

KURT MOTHES—SCIENTIST, EDUCATOR, HUMANITARIAN

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In the case of a person as famous as Prof. Dr. Kurt Mothes, the essential facts of his life are known to almost everyone since they are available in practically every standard biographical compilation. Therefore, I shall not dwell on his birth on November 3, 1900, in Plauen im Vogtland, his apprenticeship in two pharmacies there, his education at the University of Leipzig from 1921–25, first in pharmacy, then in plant physiology, where he received a doctorate under Prof. Wilhelm Ruhland, his professorship at the University of Königsberg from 1935 to 1945, or his meteoric postwar scientific career in the German Democratic Republic, culminating in his holding chairs in pharmacognosy and botany at Martin Luther University, Halle-Wittenberg and the directorship of the Akademie Institut für Biochemie der Pflanzen in Halle. Prof. Mothes' numerous honors are also a matter of record. His honorary doctorates from three major universities, his receipt of the Cothenius medal from, and his presidency of, the Leopoldina, his award of the Hoest-Madsen Medal, the Gregor Mendel Medal, the Otto Warburg Medal, the Carl Mannich Medal, the Döbereiner Medal, his designation as a National Prize winner in the German Democratic Republic, and his honorary membership and positions of leadership in numerous scientific and professional societies worldwide, are all thoroughly documented elsewhere. Time permitting, one can even read his more than 400 scientific papers and books, devoted principally to the metabolism of secondary nitrogenous plant constituents, which were the cause of many of the recognitions above cited.

So in this appreciation of him, written on the occasion of his eightieth birthday, I shall not dwell on any of these obvious facts, important as they may be, because they would only tend to obscure some stories I wish to relate about Kurt Mothes, the man, the human being, the humanitarian—one of the finest persons I have been privileged to know. In telling these tales by which I hope to illustrate various facets of his character, I must at times intrude, but I shall try to do so as little as possible and then only to lend credibility to my statements.

Following the end of World War II, Mothes, who was then an Ordinarius (full professor) at the University of Königsberg in East Prussia, spent four and one-half years in Russian prisoner-of-war camps. This period proved a real test of character for him, but he met the challenge with his customary strength of will. Finally, in 1949, he was released in order to head up the Chemisch-Physiologische Abteilung of the Institut für Kulturpflanzenforschung in Gatersleben, one of the research institutes of the Deutsche Akademie der Wissenschaften, Berlin. At long last, he was able to work for a division of one of the German governments.

His work there with the ergot and solanaceous alkaloids and with plant growth substances, such as kinetin, was little short of sensational. He attracted a group of capable young scientists around him, and together they solved many of the problems dealing with alkaloid biogenesis and the biochemistry and physiology of secondary nitrogenous plant constituents. The Akademie built a new institute especially for him, and in 1958 he became director of the Institut für Biochemie der Pflanzen in Halle.

As director of that institute, he was an outspoken advocate for the rights of human beings, even during a time when those rights were neither universally recognized nor respected. All those who worked for him there, as well as many others, knew that they could depend on him to speak and act appropriately on their behalf, even if such speech and such actions were not the popular thing to do. To the best of my knowledge, this courageous man based his actions on the sole criterion of what was right, not necessarily on what was popular.

Examples of this kind of behavior on his part are numerous, but there is one which I especially like. For his outstanding scientific achievements, Prof. Mothes was awarded the National Prize in 1953. The prize carried with it a sizable cash award. What did he choose to do with the money? One-half of it was given to his children and his co-workers. The other half was used to purchase a set of bells for a nearby church which was then in need of such utilitarian symbols, a need recognized by him because of his service on its official board. Certainly, no prize money was ever spent in a more appropriate manner.

Earlier, I stated that I would not dwell at length on Prof. Mothes' professional activities. One of them, however, requires special mention and emphasis. His outstanding service as president of the Deutsche Akademie der Naturforscher "Leopoldina" did much to maintain scientific ties between the German Democratic Republic and the German Federal Republic. He worked very hard to develop the Leopoldina as an organization which could include natural scientists from all parts of the world including the German-speaking countries and his efforts in this direction proved extremely successful. This is an achievement of which he can be justly proud.

I first met Prof. Mothes in the spring of 1956 when I had the opportunity to travel in Europe on behalf of a client who was interested in the current state of the science and art of ergot alkaloid production by parasitic cultivation. Knowing of his published work, I wrote Mothes for an appointment which was granted by return mail. My wife and I were met in Berlin, transported to Gatersleben, stayed as guests in his home, ate at table with his family, and he and his colleagues told me all about their work in the desired detail. At the time, I was just three years out of graduate school, had published a couple of papers and was as little-known in the worlds of science and education as anyone could possibly be. Yet, this world-renowned scientist gave me the most gracious reception I received on that trip which lasted six weeks and covered a dozen or so countries. It was a lesson I never forgot and a pattern I have tried to emulate in dealing with young persons. It also taught me a lot about a man named Mothes.

If I were limited to just a few words to characterize Prof. Mothes, they would be intelligence, vigor, optimism, humility, reverence, kindness, and love of family, people, and life. He is an able and enthusiastic speaker whose formal presentations and informal conversations leave a lasting impression on those privileged to listen to them. His mental vigor is obvious to anyone who has discussed with him any of his broad scientific interests. His physical vigor is also obvious to anyone who has followed this enthusiastic hunter, sometimes with rifle, often with binoculars, up the steep slopes and down into the deep valleys of the Harz mountains. His faithful dog Arco was the only one besides the professor who never seemed to tire.

