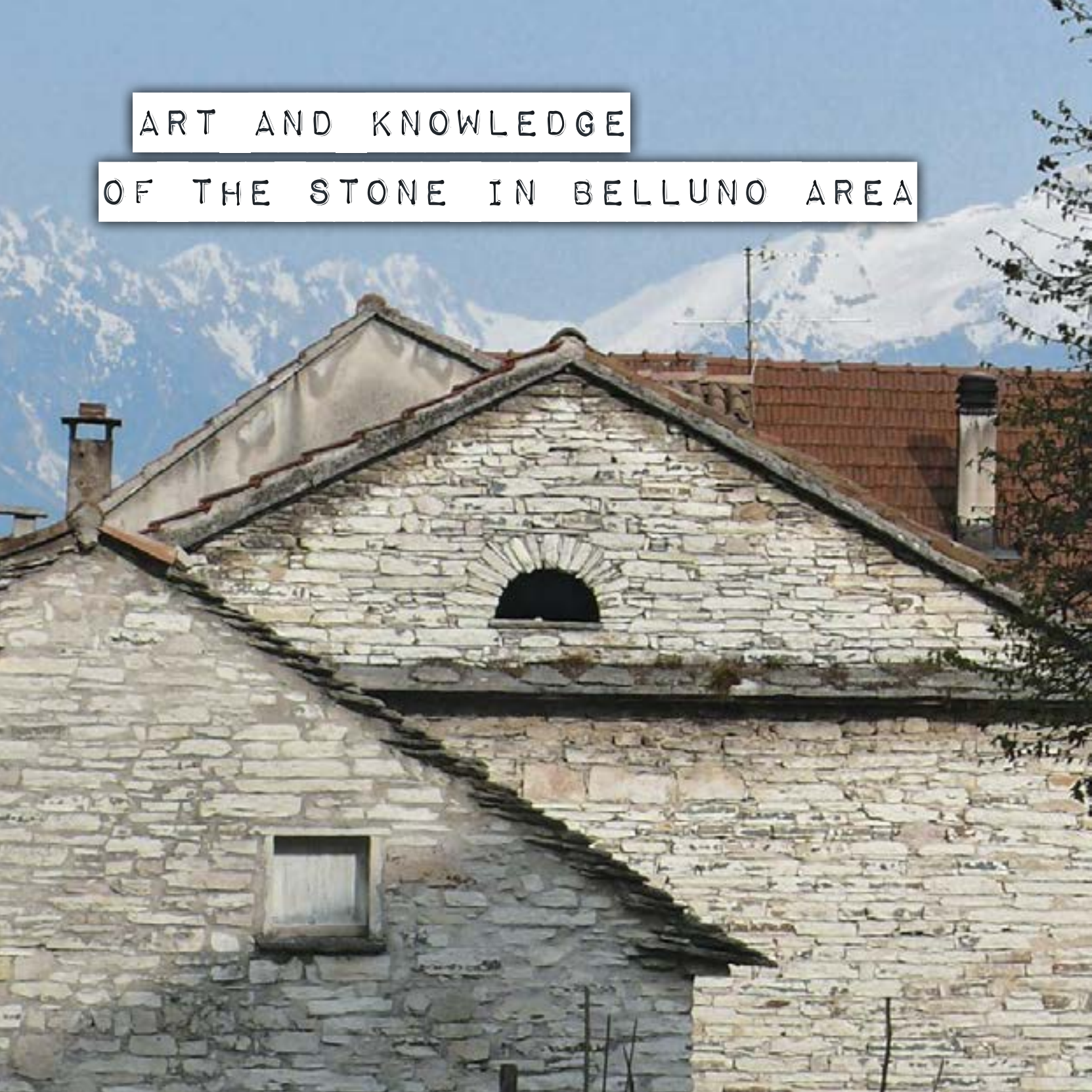


ART AND KNOWLEDGE

OF THE STONE IN BELLUNO AREA





CIRCOLO CULTURA E STAMPA BELLUNESE

ART AND KNOWLEDGE OF THE STONE IN BELLUNO AREA



Direzione Generale per la Valorizzazione
del Patrimonio Culturale.



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he Ruins of walls, towers, *castra*, *opida*, tombstones show that the Belluno stone has been used since ancient times. Even before that, stones had been used as tools in domestic life, hunting and war. Several quarries dating back to the Neolithic times are traceable from Losego, in Ponte nelle Alpi, to the Mount Avena, above Pedavena.

Discoveries in the beech woods in the Alpago area, on the Mount Teverone slopes, testify that in the Venetic époque houses were built of stone. In the Roman époque: roads, bridges, *domus*, towers, urns, sarcophagi, steles, tombstones, mosaics, columns, milestones are widespread in Valbelluna, the epicentres being the Feltre *forum* and the Belluno *municipium*. Christianity came as a new stimulus: churches, capitals, crypts, cloisters, bell towers; stones became the temporal and spiritual foundations of faith. Middle Ages castles and Renaissance villas and palaces of the powerful are all built of local stone with different hues and characteristics. Quarry workers, stone cutters, carpenters, craftsmen mastered this art, were appreciated and requested everywhere and often they emigrated because in need. Modern civilisation introduced new materials which caused the knowledge of the stone and of its working techniques to be lost. Our aim is to recover such knowledge and to lay the bases for a new renaissance of the Belluno stone.

ART AND KNOWLEDGE OF THE STONE IN BELLUNO AREA

This work intends to promote the knowledge of stones which are native of the Belluno territory and which men used through the centuries. Unearth the old to build the new: this is our main aim. Along the Piave and its tributary valleys we find stones which have been worked for centuries: from Castellavazzo to Ponte nelle Alpi, from Tambre to La Secca, from San Tomaso Agordino in Cencenighe to Gron in Sospirolo.

There are five commercial varieties. The Castellavazzo stone is the most valued and it can be found in two colours: one variety is grey, the second is reddish with veins, which, being very hard, is preferred to the former for its manifold uses. You can see it in all its splendour of red and grey tones in ancient houses, in palaces, in religious buildings, in public fountains. Quarried and worked in Castellavazzo and in the Vajont valley up to Erto and Casso, the red stone was used for capitals, columns, friezes, fireplaces, altars and ornaments, as you can see in the pictures dedicated to the most significant items from Venice to the Dolomites – World Heritage Site. Perfect material for buildings and ornaments, the grey stone was used for floors, parapets, balustrades, tubs, jambs, stairs; its characteristics - polishability, resistance and durability – guarantee its longevity even when the stone is used outside: it can bear temperature changes and harsh atmospheric agents, above all in Alpine settings.

Scattered ocraceomatics clayey materials in the red stone and settled clayey materials and graphite in the grey stone give the difference in colour.

Few kilometres from Castellavazzo, in La Secca (Ponte nelle Alpi), another red stone is found which was famous in ancient times. You can admire it in Belluno, in the paving in Via Rialto and Piazza delle Erbe.

If we proceed southwards, down to Fadalto, we reach Serravalle, first a Roman castrum and later the northern doorway to Venice, on the Strada Regia di Alemagna. From 300 the ancient hamlet used the Rosso Secca to embellish its palaces, banks, channel bridges, squares and colonnades. And in Venice, Padua, Treviso, Oderzo, Conegliano... this stone was used in the main territories of the Venetian Republic.

Near the Rosso Secca banks, on the wavy slopes of Losego and Cugnan, you can see the white quarries where hammers, wedges and chisels echoed long ago.

Since distant times, men worked the Losego and Soccher white stone and Belluno museum keeps prehistoric finds which testify to this.

And again, on the slopes of Mount Dolada as well as in Tisoi, near Belluno, millstones and other stones with lesser use were worked.

On these stone hills since ancient times men quarried and worked the sedimentary stone which was the result of calcareous powder slowly deposited when the hot Thetis Ocean reached these places.

That is the reason why in the limestone we can find seaweed, sea daffodils, seashells and little microorganisms in their shells.

This material is perfect for building walls, pavements, roof plates, floorings, stairways, fountains, capitals, windowsills. It was transported down to Venice by the zattieri (raftsmen) on the Piave.

Nowadays, on Ponte nelle Alpi hills working in the quarries has become less and less practiced and we wish that they would be rehabilitated for a sustainable development of the construction industry of our territory.

Luigino Boito

Circolo Cultura e Stampa Bellunese President

4

HISTORY

Monia Franzolin



74



HISTORY
OF THE BELLUNO
STONE

5

"[...] Quarrymen's hands break,
blood sprays and colours the white scales;
the cold weather pierces the pores as stinging pins. [...]"
Lorenzo Tarabella, *I Cavatori*



any writers and documents have dealt with the various typologies of the Belluno stone through the centuries. Among them the most notable and interesting examples are **Lucio Doglioni** and **Angelo Guarnieri**, because of the way they treat the subject and because of quality of information.

Lucio Doglioni in his work *Notizie storiche e geografiche della città di Belluno e sua provincia: Con dissertazioni due dell'antico stato, e intorno al sito di Belluno*¹ (October, 1st 1816) gives information about the use people made of some stones like Tisoi and Soccher, Castellavazzo and Cugnan, ending his treatise with an explanation of why the stone quarries were being abandoned: " [...] Grindstones and millstones are greatly traded and transported in the Treviso area and further.

Stones are quarried near Tisoi, which are of perfect quality, and in other places, coarser and more uneven; and these in Soccher. Marble and stones for factory use are not lacking. In Zoldo area we find alabaster, easy to be cut and polished, too; moreover, a certain white and red marble, whose qualities are well known to a respectable Cavalier Trevigiano, was used for noble works in altars and tabernacles, thanks to his suggestion. Such marble was used for the high altar in St. Parisio church in Treviso. However, the stones most quarried are those in Castellavazzo which are used in any kind of work, even though they are not suitable for refined work. Pavements are made of Cugnan stone, which is abundant. Flagstones used to cover the rooftops - instead of tiles – are quarried from odd places here and there. Almost every church and house in town as well as in the country is covered with such flagstones; and they are a great defence against snow freezing on rooftops. Once, white marble was quarried from St. Mamante valley, excellent and easy to be worked. You can see it in the Rettore Palace; but nowadays the roads on which stones were transported got damaged and those quarries have been abandoned. [...]".

Some years later Angelo Guarnieri gave important contribution on the topic, illustrating the whole set of quarries in Chart III in his **Carta Topografica della Provincia di Belluno del 1866**². The paper opens with an interesting and complete chart showing the quarries in the territory, a geographical list compiled after 1864 surveys with descriptions of the material and its characteristics, the cubature of annual quarrying, its economic value and other accounts.

The writer goes on with his examination of Belluno stones with an interesting article in the "Voci delle Alpi" newspaper (1867, n. 16, year I) entitled *Del commercio delle pietre molari, o cilindri di grès o molassa, che si cavano dall'arenaria grigia e rossastra nel bellunese per uso degli arrotini*³: the author writes about the richness of mineral products found in the Belluno province and then goes on to develop a complete analysis of the sandstone

1 Historical and geographical information about Belluno town and province: with two dissertations about its past and its location.

2 Topographical map of Belluno Province in 1866.

3 On trade of grindstones worked from Belluno grey and red sandstone for knife grinders.

once worked for making weapons and cutting tools and later used for making tools for knife-grinders, above all the one quarried from Calluneghe in Bolzano Bellunese, Valdantre and Costalunga in Tisoï and Canzole in Libano.

Guarnieri is sure that in ancient times these stones were largely used: he gives examples of the value of swords produced in Fisterre after the Second Punic War which had been "excellently tempered and sharpened", sharpening which was surely obtained from using the sandstone. Also, grindstones have been traded since the 15th century and not only have they been exported to other Italian territories, but also to Germany, the Balkans, Greece, Egypt and further east thanks to the international port of Venice.

These stones, quarried in tunnels, were grey and red: the former had finer grains, gave a thin edge and easily darkened the working tools; the latter bit into the metal, which never resulted perfectly polished.

In his paper *Delle cave di pietra più importanti nella provincia di Belluno*⁴ ("La Provincia di Belluno", n. 82, July, 11th 1871) the author gives precise and interesting information about the Belluno quarries and about the uses they made of stone. At the beginning he states many quarries existed, the most renowned being in Castellavazzo, Soccher, Cugnan, La Secca, Le Rosse Alte, Campel, Cesiomaggiore and Fastro. Their fortune was due to their "being close to cart-roads" so that "it is easy to transport stones with costs which do not exceed or equal the labour-cost".

