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EDITORIAL

Why *Alpine Botany*?

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Introduction

From 1891 on, the Swiss Botanical Society (SBG/SBS) was editing the *Bulletin of the Swiss Botanical Society*, named *Botanica Helvetica* since 1981. Publishing a scientific journal was always one of the most prominent activities of the society. From the beginning, botanical studies on mountains and from alpine areas had a prominent place in the journal. Recently, by devoting a special issue on alpine plants, the journal has strengthened its link with research on mountain plants and vegetation (Parisod et al. 2010). Now, starting with this issue, the Swiss Botanical Society is re-launching the journal with the name "*Alpine Botany*", to provide an international forum for studies with a particular interest in the plant ecology, vegetation and flora of mountain regions worldwide.

The Swiss tradition

A focus on mountains for publications by Swiss botanists comes not as a surprise, since the larger part of Switzerland consists of mountains with a prominent part of the European Alps within the borders of the country. Swiss Alpine research has a long tradition starting with Conradus Gessner (1516–1565) from Zürich, a giant in natural history of that time due to his five-piece volume, „*Historiae animalium*" (Gessner 1551–1558). For his „*Historiae plantarum*" (Gessner 1572–1591) he compiled more than 1,500 masterly drawings of plants. In „*De admiratione montium*" Gessner (1541) praised the Swiss Alps and committed himself to climb at least one mountain every year to enjoy their beauty and to study plants. Later, Johann Jakob Scheuchzer (1672–1733), physicist and scholar from Zürich, a founder of palaeobotany, summed up all what was then known about Swiss mountains in his „*Naturgeschichte des Schweizer Landes*" (1716). Albrecht von Haller (1708–1777), anatomist, botanist and poet from Bern explored comprehensively the flora of the Alps and published a first Swiss flora in 1742. He may be considered as one of the precursors of plant geography, inspiring amongst others Alexander von Humboldt. His poem "*The Alps*" took the hearts of the enlightened European public of that time by storm. The geologist, botanist and Alpine traveller Horace-Benedict de Saussure (1740–1799) from Geneva, well known for his ascent of the Mont Blanc, laid the foundation of atmospheric sciences in mountains. Finally, Carl Schröter from Zürich published a first textbook on alpine ecology („*Das Pflanzenleben der Alpen*") in 1908. Its second edition from 1926 included a history of the Alpine flora by H. & M. Brockmann-Jerosch, precursors of modern phylogeography (Holderegger et al. 2011, this volume). From a recent worldwide bibliometric analysis Switzerland, despite the small size of the country, emerges as a leader of mountain and alpine research (Körner 2009). Today, Switzerland is hosting several international scientific networks, such as the World Glacier Monitoring Service (Zürich), the multidisciplinary Mountain Research Initiative (MRI, Bern) for detecting signals of global environmental change, and the Global Mountain Biodiversity Assessment (GMBA, Basel) acting as the global network on mountain biodiversity research of *DIVERSITAS*.

