

1995 Mineralogical Society–Schlumberger Award

Presentation, by the President, Professor Ian Parsons, to Professor P. H. Ribbe, 5 January 1996, at the University of Bristol

It is a very great pleasure to present the Mineralogical Society-Schlumberger medal to Paul Ribbe. Paul is a leading member, a Godfather even, of the feldspar Mafia, the group who have met once a decade since 1962, through the medium of the NATO Advanced Study Institutes programme, to review the state of knowledge and exchange the latest ideas on the most abundant, and in many ways the most complex, minerals of the Earth's crust. Paul is one of three mineralogists (the others are Bill Brown and Joe Smith) who have been present at all four of these influential meetings. I'm a new-boy, with only three behind me, and I first met Paul at the July 1972



Paul Ribbe (*right*) receiving the Mineralogical Society–Schlumberger Medal from Ian Parsons.

meeting in Manchester, an event distinguished meteorologically by blazing heat. The arrival of the permissive society in mineralogical circles was signalled when a very well known Californian thermodynamicist engaged in nude bathing in the Shap granite quarry. Even in the face of excitement like that I can remember being impressed by the clarity with which Paul presented his material and by his amiable personality. Mineralogists who are not keen on feldspars will probably regard ten days

devoted solely to their study as Hell-on-Earth, but the fact is that not only do feldspars do just about everything minerals can in the way of solid-state reactions, they have also been measured and probed by every conceivable technique. This shows very clearly in Paul's publications, which involve a very large range of approaches to the study of the structure and properties of feldspars and other minerals, often when the methods were 'state-of-the art'.

By an interesting coincidence, Paul was born in another Bristol, the one in Connecticut. He obtained his B.S. at Wheaton College and his M.S. from the University of Wisconsin, both in Geology, and then came to Britain as a Fulbright scholar, to the Cavendish Laboratory at Cambridge, to do a PhD in crystallography with Helen Megaw, on 'Structural studies of plagioclase feldspars' (*sic*) obtained in 1963. After Cambridge, a short spell as a Post-doc at Chicago, and an Assistant Professorship at the University of California, Los Angeles, he went in 1966 to the Department of Geology at Virginia Polytechnic Institute, Blacksburg VA, where he is still based. The Blue Ridge Mountains provide a lovely backdrop to a region of wooded hills and small farms not unlike the more wooded parts of Perthshire, and UK visitors will certainly understand the appeal of this working environment compared with metropolitan USA.

The young Ribbe did not let the grass grow under his feet. At the age of 25, in 1960, he produced his first paper, the first of many to come in American Mineralogist, on 'An X-ray investigation of the peristerite plagioclases', and in 1962, following the first NATO meeting in Oslo, organised by T.F.W. Barth, was author and co-author of three papers in the first of the four publications which have flowed from these meetings on feldspars. By the 1972 meeting he had become the natural choice as the contributor who provided the keynote review on plagioclase structures, a role he maintained for the Rennes meeting in 1983 and the Edinburgh meeting in 1993. Paul has produced around 125 papers and reviews on a variety of mineralogical topics, with fewer than half relating to feldspar. Many are refinements of crystal structures, using standard X-ray diffraction techni-

ques applied very carefully to difficult problems, and he has produced many papers in which standard physical techniques, such as optical and X-ray properties, are developed to provide insights into the underlying structural detail, such as order-disorder and coherency strain in feldspars. He very rapidly became a pioneer of new approaches and techniques which are still part of the armoury of mineralogists. Thus in 1963, together with S.G. Fleet, he applied transmission electron microscopy to the properties of a moonstone, showing it to have a submicroscopic microstructure of alternating lamellae of orthoclase and polysynthetically twinned albite; Alex McLaren considered this the first significant application of TEM to an important rock-forming mineral. In 1966 we find him collaborating with J.V. Smith on the earliest electron microprobe analyses of feldspars and in 1972, when thermodynamic modelling of the properties of solid solutions was a hot field, publishing with S.K. Saxena on activity-composition relations in feldspars (still far from solved for the low plagioclases). In 1974 he published (with his most consistent collaborator, a VPI colleague, Gerry Gibbs) semi-empirical molecular orbital calculations for the atoms of the tetrahedral framework in feldspars; and the same year used an ion-probe to measure boron in chondrodite.

By the 1980s Paul had become so much in demand as a writer of review articles that they provide a high proportion of his output, and he also became interested in the question of the price, prestige and impact of scientific journals as measured by the citations industry. This was the topic of his 1987 Presidential Address to the Mineralogical Society of America. It is a field no organisation publishing a journal can afford to ignore; we have to maximise our citation impact while not losing sight of the need to provide a home for descriptive material with a low citation rate but a long half-life, a tricky balance.

