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PRESENTATION OF THE ROEBLING MEDAL TO PAUL RAMDOHR

D. JEROME FISHER, *University of Chicago, Chicago, Illinois.*

President Osborn, Members of the Society and Guests:

A century ago we were engaged in the greatest war of our history. One hundred years ago today although the episode of first Bull Run had occurred, all was quiet on the northern-southern front; the most newsworthy item was that the famous western explorer and son-in-law of Senator Benton, General John C. Fremont, had been relieved of his command in Missouri. It wasn't till nearly a year later that Kirby Smith's rebels (under General Bragg) threatened Cincinnati and actually entered the outskirts of Covington across the river.

Washington A. Roebling entered the Union Army in 1861 as a private of age 24, and resigned early in 1865 as a Colonel, in order to assist his father, John A. Roebling, in building the suspension bridge from Cincinnati across to Covington. This handsome bridge is only a few blocks from this hall, where Vine Street crosses the river; the keystone blocks high up in its north tower are dated 1865, and the bridge which took 10 years to build was completed in 1867. The widow of the grandson of Washington Roebling was invited to be present on this occasion, but sent this telegram along with a personal representative:

"Please extend to Professor Paul Ramdohr my warmest congratulations for his receipt of the Roebling Medal and for his scientific achievement which earned the award. I am extremely sorry I am unable to be present and greet all of you."

Mary Roebling

Washington A. Roebling was a successful civil engineer with many original ideas and a noted amateur collector of minerals; he was vice-president of this Society in 1924, and became its sole benefactor in 1926, a few months before his death at age 89. Ten years later the Council established a medal in his honor to be awarded for meritorious achievement in the mineralogical sciences. Today occurs the twentieth presentation, the seventh to a European, the first to a German.

Writing on a world-famous personality about whom there was an abundance of material, a classical author said the following:

"Nor is it always in the most distinguished achievements that men's virtues or vices may best be discerned, but very often an action of small note, a short saying, or a jest, shall distinguish a person's real character more than the greatest sieges or the most important battles. Therefore, as painters in their portraits labor over the likeness in the face, and particularly about the eyes, in which the peculiar turn of mind most appears, and run over the rest with a more careless hand, so we may be permitted to strike off the features of the

soul in order to give a real likeness of this great man and leave to others the circumstantial detail of his labors and achievements."

This paragraph forms the introduction of Plutarch's biography of Alexander the Great, written nearly two millennia ago, about four centuries after the latter's death. And if you feel that these words do not apply to Professor Ramdohr because of the mention of sieges and battles, then you have forgotten Berlin during the later stages of World War II. Moreover the circumstantial details of Professor Ramdohr's life have recently been well documented in four papers that are found in the front of the giant two-volume *Festband* celebrating his 70th birthday that appeared in the 1960 *Neues Jahrbuch für Mineralogie*, and a very personal picture is given by his two former assistants (H. Strunz and E. Seeliger, now at the Technical University of Berlin) in the first 1960 issue of *Der Aufschluss*, the monthly publication of the V.F.M.G. (*Vereinigung der Freunde der Mineralogie und Geologie*, with about 1700 members).

In these you will find he was born in Überlingen on the north shore of the Lake of Constance on New Year's Day, 1890. He attended the Universities of Heidelberg and Göttingen, but before taking his Ph.D. in 1919 at the latter he served over four years in the artillery of World War I. He was Assistant at Darmstadt for two years till 1921, then he was at Clausthal for five years, where he started his *Erzmikroskopie*, at Aachen for eight years where he succeeded Schneiderhöhn, and in 1934 followed A. Johnsen as Professor of Mineralogy at the Friedrich-Wilhelm University of Berlin. Since 1950 he has been at Heidelberg, which University made him Professor Emeritus in 1958, but he was his own successor there for two more years.

He is perhaps best known for his "*Die Erzmineralien und ihre Verwachsungen*" which is a tremendous work now in its third edition that shows him to be one of the most observant of mineralogists. He took over Klockmann (the German equivalent of Dana's Textbook) in 1936, and has seen it through four editions; a fifth is about to appear. In addition he has over 125 other publications to his credit, all but the most recent of which are listed in the *Festband*.

