THE AGE OF HOUSE FACADES IN JERSEY, CHANNEL ISLANDS, FROM MASONRY STYLE AND ROCK TYPE WITH OTHER OBSERVATIONS ON ROCKS USED AND THEIR SOURCES

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Renouf, J.T. 2002. The age of house facades in Jersey, Channel Islands, from masonry style and rock type with other observations on rocks used and their sources. *Geoscience in south-west England*, **10**, 329-335.

Only the plutonic rocks of Jersey, notably granites and diorites, supply good quality masonry stone. The other rock types — turbidites, rhyolitic and andesitic volcanics and the Rozel Conglomerate — cannot be shaped predictably and so have only ever been used as infill or under special circumstances. Rocks from sources outside the island have also been used but always for identifiable reasons. The nature of the granite employed in the principal facades of solidly built country and town houses over the centuries from the close of the Middle Ages as a rule reflects the depth from which the rock was taken. There is also a close correlation between this and the masonry style to the extent that an approximate age of construction can be inferred. The older and younger boundaries that it is possible to specify vary widely from being more than a century in earlier times (*e.g.* 1500 to 1700 A.D.) to a span as brief as less than ten years in a 20th century example. A range of French stones have been imported for a variety of specialised purposes as have others from southern England and outlying reefs of the Jersey Bailiwick itself.

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INTRODUCTION

During the course of preparing neighbourhood resources for schools in Jersey, three aspects of the use of local rock types became apparent: (1) A relationship existed between the age of island house facades and the associated masonry granite used; (2) the use of other stone was largely restricted to wall construction other than facades where aesthetic impact was not considered important, although, as implied, there were some exceptions, which are explicable either in terms of aesthetic experimentation, or of the existence of nearby or other particular stone sources, or of economic factors; (3), the post-World War 2 period excluded, imported rock types are found rarely in house, boundary or roadside walls and their occurrence can usually be traced to special circumstances often of some historical interest.

The aim of this paper is to demonstrate that prior to the early 1800s, the stone, mainly granite, used for building was taken from either surface outcrops or shallow quarries that did not reach deep enough to yield stone of consistent texture, colour or shaping characteristics. Subsequently, the stone used was fresh and consistent in both colour and texture. The style of granite quoins and ashlars used over the centuries reflects both the depth from which the stone was taken and the fashion of the time and this makes it possible to estimate the age of the feature concerned. The precision with which a granite style can be dated varies considerably over the period, from a century or more, prior to about 1800, to one or two decades during parts of the nineteenth and twentieth centuries. The use of other stones, including imported ones, is also reviewed.

BACKGROUND GEOLOGY

Hard rocks

Geologically the Channel Islands belong within the Armorican province which includes Brittany and Lower Normandy. Outcrops on Jersey lack the pre-Late Proterozoic metamorphic rocks found on Guernsey, Alderney and Sark, although the politically linked extensive offshore tidal platforms of the Minquiers to the south and the Paternosters/Écréhous group to the north (Figure 1) mainly comprise variably foliated granitic, with less widespread dioritic, plutonic rocks. The principal rock types of Jersey (Figure 2) consist of the Jersey Shale Formation (Late Proterozoic turbidites), a range of plutonic rocks (granites, diorites and gabbros) spanning the Proterozoic/Cambrian boundary, a sequence of volcanic rocks partly of Late Proterozoic age but which may include slightly younger elements (St. Saviour's Andesite Formation at the base, passing up through the