This brings me to the part of Paul Ribbe's career which in my view sets him apart from all his peers and which has made him the nearest thing to a worldwide household name that it is possible to be in

mineralogical circles. In 1978 he became Series Editor for the Mineralogical Society of America's 'Reviews in Mineralogy' series, the white-covered books which will be present, to a greater or lesser extent, on the shelves of almost all our members. Since 1973 Paul has been Editor, Copy Editor and sometimes a major contributor to no less than 32 of these splendid volumes or their revisions. He has shepherded along a series of books which at around £10 each (depending on the vagaries of the money markets) offer unrivalled value for money, are always topical, written by the best people, and which are a gold-mine of information and source of references. Over a period when the price of books has hugely outstripped the rise in salaries and library support, Paul's selfless editorial efforts have made a major contribution to our activities in whatever field of mineralogy we choose to work. The sheer nuts-and-bolts work involved is awesome. As anyone who has edited what is laughingly known as a 'camera-ready' book will be painfully aware, however carefully authors are instructed, getting their output into a reasonably homogeneous style, fitting the pages with pictures in the right place, and producing contents pages and all the rest is very far from trivial, and however outwardly sophisticated 'desk-top-publishing' becomes, when it comes to compatibility between different computing packages, the sophistication of the gremlins lurking within seems to more than keep pace.

Paul Ribbe, your scientific output alone makes you a worthy recipient of our Schlumberger medal, the highest honour that the Mineralogical Society of Great Britain and Ireland can bestow. You have already, in 1993, received the Distinguished Public Service Medal of our sister society in America. We at present have no comparable award, but I am quite sure that our membership will be happy that on this occasion the Schlumberger medal is awarded, not only as a mark of scientific distinction, but also as our way saying 'thank you' for many years of outstanding and totally unselfish service to research in mineralogy.

Acceptance by Paul H. Ribbe

Thank you, Mr. President, for your kind remarks. I am delighted to receive this award from the hands of a feldspathologist who, like me, has built his career on the most abundant, most complex, most interesting, most important group of minerals in the crust of the Earth.

I join my good friend Julian Goldsmith, who was awarded the Roebling Medal of the Mineralogical Society of America in 1988, in calling my experience

"the embarrassment of honours". There are several reasons: first, the embarrassment of being categorized with those whose abilities and contributions are orders of magnitude greater than mine, and second, the embarrassment of knowing so many colleagues and friends of truly great accomplishment who will never receive such kudos. Perhaps it was for these reasons that Michael Carpenter, a few days after the Schlumberger 'ceremony' at Bristol, told me that

there were many in the Min. Soc. who were opposed to awards in principle; I tend to agree with him and them, though both he and I have been honoured. The third embarrassment is minor by comparison: after many years of relying on the library downstairs for access to the indispensable Min. Soc. publications, I have just rejoined the Society to help ease the discomfort of those who inevitably say, "Why doesn't the Society make awards to its own members?"

So I am very embarrassed, but I am also very pleased. ...in fact, delighted.

My first documented connection to the UK goes back to a 14th generation forebear, William Brewster, elder of the non-conformist Pilgrim troupe that departed Plymouth in the summer of 1620. He had matriculated at Cambridge in 1585. I, like he, was destined to become one of several elders and founders of an independent church in America, but not under such trying circumstances. Somewhat later, I came under the influence of another Cambridge man, the late Sturges W. Bailey, who did the first computer-assisted structure refinement of a feldspar using a hard-wired Hollerith machine at the Cavendish. I literally fled to him after my first year as a student at the University of Wisconsin – I had been studying 'petrology' under a man who was no petrologist, and I was desperate to reconnect with someone who was doing real science, i.e. crystallography. 'Bull' Bailey supervised my M.S. thesis on an X-ray precession study of peristerite exsolution. Later, when I tired of industrial research at Coming Glass Works, Bull encouraged me to follow in his footsteps and apply for a Fulbright Fellowship to work with his mentor, W.H. Taylor, at Cambridge. I did this but was foiled by a form letter which told me I was on the waiting list, and that if I hadn't heard from the Fulbright office by June 1, 1960, I could assume I didn't make the cut. I didn't hear, but five weeks later a letter came saying I was admitted to Magdalene College (whose name, of course, I mispronounced).

Later I was told that the reason for the delay was that the Fulbright Commission was trying all that time to get the first American – me – into Magdalene. W.H. Taylor's welcome to the Cavendish was at least consistent with my reception by my tutor who was appalled that he should have been assigned the first American, crew-cut and all, who didn't even know what high tea was. Taylor didn't shake hands or ask me to be seated. He simply said:

"Rib-beh, I assume you will be working on feldspars. Here are some Weissenberg photographs of low and high albite. You can start with these. My secretary will assign you to an office space" or something like that. To his credit, when Fleet and I got the first TEM photos of exsolution lamellae in

moonstone, WHT, motivated by a long-standing competition with Fritz Laves at ETH in Zürich, got our paper published in *Philosophical Magazine* exactly six weeks from the day the emulsion dried.

Needless to say, my fellow students kept me afloat. Among them were Stephen Fleet, now Registry at Cambridge, Mick Wells, our resident computer (EDSAC II) guru, and G. Stuart Pawley. Bill Cochran and Peter Hurst were a great help with X-ray and electron diffraction problems, and Duncan McKee and Des McConnell advised me well mineralogically. In the end, it was a very patient and brilliantly inciteful Helen Megaw who inherited the responsibility for supervision of my dissertation which involved refinements of the crystal structures of sanidine, low and high albite, and 'transitional anorthite', among other related topics. I credit a lengthy and heated argument between Helen and my external examiner, Peter Gay, with saving my neck in a potentially difficult Ph.D. examination for which I felt poorly prepared.