He has studied and visited ore deposits all over the world. With Schneiderhöhn he travelled across the U.S.A. in 1930, probably seeing some of the camps where his uncle had worked; this uncle by the way taught him blowpipe analysis when Paul was a lad in the Darmstadt Gymnasium. From Schneiderhöhn's description of the trip we learn that Alan Bateman is a Harvard professor. The year before, he was in South Africa at the International Congress. Here as usual he made extensive collections. Professor Shand told how he had a nightmare; he dreamed

that he took his students out to see the Bushveld, but when he got there it was gone; Ramdohr had taken it back to Germany with him. Ramdohr is very observant at spotting minerals; the keenness of his eyes in this respect has been likened to the sense of smell of a pig snuffing out a truffle ("Trüffelschwein"). While visiting a Swedish granite, Norin (of Uppsala) told him that very rarely orangeite had been found in it; Ramdohr reached in his collecting bag and handed over a sample saying: "You must mean this stuff." Ramdohr never forgets anything he has ever seen, especially if it is an unidentifiable speck in a specimen under the ore microscope. A fine example of this is given on the first two pages of his article on coffinite which appeared early this year in the *Neues Jahrbuch.* As soon as Palache and I had described the mineral gratonite in 1940, Ramdohr remembered where he had seen this material, and immediately wrote a paper on it in which he took some nice cracks at yours truly; he also noted how the English robbed the mail in those days, so that only one copy of our paper reached all Germany. When at the 1958 meetings Strunz described a new mineral from Tsumeb (Ramdohr had been in Africa again the year before, but had been taken sick when about to visit Tsumeb), Ramdohr remarked: "Lieber Strunz; wenn ich nicht krank geworden wäre, hätte ich dies neue Mineral beschrieben." Ramdohr described so many new minerals that there is no doubt of the veracity of this statement.

Ramdohr still acts like a young buck in a hurry to go places, and if he doesn't learn to slow down a bit it is my prediction that he will die at a tender age, though Dr. Doris Schachner tells me he will be just like this until he is 90 at least. At the International Congress in Mexico in 1956 I remember well his great ability to ride horseback over the mountains at Concepcion del Oro; a picture of him here cracking a mine dump to pieces with his big hammer is typical—loaded collection bags are swinging from each shoulder. Last April he spent a week-end with me snowed in at Chicago, held up temporarily from sending much of the iron deposits of Upper Michigan back to Heidelberg; as soon as the planes could fly, he was out collecting, brushing aside the snow. In 1948–49 he spent nine months for C.S.I.R. (Melbourne) and went through Australia and Tasmania; I never heard directly what the result was, but I do know that since then most of Western Australia has been a desert. I don't know whether he still plays tennis or not, but he used to sneak out during the daytime for a couple of sets, and then at night with no one but the janitor to bother him, he'd spend hours on his work in the laboratory ("In der Dienstzeit kann jeder arbeiten").

Paul Ramdohr, a great teacher, has spent nearly half of the last two

years in the U. S., mainly at the Geophysical Laboratory. He is a member of many mineralogical and geological societies, and served as President of the Deutsche Mineralogische Gesellschaft from 1936 to 1945. He is a member of the Academy of Science of Berlin; also of Vienna, Heidelberg, and Halle. He has received honorary degrees from the Technical Universities of Berlin and Aachen.

Mr. President, it is a great honor and enjoyable privilege to me to present Professor Paul Ramdohr for the award of the Roebling medal.

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ACCEPTANCE OF THE ROEBLING MEDAL

PAUL RAMDOHR

President Osborn, Members, Fellows, Guests, my dear Jerry:

It is a great honor to receive the Roebling medal. I never expected to be chosen into the society of those eminent representatives of our science. I am really pleased to be selected as the first German.

When I consider those who have received this honor, I see many interesting things: first of all, the most pleasant is that the Mineralogical Society of America has always tried to honor people in all fields of our beautiful science: General Mineralogy—*Palache, Schaller, Winchell;* Petrology—general, special, theoretical and experimental: *Buddington, Tilley, Barth, Merwin, Bowen;* Goniometrical and Theoretical Crystallography: *Kraus, Niggli, Bragg, Buerger;* Optical Mineralogy: *Wright.* But we find among them also prominent mineralogists, such as *Spencer,* who cannot easily be placed in a single category. Perhaps it is only the logical sequence of this principle of treating all branches equally that I be put on the list of the medal-bearers as a "reflected-light-mineralogist." Another thing pleases me also: that the Roebling medallists are mostly people who have seen quite a bit of the world—not only of this continent but also of other countries. This shows the very wide interests of the Mineralogical Society of America, which she cultivates and honors. And also I like to mention with pleasure that some of these medalists "drank academic beer" in Germany, such as *Kraus* and *Spencer* in Munich, *Barth* in Leipzig and *Palache* and *Wright* in my own beloved Heidelberg.

