

ERNST GÄUMANN, 1893–1963: PIONEER LEADER IN PLANT PATHOLOGY

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Ernst Gäumann arrived at his office at half past seven every morning. During the first two hours he refused to be disturbed. After the daily coffee break he distributed responsibilities to his assistants and commented on the work they had done, quite often in terms I cannot repeat here. He asked much but he gave much, not only scientifically but also culturally. In his lectures he was not much interested in teaching facts, but he liked to talk about his practical experiences, about the principles of biology, and about new ideas. His excursions with students were famous. He enjoyed discussing the history, culture, and economy of the region. One day, for example, he invited a well-known painter to take us into a beautiful forest and talk about art.

He enjoyed excellent working facilities. The first time he needed more and better laboratory space he solicited money from industry. The president of the university promised to double any sum Gäu was able to collect, but when he saw how much the total was he was shocked. The second time Gäu needed funds he went to the federal government. In later years, the university administration helped us develop a well-equipped laboratory.

There is not enough space to mention all of Gäu's collaborators. Stephi Naef-Roth did the essential work on toxins. Otto Jaag assumed the heavy burden of teaching and other day-to-day work. He also campaigned to protect the lakes of Europe from pollution.

Gäumann's ideas were far ahead of his time. When he postulated that pathogenic fungi might produce toxins, many colleagues shook their heads in disbelief. Today the action of pathogenic toxins is history. Although Gäumann did not discover the host-specific toxins now considered the most interesting,



Ernst Gäumann

his original hypothesis opened up a new field of research. Long before biological control became fashionable, he wrote, "If we want to find other ways of plant protection than spraying and killing plants, we need to learn more about parasites and their hosts." When we carried out experiments on the defense responses of orchid bulbs based on the work of Noel Bernard half a century ago, they were the only clear example of postinfectious inhibitors in plants. Today similar reactions in other plants are being studied in many laboratories around the world.

In 1946 Gäumann published his famous textbook, *Pflanzliche Infektionslehre*. At the time it was the only modern, comprehensive book on basic

plant pathology. He wrote it during a period when practically no foreign literature was available and when we students had almost no books at all. The importance of Gäumann's textbook is eloquently described in William B. Brierley's preface to the 1950 translation of the work:

It is fortunate that from time to time in the march of science a scholar of deep insight and widely ranging mind brings together in one volume the whole scope of a particular field of enquiry and synthesizes it in such a way that divergent viewpoints and masses of data fall into place to create a unified and harmonious picture. Up to the present the study of plant disease has remained merely an increasing aggregation of data. The importance of Professor Gäumann's *Pflanzliche Infektionslehre* resides largely in the fact that it is the first serious attempt to develop the necessary theory. It is essentially a treatise on the theoretical foundations of plant pathology and it marks a long and decisive step towards the establishment of plant pathology as a science.

Gäumann was profoundly interested in rusts. He wrote his PhD thesis under Eduard Fischer in Berne, who was a student of Anton de Bary and who made important contributions to rust research. Gäu wrote, "When a scientist becomes fascinated by rusts he remains in their arms for a lifetime." An outstanding taxonomist of vascular plants, Walo Koch, made studies on rusts of grasses and other difficult plant groups possible. In Sophie Weber Gäumann had a collaborator who carried out inoculation experiments with the utmost care. On our field trips to Italy and France, Gäu encouraged us to forage for rusts on rare plants: "What is the use of a plant if she does not carry a rust?" He knew that his 1959 book on the taxonomy of European rusts marked the end of a period in rust research. Today he would be glad to see that the Institut für Phytomedizin has taken the study of rusts in new directions, culturing rusts in vitro, controlling rusts with hyperparasites, and controlling weeds with rusts, for example.

The institute has attracted scientists from many regions of the world. With several of them we have maintained amicable contacts for a long time. Among them was Dickinson from Cambridge. Dickie was looking for a place to spend his sabbatical studying the growth of rust hyphae on artificial membranes. Gäu did not understand much better than other scientists what Dickie wanted to do; nevertheless, he provided him with working facilities. Thirty years later, other researchers have undertaken the problem with new methods and interesting results.

I knew Gäu for sixteen years. He was not easy to work with, since he expected a lot of us, but he also left us much freedom. He could be meticulous in day-to-day laboratory affairs; in other areas he could be very generous. During the second world war he did much for refugees, particularly those from Poland. He did more than help them materially; he was also one of the promoters of a Polish university in Switzerland. Most importantly, however, he was a spokesperson for the refugees in their negotiations with Swiss authorities. These negotiations were not always smooth, but with the weight of his personality Gäu generally resolved the difficulties.

His wit and his pointed remarks were famous. He could receive a long letter and send it back marked simply "nonsense." I once saw a framed letter he had written to a scientist at a university in the Pacific Northwest after a visit there; it succinctly said "thanks." Another time he wanted to visit a museum on a Monday. The caretaker brought him to the district attorney, who explained that it was definitely against the law to open the museum on a Monday. When Gäu replied, "After all, what is against the law is the basis of your existence," the door opened.

He did not like to write letters, but otherwise he was a very productive author. His style was excellent, albeit colored by the dialect spoken in his native Swiss Bernese Emmental, which created some problems for his readers and translators.

A feeling of inferiority was absolutely against his nature. When the president of the university suggested that he sign important letters more formally, he answered, "Napoleon signed his letters with *N*, I can sign my letters with *G*." When the janitor complained about the dog Gäu brought into his office, he wrote back, "My dog is not a dog, he is my second soul."

Gäumann was happiest traveling in Southern France. He enjoyed the region, the people, and the sun, and he took great pleasure in showing us the history, culture, and cuisine of the region. He was proud to be awarded the highest distinctions among French biologists: membership in the Academy of Science and an honorary degree from the Sorbonne.

Many members of the institute loved music and would gather together to sing. We even had a little orchestra. Leopold Ettlinger, at that time the leader of a research group on antibiotics, later professor of microbiology, directed the choir and introduced us to both ancient and modern music. Gäu brought the composer Willy Burkhard into our circle. Burkhard had conducted a student band when Gäu was a botany student in Berne. Burkhard wrote several pieces for our choir and enjoyed being with us. Our institute was well known for its social gatherings.

Gäumann enjoyed many evenings with us. During the day he made us work hard, but he stimulated our thinking and expanded our cultural awareness. His personality was sometimes difficult. Nevertheless, for all who knew him he will remain both a great biologist and a great man.