

BOOK REVIEWS

ranged to form the other. Two such polygons are said to be congruent by dissection. Hilbert's third problem asked whether such a phenomenon is valid in \mathbb{R}^3 . It turns out that this is false – the authors explain the counterexample of two tetrahedra in \mathbb{R}^3 with the same volume that are not congruent by dissection using the Dehn invariant. All of this forms the first half of chapter 5 on 'Dissection'. The concluding part deals with set theoretic dissections and covers intriguing material such as the paradoxes of

Hausdorff and Banach–Tarski and Borsuk's problem.

The writing style is eminently clear and the discussions lead quickly into themes of current research in mathematics. Each module has a list of relevant references and exercises, thus making it suitable either for self-study by students at all levels or by teachers interested in supplementing standard classroom topics. Any effort put in to master even a few pages of these various modules is sure to yield rich dividends. The book as a

whole should also appeal and prove valuable to the working mathematicians who wish to get a glimpse of what is known in areas other than their own. My verdict, if one is needed at all, is – two thumbs up!

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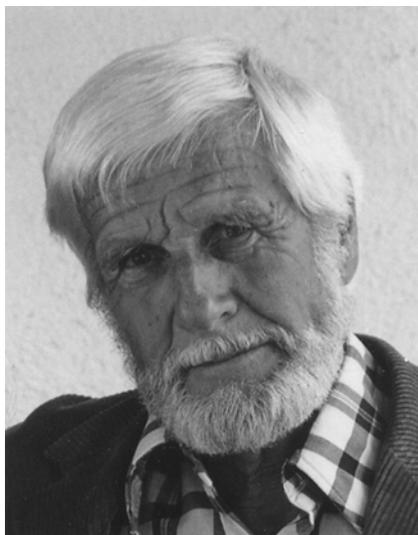
PERSONAL NEWS

Augusto Gansser (1910–2012)

Augusto Gansser, a renowned Swiss geologist best known for his work in the Himalaya, who died on 9 January 2012, belonged to a generation of traditional geologists for whom field work was the real science and spirit of exploration, an artistic engagement with landscape, and the very way of a geologist's life. Indeed, we owe the geologic maps and rock records of the planet to the pioneering field studies of those geologists. They also had the eyes and hands of an artist: Gansser's books and papers are filled with superb photographs (taken by non-digital cameras of bygone days) and fine sketches of geological profiles, structures and stratigraphy. He meticulously kept all of his field notebooks. Being ambidextrous, Gansser surprised his students by drawing sketches of geologic features by both of his hands. Arduous field work in the remote parts of the world meant the genuine geology for Gansser's generation. All these required patience, passion and intimacy with rocks, cliffs, river valleys and mountain trails and ridges.

Gansser was born on 28 October 1910 in Milan, Italy, where his father, a Swiss industrialist, and his mother, a German, were then living. He was the eldest son of the family, which over the years included another son and three daughters. In 1914, shortly before World War I, the family moved to Lugano in southern Switzerland, where Gansser grew up and went to school. He studied geology at the University of Zürich. In 1934,

Gansser participated in a geological expedition to eastern Greenland but his ship ran into trouble and he returned to Zürich to continue his doctorate research under the supervision of the eminent Alpine geologist, Rudolf Staub (1890–1961). Gansser's field area was between



Professor Augusto Gansser
(photo taken in the mid-1990s).

San Bernardino and Splügenpass in Kanton Graubünden, southeast Switzerland (his thesis was published in *Schweizerische Mineralogische und Petrographische Mitteilungen*, 1937, vol. 17).

In 1936, the young Gansser joined the Zürich geologist Arnold Heim (1882–1965) on the first Swiss expedition to the Himalaya. This eight-month field trip,

funded by the Swiss Science Society, resulted in two publications: A fascinating travelogue *The Throne of the Gods* (1938 in German, 1939 in English translation) and a research memoir *Central Himalaya: Geological Observations of the Swiss Expedition 1936* (1939), which was a significant contribution to Himalayan geology. The areas Heim and Gansser mapped and described were in the Kumaun Himalaya of India bordering Nepal and Tibet. While mapping in the Kali valley on the India–Nepal border, Gansser identified the Himalaya's basement rupture structure and designated it as the Main Central Thrust. Disguised as a Tibetan pilgrim, Gansser took part in a pilgrimage to the sacred Mount Kailash in southeastern Tibet, which was then closed to foreigners. Hiding his hammer, camera, field notebook and rock samples under his Tibetan cloak (chuba), Gansser performed the circumambulation of Mount Kailash and brought back important data on the geology of Kailash region.

After returning to Switzerland, Gansser joined Shell Oil Company in 1937 and went to work in Colombia where he lived till 1946, unable to return to his home country during World War II. During that period, he conducted mapping and field work in the Andes, and later published a number of important papers on this region, a summary of which he presented in 1973 as the 26th William Smith Lecture for the Geological Society in London ('Facts and theories on the

Andes', with a geological map at 1 : 20,000,000, published in the Society's journal). In 1947, Shell transferred Gansser to Trinidad where he lived for three years.