To mention something of myself: my love for mineralogy actually came from America. An old uncle of mine, a mining engineer from Freiberg, went as a pioneer to the mines of Montana, where he and his old friend *Genth* discovered and described some new minerals. So psittacinite and plattnerite from the You Like mine in Idaho were already

known to me when I was a ten-year old boy. It has always been clear to me that I would study mineralogy. First I went to Heidelberg. Here the geologist *Salomon* had without any doubt a stronger personality than the mineralogist *Wülfing*. I must thank the former that my relations to geology have always been visible in my papers and interests, and also that I have very many personal friendships among geologists, especially my old teacher *Stille*. In 1911 I went to Göttingen and *Mügge*. Being a humble scientist he was much less well known than *Liebisch, Groth*, and *Rinne*, but with his knowledge and ideas he really ranked in the same class with them; perhaps with his versatile experience he even surpassed them. The significance of many of his papers was only revealed 30 years after his death. His was a hard school, but one inspired by very broad interests. During my writing—even today—I often think: "What would be the criticism of *Mügge*, if he could read this paper." He taught me the art of careful observation—as far as it can be "learned." And for his students he was an example of indefatigable activity. But there was one thing in which I did not follow him: he wrote a difficult, strongly scientific style with many mathematical formulae. I have always tried to write as simply as possible, so that amateurs can understand me and foreigners do not have too much difficulty in translating. The reason why I try to avoid mathematical treatment is simply that I don't know enough about the subject!

I was accidentally led to the study of ores when I began my work in Clausthal as "Privatdozent"—almost the same as Assistant-Professor. The size and variety of the collections there, the interesting problems of ore geology of the neighborhood, as well as the beautiful country stimulated me. The material for microscopic work was carried in my *Rucksack* —not by car or helicopter—in hundreds of excursions. I thought that for a solid knowledge abundant material was necessary. Thus for my dissertation study I collected so much material that afterwards the institute in Göttingen could give 800 pieces of cristobalite to *Krantz!* I believe that examination of material from only one deposit commonly leads to erroneous generalizations. Therefore not only did I compare the specimens in many collections, but I myself gathered tons of material in quarries and mines, during dozens of long journeys to Norway, Sweden, Finland, Austria, Switzerland, England, North- and South-Africa, Australia, Mexico. Thus this is my 6th trip to the U.S.A. and Canada. I personally labelled all the collected material and I learned a lot. Microscopic work never tired me. It is only a matter of technical training to learn not to strain the eyes any more than one would, for example, on a walk through a forest. Perhaps it was only a gift of Nature. And I always worked with the principle of the least resistance: since nature gave me a

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good eyesight, I simply used it accordingly, as Lykäus in "Faust": "Born to look, ordered to see."

I was also gifted with an excellent memory. But I am of the opinion that that can also be acquired by constant training. This helped me very much to solve quickly problems which seemed to be impossible to me or others some 30 years ago, when I found new material.

I am marked as an "ore microscopist." That is understandable when the papers of the last 30 years are considered. I always tried to be an "all around" mineralogist, but to work in all fields is nearly impossible even to a very hard working man.

Mr. President! I should like to say much more: "Wenn das Herz voll ist, läuft der Mund über." But I must come to an end. Once again many thanks for this great honor; also many thanks for the kind welcome which I receive everywhere in this country, and my best wishes for the Mineralogical Society of America. Glückauf!

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PRESENTATION OF THE 1961 MINERALOGICAL SOCIETY OF AMERICA AWARD TO JOSEPH V. SMITH

C. E. TILLEY, *Cambridge University, Cambridge, England.*

Mr. President, Ladies and Gentlemen:

For those of us of the older generation it is always gratifying to stand aside and watch the fulfilling of early promise and the growth in scientific stature of our young associates. So it comes as a special pleasure to be given the priviledge of introducing today, one so prolific in fulfillment as my young friend, old student and former colleague at Cambridge, J. V. Smith, for the distinction Award of our Society.

The rise of Smith has indeed been brilliant and rapid. With a distinguished undergraduate record at Cambridge, he began his research studies in the Crystallographic Laboratory of the Cavendish with a mineralogical problem—the crystal structure of the calcium carbonate-silicates. So was elucidated early, the structure of tilleyite—in my view a most commendable endeavour. The doctorate followed. An account of the structure of paracelsian and a refinement of the melilite structure followed in quick succession and with Yoder he made early an experimental and theoretical study of the mica polymorphs. The problems of the feldspars and feldspathoids were soon to claim his attention. I recall

the splendid series of researches on the alkali feldspars—their polymorphism, structural state and exsolution phenomena—work carried out largely in collaboration with W. S. Mackenzie. Not only alkali feldspars, but also plagioclases have been brought under keen scrutiny, exemplified in papers on their powder patterns and lattice parameters, and the effect of composition and structural condition on the rhombic section and pericline twins. Further advances were made with Tuttle on the nepheline-kalsilite system, notably with the discovery of its solvus.

More recently Smith has devoted his attention to the wide open field of the zeolites—the crystal structure of chabazite—and new studies as yet unpublished, on gismondine and paulingite. He is now actively busy on a program to determine the nature of the adsorption process in zeolite molecular sieves.

Smith's career has led him to pleasant places—Cambridge, the Geophysical Laboratory, Pennsylvania State University and now Chicago, where he occupies the Chair of Mineralogy and Crystallography. In each he has made the most of the splendid opportunities afforded him, entering with zeal into his own researches, and infusing new enthusiasm into co-operative studies with colleague and student alike.

