Geology rocks minerals and fossils

English

Museo San Salvatore

Sala 4

How to discover the secrets of nature, little gems created and hidden in the underground

On the top floor of the Museo San Salvatore there is a permanent exhibition area housing a collection of geological material dedicated to rocks, minerals and fossils. With the assistance of Franco Brughera, Chairman of the Club Cercatori Minerali e Fossili Ticino, an exhibition has been organised with a view to educate the public and providing informations about how the local area has evolved geologically - in particular referring to the San Salvatore area.

The Sottoceneri area forms the only rocky outcrop in Switzerland which rises up from the Lombardia plain towards the Alps. In addition to this, the climate and the flora are both unusual, thus in the underground there are several special features which cannot be found elsewhere in Switzerland – not only for the interest of geologists.

Since the middle of the 1700's, famous natural history students on their way to Italy, had noticed that when crossing the San Gottardo pass (on their way to Italy) there were significant differences between the Sopraceneri and the Sottoceneri areas. A number of these specialists developed a particular interest for the secrets off the underground area.

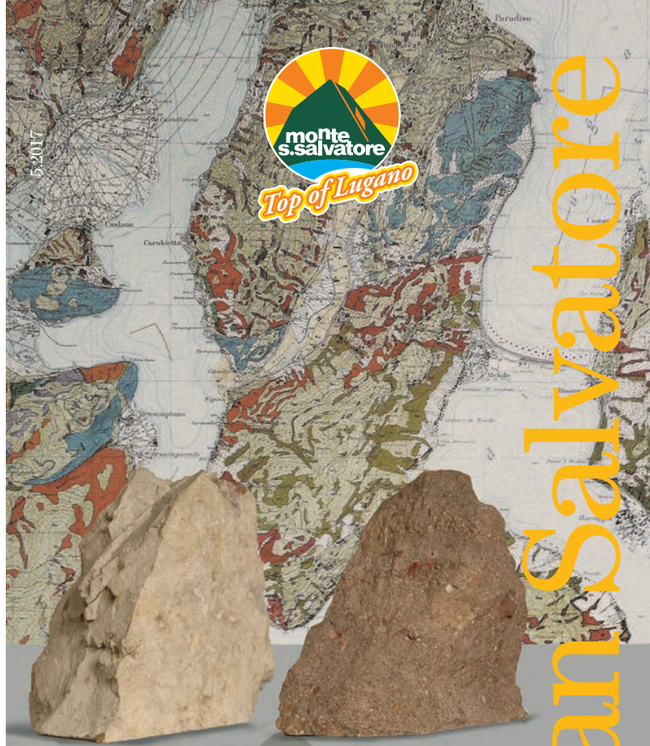
This area, extending for less than thirty kilometres and well-known for its unique geology, is crammed with strata of rocks of various origins and eras. Three key elements make up the geological structure of the Sottoceneri: the scaly crystalline ground forming the ancient Palaeozoic foundations (Insubria massif), the Permian mass of porphyry rocks (an eruptive region near Lugano) and the Mesozoic sedimentary draping of both.

Crinoids, sea lilies on reef parts

Visiting the exhibition in a clockwise direction, we find on the left of the room a geological outline of Monte San Salvatore and Monte Arbostora (from Paradiso to Morcote), along with samples of rock of which the mountain is made: from orthogneiss to dark porphyrite, from granophyre usually called porphyry to quartz porphyry , from San Salvatore's main dolomite to San Martino's conglomerate.

Continuing, it is possible to find a large display panel showing Swiss Geological Atlas sheet n° 69, covering the Lugano area and, next to it an enlargement of the San Salvatore dolomite area. On the board below we can observe 22 fossils found at San Salvatore: corals, sponges, sea lilies, bivalve molluscs etc, all the result of an extraordinary study carried out by Mr Helmut Zorn, Zurich – Frankfurt starting in 1965 and published in 1970.

The fossils have kindly been made available by Zurich University's Institute and Museum of Palaeontology.



5.2017

monte s.salvatore
Top of Lugano

Museo San Salvatore

Opening hours:
From Wednesday till Sunday
10 - 12 / 13 - 15

For those who have a valid transport ticket for the funicolar San Salvatore the entrance to the museum is included.