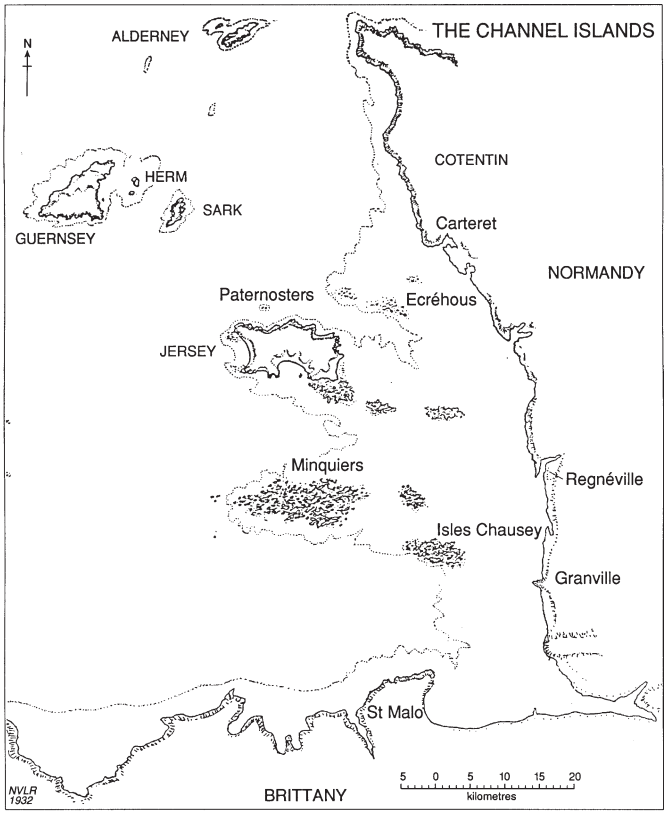

Figure 1. *The Rybot hachure map of the Channel Islands with the offshore reefs and smaller islands to indicate some of the place names mentioned in the text. The submarine contour is at c. -20 m.*

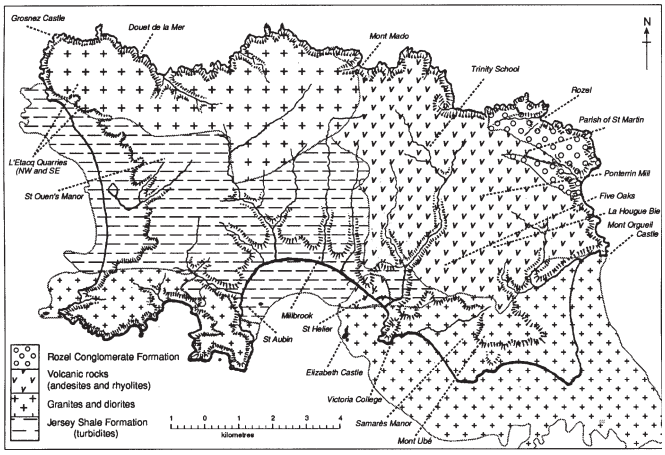

Figure 2. *Simplified geological map of Jersey superimposed on the Rybot hachure map and showing places referred to in the text.*

St. John's Rhyolite Formation to the Bouley Rhyolite Formation), a coarse conglomerate of alluvial origin (Rozel Conglomerate Formation) and a later granite (the Northwest Granite only recently confirmed as Ordovician in age (Miller *et al.*, 2001). The Northwest Granite apart, the rocks of Jersey can be related to events within the Cadomian Orogeny, a Late Proterozoic orogeny that was located on the northern margins of the Gondwanan continent of the time (e.g. Pickering and Smith, 1995). The deposition of the turbidites of the Jersey Shale Formation was interrupted by plutonic intrusions and volcanic episodes. During subsequent uplift of the land area, the conglomerates of the Rozel Conglomerate Formation were deposited as alluvial fans from higher land to the north of an active fault separating Jersey from the Paternosters/Écréhous reefs. The foliated plutonic rocks of these reefs and those of the Minquiers are probably of only slightly earlier age than the first of the island granites and represent syntectonically controlled intrusives. While Ordovician intrusives are now well documented from other areas of Armorica, the assignment of the Northwest Granite to this period is new for northeastern Armorica and the implications remain to be followed through.

The Palaeozoic to late Tertiary interval

Until the Variscan Orogeny, the geological developments of south-west England and Armorica were separate. Merging of the two regions during the Carboniferous meant that their subsequent geological histories were strongly linked. Both tended to remain positive areas on either side of the downfaulting of the Western Approaches and western English Channel throughout the late Palaeozoic and Mesozoic. Mesozoic sedimentation in the western Channel overstepped onto the relatively low and early formed platform of the Normanno-Breton shelf at different times, most clearly during the deepest Cretaceous submergence, but also in the Eocene when tongues of the Lutetian sea extended up valleys between the Channel Islands (Renouf, 1993). The formation of extensive platforms in northern Armorica at levels up to and above 100 m is thought to be largely of Tertiary origin though, as with south-west England, the precise ages of the several platforms and of the detailed nature of the weathering processes associated with them remain a subject of lively debate. The depth of the weathering was clearly linked to the warmer climates of the time.