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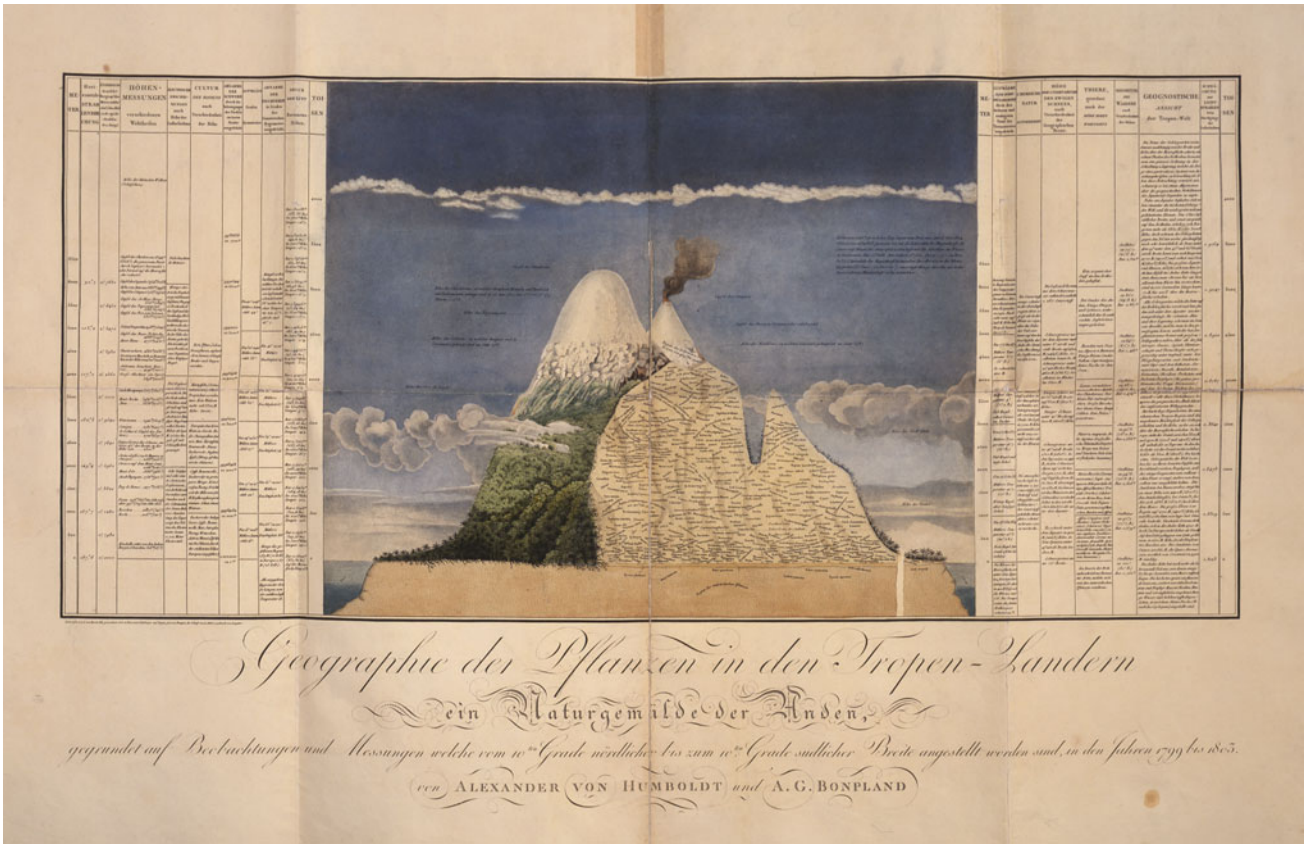

Fig. 1 „Geographie der Pflanzen in den Tropenländern; ein Naturgemälde der Anden, gegründet auf Beobachtungen und Messungen, welche vom 10ten Grade nördlicher bis zum 10ten Grade südlicher Breite angestellt worden sind, in den Jahren 1799 bis 1803". Coloured copper engraving by von Humboldt and Bonpland (1807). Reproduced by Hans-Joachim Bartsch, Copyright: Stiftung Stadtmuseum Berlin

The new name

By devoting *Alpine Botany* on plant and ecological research on mountains and alpine areas we intend to improve the journal's visibility and attractiveness worldwide. To be more focused will benefit authors and readers of the journal, it should improve the quality of submitted papers, their impact in the scientific community and thereby increase the number of citations as a measure of the quality of the journal by others. Importantly, we have enlarged the Editorial Board, including international leading scientists of botanical and ecological research on mountains from all over the world. Thereby, we intend to make *Alpine Botany* one of the leading journals in the field. As before, *Alpine Botany* is published by Springer-Basel AG, formerly Birkhäuser Verlag. New, an online Manuscript Submission, Review and Tracking System (editorial manager) for the journal will make submissions, reviewing and editing more convenient and faster.

The attractiveness of mountains and the rise of modern science

Mountains have always attracted humans. Mountains have often been seen as the Axis Mundi, the centre of the earth. The highest mountain in Greece, Mount Olympus, was considered the home of the Gods since antiquity. Mount Sinai is sacred for Jews and Christians; it is on top of this mountain that Moses is said to have received the Ten Commandments. Every year thousands of pilgrims climb Mount Fuji, the highest mountain of Japan, considered home of Shinto gods. The spiritual and cultural significance of mountains is reflected in the fact that every major religion has its sacred mountains (Bernbaum 1990).

