THE HAWLEY MEDAL FOR 1996 TO DAVID O'HANLEY AND FRED J. WICKS

The Hawley Award is presented for what is judged to be the best paper to appear in *The Canadian Mineralogist* in a given year. The winners for 1996 are David O'Hanley and Fred J. Wicks for their paper entitled "Conditions of formation of lizardite, chrysotile and antigorite, Cassiar, British Columbia" (*Can. Mineral.* **33**, 753-773, 1995). The selection committee included Norman Bégin, Roger Mason and Ron Peterson, and was chaired by Ron Emslie.

The selection committee considered that the paper exhibits many outstanding research qualities, in addition to being well-presented and scientifically sound. In particular, the skillful blending of observations, experimental data and theory has resulted in an important contribution to our understanding of the genesis of assemblages of serpentine minerals. The work is based upon a versatile integration of subdisciplines including mineralogy, crystallography, geochemistry, petrography and experimental petrology, in addition to field observations. The paper illustrates particularly well the variety of techniques that must be mastered to understand the complexities of nature. The study amply demonstrates the value of mineralogy in its own right, as well as its role as a critical supplement to other subdisciplines. Members of the selection committee believe that this is a highly significant accomplishment at a time when mineralogy has too often, in recent years, been considered as a field of declining importance.

This paper is one of a series of important collaborative works between Dave O'Hanley and Fred Wicks; it represents an extraordinary amount of work. Serpentine-group minerals, which invariably form complex assemblages and textures composed of very fine-grained material, present a real challenge to the mineralogist. Most of us, on looking at these assemblages, throw up our hands in horror and seek out something easier to investigate. My own brief venture in serpentine mineralogy was indeed a salutary experience, and I really appreciate the time and effort required to obtain decent X-ray-diffraction patterns using the microbeam camera. As serpentines are so common and important in industry, it is a pity that so few of us have considered becoming involved in this branch of mineralogy, either from an academic or environmental viewpoint. With regard to the latter, mineralogists should be playing a major role in enlightening politicians and others as to the real nature of "asbestos". It is to be hoped that the recognition O'Hanley and Wicks receive for their work will stimulate others to enter their cryptocrystalline cosmos. This is without doubt a particularly fruitful world, as both recipients of this year's award are previous winners of the Hawley Medal for earlier studies of serpentines.

In summary, on behalf of the Mineralogical Association of Canada, it gives me great pleasure to present you with the Hawley Medal for 1996.

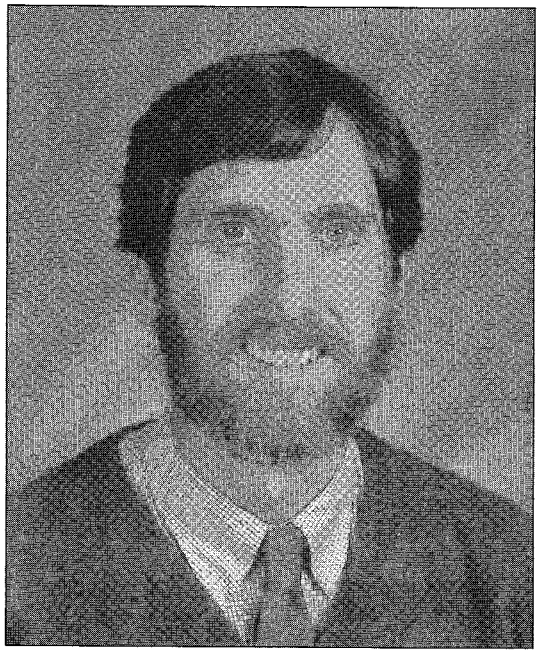
Roger H. Mitchell
President

Mr. President,
members of the Executive Council and the Mineralogical Association of Canada,
and guests,

I was very pleased when President Mitchell told me that Fred and I had been awarded the Hawley Medal. I thank the members of the Hawley Selection Committee for recognizing the paper on Cassiar as a worthy contribution to our knowledge of serpentinites, especially as so much of what I have done as a geologist was seed for and fruit of the Cassiar project. This is my second award from the Association. The first Hawley Medal was awarded for a technique to construct phase diagrams which, with the chutzpah of youth, I used to explain the formation of rocks that I had not yet studied in detail. Thus, to be awarded the Hawley Medal for work done after I have spent some time looking at these rocks is indeed gratifying.