For more information:
Funicolare San Salvatore
Tel. +41 (0) 91 985 28 28
Fax +41 (0) 91 985 28 29
info@montesansalvatore.ch
www.montesansalvatore.ch

Printed in accordance with the advice of the Club Cercatori Minerali e Fossili Ticino

Splitted *Dolomite from San Salvatore* showing very clearly the fissuring of the rocks

Showcase N° 1
San Salvatore

The showcase is dedicated to the dolomite of the San Salvatore, a rock which has never been used in large-scale construction work due to the fact that it is cracked, as can be seen from a cross-sectioned block. This means that after being crushed, it was used as hardcore, gravel, calcined dolomia, semi-calcined dolomia, or in powder form as dressing in the San Martino furnace, as well as in carbonic acid using electric calcination (Gottardo Factory at Bodio).

The dolomite of the San Salvatore is part of a coral reef which separated the San Giorgio lagoon from the deep sea, 225 million years ago.

In the same showcase there are two sections of the San Martino conglomerate, usually called Servino, of a wine-red colour, which recent studies attribute to the Upper Anisian era, 230 million years ago. This rock was used for the tunnel portals and the underground passages of the Swiss Federal Railways (FFS), then known as "Gotthardbahn".

At the foot of the mountain, in the Noranco area, there were enormous deposits of clay which gave birth to a flourishing brick-making factory, which disappeared long time ago.

Section of the S.Martino conglomerate, also called *Servino*. Intermediate rock between dolomite and metamorphic rock

Amethyst sceptre quartz, from Madonna d'Ongero granophyre in Carona

Showcase N° 2
Arbostora

The showcase displays evidence illustrating a southward geological continuation, from Monte San Salvatore to Arbostora. It includes quite exclusively Permian volcanic rocks (280 – 225 million years ago) commonly known as vulcanite, composed of dark porphyrite, quartz tuff porphyry, red quarz porphyry and Carona - Madonna d'Ongero granophyre. It was known as porphyry and it was especially used in the building industry, as cobbles for paving roads and also as gravel in garden paths.

Granophyre is well-known to mineral hunters and collectors on account of the wide variety of small and rare minerals that it contains in the miarolithite.

Dark porphyrite was extracted from the large Melide quarry in order to fill the dyke-bridge linking Melide and Bissone, for construction of the supporting walls and as hardcore for the railway line.

Areal View of the Lake Lugano Region with Monte San Salvatore and Arbostora

Neusticosaurus, from Monte San Giorgio

Showcase N° 3
San Giorgio

On the opposite shore of the Lugano Lake in a southward direction, it is possible to see a fine cone-shaped mountain; this is Monte San Giorgio, now included in the list of Unesco's protected sites, and, regarding the Triassic period (from 225 to 190 million years ago), one of the world's most studied places.

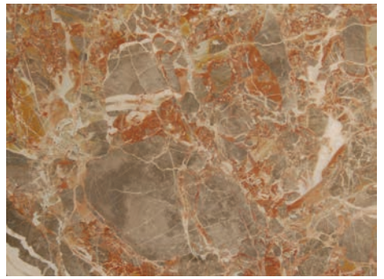
In the famous bituminous shale band, many animal fossils have been discovered: the most part of theme were marine or amphibious creatures, ranging from invertebrates to fish, amphibians, reptiles and some plants as well. The Museo cantonale di storia naturale has been given responsibility for scientific research together with Institute of Palaeontology of the University of Zurich. The showcase contains several fossils, ammonite, daonella, fish, saurians and bituminous shale.

Aragonite, from the Arosio valley above Manno

Showcase N° 4
Malcantone

This showcase contains samples of Insubria crystalline rocks and minerals (over 300 million years ago) found in the Malcantone metal-bearing mountains, which during the last century and up to the beginning of the Second World War gave birth to the famous gold mines in the Sessa-Astano municipalities as well as several exploratory mines dug at Miglieglia, Aranno and Monte Torri in the search for iron.

From Basso Malcantone we have samples of aragonite found in the Vallone di Arosio area and in the lower part of the Manno territory samples of the Carboniferous conglomerate (345 – 280 million years ago) bearing witness to the presence of dense equatorial rainforests, representing the oldest Ticino fossils.



Above: *Ammonite*, from the "Biancone" in the Breggia Park

Below: Marble from the Arzo quarries, called *Macchiavecchia*

Showcase N° 5
Mendrisiotto

In order to round off our tour of the Monte San Salvatore area, mention must be made of the Mendrisiotto area with fossil samples from the Breggia (now a protected park), lombard red ammonites from Monte Generoso, several types of marble from the Arzo quarries and the biancone known as Barlerna, as well as almost pure limestone used to make cement containing nodules of marcasite.

Showcase N° 6

The space in the middle of the room is used for special exhibitions; at the moment it is reserved for geological section of the San Gottardo motorway tunnel as well as several samples of rock starting from the South Portal heading north, extracted when the famous alpine tunnel was dug.