Prof. Mothes and his personable and dynamic wife Hilda have four children, Ute, George, Winrich, and Heinrich. When they and their children return to the family home on Hoher Weg in Halle for a Christmas reunion, no one enjoys it

more than *Opa*. He has cut the tree, it is appropriately decorated with real candles, an immense, multi-tiered *Weihnachtspyramide* is nearby, and grandfather and grandchildren sleep right there by it on Christmas Eve so as not to miss a single thing. When the colleagues from the Institute and other friends arrive the next day for caroling and refreshments, the festivities boggle the imagination.

Another celebration much anticipated by colleagues during the years that Prof. Mothes directed the Institute was the Fasching party. The events of that evening are, in general, enormous fun, but the specifics are beyond description; therefore, I shall not attempt to describe them, other than to say that they include costumes, music, dancing, humorous skits, food, beverages, and all-around good fellowship. And he and his wife outdid the most vigorous young people in their dancing and participation. My memory of the one such celebration I attended is characterized by a hiatus, brought about by an attempt to gold-plate my esophagus with the tiny fragments of gold leaf present in a bottle or so of Danziger Goldwasser.

But perhaps the nicest times with the Professor, and the most valued by those who experienced them, are the lovely dinners prepared at home by his wife Hilda and the interesting and far-ranging conversations which always followed, either sitting around the table with a good cigar and a bottle of wine, or strolling through his garden admiring a new variety of rose. Those memorable occasions are unforgettable—one recognizes that he has been privileged to share the thoughts of a great man.

One of the important measures of a good teacher is the number and quality of his students. In his years at Gatersleben and in Halle, Mothes developed around him a group of young scientists whose dedication to the work and ideals of their professor approached discipleship. I shall name some of them, but in doing so, must apologize in advance for inadvertent omissions. My closest association with these individuals and their work took place from the late 1950's up to the middle 1960's, so some who were active outside that period or whose interests were somewhat remote from my own will necessarily be lacking. But let me at least name D. Gröger, H. R. Schütte, H.-B. Schröter, G. Reuther, I. Böttger, L. Engelbrecht, D. Neubauer, H. Böhm, S. Johné, M. Luckner, D. Erge, H. Friedrich, and A. Romeike as just a few of the many scholars who comprised the Mothes group. Many of them are active scientists today, carrying on various phases of the work begun by their mentor.

During the year 1963-64 which I spent in Mothes' Institute in Halle working with Prof. D. Gröger, our principal interest centered about the constituents of fungi, especially ergot. Sharing the laboratory with our group was another devoted to the constituents of poppies, including *Papaver bracteatum*. The Mohns (poppy investigators) and the Mukos (*Mutterkorn* scientists) enjoyed a pleasant relationship with one another, both on a scientific and, occasionally, on a social plane. It was then and there that *Papaver bracteatum* Halle III was first recognized as an important potential source of thebaine, an alkaloid which might readily be converted to medicinally useful codeine without producing quantities of the more abuse-prone morphine. This significant finding was published in *Planta Medica* by Neubauer and Mothes in 1963.

For some reason, this initial discovery and the important follow-up work which continued thereafter, was and is almost completely ignored in the scientific literature. Practically every mention of it, including an inaccurate 1975 review article in *Science*, credits Iranian investigators with the breakthrough. Actually,

the Iranians did some work on the subject four years later. Prof. Mothes was never even a participant in any of the United Nations Conferences on this important plant which have been held regularly since 1972. He did set the record straight in his fine presentation at the 1975 joint international meeting of the American Society of Pharmacognosy and the Gesellschaft für Arzneipflanzenforschung in Storrs, Connecticut. I mention it here, not because this outstanding scientist requires even one more credit in his lengthy list of accomplishments, but because I believe it is manifestly unfair not to grant appropriate recognition in the case of a scientific discovery as important as this one to the health and welfare of the human race.

Earlier, I mentioned reverence as one of the terms applicable to Prof. Mothes' character. Many years ago, my wife and I shared a New Year's Eve service with him and his wife at the ancient church beside the Botanical Institute in Halle. It was a memorable experience, as was the simple meal which preceded it, a necessary tradition to get the year off to a good start. But the worship service I remember most took place in Lafayette, Indiana, when the Motheses visited us following the Storrs meeting. By chance, the first hymn was Martin Luther's stirring "A Mighty Fortress is Our God." Mrs. Mothes joined in a spirited rendition of it, but in the original German, much to the astonishment and delight of the surrounding parishioners. I honestly thought for a while they were going to request an encore.

Of course, scientists who daily confront the nearly impenetrable mysteries of life must of necessity believe in something greater than themselves. Prof. Kurt Mothes is no exception.

One characteristic which I have not illustrated anecdotally is Prof. Mothes' optimism. The reason for this is that it pervades all of his actions, indeed, every facet of his being. To return after many years in a prison camp to a new country where everything was in short supply and where there existed only a small scientific community and to develop scientific work there which received worldwide acclaim for its superior quality, is a task no one lacking optimism would even commence, let alone accomplish. Prof. Kurt Mothes had it and he did it.

Now on this occasion of his eightieth birthday, we wish him continued success, good health, and long life! The members of the American Society of Pharmacognosy thank him in particular for his long and effective service as a member of the Editorial Advisory Board of the *Journal of Natural Products (Lloydia)*. To those readers who expected a more conventional biographical sketch of him, I can only say that the normal conventions do not apply to this outstanding man. If my series of short vignettes has portrayed some of the character, the humor, and the humanism of Prof. Kurt Mothes, it will have served its purpose. He has worked hard, he has played hard when appropriate, and he is a man of the highest ability and ideals. All of us might wish that we were more like him.