

Nachruf/Obituary Dr. Hans Klinge (1928-1999)

von

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(Accepted for publication: November, 1999).



Dr. Hans Klinge
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Hans Klinge wurde am 14.8.1928 in Wiesbaden-Biebrich als zweites Kind der Eheleute Prof. Dr. med. Karl Friedrich Klinge und Dr. Walburga Klinge, geb. Happel geboren. Er besuchte die Volksschule in Münster/Westfalen und das Jakob Sturm-Gymnasium, Straßburg. 1944 war er Luftwaffenhelfer und von 1944 bis 1946 in Kriegsgefangenschaft. Von 1946 an besuchte er das Gutenberg Gymnasium in Wiesbaden, wo er 1948 die Reifeprüfung ablegte. Nach einer Hospitantenzeit als Standortskartierer im Forstamt Knesebeck bei Gifhorn (1949–1950) begann er mit dem Studium der Naturwissenschaften an der Johannes Gutenberg-Universität Mainz, an der er 1952 das Vor-

Seine Ideen brachte er in das erste ökosystemar konzipierte internationale Regenwaldprojekt in Südamerika ein, welches 1974/75 zusammen mit E. Medina und R. Herrera vom Instituto Venezolano de Investigaciones Científicas (IVIC), E. F. Brünig und J. Heuvelodop vom Institut für Weltforstwirtschaft, Reinbeck und amerikanischen Kollegen um F. Golley über die UNESCO in San Carlos de Rio Negro begonnen wurde. Dieses Projekt unterstrich die Hypothese von der großen Artenvielfalt amazonischer Regenwälder als effizientem Retentionsmechanismus von Nährstoffen und als biologische Antwort auf die Nährstoffarmut der Böden. Der Gedanke von erhöhter Diversität als biologische Antwort auf Nährstoffarmut wirkte über Brünig in die deutsche Forstwirtschaft zurück und trug dazu bei, Modelle zu entwickeln, um wegen der "neuartigen Waldschäden" das System der Forstmonokulturen durch Polykulturen zu ersetzen.

Innerhalb der seit 1980 etablierten Arbeitsgruppe Tropenökologie des Plöner Max-Planck-Instituts war Hans Klinge ein allseits geschätzter Kollege und Freund, der mit seiner Schaffenskraft und seinem kritischen Denken maßgeblich zum Erfolg beitrug. Die deutsche Tropenökologie hat mit Herrn Klinge einen profilierten, international anerkannten Wissenschaftler verloren.

Hans Klinge was born on 14.8.1928 in Wiesbaden-Biebrich, the second child of Dr. Karl Friedrich Klinge and Dr. Walburga Klinge, née Happel. He attended primary school in Münster/Westphalia and the Jakob Sturm Grammar School, Strassburg. In 1944 he became an auxiliary in the German air force and was a prisoner of war from 1944 to 1946. From 1946 onwards he attended the Gutenberg Grammar School in Wiesbaden, taking his school leaving certificate in 1948. After gaining some practical experience in the local forestry offices in Knesebeck near Gifhorn (1949-1950) he began studying sciences at the Johannes Gutenberg University, Mainz, where he completed the first part of a degree course in Geology in 1952. From 1952 to 1954 he continued at the Georg-August University Göttingen, where he studied soil science, microbiology, geology and chemistry. In 1954 he completed his doctorate under F. Scheffer on the organic substance in *rendzina* in the area of Göttingen.

From 1954 to 1956 he carried out studies at the University of Göttingen on organic substances in alluvial soils and from 1955 to 1957 he was the holder of the German Research Foundation's (Deutsche Forschungsgemeinschaft, DFG) foreign post-graduate scholarship at the Institute for Plant Physiology and Soil Science, part of the Consejo Superior de Investigaciones Científicas in Madrid/Spain, where he studied soils on limestone in Spain and Morocco. From 1957-1958 he was again a holder of a DFG scholarship at the German Federal Research Institute for Forestry and Lumber in Reinbeck, where he concluded his studies of soils on limestone in Spain and Morocco. He then went, from 1958-1959, to the Instituto Salvadoreno de Investigaciones del Café in Santa Tecla/El Salvador and to the Instituto de Investigaciones Científicas in San Salvador/El Salvador, as a guest researcher and worked on soils on volcanic rock. In 1959 he became an employee of H. Sioli at the Department of Tropical Ecology of what was at that time the Hydrobiological Institute of the Max-Planck-Society in Plön, now called the Max-Planck-Institute for Limnology. He took leave from 1966-1967 in order to work as project manager for an FAO soil project in Chile.

During his time at the Max-Planck-Institute in Plön (1959-1993) Hans Klinge's work concentrated initially on the development and soil characteristics of Amazonian

podzols, local very sandy soils which, he placed in connection with the development of blackwaters stained brownish-red by dissolved humic substances. His soil research contributed to E.-J.Fittkau's ecological classification of the Amazonian region. The theory concerning low levels of consumer biomass as a result of the low nutrient content in the vegetation of the central Amazonian continental forests is based on research undertaken by Fittkau and Klinge. At the end of the 1960s the Americans F. W. Went and N. Stark presented the "hypothesis of direct nutrient recovery" from the litter by means of mycorrhiza fungi in the roots of trees, as an adaptation mechanism for extremely low nutrient concentrations. Klinge and Fittkau developed this theory further to the concept that the Amazonian rainforests, with their thick tangle of roots near the surface, their thick and many-layered roof of treetops and the multifarious needs and adaptations of the many species represented an efficient filter mechanism for nutrients.

Klinge, his employees and his Brazilian partner W. Rodrigues from the National Institute for Amazonian Research (INPA) in Manaus, was the first researcher to determine the biomass in the central Amazonian rain forests. He continued the research started by Stark, on the chemical composition of the leaves, wood and bark of trees, on a large scale in various locations in the central Amazonian region and linked the results with the reaction mechanisms of the lakes and soils. He proved, in cooperation with K. Furch, that the trees in extremely nutrient-deficient areas of the central Amazonian lowland had clearly lower levels of many minerals than those in the nutrient-rich Amazon floodplains, but that they were also capable of enriching essential nutrients, especially nitrogen, to a considerable degree.

Klinge contributed these ideas to South America's first international rain forest project based on the concept of an ecological system, held in 1974/75. He began this project within the framework of UNESCO in San Carlos de Rio Negro together with E. Medina and R. Herrera from the Instituto Venezolano de Investigaciones Cientificas (IVIC), E.F. Brünig and J. Heuvelop from the Institute for World Forestry, Reinbeck and American researchers linked to F. Golley. The project emphasised the theory of the species-rich Amazonian rainforests as efficient nutrient retention mechanisms and as the biological answer to the nutrient-deficient soils. The effects of this idea of increased diversity as the biological answer to nutrient deficiency were felt, by way of Brünig, in German forestry and contributed to the development of models which, as a result of "modern forest damage" replaced forestry monocultures with polycultures.

Klinge was a competent member of the Tropical Ecology Working Group, set up at Plön's Max-Planck-Institute in 1980, and his creativity and critical approach contributed considerably to the group's success. Through the death of Hans Klinge German tropical ecology has lost a prominent, internationally recognised researcher, while the Tropical Ecology Working Group has also lost a colleague and friend who was esteemed by all.