Late Tertiary and Quaternary developments

The landscape at the close of the Tertiary comprised an extensive platform over the Normanno-Breton shelf at present inter-tidal levels sloping gently down to present offshore depths of some 20 m followed inland by stepped rises up to 100 m and more on the French mainland of the Cotentin and on Jersey with significantly lower platforms represented at 80 and 60 m. Below this height, platforms are mostly narrow and represent Quaternary trimming of the pre-existing relatively steep slopes joining platforms — the present sea cliffs around the coasts are one example. There is considerable argument over the principal agents responsible for the older platforms but the younger ones almost certainly result from the interplay of interglacial marine erosion at different sea-level stands and periglacial processes. In spite of the effects of climatically induced sea-level changes and erosion, the deep-weathered profile of inland areas away from the sea appears to have been largely conserved from Tertiary times. Even periglacial action in coastal and inland cliff situations was not strong enough to strip off the deep weathered zone down to fresh rock and Holocene interglacial weathering seems only to have been strong enough to have enlarged already weakened joints to produce a superficial zone of core-stone weathering in many places. Very locally, however, granites have been reduced to gravel. The effect of post-glacial marine erosion on the inter-tidal rocks has been to remove superficial weathering products from the higher areas leaving the rock somewhat fresher than inland exposures but still showing the previous effects of deep weathered joints. Also, zones of close-spaced joints have been eroded out to form gullies.

THE USE AND DEVELOPMENT OF ISLAND GRANITES: CHRONOLOGICAL REVIEW

The dominant pattern of settlement in Jersey from Medieval times until as recently as World War 2 was that of the isolated farmstead or farmstead cluster of the independent yeoman farmer. This is a feature descended ultimately from Norse practices exemplified particularly in the Normandy region of France and differing somewhat from elsewhere in that country. Villages in the English sense never existed on the island. The Jersey farmer, being thus more or less independent (de Gruchy, 1926; Stevens, 1965) - though there were still considerable Medieval dependencies involved - crucially possessed a viable land tenure from quite an early period and very broadly speaking from the sixteenth century onward tended to become relatively wealthy. When the stone built homesteads first occur in any number in the sixteenth century, they clearly reflect local wealth and certain, fairly consistent masonry styles appear almost immediately.

The stone masons at this time could only draw granite from

Figure 3. *(A) The last remaining outcrop of the Mont Mado tor showing the sub-orthogonal jointing of the granite and the deep weathering of the wide zones between them. The pole is 2 m long. (B) Even grained and even coloured Mont Mado granite from early nineteenth century deep quarry working producing finely pecked perfectly regular ashlars. This represents the peak of the search for the 'perfect' ashlar (see text). (C) Deeply weathered, iron-stained superficial granite only suitable for the roughest of walling. Fractures are irregular and their orientation on working cannot be controlled. The structure is c. 3 m high.*

a limited number of sources: nearby superficial excavations, any more assured centres of production, and seashore outcrops. Cobbles of varying sizes up to small boulders were taken from the foreshore but do not form an important element of any known house frontage. It is also clear that, where different cobble types were used (e.g. diorite) there was less pride being taken in the final appearance of the facade. In terms of quarrying *per se* an important source of granite in the island from as early as the Neolithic was Mont Mado (Figure 2).

Mont Mado is unique. Stone from the main quarry (infilled in the late 1950s and early 1960s though there is still a lesser quality source in a nearby active quarry) and its preceding granite tor (Renouf, 1999) has been identified in orthostats in La Hougue Bie Neolithic passage grave (Mourant, 1933), in the late twelfth century chapel at La Hougue Bie (Renouf, 1999) and a century or so later in corbels from Grosnez Castle (Le Cornu, 1897). The Medieval builders of La Hougue Bie chapel took full advantage of the unusual weathering pattern of this granite, which yielded more or less square ended rectangular blocks at outcrop, to make a distinctive string course just below the eaves. Joints in the tor had weathered naturally at superficial levels to produce a relatively thick zone of granular rock bounded by sharply delineated firm material (Figure 3A). This made for the easy extraction of good squared masonry with minimum shaping requirements as early as Medieval times. As the tor was quarried into, and descended deeper, the surface joints became more widely separated and the weathering zones between them reduced, but the orthogonal jointing remained, thus yielding high quality ashlars. Further, the homogeneous texture of 4 mm to 5 mm sized saccharoidal grains meant that breakage planes were readily predictable. The peak of masonry styling occurred in the early nineteenth century when the squared and flat faced palest of rose pink granite ashlars were produced (Figure 3B). But there is evidence of Mont Mado granite use in most of the house frontages in all centuries from at least the sixteenth onwards. Its distinctive even, saccharoidal texture and pale pink or yellow coloured varieties are readily recognisable wherever they occur. Other granites in the island are not so readily identified, particularly in their weathered states which is so often the case in pre-nineteenth century buildings.

