

Report on the 74th. Annual convention of the VSP/ASP 23. - 25. June 2007 in Ortisei Werner Bolliger

Participants: D. Bernoulli (lecturer and excursion guide), A. & D. Blumer, C. Blumer & K. Going, W. & R. Bolliger, M. & C. Boeuf, P. Burri, E. & V. Cartier, P. & I. de Ruiter, C. Doglioni (lecturer and excursion guide), R. & T. Eckert, P. Eckardt & J. Buchmann, A. Fischer, E. & E. Fraenkl, M. & E. Glaus, L. Glur, T. & J. Graedel, K. & M. Grasmück, V. & F. Grossen, B. Gunzenhauser & K. Censier, W. Heckendorn, P. Heitzmann, K. Hiller, A. & S. Jordi, K. Karagounis, F. Keller, C. Kerez, P. & H. Knup, P. & L. Lehner, M. Leiser & A. Urwyler, H. Lohmann, M. & K. Lutz, D. Massaras & H. Schurter, A. & D. Matter, H.-P. & D. Mohler, C. Mohr, H. & I. Niko, Y. Pannatier & Elisabeth Graf-Pannatier, H. & D. Roethlisberger, P. & A. Rowlands, L. & R. Rybach, S. Schefer, W. Schlager (lecturer and excursion guide), S. Schmid & I. Jacobs, R. Schoop, V. Simantov, B. & H. Schwendener, U. & R. Seemann, N. Spoljaric, P. Stacher, W. Steenken, F. & M. Stumm, M. Suana, P. & R. Teumer, R. Trümpy, J. Van Veen, D. Wijker, O. Zingg.

Scientific Meeting

At 14h30 P. Burri welcomes and introduces the speakers of the afternoon in the large dining room of the hotel, with the following presentations:

- Doglioni, Carlo (University La Sapienza, Rome):
Tectonics of the Dolomites.
- Schlager, Wolfgang (Free University of Amsterdam):
Microbes into atolls - carbonate production and accumulation in the Dolomites.
- De Loriol, Jean-Pierre (presented by Burri. P., in absence of the author):
Déodat de Dolomieu
- Suana, Michael J. V (Addax Petroleum):
Addax - Success Story of a Swiss Independent Petroleum Company
- Bernoulli, Daniel (Prof. em. ex ETH, (Swiss Federal Institute of Technology)
The Dolomites area in Mesozoic palaeogeography: more problems than answers?
- Gunzenhauser, Bernhard (Interoil E&P, Switzerland)
Details of the Excursions

The contributions were well presented (despite problems with darkening the large dining room) and received with great interest, not least as preparation for the field trips on the following two days, when the topics would be demonstrated in the magnificent landscape of the dolomites. The presentation by J.-P. de Loriol provided a historical understanding of the unique situation, where a mineralogical term was used to name a region. The lively contribution by M. Suana led us into the topic of the oil-business and showed at the example of Addax, how courageous decisions in a risky business environment can lead to great success.

The contributions on regional and carbonate geology of the Dolomites will appear as full publications or extended abstracts in our bulletin (probably vol. 12/2, at the beginning of next year).

Partners' Programme: Archaeological Museum Bolzano

A coach brought the participants of the partners' programme directly to the car-free zone around the "Otzi-Museum" in Bolzano (Bozen). In the museum an English- and a German-guided tour were organised. The 5300 years old Oetzi („Ice-man“), who was discovered near the Italian-Austrian Border in 1991, is the oldest natural mummy in Europe. He himself gave rise to many theories about mode and reason of his death. The exhibition around him, with the discovered artefacts in his possession, provides a very interesting insight into the way of life in his time.

The participants were attended to by Alison Rowlands und Renate Bolliger. After the visit at the museum there was still time for a refreshment on the Piazza Walter in Bolzano, and at 6 o'clock everybody was safely back at Ortisei.

Evening

Pre-dinner drinks in the courtyard of the hotel La Luna at 6:30h were sponsored by Addax Petroleum. P. Burri took the opportunity to also welcome officially the partners of the participants at the convention. For the participating students he described a very positive future employment potential for geologists and geophysicists in the dried-up job market of the oil and gas industry.