8 He recounts that, from Cugnan quarries, "traveling along the main road or taking the one on the left of the Piave River which leads to Capodiponte, after eight kilometres you start climbing and up above Lastreghe you find very old quarries, maybe worked by Romans, and now abandoned - which the village was named after - and if you go further you can see the slate quarries of today, named after the close-by Cugnan village. From North to South they have an incline of eight or even ten degrees [...]. Quarried stones are of a yellowish white; the thinnest ones are used as tiles for rooftops; the other ones for floors in houses, for vestibules in churches, for covering stoves and tables, for tombstones, door and window jambs, projections of cornices, for covering stairs, billiard tables, and so on. 6 to 8 cm-thick pieces could be useful for lithography and we have used them; yet, these stones contain flint, so it is always unsafe to work them under pressure, because they could break. This hammer- and point-worked limestone is much traded in Belluno, but maybe even more in the nearby provinces of Treviso and Udine: five to six thousand square metres a year are estimated to be exported [...]. About the La Secca quarry "which touches the main road that leads to S. Croce and Vittorio" he says that "stones there quarried contain scattered coral fossils and are cherished for floors, road paving, stairs, door and window jambs, pillars, rustic columns, troughs, pit rings, and so on; but it cannot be finely polished. This stone, too, is traded in Belluno, Treviso province and Friuli; they estimate that more than six thousand square metres a year are exported out of the province".

Guarnieri goes on to talk about the Rosse Alte oolitic limestone, near Vedana, a yellowish-white limestone

4 On the most important quarries in Belluno province.

easy to work, used for pedestals, friezes, cornices, vases, aqueduct pipes, statues in gardens, jambs... and we know it was used for Vedana church and convent; Campel stone is grey and red with stains and was used for roofs, floors, stove-covers and jambs; last to be cited is the Fastro stone, taken from a rich quarry near Scala di Primolano: a yellowish-white stone, one of the most beautiful in our province, as it is a compact limestone, easy to work and beautiful for huge and ornamental works as the column bases and capitals of Belluno theatre prove, as well as other palaces in Feltre.

1871. The year when **Belluno stone quality was officially certified** thanks to the **Esposizione provinciale di Belluno**, inaugurated on September, 10th at 9 am in Palazzo Minerva (former Accademia degli Anistamici). As they wanted to put on display the best products and excellences of a territory just included in the new Italy which was looking for a real unity and mutual knowledge, Belluno put products of the earth, that is minerals and stones, in the first section of Regio Liceo rooms. In the Exposition newspaper we read that “the Exposition showed how our province is not only teeming with hewn stones for ordinary buildings, but with colourful and streaked marble and limestone, good for polishing and for precision and marquetry work. The numerous and well-chosen specimens, all given a parallelepiped form, showed on each of their different faces the different works each stone is suitable for [...]”.

The Feltre Comizio Agrario (Agrarian Committee) exhibited 34 specimens of stones found in that district, and Cav. Giovanni de Pantz displayed 17 specimens from Fonzaso district. Castellavazzo’s Mayor presented 10 specimens and Tambre’s Mayor presented six. Thanks to Cadola’s priest fine specimens of Soccher, La Secca, Quantin and Cugnan stones were displayed; R.Liceo Tiziano exhibited Vedana and Sospirolo Rosse Alte specimens, and red marble from Fornesighe (Zoldo); Cav. Francesco Doglioni, the so-called *lumachella*, found in the Gresal valley; Giuseppe Favretti, white and red marbles of S. Pietro Hill in Longarone; Prof. Luigi Zann, black stone found in S. Lucano valley in Agordo; Cav. Giuseppe Segusini, Fener lithographic limestone; Gio:-Battista Piazza, the brown limestone found in the quarry he discovered in Vizzanuova, near Lorenzago. Tiso’s important knife-grinder stone was represented by one block which contained the skeleton of a cetacean (*Pachyodex Catulli*), by two pieces of that same stone which had been worked into a cylinder and a square, by four bottles containing sodium sulphate and magnesia found in those quarries in their different processing phases, and by an essay written by Bartolomeo Zanon, famous chemist, on their uses and preparation. Mr Antonio Martini produced an essay on Sospirolo sandstone, which – he says – cannot compete with Tiso’s for knife-grinder uses, but it is used as a hewn stone as it is easy to work and hardens well with air contact. Displayed by Gio:-Batta dell’Agnola, stones for whetstones, recently found in Taibon, in Voltago and in Zoldo, and specifically that of Taibon, are recognized to be of greater quality and have already been traded: they indicate the beginning of a new industry in the province, which deserves to be encouraged, because it gives the tools the poor farmers need, who – this way – can save money”. A lot of the above-mentioned stones received first-class honourable mention by the committee.

The above-mentioned are very recent formal statements, but they were preceded by centuries of recognition: these formations began 90 billion years ago when the alpine folding emerged after marine sedimentation began 300 billion years ago; also, since ancient times diverse typologies of stones have been used by men guided by a kind of inclination, **instinct and natural sensibility** towards available raw materials. In the Belluno area, too, the first uses of such stones were for making subsistence tools and for natural colouring: one example is the site where flint-stone was quarried and worked near Campon on Mount Avena, datable to the Palaeolithic times (between 50.000 and 27.000 years ago), which is considered the oldest human settlement known in the Belluno area. Another example is the hunter's grave in the Cismon valley (about 14.000 years ago) enriched with stones bearing geometrical-schematic and natural motifs, a prehistoric artistic expression linked to spirituality and to the veneration of the dead, aiming to wish for a better passing on to the afterlife, honouring the dead's physical and moral qualities.

If the ancient Veneti left stone relics linked to the necropolis (for example, the well-preserved site in Mel), the Romans broadened the range of uses made of such stones in Belluno area. At the beginning the area attracted the Romans for its iron and copper reserves and later Belluno became a *Municipium* in the first century AD: the area was reorganized in *pagi* (administrative district) and *vici* (villages) as the Nero stele in Castellavazzo testifies, which might be linked to the Nero reform (58 AD) which exempted transport ships from paying taxes: hardly a small rule for a community which traded goods by inland navigation, as it was in the subsequent centuries for the *zattieri* on the Piave River.

The Romans had a systematic, organized and smart approach towards quarrying and processing: they had a body of stone cutters divided into *lapidarii* – who had to prepare and install the material – and *lapicidae* – who carved the inscriptions –, which was ruled by a *Collegium fabrorum*. Thanks to this organisation and to its value, the stone and its production became one cornerstone of the economy in the Piave basin, as it is testified by copious **epigraphic and artistic testimonies**: one example is the famous Flavio Ostilio Sertoniano sarcophagus (3rd century AD, now in Palazzo Crepadona, p. 32) found in 1486 while excavations for St. Stefano bell tower foundations were being conducted; other examples are gravestones and funeral and political inscriptions. Stones were also used for landmarks and milestones (for example the milestone found in Cesiomaggiore on Via Claudia Augusta Altinate), urban divisions and road paving (for example the ones in the archaeological site in Feltre), aqueducts and bridges, but also architectonic elements like capitals and entablatures of buildings with civil and religious functions, aqueducts and sewers.

In this period, the Alpagò *Biancone* stood out, a white limestone recalling the travertine covers of Rome, because Rome wanted to give homogeneity to all the Empire through architecture (for example, the capital found near Porta Dante in Belluno).

In the Middle Age and in the subsequent period, Roman remains were **reused** for new buildings and for restructuring old ones to give them importance and austerity by using the antique fragments. Belluno stone



11

Roman bridge, Strada Statale 203, Sedico.

Roman capital in Cansiglio Bianco, 2nd – 3rd AD, Civic Museum, Belluno.



12



*Roman gravestone
reused on the side façade,
San Martino Cathedral,
Belluno.*

experienced its golden era under the **Venetian Republic**, which exploited the territory as a basin for raw materials, as the Romans had done before. The Republic also had more magnificent trading ideas: interest in Belluno stones was due to construction operations spread throughout the Republic and in effect not only do we find stones from Castellavazzo, La Secca, Lusego and Cugnan locally, but also in Venice and in other towns of the *Stato da Terra* (the mainland) in pavements and floors in palaces and churches, arches, capitals, architraves and windowsills. The reason these stones were so widespread is simple and ingenious: the quarried material was easily transported to the Piave River and loaded on rafts in the ports along the river and so it easily reached the Plain and then the Lagoon.

Between the 15th and the 18th century the Castellavazzo stone became prestigious because of its chromatic varieties which combined red and grey, as you can see in **S. Stefano Church in Belluno**, by the master stonemason Giorgio da Como. The stone was also appreciated for its mechanical strength and resistance to atmospheric agents, which made it possible for it to be used for important outdoor architectural operations: column bases, corbels and shaped plates of the Rettori Palace in Belluno; the 16th-century rebuilding of Porta Dojona; the 18th-century construction of the cathedral's bell tower designed by architect Filippo Juvarra. The Castellavazzo stone was also appreciated for its aesthetic potentiality: different tones and tricks of the light were obtained by various finishes, like polishing, chiselling, bush-hammering, rough-hewing.

The 17th century saw the development of the regulations on stones and quarries with the institution, in 1665, of the **Deputati sopra le Miniere** (Deputies on Mines) by the Consiglio dei Dieci (Council of the Ten). This was a board of magistrates supervising management and control of every subsoil product as well as of furnaces for lime, bricks and crockery production. This raw material was state owned and its quarrying was legalized by way of investitures conferred by the Deputati and payment of the *decima minerale*, a tax on the raw material. In Belluno, the Venetian government introduced the *partiti* instrument, that is, tenders for the collection of the *decima* given to private functionaries appointed by the Deputati who also had to ensure that the work went on as expected.

The link between mines and stones is shown by Agordo and the Valle Imperina, site worked by the Crotta family since the second half of the 17th century. The site reached a considerable dimension in the 18th century, producing half the copper requirements of the Republic. The Crottas joined the ranks of the *Consiglio dei Nobili* in Belluno and Alessandro finished his dwelling in Agordo in 1692, enriching the garden with statues made of Cencenighe's Dolomite stone, also used in the buildings.

At the beginning of this paper, we had already analysed the 19th-century testimonies on the importance of such stones, also testified by the 1891 dossier *Statistica industriale. Notizie sulle condizioni industriali della Provincia di Belluno*⁵ by the Agriculture Ministry, which lists 61 quarries on the territory of 18 Municipalities. These employed 571 qualified workers, who maintained an ancient tradition which right in that period

5 Industrial statistics. Information on the industrial conditions of Belluno province.

between the 19th and the 20th century was about to go through a **technological change**: manual work was being substituted by explosive and automatized equipment.

The **20th century** saw a change and somehow a decline. The first post-war period was characterized by the formation of **consumer and worker cooperatives**, growing out of associations of bricklayers and stonecutters. Two examples are the *Società Anonima Cooperativa* (Anonymous Cooperative Society), founded by Bolzano Bellunese sandstone quarrymen and stonecutters “to provide for material and moral wellbeing, to redeem all the existent quarries in the area, to exploit and directly manage them”; and the cooperative worker society *La Libertà* (Freedom) which started quarrying the Dolomite stone in Maseròz (Cencenighe Agordino) by way of automatizing stone transportation via a cableway which carried the rocks downstream.

These cooperatives soon became craft leagues, and the workers’ movement became organized into more advanced and more motivated unions. One example: the stonecutters and workers in Soccher started a demonstration for their working conditions in September and October 1922, when they were working on the railway bridge in Cadola, when the opening of such way between Vittorio Veneto and Ponte nelle Alpi could redevelop the local stone trade, exploiting a new form of transport different from river and road transportation.

A number of quarries ended their activity in the first quarter of the 20th century: Losego quarry was then reopened after the Second World War, but only the Ribe site, to quarry stone for house building. Nevertheless, the secular tradition did not get lost: Losego stonecutters were employed in other places, in quarries as well as construction sites.

During the Fascist era, according to the principle of autocracy and appreciation of tradition, local activities were redeveloped and stone quarries and furnaces in Valbelluna were given new importance. For example, Soccher and La Secca stones were used for works in the hydroelectric system of Santa Croce Lake and in the hydroelectric plant in Fadalto, which was made of stones from Soccher and from the Mount Dolada slopes, near Soverzene.

During the war a number of local firms were classified as “war-material Producer”, for example Fant in Bolzano Bellunese which supplied ILVA and ANSALDO – steelworks producing weaponry, cannons and panzers – with grindstones.