Experience of quarrying into granite cropping out inland in Jersey indicates that the upper five to ten metres are more or less deeply weathered and, perhaps more importantly, deeply and irregularly fractured. The principal jointing pattern is often restricted to three sets of joints more or less at right angles, but these are also cut by variable concentrations of sub-parallel faults and shear zones (Renouf, 1986, 1996a). At superficial depths all these planes have been opened and are characterised by irregular weathering fronts moving inward from them. Hidden potential fracture planes are also abundant. This makes it impossible to predict the breakage pattern when using hammer and chisel and the resulting stone can only be used for the roughest of walling (Figure 3C). A further feature of this stone is the more or less flat, iron-stained, nature of the broken surfaces and this is not a characteristic of most of the granite seen in even the pre-seventeenth century house frontages thus suggesting a different sourcing. Though showing weathering fronts and irregular outline, the stones in pre-nineteenth century houses, and not just the frontages, have well textured surfaces quite unlike the flat ones from fractured, surface granite. The vertical weathering profile of granites exposed along the islands cliffs and of the higher rock heads on the extensive foreshores not fully submerged by the high tide (Figure 2) are generally less deeply fractured than their inland counterparts and can yield masonry quality stone compatible with much of what is seen in pre-nineteenth century work. A possible implication of this, though not proven, is that the shore and cliffs provided a significant source of stone for house construction in earlier times (cf. Rybot, 1926 p. 295). There are indications of stone being sourced along the base of the island's cliffs (Rybot, 1947 and personal observations) and extensive quarrying operations, Mont Mado apart, have not been identified inland. Of significance in this respect is the Écréhous example where quarrying is known to have occurred on the foreshore before and during the nineteenth century (Rodwell, 1996; Renouf, 1996b) and where there is some limited identifiable quarrying. Certainly, around the cliffs of Jersey Rybot (1947) identified many large boulders abandoned in the course of splitting, as revealed by the lines of slots cut into the surface but not carried to completion. These wedge marks are confined to boulders and it is possible that their absence from outcrops is an indication that early quarrying operations focused on the abundant boulders left strewn on the extensive tidal platforms of the southwest and particularly the southeast. Such boulders, together with shore outcrop quarrying, may have been sufficient to supply much of the stone needed up into the eighteenth century when deeper inland quarrying was getting under way.

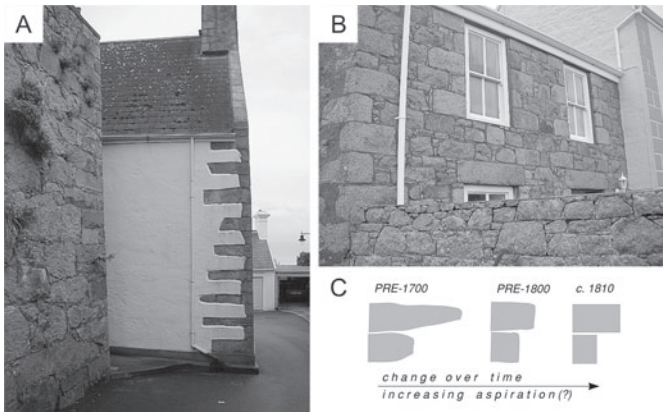

Figure 4. *(A) A recently rendered house wall showing the distinctive pre-eighteenth century style of elongated and irregular quoins found in many houses of the sixteenth and seventeenth centuries on the island. (B) A style of quoin shape typical of the eighteenth century with a strong attempt to attain squared ends and even lengths at least on the main house frontage. (C) Quoin shape and edging finish in Jersey building facades over time.*

