

PRESENTATION OF THE ROEBLING MEDAL TO
ADOLF PABST

IAN CAMPBELL, *California State Division of
Mines and Geology.*

President Faust, members and guests of the Mineralogical Society of America:

This marks the twenty-fourth occasion in the last twenty-eight years in which the Mineralogical Society of America has made an award of the Roebling Medal. Over these years the history of the medal and the conditions of the award have been so well reviewed and emphasized that it should suffice now merely to remind you that the Roebling Medal represents the preeminent mark of distinction in American Mineralogy—if not indeed, in the entire mineralogical world; and to recall that the award is based simply and wholly on the quality and significance of a man's contributions to the advancement of mineralogical and petrological science.

The first Roebling Medal was awarded to Charles Palache (my own revered teacher). Palache had been born in California and received his undergraduate education at the University of California at Berkeley. The second Roebling medalist was Waldemar Schaller, also born in California and who received both undergraduate and graduate education at the University of California. Subsequently, two other Roebling medalists (Esper Larsen and William Foshag), although not born in California, received their undergraduate and graduate education at the University of California. All four of these Roebling medalists, be it noted, were associated with eastern institutions (the U. S. Geological Survey, the U. S. National Museum, Harvard University) in the research that won them the Roebling Medal.

Now, from the point of view of a provincial Californian (and we do have a few such!) this export of all these potential Roebling medalists might well be viewed with the same concern with which many economists today view the export of our gold from Fort Knox. But time is a great equalizer, as geologists well know, and tides have a way of turning. The selection of today's Roebling medalist clearly indicates such a turning!

Adolf Pabst was born in Chicago and received his undergraduate education at the University of Illinois. He came to the University of California some forty years ago for graduate work—and fortunately has stayed ever since. This is certainly not to imply that he has become a provincial Californian—far from it. Amongst other things, he has held an American-Scandinavian Fellowship for studies at the University of Oslo, a Guggenheim Fellowship, and a Fulbright Scholarship for studies at the

University of Vienna. He was president of the Crystallographic Society of America in 1948 and president of this society in 1951.

In the years since he completed his doctorate at California he has contributed over eighty papers to the advancement of our science, the majority of them published in the *Journal of our Society*. There is neither time, nor is this the place, to review in any detail the extent of these contributions. Yet even in passing, one cannot help pausing to cite such work as his investigation of plazolite, which first provided an understanding of the role of hydroxyl in the hydrogarnets; of his investigations of ralstonite, which contributed greatly to our knowledge of the pyrochlore group as a whole and which, carried further, led to an effective structural classification of the fluo-aluminates. Then there was his notable presidential address which, at a time when it was much needed, contributed greatly to our understanding of "The Metamict State," and, also deserving of special mention, are his several studies of tetragonal sheet silicates.

These and many more significant investigations are part of the documented record. What I am more concerned with today is that you should know what manner of man is our Roebbling medalist. Two things, in particular, characterize all of his work: 1) Patient research with meticulous attention to details; 2) conciseness and precision in all of his reports. I recall one editor who said of his manuscripts that "if all papers submitted were like Adolf's, an editor would have no problems—in fact we might not even need an editor!" Another outstanding characteristic is his unvarying helpfulness. One might think that with the prodigious amount of work he, himself, has carried out he would have little time to assist others. To the contrary, his students and his colleagues alike testify to his willing and generous helpfulness. A recent example of this appeared in the March–April number of our *Journal*, wherein seven new minerals were reported from Fresno County, California. Adolf did all of the single crystal work on these minerals, and did it on minute and difficultly separable amounts of material which required the most painstaking preparation. He reviewed all of the chemistry of these minerals and synthesized two of them for the first time. Yet it was only because the original investigators had him outnumbered and thus were able, so to speak, to get on each side of him and twist both of his arms simultaneously, that he consented to allow his name to appear as a co-author. He had never viewed his efforts as anything but a labor of love, willingly donated to the advancement of the science.

Now, I am about to make two seemingly quite unrelated remarks. But give me a few moments more and I think I can bring them together in balance for you.