Dinner followed in the large dining room of the hotel, now fully prepared for food (without necessity for darkening...). Dinner was thoroughly enjoyable, even if it started a bit late, and the attire of most guests followed the newly committee-recommended less formal style...

Carlo Doglioni, Wolfgang Schlager and Daniel Bernoulli guided the field trips of Sunday and Monday: **Prof. Carlo Doglioni** of the university La Sapienza Rome explained the structural background of the Dolomites;

Prof. Wolfgang Schlager of the Free University of Amsterdam applied his new carbonate models to the interpretation of the Triassic carbonate buildups and their surroundings; and

Prof. Daniel Bernoulli, ex ETH Zürich, explained the regional geological connections between Dolomites and the Southern Alps.

Here we give a brief account of the participants' (in particular the author's) impressions during the excursions. More in-depth - and accurate - geological comments are expected to be published by the guides in Bulletin 12/2 (probably at the beginning of next year). The guidebook by Schlager & Doglioni, used during the excursions, should soon be accessible on the VSP Web Site.

24th June: Excursion around the Sella Group

On the first day of the excursions we „circumnavigated“ the Triassic Atoll of the Sella Group.

During our drive in two coaches over the Passo di Gardena (Figs. 1 & 2) and the Passo di Campolongo on the northern and eastern sides of the Sella Group we could admire the impressive and jagged cliffs of the Dolomia Principale, which overlies the **Carnian Atoll of the Cassian Dolomite**. Towards the edges of the original Cassian reef area „clinoforms“ were visible, layers of carbonate debris and volcanoclastic sediments, dipping at a depositional angle of about 30° into the basin surrounding the platform on all sides. These clinoforms are eventually overlain - overridden - by the prograding shallow platform beds.

At a stop near **Varda**, and after a steep climb of about 20 minutes, we saw Olistoliths in a basinal setting, containing big chunks of Werfen Formation and Marmolada Conglomerate (Figs. 3). Volcanoclastic sandstones of the Lower Carnian Wengen Group overlie this "Coatico Eterogeneo". The sequence is displaced by a synsedimentary listric fault and overlain more or less conformably by the Lower Carnian San Cassiano Formation.

After Lunch in the Hotel Malita at Arabba we continued our trip to the Passo Pordoi, where we travelled by cable car to the **Sass Pordoi** at an altitude of nearly 3000m (Fig. 4). Here we stood on the Norian "Dolomia Principale" and had a magnificent view of the **Piz Boè**. On its south flank and – after a longer walk over rocky footpaths and snow – on its westerly continuation, we could see a stack of thrusts with ramp geometries that affect the higher parts of the beautifully exposed sequence: Rhaetian Dachstein Limestones, Jurassic Ammonitico Rosso and Cretaceous Puez Marls, topped by

a klippe of Dolomia Principale, all over a basal decollement on the Dachstein Formation and the underlying Dolomia Principale (Figs 5 & 6).

The continuation of the trip brought us to the **Passo di Sella**. Next to the road we saw an Olistolith in the basinal Cassian Formation with carbonatic and volcanoclastic turbidites alternating with shales and marls. The olistolith contains non-dolomitized platform carbonates from the Cassian Dolomite, which show coralline textures and shell fossils. They give an impression of how the platform carbonates were composed before post-diagenetic, regional dolomitization took place.

This concluded the first day's excursion programme, during which we thoroughly enjoyed the Dolomite landscape in beautiful summer weather. We were now ready for the rich evening meal offered by the Hotel la Luna in its half-board accommodation.

25th June: Seceda

No coaches were necessary on this second day of the field trip. We reached the station of the Seceda cable car in Ortisei on foot.

While riding on the cable car, we could see the lower stratigraphic sequence of the Dolomites beautifully exposed: from Gardena Sandstones at the base, overlain by the evaporitic Bellerophon Formation and the basinal Werfen Formation, up to the Anisian Contrin Dolomite.