How to explain this curiosity for mountains? With increasing elevation, environmental conditions change and life is more and more constrained by the physical components of the environment, causing fear and respect. One of the earliest to climb a mountain for pleasure was the Italian poet and humanist Francesco Petrarca (1304–1374). He

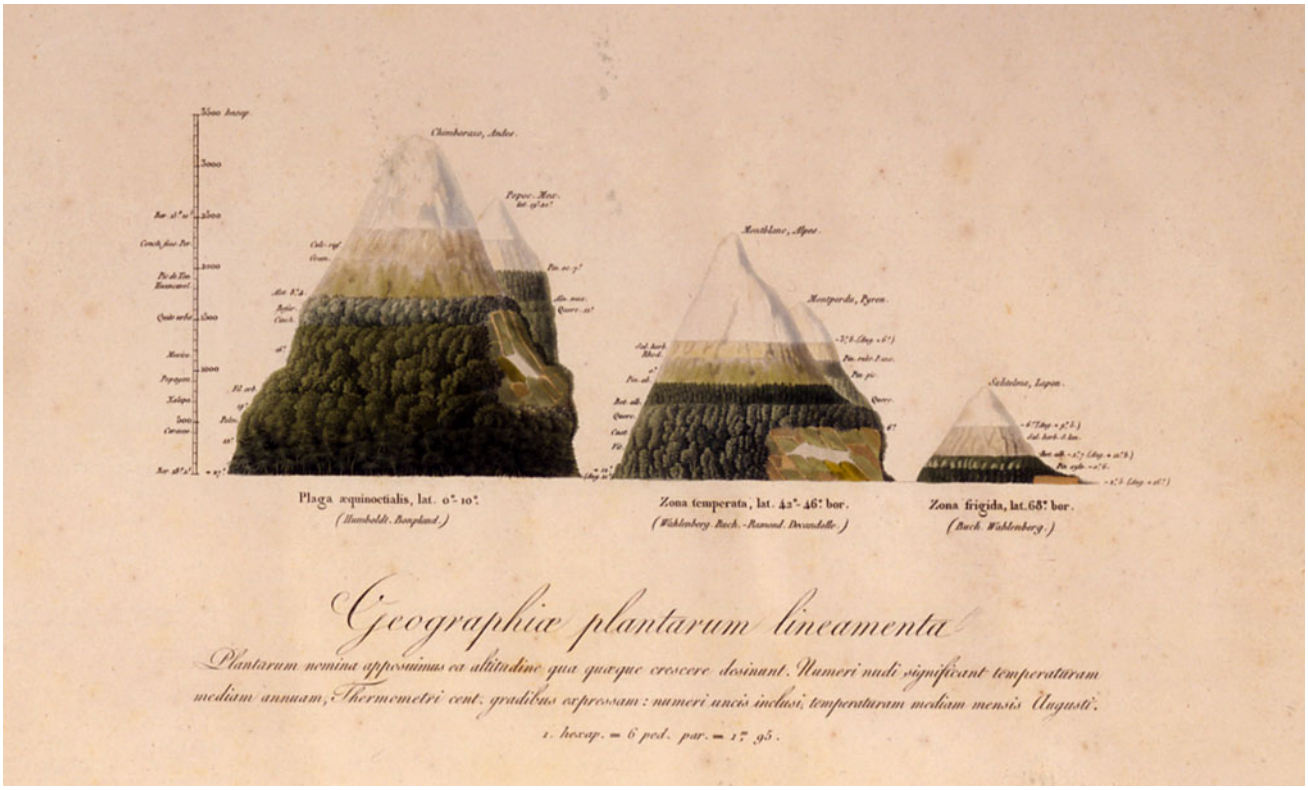

Fig. 2 „Geographiæ plantarum lineamenta". Elevational vegetation belts for the equatorial Andes (Chimborazo), the Alps (Mont Blanc), and the Arctic (Sulitelma, Lappland). Coloured copper engraving by von Humboldt et al. (1815). Reproduced by Hans-Joachim Bartsch, Copyright: Stiftung Stadtmuseum Berlin

described his emotions on the top of Mount Ventoux in France as an allegory of aspiration towards a better life. The event has been judged as a historical turning point from the Middle Ages towards modernity, as a symbol of a new sensitivity of man towards nature in the Renaissance (Burckhardt 1860). It is the dawn of modern science, the beginning of the discovery and exploration of unknown landscapes, plants, animals and continents.