1) In reviewing previous presentations of Roebling medalists I have been dismayed to find virtually no reference to the distaff side—important as we know that the distaff side is to any man, whether he be president of the United States, Nobel laureate, or Roebling medalist. So I propose to take steps right now to remedy this unfortunate situation by mentioning Gudrun Pabst, a lovely lady and distinguished in her own right. In fact, just last month she was the recipient of two signal honors. She was elected a Fellow of the American-Scandinavian Foundation; and two weeks ago the Norwegian Consul-General in San Francisco, acting on behalf of the King of Norway, presented Gudrun with the St. Olaf's Medal.

2) Those of you who have occasion to review the statistics in the Bureau of Mines Minerals Yearbook may have noticed that within the last year, after an absence of many years, California has bounced back to the top of the column in production of tin in the conterminous United States. From this interesting, yet widely unappreciated statistic, I would not be so bold as to venture that a metallogenic province for tin in California is thereby indicated. But it should be at least of incidental interest to point out that in two or three of the newly discovered localities for benitoite (itself long one of California's most distinctive minerals) analysis has shown significant amounts of tin. In fact, in one locality, tin proxies for as much as 75% of the titanium, a circumstance which properly calls for a new mineral name rather than merely "stannian benitoite." I might say that "courtesy of the publishing delays introduced by the Banta Company's computerization program," I am able to announce here, for the first time—what is scheduled for the (delayed) September issue of our Journal—that this new, unique mineral has been named "pabstite" in order to honor an unique and distinguished Californian. Thus it is that in October two honors came to Gudrun Pabst; and now in November, two honors have come to Adolf—thereby maintaining a happy balance in a happy family!

One more outstanding characteristic of our Roebling medalist I must cite: He is above all things, consistent. We know scholars and we know professors who present one behavioral pattern in the classroom, perhaps another one in the laboratory, and a still different one in their private lives. But Adolf is consistently consistent. I can illustrate this best by repeating a story which, although the occasion was a number of years ago, still circulates on the Berkeley campus. This goes back, in fact, to the reign of Roosevelt the Second—it was election day for his third term. That night there was an election party at the Ralph Chaney's (a distinguished Fellow of GSA, and known to many of you). It was a lively party because in attendance there were some who were pro-FDR, and



From left to right: GEORGE T. FAUST, IAN CAMPBELL, ADOLF PABST.

some anti-FDR; there were some pro-third termers, and some anti-third termers. But by midnight, California time, it was clear that Roosevelt had won the election, and the guests started to go home. It had been a rainy evening, and at this time the rain was coming down harder than ever. Guests had driven into the ample driveway (shrub surrounded) of the Chaney's. So, when the time came to go home, Adolf seized an umbrella and chivalrously went out in the rain to bring the car around to the front porch so that Gudrun might encoach dry. Adolf however seemed to be gone for an unconscionably long time and Gudrun, anxiously waiting on the porch, eventually called "Adolf, where are you?" The response came, in lugubrious tones, seemingly from far below ground, "I don't know, I think I'm in a hole." How I wish I could take time to go into all the muddy and fascinating details with which this story has since been embellished, but I must do no more than explain what had happened. There had been an old dug well on the Chaney place, some sixteen feet deep which, through the years, had become encrusted with sod and small shrubs. Adolf had stepped onto this and, what with the soaking the ground had had, he fell through to the bottom of the well. It could have been a dangerous business but fortunately there was enough mud and shrubbery to cushion his fall and he was unhurt. Soon there was a mustering of lanterns and flashlights and eventually a six-

teen-foot ladder was obtained and carefully lowered down the well. Again, Gudrun went through a long, anxious wait, this time hovering near the edge of the well, but no Adolf. Eventually she called, "Adolf why don't you come out?" Came the response (still in those lugubrious tones), "I can't find my umbrella." This, I think, illustrates better than any scientific episode, the consistency of character in our Roebing medalist—a man whose patience and attention to detail leaves nothing overlooked or forgotten, no matter how trying the circumstances. And now, Adolf, never mind about that umbrella, come on up and receive the Roebing Medal!