But the superficial stone available, be it from unidentified inland quarries or the foreshore, severely limited the ability of the masons to produce squared ashlars. This resulted in variably shaped quoins, for instance, which reflect natural breakage lines, particularly weathered joints (Figure 4A). As time passed the quarries extended downward into somewhat fresher granite and this was reflected in the appearance of increasingly squared, regular quoins (Figure 4B) though still with a lack of uniformity of colour, finish and texture, resulting from the imperfections due to relatively near surface sources. During the late eighteenth century, and with an impressive surge in the opening decade of the nineteenth century, quarries were driven deep to support the demand for major fortifications. Fort Regent, built between 1804 and 1811 (Davies, 1971) is an outstanding example. The amount of military activity also brought with it the arrival in the island of masons in considerable numbers of which a proportion are recorded to have come from Cornwall.

The scale of construction and the number of masons involved were also linked with a further vital element, that of increasingly mechanised means of producing dimension granite. In the civilian sector these trends came together to produce the outstanding technical quality of perfectly squared ashlars with flat picked surfaces and uniform colour and texture made out of Mont Mado stone as mentioned earlier (Figure 3B). These ashlar frontages of Mont Mado granite were only commissioned over a couple of decades (± 1810-1830); subsequently, masonry finishes to ashlars and quoins reflected a move away from perfectly flat picked surfaces to a variety of regular but rougher textural finishes. This is almost certainly explained by a realisation that the most aesthetically pleasing feature of granite is the multiplicity of reflections from a broken but controlled textural finish: the flat picked surface of the early nineteenth century concealed rather than revealed the glints of broken quartz and feldspar. The trend in quoin shape is summarised in Figure 4C.

During the nineteenth century the masons experimented with a wide variety of ashlar surface finishes; they also often returned to a more irregular infill between quoins and window and door surrounds. Nonetheless, post-1800 granite work on house frontages is most readily recognizable by the uniformity of the granite used and its freshness, both features in striking contrast to the earlier centuries. The use of other rock types in frontages remained minimal though one or two were commissioned employing dark grey, black-appearing, diorite - referred to locally as bluestone - in different patterns with the granite (Figure 5A).

Major military works of the mid-nineteenth century maintained the high number of masons in the island and the more wealthy landowners, including ecclesiastical and civic authorities, used granite more flamboyantly to realise some very fine Victorian gothic expressions. Nonetheless, the great hardness of granite always limited the degree and amount of fine detail that could be captured and there is a certain restraint to the decorative granite work. The Methodist Chapel on St. Aubin's quay (Figure 5B), the gatehouse to St. Ouen's Manor and the Victoria Cottage Homes near Five Oaks are typical examples.

At the close of the nineteenth century an overall decline in island prosperity is probably reflected in the fewer buildings of note dating from the Edwardian period and extending onward to post-World War II when the startling modern economic boom began and a new period of granite use was ushered in. Perhaps there was only one completely fresh innovation in granite working: Ronez Quarries (presently one of the two major producers of aggregate) worked a granite quarry in the northwest of the island in the 1960s using a thermal lance and saws to produce 'sawn and split' stone. By limiting production to two or three complementary sizes it was hoped that the uniformity of shape and the sawn upper and lower surfaces of each piece would allow a block layer to lay them (the late James Forshaw, manager at Ronez, *pers. comm.,* 1969). In the event, a stone mason produced a better final effect by trimming unsightly protuberances. Where this was not done the detail of the finish has a certain raggedness to it. The Church House building (Figure 5C) by the town church of St. Helier is the best known example. However, the costs of the processing, and perhaps the fact that the northwest granite used is a rather uninteresting grey, led to the end of production within a decade. However, it is a good example of datable granite use.