In the period following the Second World War, stonecutters associated again: the most important action was the founding of the *Cooperativa scalpellini e cementisti del Piave* (Piave’s stonecutter and cement mixer cooperative) on February, 13th 1957. Their aim was to quarry and work every kind of marble and accept any order the members could carry out. However, this did not lead to the results hoped for.

Contradiction characterised this period: on one hand, people wanted to abandon the past and modernize the stone industry, on the other hand enterprises were born which succeeded in giving new value to the tradition and to the local products.



15

Villa Crotta, Agordo.

*Internal architecture,
Santo Stefano church, Belluno.*



One example: Fant firm in Libano grew so much that it employed 150 workers who made grindstones for mechanical workshops, agricultural consortia, hardware stores, blacksmiths, steelworks, knife factories and became important on foreign markets from the Czech Republic to Sweden, Iran, Iraq and Egypt for crystal processing. The activity ceased in 1963 because artificial grindstones were becoming competitive and because of danger in extracting raw materials.

Another example: Rosei Sora Losego quarry opened in 1959 thanks to the Prest brothers, whose family had owned the land since the second half of the 19th century. The brothers stood out for diligence, professionalism and competence. They supplied the Fadalto Alto furnace which produced lime, in a boom period for the construction industry.

The history of stone in Belluno does not end here: some “heroes” are keeping going, despite difficulties and internal and foreign competition and the current economic trend. In the next sections we are going to analyse these subjects and the characteristics of the stones in depth.

Martina Boito





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natural stone is a highly valued material, especially for construction.

Many reasons drive us to use stone instead of other materials, one in particular responds to a current sensitive issue, that is **ecology**.

Natural stone is a building material found in nature: no energy is needed for making it, only quarrying and processing it involve energy consumption, but in a small amount in comparison with other building materials. Stone is extracted from small quarries without using too much explosive. Stone processing residues can be directly used for filling up quarries where it is extracted.

In the lifecycle – extraction, processing and disposal – nothing is thrown away. Natural stone is environmentally compatible, does not contain contaminants which might cause harm to health. It can be safely used for areas where food is handled, it is not combustible and it does not release unhealthy substances in the event of fire.

Moreover, natural stone is fascinating, various, it can be customized, it ages well and it is three-dimensional: you can produce stones in whichever solid form or any plate size you desire. Interesting light and shadow effects are obtained thanks to grooves carved on the stone surface. Also, stone has an attractive price, it is favourable in terms of physical properties and guarantees long lifetime.

In particular, our local stones are excellent materials with great potential. This book wants to offer an in-depth study on the characteristics and architectural uses of the various types of Belluno stone, so that its characteristics become known and appreciated in Italy as well as abroad.

We wish to raise awareness among public and private institutions as well as professionals in the sector, so that they

use these materials, valued not only for their intrinsic qualities but particularly because they are connected to our history and to a desire to contribute a significant and lasting architecture.

In mountainous regions, such as Belluno, wealth derives from minerals exploited since ancient times. Distant are the origins of stone usage and processing and in our tradition we find them in architectural works as well as in everyday objects.

The skills of local stonecutters were appreciated and looked for abroad and the stone itself was exported beyond the borders: from Venice to the Mediterranean and the Black Sea ports. Millstones quarried in Tisoi, Libano and Bolzano Bellunese reached Germany, Bosnia, Albania, Constantinople and the Anglo-Saxon countries.

Stone quarries are known to have existed all around Belluno, whose traces we can read in our landscape and memory and which testify to technical knowledge and effective solutions, in particular as regards the local architecture.

Stones were used for churches, houses, mansions, palaces, for dry-stone walls, thresholds and gates, for windowsills, architraves, jambs, staircases, floors, corbels, fountains and basins. Architectural works were closely linked to the place where they were built and to the available resources.

The **Rural houses** come to mind, built of stones found during digging for building their foundations.

Stone was particularly used for those parts which had to last over time and were most subject to wear.

Stone was used for load bearing walls, windows, doors and staircases in contact with the soil: the first external steps of wooden balconies were of solid rectangular- or triangular-shaped wood, leaning on wall structures or rounded-edge tread plates and wall or wooden riser. Floors were usually made of cobblestones in the stables and of stone slabs in the kitchen and other living areas: the substrate was made of small-size stones and pebbles and then was properly compressed; on this, stone slabs were lain. In the kitchen, the heart of the house, there was the fireplace, consisting of a large stone. For discharging smoke, we rarely found a flue pipe, which could not be made without hewn stones. Alternatively, the *ritonda* was built: a compartment next to the kitchen, protruding on one side with variable structures; the fireplace was placed inside it and benches or brickwork seats all around.

In Belluno the word for fireplace is *larin*: it comes from the Latin *Lari*, the divinities who protected the household. (Latin *lares* meant "fireplace").

The rural house is a genuine and spontaneous expression, suited to the functions and activities conducted there. The choice of material was not casual and the orientation of the house followed the path of the sun.

The north-facing part was blind so the built-up area could defend itself from cool air from the valley. For other components of the house timber was found in the forest: various kinds of timber were suited to fulfil different functions. The building process used a short chain of supply and responded to environmental sustainability criteria.

The most renowned quarried stone was used to make the most beautiful and representative parts of the **Belluno Villas**, erected on the ruins of the medieval castles.

Belluno province is rich in Mansions, which are different from the classical Palladian Villas, because of landscape and architectonic characteristics, such as the family chapel, situated near one of the entrances.

Charming examples are **Villa Pasole** in Pedavena and **Villa Miari Fulcis** in Modolo.

In Villas and Manor Houses, the most renowned local stone was used to enhance the façade elements, such as podiums, porticoes' arches, windows, string courses, parapets and arcades. Indoor, it was used to build stone fireplaces, basins and sometimes to define with mouldings the portals leading from one room to another and giving fascinating perspectives, in the following centuries also made with stucco.

Stone is also used for indoor and outdoor staircases as well as for some floorings, often in Venetian or Palladian style, fringed with skirting boards. The Palladian floor was different from the *battuto veneziano* floor: it was made of thicker stones all cut with the hammer, all of the same thickness and all trapezoid- or triangle-shaped; they were placed side by side, divided by a small gap, on a concrete layer without following a project. After the installation, they were hammered and rolled, and subsequently sand-blasted and polished and treated with wax. Particular use of it was made in realizing coats of arms representing the noble families, which were placed in relevant locations.

The portals of outside gates were made of stone, too and were embellished with significant masks evoking popular beliefs, such as the **Villa Crotta** portals in Agordo, in whose gardens you can also admire beautiful sculptures.

Stone was used for two reasons: it was a lasting and valued material, suited to give value to the noble architecture of the villa; moreover, it had properties, such as resistance to wear, water and atmospheric agents, that made it suitable for horse-stable and barn floorings and for building wells and fountains, essential elements in a farmer's daily life, linked to the landowner's villa.

In **houses and palaces in town**, besides façade elements, fireplaces, staircases, portals and floors, power had to be displayed and this was through sculptures, decorations, busts, plaques, coats of arms and stone plates placed indoor as well as outdoor.

For example, the **Rettori Palace's** façade is enriched with busts representing 15th- to 17th-century rettori with their coats of arms with two rows of windows, while in the lower part there is a beautiful lodge with arches and columns made of Valdart stone, a compact white limestone with fine grain, lasting and easily workable, quarried above Cirvoi, near **San Mamante church**.

The local stone was used in ancient times and we find testimonies in the beautiful stone-made **Chiesette** (small churches) immersed in the green of our Province, such as **Sant'Andrea church** in Ponte nelle Alpi, whose floor, made of Cugnan stone, has recently been restored. Using the stone takes on symbolic meaning and spiritual and religious value, as this material lasts in time.

In Belluno province we find magnificent examples in village churches as well as in the larger churches, such as **Santo Stefano** and **San Rocco** in Belluno. In the former we can admire a wide use of Castellavazzo red stone combined with Valdart milky white stone, which was also used for the beautiful 15th-century **Santa Maria dei Battuti** portal; in the latter Castellavazzo grey stone was used in the façade as well as in the columns, arches and internal stringcourses, while the floor has recently been restored with Rosso Secca stone.

Besides architectonic elements and beautiful stone-flagged floors, in churches stones were also used for altars, baptismal fonts and stoups.

In the local use of the stone, we should remember some architectural elements which were functional to daily life in the past and which bring us back in time, such as fountains found in the villages, wash basins nowadays used as flower pots, pavements of old centres which we tread on every day scarcely noticing.

Palaces, villages, squares, streets... all speak the same language which we can still read and decipher. What we want to do is understand the beauty and the creativity involved in using the Belluno stone, so that it is used and given value in the future, in an intelligent, aware and – why not? – creative way.

Local firms working this stone are developing valuable projects and precious creations, and particularly:

- Walls, floors and coatings
- Bathtubs and wash-basins
- Fireplaces
- Staircases
- Sacred elements
- Architectural and decorative elements
- External floorings and urban fittings

Following, a collection of some examples on the uses of Belluno stone in the local architecture which compares old knowledge about construction and new interesting ideas.



23

*Bush-hammered Grey Castellavazzo staircase,
with framed heads, private internal courtyard,
Via Mezzaterra, Belluno.*

24



View of Castellavazzo.

CASTELLAVAZZO STONE

Castellavazzo stone is very precious and has been largely used since ancient times.

It seems that this stone was quarried in the Roman age.

The stone has two varieties: grey and red. The grey is given by clay minerals and graphite and this stone is quarried on the surface; the red is given by hematite and is found deep down.

Castellavazzo stone is the most precious for its characteristics: its beauty and its hardness. One quarry is still working: Masor quarry in Olantrèghe, near Castellavazzo and other ones.

For centuries it has been considered a noble stone and has been used for the most beautiful and important architectural elements – indoor as well as outdoor, thanks to its resistance to sudden changes in temperature – in the whole province and further, transported on rafts.

Belluno bell tower was made of Castellavazzo red stone: time has made the red lighter, to the extent that it seems to be white stone.

We may not notice it, but this stone has always been part of our lives.

If we take a walk in Belluno, we can see how the stone is manifested in all its beauty.

We can see it in palace architecture, in the most beloved churches, in Renaissance fountains found in the squares with statues of bishops. Water spills from bronze pipes with a dragon's head representing the victory of good over evil.

The old part of Castellavazzo is also made of this stone. A lot of stone houses are now uninhabited, abandoned or for sale. They are extremely interesting from an architectural point of view.

If we take a walk in the recently restored streets we can understand the beauty of this place, given by fascinating corners, framed by precious architecture of stone and the natural surroundings.

The Castellavazzo quarry was owned by old **Bruno Mazzucco**, a hard worker and expert in the secrets and the working techniques in stone.

Once he tried to drill Mount Civetta slopes, helped by some geologists: he wanted to obtain the beautiful Dolomite red stone.

Unfortunately he did not succeed, because the stone was soft and crumbly.

So he was satisfied with extracting the Castellavazzo stone, not less precious.

Nowadays Castellavazzo stone is extracted by **Roccia Scavi**, while it is worked and sold by **Antonio Cason's Cason Marmi s.a.s.**

The products are mainly for interior fittings like bathtubs, basins, fireplaces, coatings.

The firms constantly develop new work techniques and new and interesting combinations thanks to their passion for this stone.

A recently made project is Rosapietra Hotel in Cortina d'Ampezzo: Castellavazzo stone is a key element together with wood.

In the hotel bathrooms the use of different finishes is characteristic as are various cuts of the same stone. In detail: the **end wall** is made of red Castellavazzo in slats (h. 8/10/12 cm) hand-cut with chisels; the **basin top** of cut-against-vein red Castellavazzo with a shiny surface finish and split edges; the **mirror wall** of cut-against-vein red Castellavazzo with bush-hammered and brushed surface finish and split edges. The result is a real work of art.

26



Detail: Castellavazzo stone variously finished, "Rosapietra" Hotel, Cortina d'Ampezzo.



27

Urban pavements and fittings, Castellavazzo stone, requalified area in the centre of Castellavazzo.

Private house fireplace, Belluno.

Stoup in the San Martino Hospital Chapel, Belluno.





19th-century Rosso Secca fountain with bench, via I novembre, Belluno.

Detail: country house window, Alpago.



ROSSO SECCA STONE

In the picture you can see an old fountain and a bench situated at the panoramic viewpoint in Belluno and made of Rosso Secca stone. The other picture shows a Rosso Secca window. This stone has been used since ancient times: it was greatly used in the past and it is significant that it has recently been used to restore historic and architecture buildings, for example **Palazzo Fulcis** (with Rosso Secca and Cugnan floors) and **Palazzo Bembo** where the old check-board floors have been restored with Rosso Secca and grey Cugnan stone, while columns, arches and staircases are made of Castellavazzo stone.

