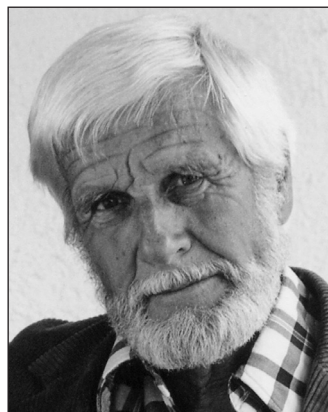


Memorial to Augusto Gansser (1910–2012)

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The renowned Swiss geologist and GSA honorary fellow Augusto Gansser passed away in his hometown of Massagno in Lugano district, southern Switzerland, on 9 January 2012, at age 101. Gansser was born on 28 October 1910 in Milan, Italy, where his father, a Swiss businessman, and his mother, a German, were then living. Four years later, the family moved to Lugano where Augusto went to school and grew up in the shadow of the Alps. He later recalled that, at age seven on a family vacation to the Alpine town of Andermatt, he happened to find a large piece of quartz in the foundation of the Furka Oberalp railway, and that crystal triggered his early interest in rocks and mountains. Gansser studied geology at the University of Zürich. As a member of the Swiss Alpine Club, in 1934 he joined a four-month Danish expedition to east Greenland led by Lauge Koch. Their ship ran into difficulties, and Gansser returned to Zürich to continue his doctorate degree under the supervision of Professor Rudolf Staub (1890–1961). He also briefly worked as an instructor at the Geological Institute, Zürich, then headed by Staub.



In 1936, the Zürich geologist Arnold Heim (1882–1965) invited Gansser to join him on the first Swiss expedition to the Himalayas funded by the Swiss Science Society. This eight-month journey was the beginning of Gansser's lifelong passion for geologic work in the Himalayas. The region Heim and Gansser mapped was in the central Himalaya of India bordering Nepal and Tibet. The results of their field trips and observations were published in two well-written books: a travelogue titled *The Throne of the Gods* and a research volume *Central Himalaya: Geological Observations of the Swiss Expedition 1936* (1939).

A highlight of Gansser's journey was his visit, disguised as a pilgrim, to the sacred Mount Kailash in southern Tibet (then forbidden to foreigners), located in an area that is the source of the major Himalayan rivers: the Indus, Sutlej, and Yarlung-Tsangpo (Brahmaputra). He later commented that on this arduous trip he could hide his hammer, compass, and camera under his Tibetan cloak (*chuba*), but "the only thing I could not hide were my blue eyes." In the Kali valley on the India-Nepal border, Gansser mapped a basement rupture line, what he called the Main Central Thrust, whose significance as a major structure bringing the high-grade metamorphosed rocks (gneiss and schist) of Higher Himalaya atop the sediments and low-grade metamorphosed rocks of Lesser Himalaya has been increasingly recognized by further studies.

Superb field photographs and stylish sketches of landscape, structures, and stratigraphic sections, making profound geologic inferences from field relations, giving priority to facts and observations rather than to arm-waving theories, and blending regional geologic work with a compassionate curiosity toward local cultures and peoples, as reflected in the young Gansser's 1936 Himalayan work, remained characteristics of his work throughout his life.

In 1937, Gansser returned to Lugano, and married Linda Biaggi, a champion swimmer, who was also known as Toti. The couple spent their honeymoon driving and camping in Morocco.

Gansser then joined Shell and went to work in Colombia where he lived until 1946, unable to return to Switzerland during World War II. He conducted mapping and field work in the Andes, and later published several papers on this region. During their stay in Colombia, Gansser immortalized his wife by naming a 5000-m peak Pico Toti because while climbing it together she had fallen down a slope but had been saved by her rope.

In 1947, Shell transferred Gansser to Trinidad where he lived for three years. In 1951, Gansser joined H. Huber and A. Heim in Iran, all working for the National Iranian Oil Company. He mapped the little-known central and northern parts of the Persian Plateau on foot and using aerial photographs, and published an influential paper at the World Petroleum Congress held in Rome in 1955. The most dramatic part of Gansser's work in Iran was his involvement in the discovery of oil near the town of Qom in northern Iran far from the well-known Zagros petroleum basin in the southwest of the country. Oil trapped at 3000 m beneath a salt cap was hit by the fifth "wildcat" well on 26 August 1956, but the oil gusher was too overwhelming. Erupting about 120,000 barrels of crude per day to a height of 52 m (the largest oil gusher on record, according to *The Guinness Book of World Records*), a black oil lake hazardous to the environment soon formed. Two weeks later, fire was set to the oil lake, and after three months the well was shut down.