The Cassiar project was started while I was a post-doctoral fellow under Fred and finished eight years later, while I was a post-doctoral fellow under Kurt Kyser. I am grateful to both Fred and Kurt for giving me the freedom to pursue my hunches and insights, unfettered by what I would have considered just demands to fit into their established and productive research programs as the post-doctoral fellow that I was.

When I started working with Fred, serpentinites were not, and probably still are not, considered rocks worthy of study, because they could not contribute to



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solving geological problems. This did not bother me, because all I wanted to do was to look at serpentinites, and it suited my personality, which liked working in isolation. Fred financed a trip to the Abitibi greenstone belt and permitted trips to the serpentine belt of New South Wales and the Josephine Ophiolite in California. These trips allowed me to look at serpentinites in diverse tectonic settings and thereby deepen my understanding and appreciation of them. Eva Schandl, who was a graduate student under Fred at the time, first got me thinking seriously about fluids, because she kept mentioning that there were fluid inclusions in rodingites, and that we should do something with them. It is not easy to ignore Eva, and thus I found myself considering not only rodingites, but carbonates as well. She started me on the road out of serpentine hollow. It was Kurt who cured my myopia, which divided the geological world into serpentinites (complex and interesting) and everything else (not interesting). He, along with Greg Harper of SUNY Albany, helped me understand how to consider fluids in their geological setting, thus liberating serpentinites to be ciphers that could unravel geological conundrums, and partially inserting me into the wider geological community. The efforts and knowledge of all these people are present in the Cassiar paper.

I acknowledge a debt I owe to Bob Martin. He suffered from my bad writing, and helped me more than he can know to improve it. I hope that he has seen in the last eight years some progress in my ability to use the written word. I think both that *The Canadian Mineralogist* is one of the best-edited journals in the geological community, and that it is his doing.

On the larger scene, I cannot separate the Association from geology in Canada. My interests have always been in minerals and the solid state which they represent, and both the Association and the geological establishment in Canada have supported my efforts to understand the serpentine minerals. This effort required much time and effort just looking at serpentines, with no goal other than a desire to understand them. I am convinced that my work would not have been accomplished if I had stayed in the United States, where work undertaken just to see what is there would not be funded. I am fortunate to have had the opportunity to write down in book form for the geological community at large all I have learned about serpentinites, and to feel that I have repaid all those who have helped me while I was an academic scientist.

On a personal level, Hilda and I enjoyed enormously our eight years in Canada. Our two children are Canadian citizens, and our daughter is old enough to be a Canadian. Growing up in Saskatoon, she knew maple leaves as Canada leaves because she knew the flag before she saw a maple tree. When Richard Nixon died a few years ago, we overheard her tell a companion that the flags were flying at half mast because their president had died. Such memories will always allow us to think well of Canada.

Currently I am teaching in a private high school in the Twin Cities area of Minnesota. This change of career was not forced upon me, and two years later I know it was the correct choice. My recent change of career, and the subsequent award of the Hawley Medal for something I almost consider to be from a previous life, brought on a fit of melancholy and introspection. I feel a debt of gratitude and a sense of obligation to the Mineralogical Association of Canada for what it has done for me. Both in representing my interests as a mineralogist, and in sponsoring sessions and meetings, I have benefitted from the unselfish efforts of many of you.

My new career presents the challenge of managing a classroom while talking about subjects that I love. I am trying to pass some of this knowledge onto high school students. In addition, I am responsible for organizing the content of six science courses taught from grades seven to twelve, trying to elicit a sense of wonder from the students. Perhaps I am beginning to pay you back

indirectly for all the time you spent organizing things for me. I appreciate now what teachers in high school went through so that I could enjoy teaching advanced topics to both undergraduate and graduate students. Finally, I urge you to spend time talking in local schools, if possible. I think that love of a subject is the most important aspect of talking with primary and secondary school students. You have this gift, and you should share it with those not in the profession. Thank you!

