), that did so much to sustain scientific contact between East and West during the long Cold War years.

My research adviser, George Batchelor, came by car from Cambridge to Zakopane with his wife and three children, and offered me the last space in the car, which I gladly accepted. It was a memorable journey! The Proceedings of the meeting (*Arch. Mech. Stosowanej*, vol. 2, 1964) remind me that Richard Herczyński (whom I thank for his kind remarks) lectured on Knudsen number effects in rarefied gases, and that George Batchelor lectured on diffusion from a point source in a turbulent boundary layer (a beautiful piece of work that is perhaps not as well known as it should be). I lectured myself on corner eddies in Stokes flow (which I am glad to see reappear in a three-dimensional geometry at this Symposium!). It is salutary to recognise that so many fluid dynamical problems, particularly those involving turbulence, that were already under investigation 40 years ago, remain still unsolved to this day; it is perhaps a tribute to the structural stability of our subject! The frontiers of research move slowly, but we may hope that this Symposium will do something to accelerate the process.

I'd like to thank Konrad Bajer for the immense care that he has taken in all the arrangements for the Symposium, and for his personal attention to detail which I know we have all appreciated, and which has ensured its outstanding success, both scientifically and socially.