The view from the restaurant Seceda was magnificent and consoled the participants over the somewhat belated coffee and croissants... Across the Val Gardena one could see the neighbouring Carnian atolls of the Sella Group and Sasso Lungo, separated by a depression that was once an intervening basin. To the NE of Seceda the near and partly cloud-covered cliffs of the Geisler Peaks were visible.

Platform carbonates of the Ladinian Schlern Formation in the Geisler Peaks predate those of the Cassian Dolomites seen in the Sella Group and Sasso Lungo. They grade into clinoforms which make up most of the peaks. A NE-dipping flank of a large syncline structurally exaggerates the original depositional dip of those clinoforms (Fig.7).

During a walk to the saddle at the base of the Geisler Peaks we had a closer look at the Late Anisian-Early Ladinian Livinallongo (Buchenstein) Formation with its dolomite beds and bituminous shale and tuff intercalations. These bear evidence of an occasionally restricted and closed basinal setting and volcanic activity with a measured age of around 240 million years. Carbonate beds derived from the Schlern platform interfinger with the upper Lavinallongo Formation. They reached the more remote basin as the platform prograded.

Daniel Bernoulli presented a last regional geological overview after lunch in the restaurant Seceda. He put the Dolomite stratigraphy into context with that of the Southern Alps.

To the participants who were unfamiliar with the Dolomite Geology prior to the convention, the field trip left a deep impression: A spectacular landscape shows abundant rock cliffs that were formed as atolls in the Triassic. They survived the impact of the Alpine orogeny tectonically little deformed, and post-alpine erosion re-excavated the original topography with carbonate buildups and intervening basins. This permits on the one hand an accurate reconstruction of the Triassic history with its synsedimentary tectonics and episodic volcanicity. On the other hand a detailed carbonate sedimentary model may be derived, which can explain the creation of atolls as mainly constructed by microbes that flourished in shallow water. These microbes formed particles that were shed from the platform into the surrounding basin at subaquatic depositional angles of around 30°. This model differs in many respects from depositional models of recent atolls and platforms and is more akin to the interpretation of Precambrian carbonates.

Seceda was at the end of the excursion programme, and a few participants took their leave right here. Others, with more time at their disposal, chose to prolong their stay in the beautiful region, and gathered for one last time for a good dinner at the hotel La Luna.

Text to figures:

- Fig. 1. On the Passo di Gardena. Wolfgang Schlager and excursion group. In background left: Sella Group, centre: Sasso Lungo. (Photo: Bernhard Gunzenhauser)
- Fig. 2. The three excursion guides. Left: Carlo Doglioni, centre: Daniel Bernoulli, right: Wolfgang Schlager. (Photo: Willem Steenken)
- Fig. 3. Outcrop near Varda. Olistoliths of the Caotico Eterogeneo (left centre) in the upthrown block of a synsedimentary listric fault of Ladinian age (wooded area on right is downthrown block). (Photo: Willem Steenken)
- Fig. 4. Sass Pordoi. Underfoot: Dolomia Principale. To right: Dolomia Principale overlain by Dachstein Limestone. In background: Sasso Lungo. (Photo: Willem Steenken)
- Fig. 5. Sass Pordoi. Piz Boè with Dolomia Principale at its base. At its top (above upper scree slope) a klippe made up of stacked thrusts, containing again Dolomia Principale, Dachstein Limestone, Jurassic Ammonitico Rosso and Cretaceous Puez Marls. (Photo: Peter Heitzmann)
- Fig. 6. Sass Pordoi. The field guide Carlo Doglioni explains the tectonics of Piz Boè, assisted by the VSP president Peter Burri. (Photo: Bernhard Gunzenhauser)
- Fig. 7. Seceda. View of the Geisler Peaks (half in clouds) with Clinoforms of the Ladinian Schlern Fm, showing tectonically exaggerated dips to the right. In foreground: underlying basinal Livinallongo Fm, with dolomite beds and bituminous shales and tuff intercalations (Late Anisian - Early Ladinian). (Photo: Bernhard Gunzenhauser)