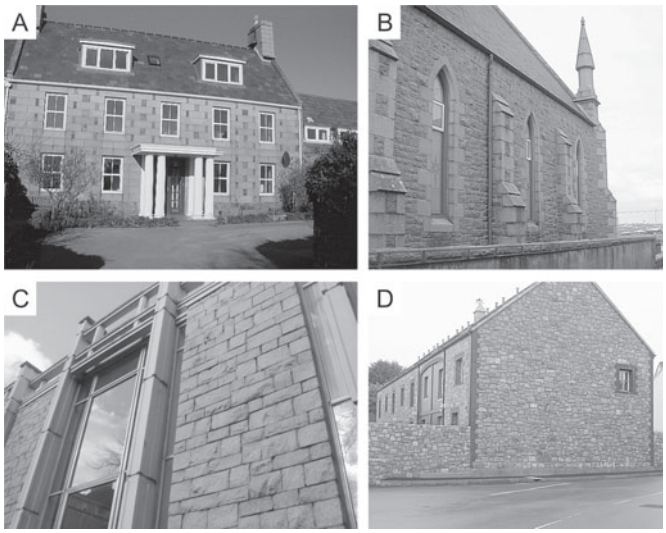

Figure 5. *(A) The regularity of the ashlars used for this house front is typical of the nineteenth century but what is much rarer is the geometrical interspersing of the granite with diorite. (B) Granite is a very difficult rock to sculpt and, even with nineteenth century techniques it was rare to find much detail. More typical are the Victorian gothic shapes shown here from a local chapel at St. Aubin. (C) During the latter 1960s and early 1970s, Ronez Quarries worked the L'Etacq Quarry SE using a thermal lance and cut the blocks produced into regular sawn and split ashlars. It was hoped that a block layer could be used to set them but the end result was better if a stone mason was employed to trim the quarry pieces. (D) In the last two to three decades many buildings, often those of commercial enterprises in the town, have used natural stone finishes but some are rather spoiled by the creation of large unrelieved surface areas.*

A feature of local granite usage over the past two to three decades has been a marked return to irregular shaped infill between regular quoins. The infill is usually of smallish stone with a uniform "broken-granite" texture from a single source though, in others, more typical mixed granites are used. However, some buildings, particularly those of commerce such as banks and finance houses but also including private dwellings, have large expanses of unrelieved granite work which lacks variety (Figure 5D).

Stone sources other than granite in Jersey

The Jersey Shale Formation (Figure 2) occupies a large area across the centre of the island but is virtually unknown in buildings, although it has been used quite extensively within the outcrop area for walling. The quarried stone is grey to black in colour and has weathered little in its wall settings. No working quarries now exist in the formation and replacement road side walls now tend to see recycling of old blocks with mixed, rough granite.

A variety of andesitic rocks were quarried quite extensively in the nineteenth century in the immediate surroundings of the town of St. Helier and has been used, usually with poor quality granite, in some house and workshop walls as well as more widely in street walls and in house walls destined for rendering. Outside the town area to the northeast and east, andesitic and rhyolitic rocks have also been used for walling and in outbuildings.

Very locally, as in the small fishing hamlet of Rozel, conglomerate of the Rozel Conglomerate Formation has been used in a small number of house walls where the irregular outline of the finished blocks used reflects the difficulty of controlled working of this stone. It has, however, been used in the major nineteenth century construction of St. Catherine's Breakwater and in adjacent distinctive Jersey towers (pre-Martello round towers). Major quarries were opened exclusively for the breakwater construction in which blocks of about seven tons were common. The conglomerate is notable for its conspicuous jointing but the weakness of the bonding between pebbles meant that only large blocks were viable in building projects. The breakwater project allowed this, but house building did not.

The other important plutonic rock is diorite and this has been quarried in the island notably at Ronez — the largest quarry presently operating in the island — and in the southeast near Samarès Manor in the Mont Ubé hill; both quarries reached down to relatively fresh rock in the nineteenth century. There is no house facade built exclusively of diorite but there are a number which have incorporated it, often to form a pattern with granite. In one or two cases the pattern is geometric and produces a chequerboard appearance (Figure 5A). From the small number of such frontages it is evident that only a minority liked the effect. In pre-nineteenth century houses isolated blocks of diorite have been incorporated into house frontages and this is most common in the south-east where a number show their shore origin in rounded and smoothed surfaces and angles.

Non-Jersey stone sources

Disregarding the twentieth century for the most part, since the scale and nature of stone importations from a world-wide variety of sources reflects a different economic and aesthetic approach — particularly evident in the past half century — there are a number of importations in earlier centuries that are of particular interest.