In the past Rosso Secca was used in the house for lintels and windowsills. For thresholds and windowsills stone slabs were used which were easily found in the surroundings, such as the red *scaglia*. Windows were made of stone in houses close to quarries, such as in the Alpagò area; in this area Rosso Secca and white Cansiglio stones were usually used.

The window frames were sometimes made of timber and the openings were splayed, so that the shutters could open wide.

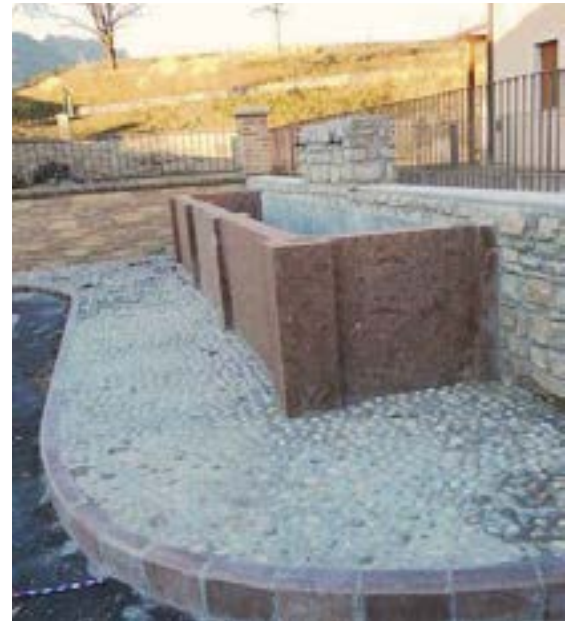
Simply-designed gratings usually protected ground floor windows.

Rosso Secca is quarried in polishable uniform wine-red hewn blocks, with variable tonality according to the finish. It can have sporadic little grey pigmentations. Rosso Secca is beautiful if cut with a saw, while other stones need to be finished; moreover, it is one of the few stones resisting to flaming and frost. **Flaming** enhances the colour and makes the stone interesting: it could be easily used in new architectural projects, in façade frames on a plastered background. It is used for indoor and outdoor flooring: the natural roughness does not need additional finishes. It is also used for coatings, jambs, windowsills, staircases, fireplaces and other elements.



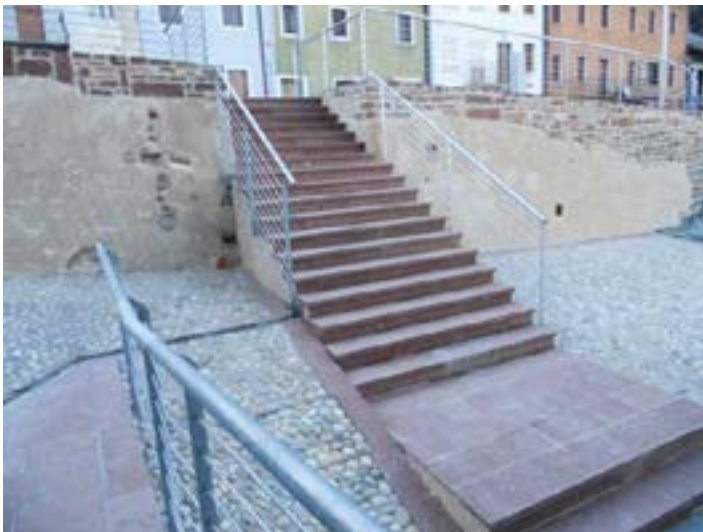
*Detail of the new pavement
integrated with the old one
in Via Mezzaterra, Belluno.*

*New Rosso Secca flamed fountain,
Piaia (Ponte nelle Alpi).*





31



*Detail: pavement in Piazza
Foro Boario, Vittorio Veneto.*

*Rosso Secca staircase,
S. Croce del Lago church,
Ferra D'Alpago.*



*Details: window frames
and wall, Cugnan,
Ponte nelle Alpi.*

CUGNAN STONE in PONTE nelle ALPI

If we take a walk around Cugnan village, we can admire houses made of stones, built many years ago, in accordance with rural house typologies.

Village houses tell stories. Walls were made with what you had: ordinary stones found in the surrounding alluvial or morainic deposits; noble stones were specifically used for windowsills, thresholds, jambs and roofs. Bigger ashlar were used for foundations and the ones with regular shape and length for corners. If the village was close to a quarry (*perina*) regular-shaped rough-hewn stones could be used. The typical section of the walls was 45-50 cm thick, made of materials with heterogeneous shapes and dimensions. At the bottom, thicker (60 cm) stone courses were laid, which functioned as foundations. The quality of the construction of the foundations was very variable, depending on workers and material employed. The most common structures were: common walls, without courses and with regular stones; irregular common walls with stone courses; square ashlar walls. Walls were sometimes tapered, the higher you built, yet this was not a common building rule. Plasters and mortar beds were made of lime, produced in local *calchère* (lime kilns), and of clay aggregates.

Today we can still understand which materials were used for building construction: they are full-fledge memory mosaics.

Cugnan stone is a natural sheet stone entirely made of limestone. It has a very fine grain, it is light bluish-grey coloured and has some light yellow stripes resulting from oxidation occurring during the lithification process of iron present on the stone surface. A natural decolorization which makes the stone particularly valuable and rare. Nowadays it is mainly used for floorings and walls, in particular dry-stone walls and external coatings, because of its resistance to atmospheric agents; it is variously finished: bush-hammered, brushed, naturally split, sliced for walls and similar. It was also used for historic and architectonic restructurings in the Triveneto area: *De Gusto* restaurant – historical building bound by the heritage protection authorities – in Levego was restored with Cugnan stone for the outdoor flooring and with grey Castellavazzo stone for the stairs. The new indoor floor was restored with Cugnan stone, with an aging finish.

Cugnan and Rosso Secca are quarried by **Bertagno Angelo s.r.l.** who for years have been processing and making these natural stones appreciated.



*Restoration of old Cugnan stone pavement,
"De Gusto" restaurant, Levego (Belluno).*

*Detail: dry stone wall, Pian di Vedoia
Autogrill project, Ponte nelle Alpi.*





35



*Floor detail: juxtaposition
of old and new paving,
Palazzo Bembo, Belluno.*

*Detail: pavement,
Fregona Church Square (TV).*

36



*View of a group of houses,
Lastreghe.*

LASTREGHE STONE

Lastreghe village was named after the stone slabs found on *Coi de Pera*, that is “stone hills”.

In villages, stone houses were made with material found naturally: erratics, big pebbles and quarried stones. Wall typologies were determined by the kind of stone used. The nature of the stone is variable: common walls, without courses and with regular stones; irregular common walls with stone courses; square ashlar walls. A lot of stone houses are still intact, because of the great resistance stones have and because these buildings are very difficult to demolish: think about beautiful dry-stone walls found on walks along Val Belluna.

Restoring and building stone works means we have to be sensible and maintain the landscape quality: man has always intervened with a wise use of stone materials.

In the 20th century the relationship between environment and stone has been through a deep identity crisis because of new materials introduced and because of raw materials imported from all over the world. In that period quarries were only used to get lime, by crumbling and baking the stone.

Nowadays this industry seems to be about to be relaunched, due to new building procedures and to the sensitive recovery of the regional tradition.

New refined quarrying and processing techniques make the stone adaptable and the costs affordable, similar to imported stones and products.

Lastreghe stone is similar to Cugnan stone, but darker and slightly greener; while **Losego** stone has got grey tonalities and is extracted and processed by **Franco Prest's Prest firm**.

Lastreghe stone is nowadays extracted and processed by **Fratelli De Pra s.p.a.**, who in 1992 bought the quarry from the Stonecutter Cooperative, who had been working there since the post-war.

Lastreghe stone is used for restorations, coatings, floors, staircases, garden ornaments, fountains, wells and similar elements. It is also used for structural works, load-bearing walls and roof coverings. The latter are still made in accordance with the tradition, which had different laying typologies, depending on the available material size and thickness: partial overlap of wide and thin slabs; orderly arrangement of thicker slabs, inclined; or a tight weft of small flat irregular slabs which could come from soil tillage.



*Detail: dry stone wall coating,
private house, Visome.*

*Detail: wall coating,
private house, Mel.*





39



*Long, narrow stair-like flagstones
recalling the old building system
in the Upper Alpage area,
capital, Valdenogher, Tambre.*

*Garden paving, private house,
Vittorio Veneto.*

40



Cansiglio stone Roman sarcophagus 3rd century AD, Palazzo Crepadona, Belluno

Franco Fiabane's sculpture. Old section: using Roman boundary stone found and worked in Via Altinate, leading from Rome to Santiago de Compostela; new section: linear modern sculpture, the figure is derived from the composition and decomposition of triangular figures.



CANSIGLIO STONE

Caio Flavio Ostilio and his wife Domitia's sarcophagus, now in Palazzo Crepadona (Belluno), was made in Roman times and with Cansiglio stone. This testifies that the Prandarola quarry (near Pian Rosada) was already operating and in fact the extracted stone has been widely used for its characteristics in the following centuries. Outside Belluno Civic Museum the capitals made in Cansiglio stone are another historic example.

Cansiglio stone is a white limestone with more or less fine grain, it has good mechanical and working characteristics, it is antifreeze and does not absorb water. Today there are two main quarries: in Tambre d'Alpago, there is a quarry pit where talc for pharmaceutical use is extracted and; in Col delle Fratte (Pianon) the *bianco di Pianon* (Pianon's white) is extracted. The latter is a stone similar to ancient Cansiglio stone, ivory white and well workable. The stone is extracted by **Grigolin**. Uncoloured marbles, such as Cansiglio stone, are rich in pure calcium carbonate, which is used by a wide variety of industries, such as food and medical ones. Marble powder is also a component in colorants and varnishes, in toothpastes and plastics and is also used in papermaking industry, together with kaolin. Whole uncrushed pieces for industries are cut in blocks by **Uberti Marmi**, who cuts the hugest erratics in the quarry, which, once cut in big blocks, are then sawed in plates and shims for interior fittings, such as worktables, bathtubs, basins, design objects and floors, but also for outdoors, such as façade elements, thresholds, windowsills and floorings.

In Alpago, you can still find erratics known as "**pietra canterina**" ("singing stone") with very fine grain, suitable for sculptures and artifacts. When interesting pieces are found, they are set aside for local artists. Master **Franco Fiabane** is one of such artists, one of the greatest lovers of this stone, and he has been carving it for over 60 years, giving us magnificent sculptures, like the Via Crucis in Madonna di Lourdes Church in Nevegal. He loves calling it "**pietra di Sant'Anna**" (St. Anne stone), named after the village where it was once quarried.

42



*Brushed stone kitchen basin
and worktable in Cansiglio stone,
private house.*

*Detail: mullioned window frame
in Cansiglio stone,
bush-hammered with chisels,
private house.*



*Stone fountain blunted
and bush-hammered with chisel,
Spert d'Alpago square.*

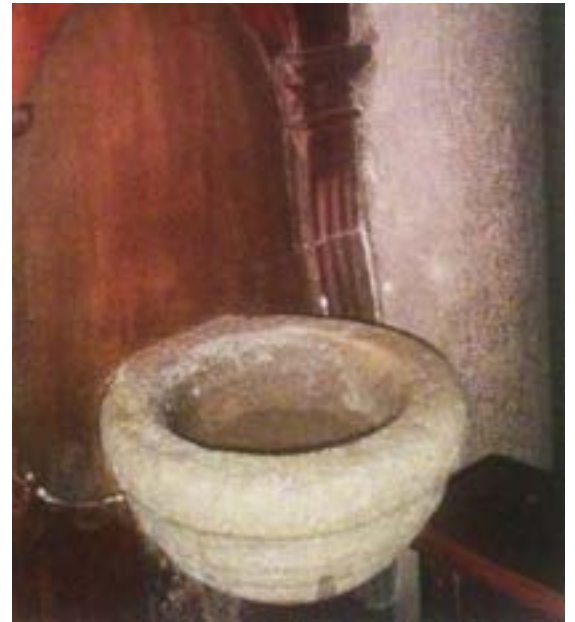
*Stoup with polished border and
chiselled parts, Tambre church.*





*Detail: Dolomite Stone façade,
Villa Crotta, Agordo.*

*Round basin and column
of the original church, Dolomite stone.
Among the oldest products
made in the village of Cencenighe.
Parish church, Cencenighe.*



DOLOMITE STONE

In the entire Val Belluna area there are small quarries, started thanks to widespread stratified limestone with good mechanical and workability characteristics.

