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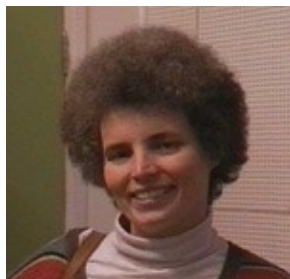
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Features

## Career profile – Academic Researcher



Helen Mason

Helen Mason was educated at St Bernard's Convent, and Langley Grammar School in Slough. She obtained nine 0-levels, three grade As at A-levels in Physics, Maths and Further Maths, and an S-level grade 1 in Physics. In 1970, she obtained a first class honours B.Sc. degree in Physics and Applied Mathematics, from Queen Mary College in London. In 1973, she was awarded a Ph.D. in Atomic and Astrophysics at the University of London, and won the UCL Carey Foster Research Prize. In 1978, she gained an honorary M.A. at the University of Cambridge. She spoke to us about her career.

### **From a Sixth Former's point of view how did you choose what subject to do at University and what influenced your decision?**

I think I always wanted to do Maths and Physics from quite an early age because I was good at Maths at school and wasn't particularly good at Languages or the Arts. I was more interested in Physics and the application of Mathematics to Physics and always had an interest in Astronomy, that fascinated me.

I was encouraged by my father who was an engineer and used to take me to the Open Days at Harwell, the nuclear power place where he worked. He talked about Physics to me, about how things worked and encouraged me to ask questions. As a summer student I worked at the Radio and Space Research Station for a couple of summers. It used to be at Slough where I lived, and is now the Rutherford Appleton Laboratory, with which I still work! That's also where I met my husband who works for the British Antarctic Survey.

The encouragement came from both my father and from work experience, also I had very supportive teachers all the way through.

### **Were there many in your class doing similar subjects?**

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There were quite a lot in the Physics class, not many girls, maybe three or four of us doing Physics and a few more doing Maths, but not very many out of the class of about thirty. We had very good teachers and extra support for any areas that were particularly weak. My school had the basic equipment for doing O and A–Levels, but there might have been more opportunities for clubs, in Astronomy say. I didn't share that interest with any other people at the school. At the time I was not particularly frustrated by that but in retrospect it might have been useful.

### **How did you choose your University?**

I was somewhat restricted with my choice of University because I was a year younger than everybody else and not all Universities would take me. I visited London University amongst others and was very impressed by Queen Mary College where I eventually took up a place.

### **How did you make your career choices?**

I always had it in mind to be a school teacher and thought that was what I would do at each stage of my career. But at each stage I sort of surprised people by actually doing rather better than they'd anticipated. This was true of my A–Level results for example, although they knew I would do quite well they didn't realise quite how well I would do and at that stage hadn't really thought about Oxford or Cambridge for me although probably I was capable of trying for an entrance to either. Similarly with the first degree. But I did think I might do research and actually got a place at University College. Then having done my Ph.D., the opportunity arrived for me to stay on and do a post–Doc. I was enjoying the work so much that I did, then I got hooked and had the opportunity to transfer here to Cambridge and that's how I'm here.

### **Any advice you would give others, seeking a similar career?**

Whenever I had a work or personal problem, I would ask for the advice of the professor who I worked for at University College: Professor Seaton who is a very supportive guy and has supported me throughout my career. Part–way through my PhD I decided to get married so thought I had better discuss this with him before I gave a final answer on the question. I went to see him and said "I am thinking of getting married, what do you think about this?". He always thought very carefully about questions before answering. There was a silence in which I was getting rather nervous, he eventually said "Hmm, yes I think that's a good idea, but" (and I wondered what the but was) "keep your maiden name". When I asked why, he replied "Well, if you publish papers and then you get married, you will have to change your name and then if you get divorced, you will have to change your name again". So I was rather reassured that he thought I was going to have such a long research career! In fact that piece of advice has been extremely useful, because it is often difficult for a couple to retain their own identity particularly if they work in similar fields. My husband is also in Physics although not quite in the same field. Very often couples find that the woman is in the shadow of the man, whereas I know that my research career is built entirely on my own work because people don't even know what my married name is.