The record of his investigations through the relatively short period of one decade is a remarkable achievement, and it is not surprising that he should appear before us as the Council's choice—among the youngest of recipients at the time of the award. We can look forward to further decades of his contributions, confident that they will serve to illuminate new and expanding horizons in mineralogy and crystallography.

Mr. President, I have the honour and pleasure to present to you, Joseph Victor Smith, for the Eleventh Mineralogical Society of America Award.

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ACCEPTANCE OF THE MINERALOGICAL SOCIETY OF AMERICA AWARD

JOSEPH V. SMITH, *University of Chicago, Chicago, Illinois.*

Mr. President, Professor Tilley, Members and Guests:

It is both an honor and a challenge to receive the Mineralogical Society of America award, and, of course, a source of deep satisfaction. However, most of the credit must go elsewhere for I have been particularly fortunate in my teachers and environment.

My father is a farmer, and my mother was a schoolteacher. Both have

worked hard and enthusiastically for 12 hours a day, almost every day of their adult lives. I could not have had better examples to follow, for whatever else is needed a mineralogist must be capable of sustained endeavor against the floods of information that threaten to submerge him.

At Cambridge, I was fortunate in receiving instruction from a faculty which believed that teaching and research had equal importance, and where the most distinguished professor would take his turn with the elementary classes. To me teaching and research are complementary and indivisible: skimp on teaching and the next generation of research scientists will be sorely handicapped: ignore research, and your teaching will become sterile. Too often I see lip-service paid to teaching: the whole concept in some so-called universities of a division between research professors and teachers is demoralizing, and the excessive gearing of reward to research achievements distorts the nature of the educational process. The Cambridge faculty knew this well, and I benefited from their excellent training.

Frank Tuttle was responsible for my greatest good fortune when he took me to join the great group of scholars at the Geophysical Laboratory. I am not the only one who feels that Frank's inquisitive mind, personal honesty and enthusiasm have been paramount in shaping his own career. Nor am I the only one to remember the time at the Geophysical Laboratory as a blissful period when cares were absent and the cherry trees in bloom. It was here that I met my very good friend, William Scott MacKenzie, who has been responsible for most of our joint research.

Back in Cambridge I profited greatly from the accumulated experience of the classic school of petrology built up to such an enviable eminence by Professor Tilley. It was with real regret that like him I left my native soil, but I had been infected by the enthusiasm that is the most notable characteristic of American life, and set out on the path blazed by the forbears of most of you here today. It is fashionable today in much of the world to criticize the United States: may I say that I know of no country that welcomes and accepts foreigners so warmly as here. I believe this is one of the touchstones of civilization, and I thank you here for what it has meant to my wife and me.

My final piece of good fortune was being appointed to the University of Chicago at the time of the creation of the new Department of Geophysical Sciences. It is unfortunately true that some earth scientists chose their subject because the exact sciences looked too forbidding: consequently many curricula have been watered down. It is also true that the great mass of information on the earth has led to narrow specialization with the formation of undesirable barriers. I believe that the new department

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at Chicago is correct in its conclusion that really significant advances in our understanding of the earth will come most easily from scientists who have been trained in the fundamental sciences of physics, chemistry and biology, and who have studied in an environment which emphasized the unity of the earth sciences. Fortunately medical advances have prolonged the life expectancy, and the high schools are now improving under the threat of the competition for university places: consequently I see a system developing over the next decade in which 3 years are used for study of the pure sciences, 3 years for study of the geophysical sciences, two years for supervised research and every subsequent seventh year for formal refresher courses. In the curriculum at Chicago we are using a triangular system with the three extremes occupied by the biological, dynamical and physico-chemical aspects. As far as possible, the beginning courses are based on material that is common ground to at least two of the geosciences. Thus the introductory course of physical chemistry covers homogeneous and heterogeneous phase equilibria, kinetics and nucleation theory, all of which apply equally well to phase changes in the lithosphere, atmosphere and hydrosphere. To bring the existing specialists together daily luncheon meetings and weekly seminars are in progress. It is amazing how many problems have been found that require unlikely combinations of specialist knowledge. For example, identification of nuclei in rain drops requires very advanced mineralogical techniques, whereas the testing of the theory that comets influence rainfall requires an even wider range of knowledge.

Mr. President, I do not advocate this pattern for all universities: indeed I believe that uniformity and conformity are dangerous and ultimately sterile, just as in thermodynamics. Nevertheless, I believe that the Chicago approach will play a major role in determining the advances of the geophysical sciences in the next decade.

Ladies and gentlemen, I thank you all for this award, and I can assure you that the stimulation of my present environment will ensure that I shall be striving equally hard in the future.