Nowadays few quarries are still working. High transportation costs are one reason, caused by their location in inaccessible areas.

Dolomite stone can be found in Agordo valley and is variously coloured: from white to grey, according to where it is extracted. Black Dolomite stone has been used up. This stone is suitable for internal as well as external coatings, thanks to its resistance to atmospheric agents and water.

It has been used since ancient times for stoups in village churches as well as in portals. Precious testimony of the use made of such stone is **Villa Crotta** in the centre of Agordo. Over time, Villa Crotta de' Manzoni was modified and widened. Alessandro, son of Giovanni Crotta, finished the palace, embellishing it with a park about the year 1692.

In the inner garden, standing on a large base, there are pagan gods and mythological characters made of Dolomite stone, as are the portico with ashlar columns, the portals with masks and some façade elements. The sculptures, known as *Pop* or *mut del Grotta*, are also found in the columns of the small external garden, which overlooks *Piazza della Libertà*: they represent figures wearing 16th- and 17th-century clothes and pagan gods inspired by Renaissance beauty standards.

Giuseppe Segusini (architect, 1801-1876) records the methodical procedure followed during the process of relevant artistic works: first, stone was extracted and rough-hewn by stonecutters in the quarry.

After transportation, rough-hewn blocks were processed by stonecutters and their assistants, considering the working difficulties they had. The ornamental elements were committed to ornament stonecutters on models made by the architect.

A 1692 commercial act testifies how local stonecutters were supplied with stones suitable for sculpting statues for the Villa. Moreover, the name **Lombardo** appears in the act, an artist who was probably the one who worked for the **Duomo in Belluno**.

History teaches that the drawings were commissioned to an architect, while qualified stonecutters had to fulfil the task faithfully.

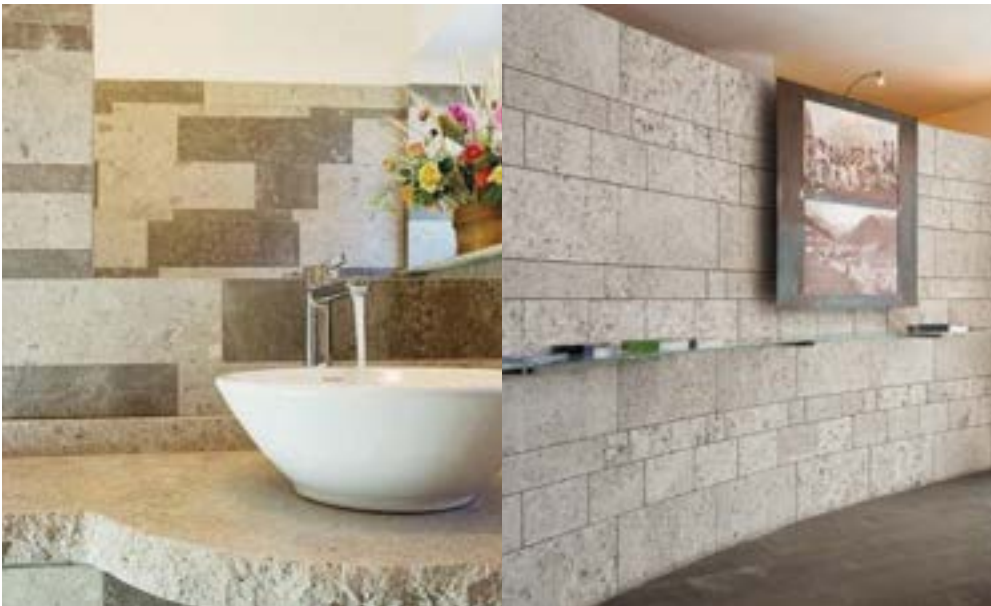
Nowadays, the process is more or less the same, no doubt facilitated by modern instruments and electronic machinery. Insiders still use the old expression: "Stone is better than architects, because it doesn't complain!"

Dolomite stone is nowadays extracted and processed by **S.E.V.I.S.**, which realizes precious architectonic works for internal as well as external coatings. The material of a sometimes small size is recovered and conglomerated into a completely new Dolomite material (marble cement). The conglomerate is a high-quality

homogeneous mixture, in 235x142x80 cm vibro-tamped blocks. Its components are simple and natural Dolomia, water and Portland cement 52,2 granulates. Slabs can be worked with different finishes, as for stone. This natural material is suitable for Alpine as well as for modern environments. In particular, bathrooms are finished with cement stucco or resin: to make the stone more waterproof and for hygienic reasons, pores are filled up. The stone can also be finished with brushing or polishing.

Another finish enhancing the material is **sandblasting**, which highlights the stone porosity by digging in the pores and giving an opacity effect, natural and rough to the touch. Thanks to their anti-slip properties sand-blasted floors are mainly used for exteriors.

46



Detail: Dolomite stone bathroom with different tones of grey, with stucco and patina finishes, Belvedere hotel, Moena (TN).

Bush-hammered Dolomite stone-coated wall, APT Offices Vigo di Fassa (TN).



47



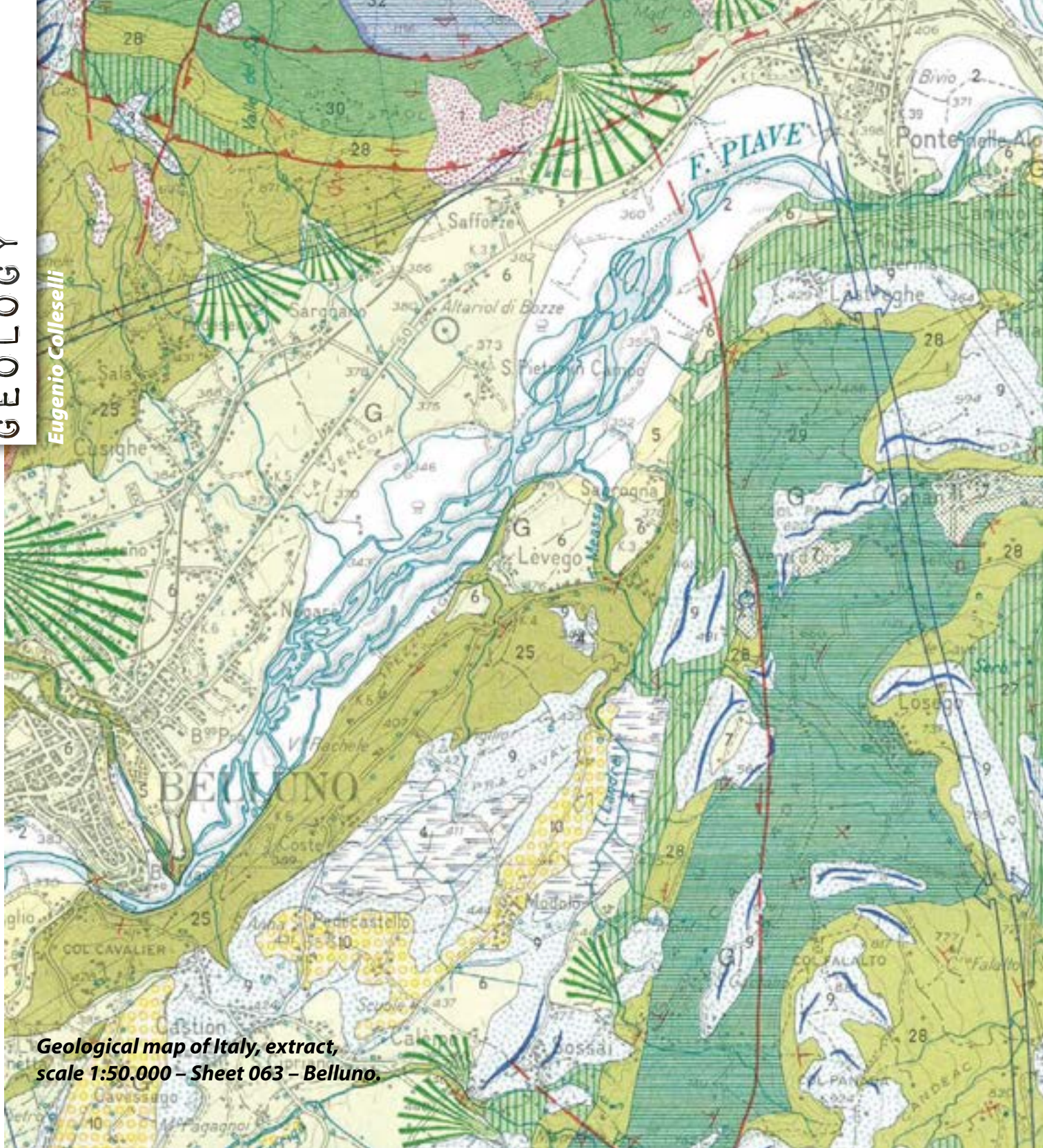
*External wall coating,
in Dolomite stone bossage,
Corona Hotel, Andalo (TN).*

*Opus incertum, internal wall
Dolomite stone coating,
Nives Hotel, Selva di Val Gardena (BZ).*

GEOLOGY

Eugenio Colleselli

48



**Geological map of Italy, extract,
scale 1:50,000 - Sheet 063 - Belluno.**

GENERAL CHARACTERISTICS OF STONE MATERIALS

Construction stone use is subject to national (UNI) and European (EN) specific technical rules, continually updated: about 30 rules, from terminology and classification to requirements and test methodology. Therefore, technical data – such as those in the following paragraphs, on the basis of information made available by the firms – might refer to old rules, but give main technical characteristics of each material. Commercially, stone materials are grouped under the following categories (UNI 8458, substituted by UNI EN 12670:2003 – Natural Stone – Terminology):

Marble: compact and polishable crystalline stone, used in decoration and building, mainly consisting of minerals with hardness between 3 and 4 on the Mohs scale (such as calcite, dolomite or serpentine). E.g. marbles as per the scientific definition recrystallized metamorphic limestone, calciphyres, cipollinos); limestone, dolomites, and calcareous breccias, provided that they are capable of taking a mirror polish; calcareous alabasters, serpentines and ophicalcites.

Granite: alkaline stone, compact and polishable, used in decoration and building, mainly consisting of minerals with hardness between 6 and 7 on the Mohs scale (such as quartz and feldspars). E.g. granites per the scientific definition (intrusive alkaline magmatic stones, made of quartz, potassium-sodium feldspar and micas); other intrusive magmatic stones (diorites, granodiorites, syenites, gabbro, etc.); correspondent extrusive magmatic stones with pore-structure, some metamorphic stones with analogous composition, like gneiss and serizzo.

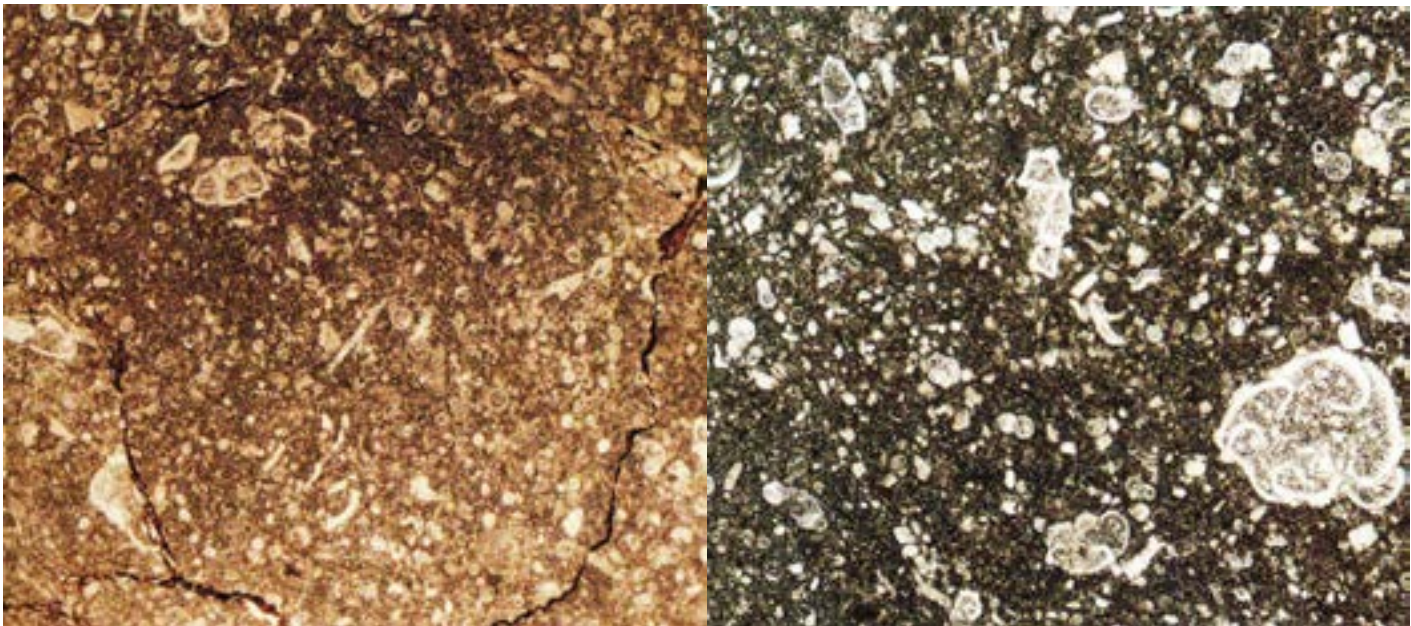
Travertine: sedimentary limestone formed by chemical deposit, with porous fabric, used in decoration and building; some varieties are polishable.