The ascent of ecology as a global science is tightly linked with research on mountains. In 1555, Gessner published a naturalist's description of his ascent of Mount Pilatus in central Switzerland (Deubelbeiss 1991), a most remarkable text as it is the earliest description of an elevational succession of vegetation zones. In 1799, when Alexander von Humboldt was 30, he started his journey to the New World. In a letter, he summarised his intentions as follows: "I shall collect plants and fossils […], I shall conduct chemical analyses of the air—but all that is not the main purpose of my expedition. Above all, I will observe the interactions of forces, the influence of the inanimate environment on plant and animal life. My eyes will constantly focus on this harmony." (A. von Humboldt 1799, in a letter to K.E. von Moll). His climb up to 5,875 m on the volcano Chimborazo, considered then with 6,268 m as the tallest mountain on Earth, became a symbol of global ecology. On the tableau in his „Ideen zu einer Geographie der Pflanzen" (Humboldt 1807, Fig. 1) the elevational distribution of hundreds of plant genera and species is shown together with measurements of altitude, air pressure, humidity, etc. His invention of isothermal lines provided a general summary of the pattern of environment and vegetation. Humboldt extended his tableau later by comparing vegetation zones from the Andes, the Alps and Lappland (Humboldt 1815, Fig. 2), thereby creating a global picture of climate-vegetational zonation still valid today. Exploring the interaction of the environment with plants and vegetation on earth has preoccupied scientists until today; because of climate change these questions are more pressing than ever.

The actuality of alpine research

The elevational gradients of Mountains shaped a diverse topography and created a tremendous richness of habitats and organismal diversity over short distances. Mountains harbour approximately one quarter of the terrestrial biological diversity, and half of the world's biodiversity hotspots are concentrated in mountains (Spehn et al. 2010).

Moreover, the alpine zones of the world experienced climate oscillations time and again. During the Quaternary, recurrent glaciations caused repeated and drastic changes in the range of alpine and arctic plants, strongly influencing the genetic and floral diversity of today's vegetation. A high level of alpine endemism indicates the importance of local and regional diversification and evolutionary processes. Research in molecular phylogeography, palaeobotany, systematics, and ecology resulted in a greater understanding of past events and the ongoing processes shaping alpine biodiversity and ecosystem functioning. A brief historical account of ecological research in mountains is given in the textbook *Alpine Plant Life* by Körner (2003), and on the history and evolution of arctic and alpine flora in the proceedings of a recent symposium by the Botanical Society of Scotland (Abbott 2008). The importance of alpine research is likely to increase in the future for several reasons: mountains are zones where global change signals are particularly strong and clear; rapid socioeconomic changes are affecting mountains at an accelerating pace; and finally alpine areas offer a diverse spectrum of conditions and locally adapted organismal diversity which are important for the current and future well-being of mankind and, therefore, need our protection.

This first issue of *Alpine Botany* starts with a historical retrospect to the influential scientific achievements of Marie Brockmann-Jerosch on the origin and history of the Swiss alpine flora (Holderegger et al. 2011). Körner (2011) gives a description of the coldest places on earth with angiosperm plant life, thereby documenting that mountains are good for scientific discoveries still today. Two case studies highlight the important role of glacial history in the European Alps for plant speciation (Kadereit et al. 2011; Scheepens et al. 2011). Ohsawa and Ide (2011) present a comprehensive review of the role of mountains for plant phylogeographic pattern in the Japanese Archipelago. Finally, Kikvidze et al. (2011) explore the importance of climatic drivers for the diversity and interactions in alpine plant communities. We hope to provide with *Alpine Botany* a vivid forum for studies on mountains and alpine areas in the future and invite researchers to submit their papers.

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