Chausey granite

At least from Medieval times, the neighbouring French Channel

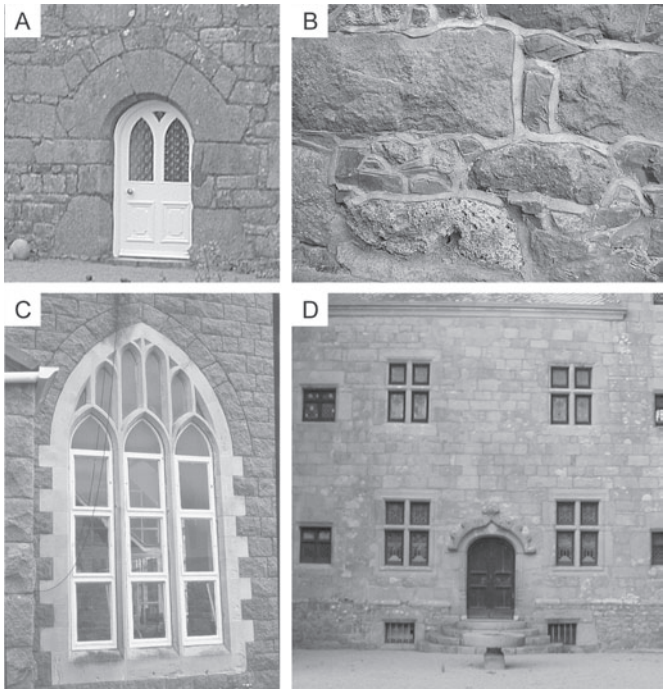

Figure 6. *(A) A typical Jersey arch of pre-eighteenth century, perhaps pre-seventeenth century date. This style of arch with many local variations was also widespread in nearby Lower Normandy and northern Brittany where its first appearance was perhaps as early as the fifteenth century. This arch uses Chausey stone. (B) Detail from an island water mill reveals a piece of old millstone, French burrstone, built into the facade (bottom left). The gruyère like texture, pale colour and cherty appearance on broken parts are diagnostic. (C) Caen stone from Normandy has been used down the ages in the Channel Islands. This is a mid-nineteenth century Victorian gothic example from Trinity School. A rather iron-rich calcareous rock was used for the similarly styled and dated prestigious Victoria College but this had to be replaced in the mid-twentieth century because the iron was attacked by the salt laden sea winds. That at Trinity School has survived either because it was a slightly different stone or because of its sheltered position. (D) St. Ouen's Manor is the senior manor of the island. The de Carteret family have played a major role in island affairs through the centuries and it seems likely that this regular ashlar fronted section of the manor dates from the late sixteenth century. It was perhaps the desire to emulate the regularity of the ashlar frontages of the wealthier and more important island families that drove the style of house frontages in Jersey until near perfect stone finish was achieved in the early nineteenth century only to be rapidly abandoned for a return to more varied textures.*

Islands' archipelago known as Chausey (Figure 1) has been a source of granite with specific qualities. Notably the granite is extensively exposed on the innumerable islets that comprise the group, it is relatively fresh right up to the surface, it has widely spaced joints and its mineral texture, particularly the distribution of micas, means that it is easier to work than most other granites either in the islands or around the adjacent coasts of France. However, it is rather a drab grey colour. McCormack (1986) records the first widespread use of squared ashlars of Chausey stone in the Channel Islands as dating from early in the fifteenth century (ecclesiastical architecture). By and large the first use of this stone is reserved for ecclesiastical work where less than straightforward stone work was required, e.g. window mouldings, crosses, fonts, door surrounds. Blocks of Chausey stone crept into use in vernacular buildings of the sixteenth and seventeenth centuries but not in any organised or major way; they were used along with any other local piece of granite that was available and this included door surrounds and the distinctive and prestigious Jersey arches (Figure 6A). Such use of Chausey stone in Jersey continued into the eighteenth and nineteenth centuries although there was one almost exclusive use: the fashioning of the U-stone sections of apple crushers (for cider making). An unusual extension of the use of the U-shaped block, this time in straight sections, was at Ponterrin Mill to create the upper mill race. Inevitably pieces of Chausey stone were re-used in many local buildings.