Mr. President, on behalf of the Mineralogical Society of America, and—if you will permit me momentarily to don my hat as an official of the State of California—let me add that California proudly presents our adopted native-son to you, for the twenty-fourth award of the Roebing Medal.

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ACCEPTANCE OF THE ROEBLING MEDAL OF THE MINERALOGICAL SOCIETY OF AMERICA

ADOLF PABST, *University of California, Berkeley, California.*

President Faust, Ladies and Gentlemen, Dear Ian:

When past president Berry phoned me from Miami last year to ask whether I would accept this medal there was no time to consider a reply. Long before I had come to the conclusion that I was a failure and so was not prepared for the question. The past year has been for me one of self examination that has only strengthened that conclusion.

Before chance led me to become a mineralogist I was a devoted reader of H. L. Mencken. A few of you may remember his references to "the messianic delusion." In recent years when I have been called upon to assess various proposals for crystallographic or mineralogic investigations I have often felt that the young authors of these proposals suffered from such delusions. If only their project could be supported by 50 or 100 thousand dollars the progress of mineralogy would be assured. My position has been at the opposite extreme. I have pursued only limited objectives and it is gratifying that some of you have found merit in the results.

When I determined the structure of plazolite it was without anticipation that this would be the start to understanding of the hydrogarnets, now known to be widespread. When working on rastonite I did not



ADOLF PABST
(1955)

realize that the fluoaluminate structure I had found belonged to the pyrochlore type until Machatschki saw it. Other and better crystallographers have since failed in exactly the same way in dealing with related artificial substances and not even the editors of *STRUCTURE REPORTS* have noticed this. It was years after the completion of the gillespite structure, a new type of phyllosilicate, before I realized that its most startling feature is the square planar coordination of the iron. In these and doubtless in many other cases my reach has exceeded my grasp.

In this year of self examination flaws have been found in many old papers. Some may be too trivial to warrant rectification. Not being given to hiding mistakes I had earlier published several papers solely to correct errors. One was to correct my propagation of the error of Morel as to the existence of a hemipentahydrate of sodium carbonate, really trona. This drew a response that gave me no little satisfaction. More recently I not only propagated but compounded error as to the correct space group of lawsonite when I attributed certain diffraction effects of this mineral to "false symmetry." This was speedily and fully corrected. In view of these efforts it was particularly frustrating when, only a few days after Len Berry's phone call, I found a description of the nonexistent sodium carbonate hydrate based on my faulty paper in a newly published reference book and a wholly misleading citation to my erroneous "false symmetry" paper in another newly published reference book.

My inadequacy becomes daily more apparent. Most recently Dick Erd has found that even my simple conclusions as to the identity of stellerite and epidesmine with stilbite are questionable. It is well that the end is in sight. Half a dozen studies, all with limited objectives, are in progress and several others in abeyance, but it may be that I will publish no more as I am determined to avoid the need for corrections, corrections that may go unnoticed. My chief concern now is to make sure that others finish properly various mineralogical tasks which I can clearly outline but may be unable to finish. So far efforts to arouse interest in these tasks have been without success.

Thank you again, Ian!

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PRESENTATION OF THE 1965 MINERALOGICAL
SOCIETY OF AMERICA AWARD TO
PETER J. WYLLIE

RICHARD H. JAHNS, *Stanford University, Stanford, California.*

Mr. President, Fellow Members, and Guests of the Society:

The 1965 recipient of the Mineralogical Society of America Award was born 35 years ago in London, England, and since then he has been consistently devoted to the operating principle of much action per unit time. Even his grammar-school teachers in Middlesex were confident that he would move rapidly and far, both physically and mentally, but understandably they were at a loss in attempting to identify directions and targets for so talented and yeasty a youngster.