Stone: used for decoration and/or construction, generally non-polishable. This category includes stones of various mineral composition, which cannot be included in any of the preceding groups. These stones go under two categories: *soft and/or not very compact stones* and *hard and/or compact stones*. Examples for the first group are: sedimentary stones (calcareenites, limestone-cement sandstones, etc.), pyroclastic stones (peperinos, tuffs, etc.): Examples for the second group are: naturally split stones (quartzites, mica shists, slab gneiss, slate, etc.) and some vulcanites (basalts, trachytes, leucitites, etc.).

The mineralogical-petrographic and paleontological characteristics can be determined with macroscopic and microscopic observation: the former by directly observing the just cut surface, and aims to highlight the general characteristics of the stone, such as structure, grain, colour and possible presence of minerals and fossils recognisable with the naked eye; the latter with a polarizing microscope, by examining a significant fragment of stone, in thin section, so that most mineralogical and micro-paleontological elements are penetrated by light and observed in transparency. Polarized light makes the minerals assume characteristic

colours – called interference colours – thanks to which stones are unequivocally recognized.

A material's **technical characteristics** are determined through physical-technical tests on carefully prepared stone cubes and slabs and are important for deciding their use. In the Belluno province, above all for external usage, the most used tests are the **imbibition coefficient** and the **ultimate tensile strength by simple compression** (indicating how compact the stone is), **freezing** and the **thermal expansion coefficient** (indicating whether a stone can be used in cold, damp climates).



51

*Castellavazzo stone, red variety: petrographic microscope view
(From the book "Castellavazzo, un paese di pietra, la pietra di un paese").*

*Castellavazzo stone, grey variety: petrographic microscope view
(From the book "Castellavazzo, un paese di pietra, la pietra di un paese").*

CASTELLAVAZZO STONE

GEOLOGY

Currently, **Castellavazzo stone** is extracted in Olantreghe, on the right side of the Piave Valley, at about 600 m above sea level.

Also called Castellavazzo Marble (it is a **polishable limestone**), this stone historically represents one of the main if not *the* main variety used in Belluno and nearby. It is made up of layers of modest thickness (about 10 m), within the succession of stones characterizing the Castellavazzo area and reaching about 850 m in thickness.

Lithostratigraphy (see Italy Geological Map, 1:50.000 scale, sheet 046 Longarone): **Biancone** Formation on top, followed by the **Scaglia Rossa** Formation above and by the **Ammonitico Rosso Superiore** Formation at the base, all of them dating back to Cretaceous and with the following lithological characteristics:

Scaglia Rossa: Cretaceous (*Santonian – Maastrichtian*): marlstones and red marlstone micrites, grey on top, sometimes with interbedded breccias and graded biocalcarenes.

Biancone: Cretaceous (*Tithonian p.p. – late Cretaceous*): well stratified white and grey flint micrites, with sporadic interbedded graded biocalcarenes. Also rough calcarenites (local Soccher limestone), green and red marlstones and marl limestones, sometimes nodular, white and hazel limestones with aspects of *Scaglia Variegata*. Towards the top interlayers and alternating bioturbated dark grey marlstones and nodular limestones with aspects of *Ammonitico Rosso* (Castellavazzo Marble).

Ammonitico Rosso Superiore: Cretaceous (sup. Oxfordian – inf. Tithonian): grey, greenish and pinky nodular micrite limestones, moderately marl-y, rich in embedded ammonites; at the base, Saccocoma fossils. In detail, Castellavazzo Marble consists in a succession of reddish or greyish nodular limestones, with thickness varying from 1-2 m to 9 m max.

A characteristic making the stone pleasant-looking (as it is used for decorations), knots originating from physical processes on sediments deposited in the Cretaceous era.

We distinguish two orders of knots: the first originated with the sediment (syngensis); the second originated after the lithification (physical-chemical processes which transform the sediment) due to pressure-dissolution phenomena (diagenesis).

On the sea bed calcareous slimes rich in microfossils (pelagic organisms) were deposited, and then other deposits with moderate terrigenous fraction alternated, forming a sequence of calcareous levels and thin marlstone layers.

The levels had different densities. This triggered gravitational phenomena which remixed the amalgam and rebalanced the deposit characteristics, generating a new one, with micrite mud folds isolated by a marlstone sheath.

This series of processes determined the first order knots; some billion years later the deposit's already lithified fine fraction dissolved under the effect of the lithostatic burden and generated the stylolithization rims (a characteristic notching substituting the original joint between layers).

Castellavazzo stone is found in two varieties distinguishing themselves for different pigmentation: red and grey. The **red variety** generally occupies the lower layers, while the **grey variety** is found in upper layers, in stratigraphic continuity.

The original description made by old stonecutters, quoted by DE VECCHI G. (1962) is interesting: they called the single layers **"corso"**:

Corso known as **"Pelet"**, 42 cm thick.

Corso known as **"Grigio"** (grey), 32 cm thick. It can be divided into two *laste* (slabs) and is used for jambs, stairs, architraves and balconies.

Corso known as **"Colone"**, 30 cm. It cannot be divided into slabs and is used for capitals.

Corso known as **"Quattro laste"** (four sheets), 45 cm. It can be divided into four slabs and is used for floorings; undivided, it is used for columns.

Corso known as **"Cinque Once"** (five ounces), 15 cm. It can be divided into two slabs. Used for jambs.

Corso known as **"Mezo Piè"** (half foot), 18 cm. It can be divided into two slabs. Used for jambs, pillars, balustrades.

Corso known as **"Cinque Once"** (five ounces), 13 cm. Indivisible.

Corso known as **"Pel mort"** (dead skin), 20 cm. Crumbly: non-usable.

Corso known as **"Quattro srati"** (four layers), 3 cm per layer. Used for gutters and gardens and flowerbeds borders.

Corso known as **"Due laste"** (two slabs), knotty, 17 cm. It gives the best slabs for floorings.

Corso known as **"Bianc e Ros"** (white and red), 21 cm. Red on top, white on the base. Used for hearths, fireplaces, jambs and fountain basins.

Corso known as **"Laste"** (slabs), 45 cm. Slabs up to 22 cm can be used. For stones at sight and floorings.

Corso detto dei **"Pelet bas"**, 90 cm. Divisible into three slabs.

TECHNICAL DATA

Castellavazzo stone is only extracted in the *Marsor* quarry (Olantreghe) by Roccia Scavi s.r.l.

This stone is an excellent material for decorations and buildings: it is suitable for external use as well as for internal coatings, thanks to its characteristics, such as polishability, resistance and durability.

Moreover, it does not freeze: after the freeze/thaw cycles (91,7 MPa), the ultimate tensile strength under compression is not less than 25% of the average value determined during solid-state tests (106,8 MPa).

The two varieties are similar in technical and petrographical characteristics and in their micropaleontological content, while they are different in the mineralogy: the red variety contains **hematite** (iron oxide), while the

grey variety contains **graphite** (carbon), which are responsible for the pigmentation.
Here are the technical data sheets for the two varieties:

Scheda 1 RED CASTELLAVAZZO STONE

<i>Commercial name</i>	Pietra di Castellavazzo – varietà rossa
<i>Petrographic definition</i>	Polishable biomicrite limestone
<i>Commercial category (UNI 8458)</i>	Marble

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,65
Imbibition coefficient	(%)	0,24
Ultimate tensile strength under simple compression (MPa)	(MPa)	106,8
Ultimate tensile strength under simple compression after freezing	(MPa)	91,7
Flexural strength under concentrated load	(MPa)	13,1
Relative abrasion coefficient at tribometer (referred to S. Fedelino granite)		0,73
Impact strength: minimum height of fall	(cm)	50

Scheda 2 GREY CASTELLAVAZZO STONE

<i>Commercial name</i>	Pietra di Castellavazzo – varietà grigia
<i>Petrographic definition</i>	Polishable biomicrite limestone
<i>Commercial category (UNI 8458)</i>	Marble

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,67
Imbibition coefficient	(%)	0,17
Ultimate tensile strength under simple compression (MPa)	(MPa)	120,4
Ultimate tensile strength under simple compression after freezing	(MPa)	93,8
Flexural strength under concentrated load	(MPa)	15,2
Relative abrasion coefficient at tribometer (referred to S. Fedelino granite)		0,8
Impact strength: minimum height of fall	(cm)	53

If we compare the two varieties, from a physical and a mechanical point of view, we find that the grey variety is slightly more compact and resistant.



Castellavazzo Formation outcrop, where Castellavazzo stone is extracted

ROSSO SECCA

GEOLOGY

Rosso Secca is extracted in a small quarry in La Secca (Ponte nelle Alpi), very close to A27 motorway, at about 400 m above sea level.

There is a rocky slope, consisting of red marl limestone, with orientation of the strata in the slope direction, more or less with same inclination.

Lithostratigraphy (see Italy Geological Map, 1:50.000 scale, sheet 063 Belluno): in this particular sector of the Belluno Basin: **Cugnan and Scaglia Rossa** Formation, followed by the **Marna della Vena d'Oro e Scaglia Cinerea** Formation above and by the **Calcari del Fadalto** at the base (between Cretaceous and Pleistocene).

They have the following lithological characteristics:

Marna della Vena d'Oro e Scaglia Cinerea (Vena d'Oro marlstone and *Scaglia Cinerea*): Paleocene (*Thanetian* – *basal Cuisian*); red and grey-greenish foliated clay marlstones in globorotalia and trunca-tulinoides. Marlstones and ash clay marlstones in globorotaloides, under grey marl limestones, densely stratified with sporadic interbedded bioclastic limestones.

Formazione di Cugnan e Scaglia Rossa (Cugnan Formation and *Scaglia Rossa*): Paleocene – Cretaceous (*Santonian* – *Maastrichtian*); alternating light grey biocalcarenes, marl limestones and reddish clay marlstones in globorotaloides; reddish slab-shaped calcareous marlstones and marl limestones in globotruncanidoides, truncarotaloides, inocerami and ichnofossils, flint in the lower part, with calcarenites and whitish bioclastic breccias.

Formazione dei Calcari del Fadalto (Fadalto Limestones Formation): Cretaceous (*Abian/Cenomanian* – *Santonian*); hazel calcarenites and bioclastic breccias in fragments of rudists and caprinidae. Indistinct stratification or in meters-thick layers.

In particular, **Rosso Secca** is found between red (referable to *Scaglia Rossa*) and grey lithotypes, in correspondence of a limited and characteristic level consisting of intense wine-red marl limestones, 1-2m thick.

TECHNICAL DATA

Rosso Secca stone is extracted in *La Secca* (Ponte nelle Alpi) by Angelo Bertagno S.r.l.

This stone is an excellent material for decorations and buildings: it is suitable for external as well as for internal use, thanks to its characteristics, such as resistance and durability.

Moreover, it does not freeze: after freeze/thaw (20,8 MPa), the ultimate tensile strength under traction by flexion is the same as the average value determined during solid-state tests (20,8 MPa).