In 1951, Gansser took a job at the National Iranian Oil Company. Several other Swiss geologists including A. Heim and H. Huber were his co-workers in Tehran. Gansser was engaged in the mapping of the little known central and northern parts of the Persian Plateau using aerial photographs and field observations. In 1955, he published an influential paper, 'New aspects of the geology of central Iran', at the World Petroleum Congress in Rome. He also helped in the discovery of oil near the town of Qom in northern Iran in 1958, but the powerful gusher caused environmental hazard and was plugged with great difficulty. Further exploration in the region was discouraged as a few new wells did not find substantial oil.

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, he continued his interest in the geology of Iran, about which he occasionally published papers; he was a co-author of *Salt Diapirs of the Great Kavir, Central Iran* (Geological Society of America Special Paper, 1990) and attended a conference on salt diapirism in southern Iran in December 1990.

From his base at Zürich, Gansser conducted geologic research in the Alps and also resumed his work in the Himalaya. In 1964, Gansser, then Head of the Geology Department at Zürich, published his seminal book, *The Geology of the Himalayas*, which synthesized the knowledge of Himalayan geology for various parts of the Himalaya, including Gansser's own research. The book was released on the occasion of the 22nd International Geological Congress held in New Delhi in 1964 and included a coloured geologic map of the Himalaya at the scale of 1 : 2,000,000. The book earned Gansser the Patron's Medal of the Royal Geographical Society of London.

Thanks to his training in the fold-and-thrust tectonics of the Alps epitomizing the horizontal movement of rocks under compressional forces, Gansser was one of the first geologists who applied plate tectonics to explain the evolution of orogenic belts, particularly the Himalaya. He argued for the separation and drift of

India from the southern supercontinent of Gondwanaland across the Tethys Ocean and identified the Indus–Tsangpo Suture Zone (along the river courses of Indus and Tsangpo in southern Tibet) as the plate boundary of the India–Asia collision, based mainly on his observations of Tethys ocean-floor rocks (ophiolites) to the south of Mount Kailash in 1936. Over the years, Gansser refined his views and geologic map of the Himalaya, and in a number of papers mainly drawn on field observations, he presented a tectonic scenario for the origin of the Himalaya, which educated generations of Himalayan geologists and still remains largely a valid interpretation.

From 1963 to 1977, Gansser conducted five field trips in Bhutan and his friendship with Bhutan's royal court helped in the success of his 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 colour map of Bhutan at the scale of 1 : 500,000 are fundamental contributions to the geology of the little-known Buddhist kingdom.

Gansser retired in 1977 as Emeritus Professor, but it was the beginning of new explorations for him. In the 1970s, as India opened the Ladakh–Zaskar region in northwest Himalaya to foreign visitors, Gansser along with several colleagues and students from Switzerland conducted pioneering work in that region and produced several important papers on the origin of the Andean-type Trans-Himalayan magmatic belt that formed prior to the Himalaya.

Gansser visited Tibet in 1980 at the invitation of Deng Xiaoping to attend an international symposium on Tibet; in 1985, he re-visited Tibet on a joint British–Chinese expedition. In 1987, Gansser was a co-author of *Himalayas: Growing Mountains, Living Myths, Migrating Peoples*, a fabulous book describing Himalayan geology, geography and culture in plain language, and profusely illustrated with splendid photographs.

For his pioneering geologic exploration in several mountain belts, Gansser received a number of awards, including the Wollaston Medal of the Geological Society of London (1980), the Prix Gaudry of the Geological Society of France (1982), the Steinmann Medal of the Geological Society of West Germany

(1982), and King Albert Medal of Merit (Belgium, 1998). Gansser was an honorary member of the US National Academy of Sciences, Geological Society of America, Accademia Nazionale dei Lincei (Rome), Geological Society of India, and the Nepal Geological Society. In 1983, the University of Peshawar (Pakistan) awarded Gansser an honorary title of 'Baba Himalaya' (Father of the Himalaya).

Gansser was fluent in German, Italian, French, Spanish and English. He was a prolific writer and produced dozens of geological papers, memoirs and books. He was also an excellent photographer. Two fantastic books on Bhutan, *Bhutan: Land of Hidden Treasures* (1971) and *The Dragon Kingdom: Images of Bhutan* (1988) written by Asian scholar Blanche Christine Olschak, are decorated with many photographs taken by Gansser and his daughter Ursula Markus. In the last two decades of his life, Gansser turned his attention to the geoarchaeology of the places he had visited and published two novel books – *Cup-stones: Prehistoric Cult Objects* (1990; expanded German edition, *Schalensteine*, 1999) and *Hands: Prehistoric Visiting Cards?* (1995).

In 1937 Gansser married Linda ('Toti') Biaggi, a champion swimmer. The couple raised four daughters and two sons. His wife died of Alzheimer's in 2000. She had kept notes of their long-life journey which Gansser compiled in a biographical work, *La moglie di un geologo* ('The Wife of a Geologist', 2000). Gansser died peacefully in his home at Massagno, Lugano early this year. He lived a relatively long life – 101 years (able to see his first great-grandchild) – and in a world that went through a lot – two world wars and many regional ones, economic depressions and booms, rapid changes in technology and so forth. He remained devoted to his geology, family and students. Moreover, as his publications and friendships show, Gansser harmonized his geologic mapping and mountain exploration with compassion, gratitude and respectful curiosity toward local peoples.

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