Gansser left Iran in 1958 to take up a joint position of professor of geology at the University of Zürich and the Swiss Federal Institute of Technology (ETH). Nevertheless, his interest in the geology of Iran continued; he was a co-author of *Salt Diapirs of the Great Kavir, Central Iran*, a Memoir published by the Geological Society of America in 1990.

Gansser proved to be a popular professor at Zürich: His classes were based on enthusiastic presentation of his own field studies; he was fluent in several European languages; and the geologic sketches which he drew on the blackboard with both right and left hand (he was ambidextrous) captivated the students' imagination. From his new base at Zürich, Gansser conducted geologic research in the Alps and also rejuvenated his work in the Himalayas. In 1964, he published his seminal book, *The Geology of the Himalayas*. Gansser was one of the first geologists who applied the plate tectonic theory to the evolution of mountain belts, specifically the Himalayas—thanks to his upbringing in Alpine geology where a "mobilist" tectonics characterized by thrust sheets, fold nappes, and compressional forces had been worked out by Swiss geologists such as Hans Conrad Escher von der Linth and his son Arnold, Albert Heim and his son Arnold (Gansser's mentor), and Emil Argand decades before the theory of plate tectonics.

Gansser identified the Indus-Tsangpo Suture Zone, a lineament running along the river courses of Indus and Tsangpo in southern Tibet as the plate boundary between India and Asia, based mainly on his observations of ophiolites in that region in 1936. Over the years, in a series of papers, Gansser articulated a field data-based tectonic scenario for the evolution of the Himalayas, which influenced generations of Himalayan geologists and still remains largely a valid interpretation.

From 1963 to 1977, Gansser made five field trips to Bhutan; his friendship with Bhutan's royal family definitely contributed to the success of his pioneering geologic work in that remote country. Gansser's 1983 book *Geology of the Bhutan Himalaya* (dedicated to the "memory of HM King Dorji Wangchuck") and his 1994 color map of Bhutan at the scale of 1:500,000 lay the foundation of our geologic knowledge of this little-known Buddhist kingdom. Gansser's fascinating photographs of Bhutan have also decorated two coffee-table books, *Bhutan: Land of Hidden Treasures* (1971) and *The Dragon Kingdom: Images of Bhutan* (1988).

In 1979, when India opened the remote regions of Ladakh and Zaskar in northwest Himalayas to foreign visitors, Gansser (although already retired in 1977) along with several geology students at Zürich conducted important research in that region and published several key

papers on the origin of the Andean-type Trans-Himalayan magmatic belt that was a precursor to the India-Asia collision and the eventual uplift of the Himalayas.

Gansser visited Tibet in 1980 at the invitation of the Chinese leader Deng Xiaoping to participate in an international symposium on Tibet; in 1985 he revisited Tibet on a joint British-Chinese expedition.

For his pioneering geologic exploration in several mountain belts, Gansser received a number of awards, including the Patron's Medal of the Royal Geographical Society (London), the Wollaston Medal of the Geological Society (London), the Prix Gaudry of the Geological Society of France, the Steinmann Medal of the Geological Society of West Germany, and the King Albert Medal of Merit (Belgium). Gansser was an honorary fellow of the U.S. National Academy of Sciences, Accademia Nazionale dei Lincei (Rome), the Geological Society of India, and Nepal Geological Society. Perhaps the honorary title of "Baba-ye Himalaya" (Father of the Himalaya) given to him by the University of Peshawar (Pakistan) in 1983 best describes the significance of Gansser's lifelong work in these highest mountains.

Gansser's motivation for geologic research and writing and his brilliant thinking as a natural scientist, even late in his life, was remarkable. In 1990, he published a monograph on cup stones, which he had observed in various parts of the world. These cup shapes fashioned in stones come in various sizes and were used by prehistoric peoples; and the question of their various functions has intrigued archaeologists for years. Gansser's book, which he updated in a bilingual German-English edition in 1999, is an important contribution to this aspect of geoarchaeology.

The Ganssers had four daughters (Ursula born in 1941, Manuela, 1949, Francesca, 1956, and Rosanna, 1959) and two sons (Mario born in 1943, and Luca, 1945). In 2000, Gansser's beloved wife died. Linda Biaggi-Gansser had kept diaries and notes of their long life journey, which formed the basis for a biographical work, *La maglie di un geologo: Augusto Gansser* (second edition, 2000). In January 2012, upon his death, Gansser was cremated with his hammer placed along with his body—not merely as a beautiful gesture for the wonderful life of a great field geologist but also to fulfill a last wish of his: "Instead of flowers, I would like a geologist's hammer." His ashes were scattered by his family members into a stream in an Alpine valley where he used to play as a child.

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