Scheda ROSSO SECCA

<i>Commercial name</i>	Rosso Secca
<i>Petrographic definition</i>	Micrite fossil limestone
<i>Commercial category (UNI 8458)</i>	Hewn limestone

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,66
Water absorption at atmospheric pressure	(%)	0,5%
Flexural strength under concentrated load (UNI EN 12372:01)	(MPa)	20,8
Flexural strength under concentrated load (UNI EN 12372:01) after freeze/thaw cycles (UNI EN 12371:03)	(MPa)	20,8
Flexion resistance variation after 48 freeze/thaw cycles	(%)	0,0%
Slip resistance (USRV UNI EN 1341:03 App. D)		66
Abrasion resistance (UNI EN 1341:03 App. C)	(mm)	20,5
Reaction to fire (Decision 96/603/EC)	Class	A1

57



Scaglia Rossa outcrop, where Rosso Secca is extracted.

CUGNAN STONE

GEOLOGY

In the past **Cugnan stone**, in Ponte nelle Alpi, was plentiful in Cugnan, but it has progressively diminished. The last active quarry is in *Lasta Boschet*, up the road which leads from Cugnan to Losego, at about 630 m above sea level.

On the northern slope, red marl limestone emerge, with the strata orientated in the direction of the slope, with same inclination more or less.

Lithostratigraphy (see Italy Geological Map, 1:50.000 scale, sheet 063 Belluno): in this particular sector of Belluno Basin: **Cugnan and Scaglia Rossa** Formation, followed by the **Marna della Vena d'Oro e Scaglia Cinerea** Formation above and by the **Calcari del Fadalto** at the base (between Cretaceous and Pleistocene). They have the following lithological characteristics:

Marna della Vena d'Oro e Scaglia Cinerea (Vena d'Oro marlstone and *Scaglia Cinerea*): Paleocene (*Thanetian* – *basal Cuisian*); red and grey-greenish foliated clay marlstones in globoborotalia and trunca-tulinoides.

Marlstones and ash clay marlstones in globoborotalides, under grey marl limestones, densely stratified with sporadic interbedded bioclastic limestones.

58

Formazione di Cugnan e Scaglia Rossa (Cugnan Formation and *Scaglia Rossa*): Paleocene – Cretaceous (*Santonian* – *Maastrichtian*); alternating light grey biocalcarenites, marl limestones and reddish clay marlstones in globoborotalides; reddish slab-shaped calcareous marlstones and marl limestones in globotroncanidides, truncarotaloidides, inocerami and ichnofossils, flint in the lower part, with calcarenites and whitish bioclastic breccias.

Formazione dei Calcari del Fadalto (Fadalto Limestones Formation): Cretaceous (*Abian/Cenomanian* – *Santonian*); hazel-coloured calcarenites and bioclastic breccias with fragments of rudists and caprinidae.

Indistinct stratification or in meters-thick layers.

In particular, Cugnan Stone is found at certain levels of the *Formazione di Cugnan*, in correspondence with a limited and characteristic level consisting of intense red marl limestones, 1-2 m thick.

TECHNICAL DATA

Cugnan stone is extracted in *Lasta Boschet* quarry (Ponte nelle Alpi) by Angelo Bertagno S.r.l.

Cugnan stone is an excellent material for decoration and building for the construction industry and urban fittings: it is suitable for external use, thanks to its characteristics, such as resistance and durability.

Moreover, it does not freeze: after the freeze/thaw cycles (26,8 MPa), flexural strength under concentrated load is not less than 20% of the average value determined during solid-state tests (30,7 MPa).

Scheda CUGNAN STONE

Commercial name	Pietra di Cugnan
Petrographic definition	Micrite fossil limestone
Commercial category (UNI 8458)	Hewn limestone

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,65
Water absorption at atmospheric pressure	(%)	0,4%
Flexural strength under concentrated load (UNI EN 12372:01)	(MPa)	30,7
Flexural strength under concentrated load (UNI EN 12372:01) after freeze/thaw cycles (UNI EN 12371:03)	(MPa)	26,8
Flexion resistance variation after 48 freeze/thaw cycles	(%)	12,7%
Slip resistance (USRV UNI EN 1341:03 App. D)		68
Abrasion resistance (UNI EN 1341:03 App. C)	(mm)	19,5
Reaction to fire (Decision 96/603/EC)	Class	A1

59



Cugnan Formation outcrop, where Cugnan stone is extracted.

LASTREGHE STONE

GEOLOGY

Lastreghe stone is extracted in one quarry in Lastreghe (Ponte nelle Alpi), on the orographic left of the Piave valley, at about 520 m above sea level.

On this slope, white bioclastic limestones emerge, with the strata orientated in the direction of the slope, with same inclination more or less.

Lithostratigraphy (see Italy Geological Map, 1:50.000 scale, sheet 063 Belluno): in this particular sector of the Belluno Basin: **Calcari del Fadalto** Formation, followed by the **Cugnan and Scaglia Rossa** Formation above and by the **Biancone** Formation at the base (Cretaceous sup.). They have the following lithological characteristics:

Formazione di Cugnan e Scaglia Rossa (Cugnan Formation and *Scaglia Rossa*): Paleocene – Cretaceous (*Santonian – Maastrichtian*); alternating light grey biocalcarenites, marl limestones and reddish clay marlstones in globoborotallides; reddish slab-shaped calcareous marlstones and marl limestones in globotroncanidides, truncarotaloidides, inocerami and ichnofossils, flint in the lower part, with calcarenites and whitish bioclastic breccias.

60

Formazione dei Calcari del Fadalto (Fadalto Limestones Formation): Cretaceous (*Abian/Cenomanian – Santonian*); hazel-coloured calcarenites and bioclastic breccias with fragments of rudists and caprinidae. Indistinct stratification or in meters-thick layers.

Biancone: Cretaceous (*Tithonian p.p. – late Cretaceous*): well stratified white and grey flint micrites, with sporadic interbedded graded biocalcarenites. Also rough calcarenites (local Soccher limestone).

In particular, in this particular sector of Belluno Basin, **Lastreghe Stone** consists of white and hazel-coloured calcarenites and bioclastic calcirutides, in tabular strata, from dm to 1 m thick.

TECHNICAL DATA

Lastreghe stone is extracted in *Lastreghe* (Ponte nelle Alpi) by F.lli De Pra S.p.A.

Lastreghe stone is an excellent material for decoration and building: it is suitable for external use, thanks to its characteristics, such as resistance and durability.

Moreover, it does not freeze: after the freeze/thaw cycles (27,9 MPa), flexural strength under concentrated load is not less than 20% of the average value determined during solid-state tests (32,1 MPa).

Scheda LASTREGHE STONE

Commercial name	Pietra di Lastreghe
Petrographic definition	Biomicrite
Commercial category (UNI 8458)	Hewn limestone

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,69
Water absorption at atmospheric pressure	(%)	0,1%
Flexural strength under concentrated load (UNI EN 12372:01)	(MPa)	32,1
Flexural strength under concentrated load (UNI EN 12372:01) after free/thaw cycles (UNI EN 12371:03)	(MPa)	27,9
Flexion resistance variation after 48 freeze/thaw cycles	(%)	13,1%
Slip resistance (USRV UNI EN 1341:03 App. D)		73
Abrasion resistance (UNI EN 1341:03 App. C)	(mm)	21,0
Reaction to fire (Decision 96/603/EC)	Class	A1

61



Fadalto Limestone outcrop, where Lastreghe stone is extracted.

CANSIGLIO STONE

GEOLOGY

Cansiglio stone has been extracted since Roman times in *Col delle Fratte* (Tambre) at about 1010m above sea level, along the road winding on Mount Guslòn slopes.

In this area the slopes consist of accumulations from old landslides: debris deposits and huge stone blocks fallen from above.

Lithostratigraphy: **Calcari del Fadalto** Formation (in the Alpago sector also known as **Calcario di Monte Cavallo** – Mount Cavallo Limestone) followed on the roof by the **Scaglia Cinerea** Formation and at the base by the **Biancone** Formation (Cretaceous). They have the following lithological characteristics:

Scaglia Rossa: Cretaceous (*Santonian – Maastrichtian*): marlstones and red marlstone micrites, grey on top, sometimes with interbedded breccias and graded biocalcarenes.

Formazione dei Calcari del Fadalto (Fadalto Limestones Formation): Cretaceous (*Abian/Cenomanian – Santonian*); hazel-coloured calcarenites and bioclastic breccias with fragments of rudists and caprinidae. Indistinct stratification or in meters-thick layers.

Biancone: Cretaceous (*Tithonian p.p. – late Cretaceous*): well stratified white and grey flint micrites, with sporadic interbedded graded biocalcarenes. Also rough calcarenites (local Soccher limestone).

62

TECHNICAL DATA

Cansiglio stone is extracted in *Col delle Fratte* in Pianon (Tambre) by Grigolin S.p.A. and is processed and sold by Uberti Marmi.

Cansiglio stone is an excellent material for decoration and building for the construction industry and urban fittings: it is suitable for external as well as for internal use, thanks to its characteristics, such as resistance and durability.

Moreover, it does not freeze: after freeze/thaw cycles (3,1 MPa), flexural strength under concentrated load increases for more than 30% than the average value determined during solid-state tests (2,3 MPa); after freeze/thaw cycles (114 MPa) compression strength under concentrated load is not less than 20% of the average value determined during solid-state tests (134 MPa).

Scheda CANSIGLIO STONE

<i>Commercial name</i>	Pietra del Cansiglio
<i>Petrographic definition</i>	Micrite fossil limestone (biosparite)
<i>Commercial category (UNI 8458)</i>	Hewn polishable limestone

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	-
Water absorption at atmospheric pressure	(%)	0,3%
Flexural strength under concentrated load (UNI EN 12372:01)	(MPa)	2,3
Flexural strength under concentrated load (UNI EN 12372:01) after freeze/thaw cycles (UNI EN 12371:03)	(MPa)	3,1
Flexion resistance variation after 48 freeze/thaw cycles	(%)	34 %
Compressive strength (UNI EN 1926:99)	(MPa)	134
Compressive strength (UNI EN 1926:99) after freeze/thaw cycles (UNI EN 12371:01)	(MPa)	114
Compressive strength variation after 48 freeze/thaw cycles	(%)	15,0%
Slip resistance (USRV UNI EN 1341:03 App. D)		63
Abrasion resistance (UNI EN 1341:03 App. C)	(mm)	20,08
Reaction to fire (Decision 96/603/EC)	Class	-

63



Outcrop where Cansiglio stone is extracted.

DOLOMITE STONE

GEOLOGY

Dolomite stone is extracted in *I Piagn* area (San Tomaso Agordino).

In this area the slopes consist of accumulations from old landslides: debris deposits and huge stone blocks fallen from above.

Lithostratigraphy: **Dolomia del Serla** Formation, followed by **Livinallongo** Formation above and by **Richtofen** Conglomerate and the **Werfen** formation at the base (Triassic). They have the following lithological characteristics:

Livinallongo Formation (upper Anisian): Marl limestones, nodular limestones, marlstones and densely stratified tufa.

Dolomia della Serla Formation (lower Anisian): Dolomites and Dolomitic limestones stratified in stratified banks or hardly stratified.

Richtofen Conglomerate (lower Anisian): more or less gross conglomerates with interbedded reddish marlstones and clay and **Werfen** Formation (lower Anisian): marl limestones and oolitic limestones with interbedded sandstones and siltstones, more or less stratified.

64

TECHNICAL DATA

Dolomite stone is extracted in the *I Piagn* quarry (San Tomaso Agordino) by S.E.V.I.S. S.r.l.

This stone is excellent material for decorations and buildings: it is suitable for external use, thanks to its characteristics, such as resistance and durability.

Moreover, it does not freeze: after freeze/thaw cycles (9,9 MPa), flexural strength under concentrated load is not less than 20% of the average value determined during solid-state tests (11,3 MPa); after freeze/thaw cycles (112 MPa) compression strength under concentrated load is not less than 25% of the average value determined during solid-state tests (140 MPa).