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It is a particular pleasure to receive the Hawley Award here in Winnipeg, my home town, and at the University of Manitoba, my alma mater. Thank you very much. It is particularly pleasing to be asked to speak on this occasion. I have won the Hawley Award before, but on those occasions I was not given the opportunity to speak, perhaps for fear the luncheon would go on too long. After all this speech, the MAC may wish to go back to this earlier tradition.

When I became President of MAC, I realized that my Presidential Address would be given in Winnipeg. At the time, I thought how pleased my Mother would be to come to hear it. She would have been even happier to see me presented with this Medal had she not passed away last November. Nevertheless, I am lucky to be supported by both my sisters, who have come here today. I thank them for coming.

I have not always worked on serpentine minerals; it only seems that way. Through atomic force microscopy, thermal analysis, building the ROM mineral collection and studying gem deposits, I have worked on a variety of minerals. It is true though that serpentine minerals and how they form have been the thread through my career. I first became interested in serpentine as an undergraduate here at the University of Manitoba in Bruce Wilson's petrology lectures. The problem of serpentinization intrigued me, but at that point, there was no opportunity to develop my interest in it. Later, during my Master's work on differential thermal analysis (DTA) of Lake Agassiz clays, Colin Coats asked me if I could do DTA on the serpentine minerals from the Manitoba Nickel Belt he was working on for his Ph.D. This was the first time I had actually worked on serpentine. This led to X-ray-diffraction studies and the chance to work with Bob Ferguson. A couple of years later, when I had had enough of research on clay minerals at the Manitoba Department of Highways, I decided to go to Oxford to work with Jack Zussman for a doctorate. Colin suggested that I take his serpentine samples and do further work on them, and Joe Brummer was helpful in allowing me to collect an extended suite of serpentinite samples from the Manitoba Nickel Belt. Jack had the idea of using a microbeam X-ray-diffraction camera to produce diffraction patterns of the serpentine minerals *in situ* in thin section. This proved to be a very successful approach in figuring out the mineralogy of the baffling array of textures the serpentine minerals develop. Later, when Jack left Oxford to be Chair of Geology at Manchester, I spent six months with Fab Aumento at the GSC in Ottawa extending my work to the Mount Albert and Muskox serpentinites. When I returned to Oxford, Eric Whittaker became my supervisor, and I got very involved in the crystal structures and crystal chemistry of the serpentine minerals.

It was my good fortune to be able to return to Canada and a job at the Royal Ontario Museum (ROM). This was mainly through the efforts of Bob Gait, whom I knew from Manitoba and who had joined

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ROM himself two years earlier. ROM has a wonderful mineral collection, and it is an exceptional place to learn about minerals and to develop one's research interests. I expanded my work on serpentines with more microbeam work at ROM on Canadian asbestos deposits, electron-microprobe analysis of serpentines with George Plant at the GSC, transmission electron microscopy with Don Peacor at the University of Michigan at Ann Arbor, and was Eric Chatfield's serpentine mineral consultant on asbestos problems in the environment. Frank Hawthorne invited me to do research with him at Manitoba, and I got further involved in the crystal chemistry of serpentine-group minerals. I became interested in deformation studies of serpentine minerals and the preserpentinization deformation textures preserved by serpentine minerals. This attracted the attention of David O'Hanley, who joined me as a Post-Doctoral Fellow in what was to be an exciting collaboration.

David's interest in serpentine minerals, phase diagrams and structural geology perfectly complemented my own interests, so we filled the gaps in each other's knowledge and were able to solve problems neither one of us would have tackled alone. David and I have had great fun working together in both the field and the lab. It is rewarding not only to have fun with a project, but to also have its results acknowledged by our colleagues. I thank the MAC for bestowing on me the honor of the Hawley Medal.

Fred J. Wicks