In 1962 I was fortunate, while still a post-graduate student, to attend the first of four NATO-sponsored Advanced Study Institutes on feldspars. There I met J.V. Smith and Julian Goldsmith from the University of Chicago, who invited me to work with them, and – as fate would have it – a Schlumberger award winner, Ian Carmichael. In 1963 and 1964 Ian, Henry Emeleus, and I competed for time on the new ARL electron probe. In the beginning we were measuring with a millimeter scale the peak heights from each element. So we thought we'd been transported to heaven when the first Nixie tubes arrived and we could copy the glowing numbers (three elements at a time) into our notebooks. Thus Joe Smith and I completed exhaustive microanalytical studies of the compositions of chemically analysed plagioclases and alkali feldspars.

Throughout my entire professional career I have been blessed with highly competent colleagues who were kind enough to tolerate me. Most notable among them have been Jerry Gibbs (an Honorary Member of the Min. Soc.), from whom I continue to learn, and my good friend, F. Donald Bloss. Students always are great teachers, too, and Norris Jones, Mike Phillips, Alex Speer, John Higgins, Carl Francis, Dana Griffen, and Shu-Chun Su have been especially inspirational. Other collaborators who have left a significant imprint on my career are Joe Smith, Dave Stewart, Herbert Kroll, and Horst Pentinghaus.

My wife, Elna, has been totally supportive of my professional endeavours. I owe more to her than I can reasonably express in a professional journal.

As a parting thought, I would mention the fourth embarrassment that accompanies my acceptance of the Schlumberger medal. Ian Parsons made it clear in

his presentation that my 20 years as series editor of *Reviews in Mineralogy* was a (the?) significant reason for the award, but what he was kind enough not to say was that my name has appeared on the front cover of nearly 140,000 volumes and that I put it there. Most who read this will understand that academic bean counters love that sort of thing, and that promotion and its attendant rewards depend to a large degree on name-recognition. So I have enjoyed both, far beyond my real contribution to the science

of mineralogy. More than 40 editors and authors of monographs, and nearly 350 authors did most of the work for the *Reviews*, and I thank them for making the series so successful.

I am grateful to the Society and its members for this singular recognition, all the more enjoyable because it comes from a place that has meant so much to me and my wife over these past 35 years. Thank you all!

1995 Max Hey Medal

Presentation, by the President, Professor Ian Parsons, to Dr S. C. Kohn, 5 January 1996, at the University of Bristol

The Max Hey medal is awarded to young mineralogists, less than 35 years old at the time of the award, who are showing every sign of becoming of becoming outstanding contributors to our science as their careers unfold. It is slightly disquieting that this year's winner, Simon Kohn, currently a NERC Advanced Research Fellow here in Bristol, was born in 1961, when I was already one year into my Ph.D. programme. Like others of my generation, as I got round to publishing my Ph.D. work, and for many years subsequently, when I sent it to Max Hey as editor of *Min. Mag.*, I would receive charming,

hyphening, 'the Lloyd George-Bonar Law squabble', which according to Max could properly only be interpreted as involving three people. Sadly, today's editors, under pressure to publish themselves and grudgingly permitted to give their time to journals which do not figure in their institution's balance sheets, have little time to explain the subtleties of language, even to the young. It is however, highly appropriate that the Mineralogical Society's young scientist medal should commemorate Max Hey, who put in so much effort on their behalf.

Simon graduated in Chemistry at Oxford in 1983, doing a project in his final year on magnesia-chromite refractories. This must have fired an interest in *compounds of mineralogical interest* because he then moved to Manchester to do a Ph.D. involving high-pressure synthesis work, and electron and ion-probe analysis, on trace element partitioning in igneous systems. This work showed that melt composition plays a major role in trace element partitioning, and much of his subsequent work has been concerned with melt and glass structure. He stayed in Manchester as a post-doctoral Fellow to develop the EXAFS technique to study the atomic environment of trace elements, using the Daresbury Synchrotron Source, and developed an intense collaboration with workers at Warwick, studying the dissolution mechanisms of H₂O, CO₂ and F in silicate glasses using magic-angle-spinning NMR. After three years at Manchester he moved to the Department of Physics at Warwick, but maintained his links with Manchester as an honorary research fellow. His NMR work on volatiles in glasses continued, and he developed *in situ* high-temperature MAS NMR for work on mineralogical problems such as displacive phase transformations in framework silicates. He has been a Fellow here in Bristol since



Simon Kohn (*right*) receiving the Max Hey medal from Ian Parsons.

lengthy, laboriously hand-written editorial comments, putting me right, for example, on the abuse of 'non-qualifying adjectival clauses' and the proper use of hyphens. The letter I have before me, dated 1967, cites as 'the classic example' of illegal