Scheda CANSIGLIO STONE

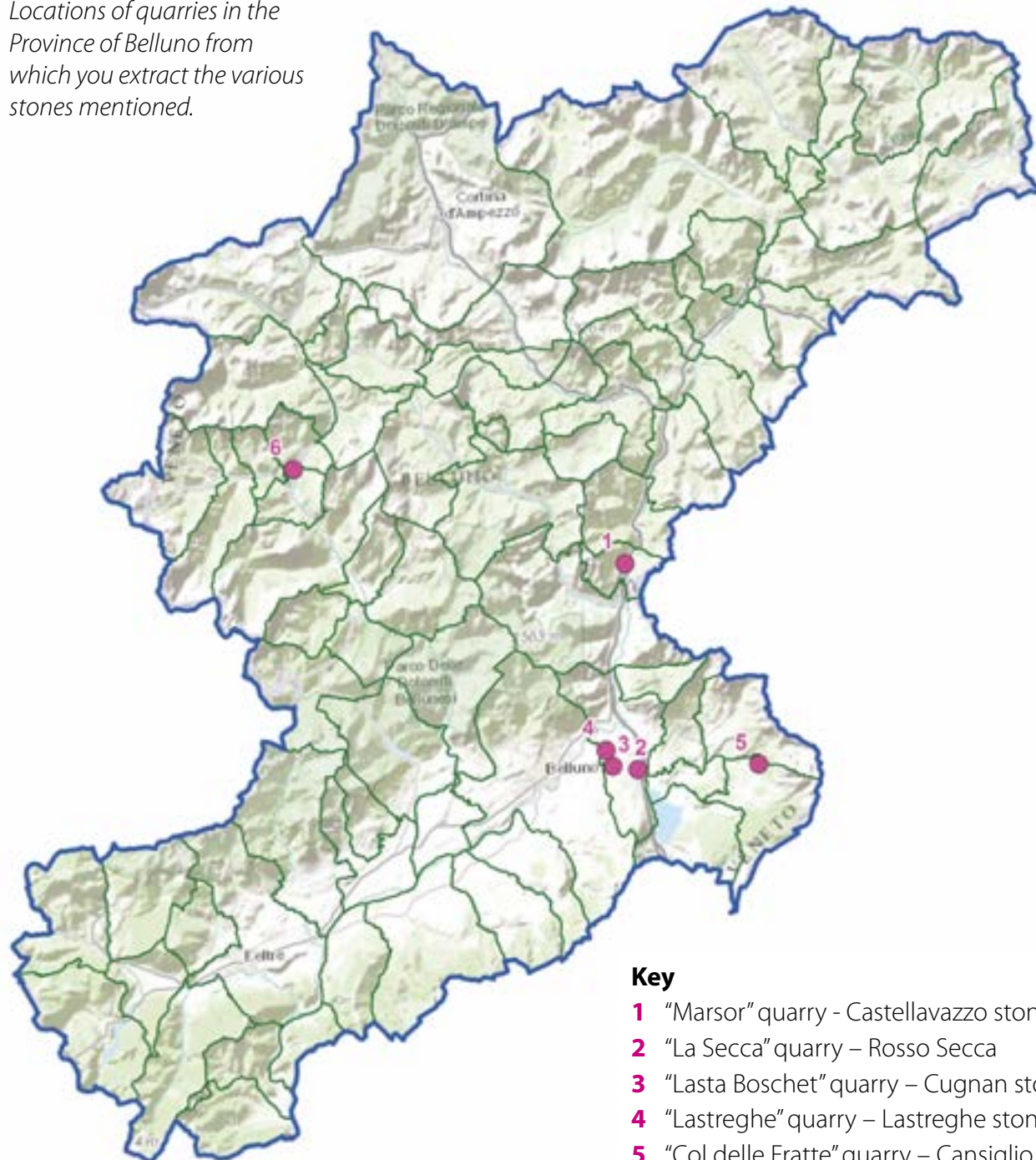
<i>Commercial name</i>	Pietra Dolomia
<i>Petrographic definition</i>	Dolomite
<i>Commercial category (UNI 8458)</i>	Hewn stone

Technical characteristics	Unit	Values
Mass per unit volume	(t/m ³)	2,64
Water absorption at atmospheric pressure	(%)	1,0%
Flexural strength under concentrated load (UNI EN 12372:01)	(MPa)	11,3
Flexural strength under concentrated load (UNI EN 12372:01) after freeze/thaw cycles (UNI EN 12371:03)	(MPa)	9,9
Flexion resistance variation after 56 freeze/thaw cycles	(%)	12,4%
Compressive strength (UNI EN 1926:99)	(MPa)	140
Compressive strength (UNI EN 1926:99) after freeze/thaw cycles (UNI EN 12371:01)	(MPa)	112
Compressive strength variation after 56 freeze/thaw cycles	(%)	20,0%
Slip resistance (USRV UNI EN 1341:03 App. D)		63
Abrasion resistance (UNI EN 1341:03 App. C)	(mm)	18,5
Reaction to fire (Decision 96/603/EC)	Class	A1

65

*Dolomite stone outcrop.*

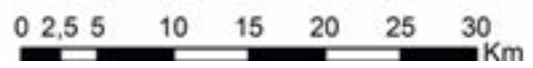
Locations of quarries in the Province of Belluno from which you extract the various stones mentioned.



66

Key

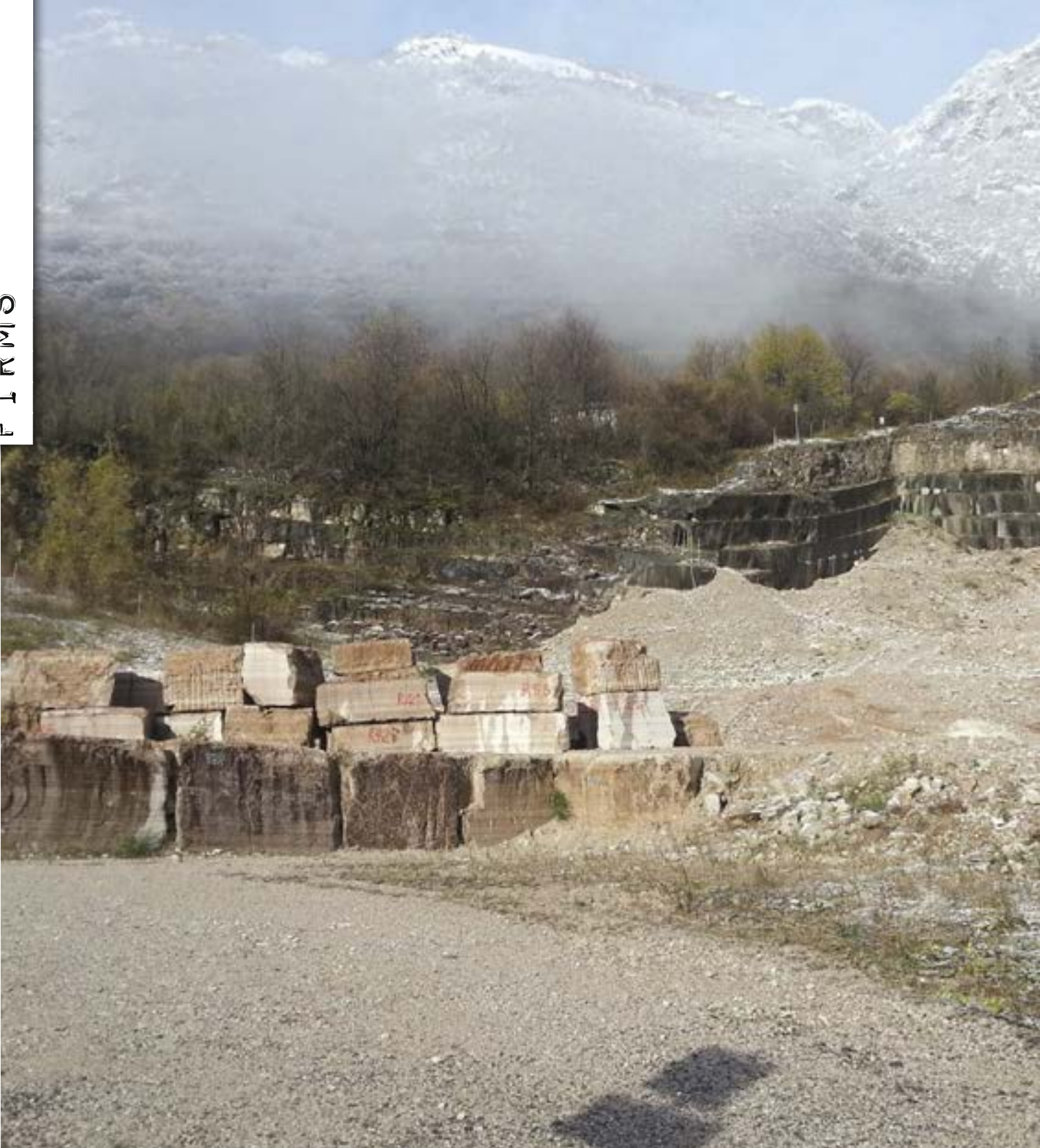
- 1** "Marsor" quarry - Castellavazzo stone
- 2** "La Secca" quarry - Rosso Secca
- 3** "Lasta Boschet" quarry - Cugnana stone
- 4** "Lastreghe" quarry - Lastreghe stone
- 5** "Col delle Fratte" quarry - Cansiglio stone
- 6** "I Piegn" quarry - Dolomite stone





67

Col delle Fratte quarry during Cansiglio stone processing.





QUARRIES
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AREA



70

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71

POSSO SECCA STONE

La Secca quarry

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72

CUGNAN STONE

Lasta Boschet quarry

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73

LASTREGHE STONE

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74

CANSIGLIO STONE

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75

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FINISHES





MAIN

FINISHES

OF NATURAL

STONE



W

hat we mainly appreciate in the stones is their colour, their veining and their grain.

Processing of stones can vary our perception of the material, by considerably increasing or diminishing the relation between the three characteristics, so modifying the visual impact of the material. Therefore, one stone

can acquire completely different aesthetic-perceptive characteristics, depending on the processing, the veining composition and the chromatic combination.

Finishes can be machine- and/or hand-made. There are various finishes of stone slabs and they give different aesthetic results:



POLISHED: scraped (when the stone becomes shiny). Marble, stone and granite polishing gives the surface an extra-ordinary reflective power and enhances its colour.

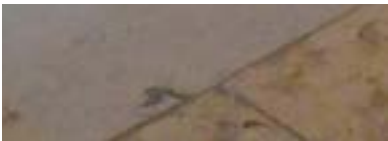


HONED: scraped (with sandpaper, without polishing). Honing is an intermediate phase of the polishing process and tends to tone down colour. Honing makes the surface perfectly flat, eliminates imperfections and makes the slab bright – yet less than polishing.

78



FLAMED: historical impact process (blowtorch treatment after cutting or splitting), flaming gives the slabs an uneven, soft and porous aspect to the sight as well as to the touch. Flaming is done on stones and granites and makes the material anti-slip and suitable for exteriors. This process is also done by flushing water on the stone, to enhance the surface colour and make the material much more resistant to atmospheric agents.



ANTIQUED: (also called patina or glaze) obtained through brushing on a polished surface. Aging makes the stone pleasant to the touch and it is also called “leather finishing”. This finishing gives value to the stone’s natural beauty and enhances its colour, giving the stone a “vintage” look.



BUSH-HAMMERED: historical impact process (the stone is hammered to give a regular rough surface) Bush-hammering (also “hammering”) is mainly done on granites. The stone acquires a rustic aspect and is used as anti-slip or as coating for exteriors. Bush-hammering tends to enhance the grain, making it similar to the natural grain.



SANDBLASTED: the surface is eroded by flushing the stone surface with sand and air, enhancing the details. The surface is rough to the touch, and flat. Sanded floorings are ‘anti-slip and they are suitable for exteriors.



BRUSHED: brushing makes the surface irregular, yet without pores. It is suitable for kitchens (stains on worktables and on irregular floors go unnoticed) and it is often completed with flaming, sanding and acid treatments, which make the material easier to clean.



SAWN SURFACE: (or “*diamond surface*”) finishing is done on stones, marbles and granites. It is obtained from the mechanical cut: the surface remains as it was when cut.



SPLIT FACE: typical impact process, once done with hammer and chisel; nowadays specific machinery is used, operating with pressure on the splitting lines of the stone block: the stone is cut into two with a sharp blow and the two halves remain rough.





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*Private courtyard wall,
Puos d'Alpago.*





THANKS TO

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Cason Marmi S.a.s.
Roccia Scavi S.r.l.
Angelo Bertagno S.r.l.
Fratelli De Pra S.p.a.
Uberti Marmi S.a.s.
S.E.V.I.S. S.r.l.

Photography and images

Biblioteca Civica di Belluno
Martina Boito
Aldo Collazuol
Eugenio Colleselli
Matteo Crema
Roberta De Min
Monia Franzolin
Tiziano Padovan
Foto Tonina

Office

Circolo Cultura e Stampa Bellunese
Anna De March
Elisabetta Pierobon

Printed in July 2014 by
Tipolitografia Editoria DBS
Rasai di Seren del Grappa (BL)
www.tipografiadbs.it



CIRCOLO CULTURA E STAMPA BELLUNESE

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