After serving in the Royal Air Force, Peter Wyllie matriculated in 1949 at the University of St. Andrews, Scotland, where his studies centered about physics and geology. He graduated with the B.Sc. degree in 1952. During the summer of 1950 he had been a member of the British West Greenland Expedition, studying geology and glaciology under Dr. H. I. Drever of St. Andrews, and in 1952 he was appointed Assistant Geologist on the staff of the British North Greenland Expedition. After making a geological and glaciological survey of an hitherto unknown region, he returned to St. Andrews to study toward an advanced degree that he received with First Class Honors in 1955.

His mapping in the complex basement terrane of Greenland aroused Wyllie's interest in the genesis of granitic rocks, an interest that has continued strongly to the present time. It was soon expanded to include the petrology of peridotites and olivine-rich rocks, along with the fusion of various kinds of rocks by thermal metamorphism, and these topics became the themes of his Ph.D. investigations based on field work near the geologically famous Island of Skye. During this period he also held an instructorship at St. Andrews, thereby beginning his career as a teacher.

With an already substantial background of geologic experience, Wyllie came to The Pennsylvania State University in 1956 as Research Assistant to Dr. O. F. Tuttle. Here began an extraordinarily happy and productive association between these two men. Indeed, it would be almost uniquely appropriate for Frank Tuttle, first recipient of the Mineralogical Society of America Award, to be making this introduction, but he

has perforce foregone such pleasure because he is yet fully to recover his earlier good health.

During his first two years at Penn State, Wyllie showed the skill and stamina of a seasoned vaudeville juggler as he worked by day on new, mainly experimentally-based research, and by night toward completion of his Ph.D. thesis. His self-imposed "moonlighting" yielded the magic degree from St. Andrews University in 1958. Following a year as Assistant Professor of Geochemistry at Penn State, he returned to the British Islands, where he served at Leeds University, England, as Research Fellow in the School of Chemistry and subsequently as Lecturer in Experimental Petrology in the Geology Department.

Penn State lured him back in 1961, only to lose him four years later. Here it is of interest to note that the College of Mineral Industries at this university, thanks largely to the efforts of men such as E. F. Osborn, O. F. Tuttle, M. L. Keith, Rustum Roy, C. W. Burnham, and P. J. Wyllie, has long provided numerous academic and other institutions with young scientists especially competent in the areas of experimental petrology and phase-equilibrium studies. The University of Chicago is the latest organization to be so enriched, in this instance through the coming of Wyllie himself.

It would appear that this man routinely maintains one foot in the laboratory and the other on the ground, the chalk in one hand and a pencil in the other, and a wealth of useful intellectual motions in his head. That his professional activities have been characterized by remarkable energy and versatility can be attested by his former teachers, his students, his colleagues, and his many friends—the last category by no means distinct from the other three! But here the record itself speaks most eloquently, for he has taught with distinction, turned out a long series of worthy research contributions, and even has willingly and effectively directed his talents toward administrative duties when these have been thrust upon him.

Clearly outlined and documented among Wyllie's more than fifty published papers are the results of his careful searches into the origins of granitic, alkaline, ultrabasic, carbonatitic, and thermally metamorphosed rocks. He has been strikingly successful in his use of the experimental approach for elucidating and testing theories of rock genesis, and in this he has maintained contact with reality as expressed by the nature and occurrence of the rocks themselves. Of perhaps greatest significance toward our ultimate understanding of many rock-forming processes are the results of his experimental work on systems with one or more volatile components, and especially carbonate and carbonate-silicate systems.

This man claims that he has had much help from many people, that he

wouldn't be here at this table today if it weren't for his fortunate association with Frank Tuttle—and if his lovely wife had not been willing to type his Ph.D. thesis at a time when finances were low. Assuredly such claims must have substance, but it seems likely that the energetic Wyllie himself must have contributed a little something, as well. He once was runner-up in the Scottish Universities Boxing Championships despite a “bruised” neck that actually had been broken weeks earlier in a rugby game, but no one has since suggested that his resulting permanently stiff neck is to be correlated with a mental hernia! And when he wistfully identifies his current main research interests with experimental melting down of the Sierra Nevada and other batholiths, we may as well be emotionally prepared to step back and watch them go!