### **What does your present job entail from day to day?**

I am a member of staff at the Department of Applied Mathematics and Theoretical Physics and a fellow of St Edmund's College. During term time I am very much preoccupied with Departmental work. That involves both teaching and administration: supervising research students, I have two at present, undergraduate teaching and organising the Computational Mathematics Course. There is also examining and marking and, as I'm College Tutor, a lot of College work. Outside of term time I try to put more emphasis on my research work. That's quite a bit of collaboration I'm involved with, in Europe and USA, organising the collaboration and analysing data, working on data, theoretical work and computations.

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My main interest at the moment is to do with the SOHO (Solar Heliospheric Observatory) satellite which was launched in December 1995. With SOHO we are trying to understand the origin of the solar wind which flows right out to the Earth and affects the Earth's environment. We are also trying to understand what heats the outer atmosphere of the Earth.

It is very exciting to be actually involved in a space mission. It is a NASA/EASA project, operated from the Goddard Space Flight Centre (the ground station for SOHO where I work). There are a range of instruments looking from the solar interior, through solar oscillations, through the solar atmosphere, right out into the solar wind (which is what I did my dissertation on for my degree).

SOHO is looking at all aspects of the Sun. It is out at Lagrange point, which is the point of no gravity between the Earth and the Sun. It is doing a small orbit which keeps it stable at that point, but it is quite a long way from the Earth and the transmission back from it is relatively slow so we cannot get back all the data we would like. We have to be selective and have a good idea, before we write an observing sequence, of what we are aiming to look at and achieve. It doesn't always work the first time, we have to iterate it, we might miss certain things and go back or we might see things that are interesting which we want to pursue further.

### **It sounds like you have plenty of opportunities for travel!**

The opportunities are very good for me. I love travelling and collaborating with other people. I have spent time in the United States, and also work with European colleagues in France and more recently in Italy and Germany. Also, I am quite frequently invited to give reviews at conferences and went to Japan last year to give an invited review.

### **How do your pay scales compare with similar scientific posts in the commercial sector?**

I assume that they are less. I don't know if there are equivalent commercial jobs, there are a lot of research jobs in industry. But I don't think you have the same freedom as an academic to choose the research that you do. Maybe I don't get paid quite as much as I might in industry, but the pay is not too bad and is a price I pay to be able to do the work that I really enjoy doing.

### **How do you combine a career with bringing up a family?**

It is not easy. I think the only way that anyone can hope to carry on a career, indeed for either of you, husband and wife, is with a great deal of support from those around you. For me that's not only my husband, but my family and the colleagues with whom I work both in this country and overseas, who have encouraged me, at difficult times when I felt like abandoning it, to carry on and that I should carry on. Also, I have been working part-time: half-time when the children were small, more recently I have been working three-quarters time.

One of the main problems is mobility. That is true for any couple with careers, to try and get two suitable jobs in the same place and at the same time. At some stage one career has to give precedence to the other, particularly if children are involved you cannot be living hundreds of miles apart. In some ways I was fortunate that we were both able to pursue careers here in Cambridge but it means that if any opportunities arise for me elsewhere, as they have, I cannot actually pursue them. My husband and I both got our PhDs on the same day from the same place and he is now a Division Head at the British Antarctic Survey. Because of these problems I have probably not attained the same level in my career as some of my peers. But that is just a compromise one of you has to make.

### **Have you encountered any prejudices that hampered your career?**

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I can't say that I have encountered overt prejudice from particular people but would say the system as a whole hasn't contained the flexibility that would enable people like myself to pursue careers very easily. Things are changing and more flexibility is being introduced: age limits, child care and part-time funding. They have taken a long while to filter through and I have not been able to benefit from some of them, like child care, because they have come after me. But most of the people around me have been very supportive and have tried to help me as best they can within the limitations of a particular system in which they are working. I think it is the system that needs more flexibility to allow people to have different career paths.

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