Mr. President, it is with pleasure and warm good wishes, in which most especially his former colleagues join me, that I present Dr. Peter J. Wyllie, 1965 recipient of the Mineralogical Society of America Award.

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ACCEPTANCE OF THE 1965 MINERALOGICAL
SOCIETY OF AMERICA AWARD

P. J. WYLLIE, *The University of Chicago.*

Mr. President, Ladies and Gentlemen:

When the time came to ask someone to introduce me, I was sorry to learn that Dr. O. F. Tuttle could not oblige, because he was the obvious choice, but I was pleased when Dr. R. H. Jahns came to my rescue. I know that my new colleagues in Chicago (with three MSA Awards in the department now) do not mind me describing this as a Penn State Award, and I am sure that Dr. Jahns' new colleagues at Stanford do not mind me reclaiming him for Penn State on this occasion. When I learned at the last GSA meeting that I had been elected as the 1965 recipient of the MSA Award I was overcome with the shock of surprise and pleasure. The shock has abated, but I still cannot express my feelings adequately. I can only assure the nominating committee and the council that this honor is greatly appreciated—very greatly appreciated. Then, like the previous recipients, I take pleasure in thanking my teachers and associates, and in telling you a little about them.

I went to St. Andrews University in Scotland with the intention of graduating in chemistry or physics. However, when I contrasted our field trips in geology with the laboratory afternoons in chemistry and physics,

I decided that geology was my subject. I became influenced by Dr. Harald Drever, a high-spirited, uncompromising Scot, with a strong belief in the importance of individual resourcefulness, breadth of experience, and scientific integrity. As a teacher, he tried to instil his beliefs into me. Through his efforts, I joined two expeditions to Greenland and, later with the help of Dr. W. S. Mackenzie, a former St. Andrews student, Dr. Drever arranged for me to become research assistant to Dr. O. F. Tuttle in the stimulating environment of the Division of Earth Sciences at Penn State. This was the best thing that could have happened to me. I understand that I have received this Award as a result of work completed in silicate-volatile systems, and in carbonate systems containing a liquid phase. Tuttle always had a hunch that liquid would form at reasonable temperatures, given the right conditions, and one day he popped into my office and said "Pete, why don't you see if you can melt calcite when you have time?" When N. L. Bowen introduced Tuttle for the MSA Award 15 years ago, he referred to Tuttle's flair for experiment, but he might have added that Frank Tuttle is also a man of ideas, and there simply was not time for me to try all of the suggestions that he "popped" into my office. However, on this occasion it happened that the combination calcite-water seemed far more attractive than the HF solutions that I was adding to granites, so I did try to melt calcite and found that it melted very easily. Then followed a busy period when we investigated the products of melting. Tuttle cancelled all morning appointments so that he could stay in the laboratory. I have never seen a man more happy than he was at that time, whistling down the corridor with a "bomb" in each hand, headed for the microscope and examination of the samples. The system $\text{CaO-CO}_2\text{-H}_2\text{O}$ opened up a whole series of experimental studies with results that have applications in many areas of petrology. Several of these have been tackled by enthusiastic graduate students whose work I have had the good fortune to supervise, with support of the National Science Foundation. The students and ex-students include G. M. Biggar, G. Franz, J. L. Haas, A. F. Koster van Groos, and D. H. Watkinson.

There are many exciting prospects ahead in carbonate-silicate systems, and research proceeds apace, but I have to admit that what I really want to do is to work with rocks. Thanks again to the National Science Foundation, we now have a program under way, melting igneous rock series, that is being conducted by Drs. G. V. Gibbs and D. L. Gibbon at Penn State, and by A. J. Piwinski and myself in our new home in Chicago. In Chicago, we plan to melt down the granitic batholiths of the western U.S.A. We have specimens from the Wallowa batholith and the Sierra Nevada batholith, kindly supplied by Drs. W. H. Taubeneck, P. C. Bateman, and F. C. Dodge. With the help of the modern alchem-



PETER J. WYLLIE