Écréhous granitic gneiss

While the use of Chausey stone was widespread in both time, place and usage in the island, the same is not true of Écréhous stone which is probably, quantity-wise, the next most common non-island stone. The Écréhous (Figure 1) are the most easterly of a line of reefs lying to the north of the island and separated from it by a major fault. The reefs are composed of Late Proterozoic foliated granites. The Écréhous are administratively a part of the parish of St. Martin which forms the northeastern corner of Jersey. St. Martin families over the centuries have had close associations with the reef, owning property there and fishing. At different times, mostly it is thought during the eighteenth century but also in the nineteenth century, stone has been brought back from the reef and used as masonry almost exclusively in St. Martin houses (Noury, 1886; Mourant, 1956; Rodwell, 1996; Renouf, 1996b). As the only source of the granite is on tidal rock outcrops, all the stone brought back to Jersey was necessarily from superficial sources though less weathered than it would have been on land because of the hydraulic and corrasional effects of the rough seas common in the area. However, the rock cannot be shaped either into squared ashlars or to yield good flat surfaces. As a consequence the pieces built into house walls tend to be large and irregular when used as quoins and irregular and often small when used as infill. As island granites are not foliated it is easy to pick out Écréhous stone and recognition is further enhanced by its pale, almost white, colour. Mourant (1956) estimated that about 1000 tons of this stone was used in the northeast of the island. Why this stone was brought in to Jersey is something of a puzzle since a number of the houses where it has been most used are on the island plateau and this would have entailed a significant horse and cart journey from wherever it was landed, not to mention the collection and water transport. This may be a case where the house owners had privileged access to the Écréhous source by virtue of historical ownership rights thus allowing them to compete with the nearest and most important source of masonry granite, that of Mont Mado some 5 to 8 km distant.

French burrstone (buhr stone) and Millstone Grit

With the spread of the use of water- and wind-mills in Medieval times, there developed a thriving trade in a very limited number of stones considered ideal for the making of millstones. Pre-eminent among these was the French burrstone derived from Oligocene cavernous, siliceous limestones and found around Paris. The best known centre was La Ferté-sous-Jouarre. This stone, though, could not be quarried in one piece as for instance two of the other stones of major importance cullin (*from* Cologne) in the Eifelian volcanic province and peakstone (Derbyshire Millstone Grit edges) but so good was its extreme gruyère-like texture for grinding purposes that no self respecting miller would use any other stone but this for grinding wheat - other lesser stones were used for grinding oats and producing other meals. The complete millstone was made up in polygonal sections held together by plaster of Paris - the origin of the name - and bound by iron hoops on the outside. When the stone had been worn down and served its purpose for milling, some of the discarded blocks were incorporated into the mill's walls during any rebuilding. No mill building visited in Jersey to date has failed to reveal the presence of this stone, albeit in low numbers, in the walls somewhere (Figure 6B). The majority of the presently surviving mills were probably built in stone in the eighteenth century to judge by their quoins though some are certainly nineteenth century and a few may be older. No examples of cullin stone have been found in Jersey although there are a number of peakstones.

Mesozoic limestones and calcareous sandstones

There are examples of the use of a number of French stones in the Channel Islands apart from the principal one of Chausey granite though their use in private dwellings is rare. Various Jurassic limestones and calcareous sandstones from the area centered on Caen in Normandy were incorporated into ecclesiastical buildings in Medieval times, the most extensive use being that of Caen stone in the 12th century chapel of Lihou, Guernsey though a later fifteenth century example is in St. Martin's parish church in Jersey (McCormack, 1986). In the nineteenth century Victoria College in Jersey was built on an exposed hill overlooking St. Helier. Caen stone was used for the elaborate Victorian gothic windows and the quoins. However, the type of Caen stone used had considerable iron in its cement and this broke down under the effect of the salt laden sea winds so that it had to be completely replaced and/or sealed during the mid-twentieth century. A local parish school built at the same time in a sheltered inland position at Trinity followed the same style (Figure 6C) but the Caen stone has survived - where it has not been removed in the many alterations the school has undergone during the last one hundred years. But there is little evidence of use of wastage Caen stone in other buildings in the island.

Limestones imported from the Isle of Purbeck and from Portland have been used to serve functions in military buildings in the the island notably for sills and partial embrasure surrounds. St. Aubin's Fort shows this feature and it seems possible that this softer rock was preferred to granite in such situations to minimise the splintering effect from impacting bullets on the defenders. Purbeck marble packed with its freshwater shells was also used in fortifications but often as steps as in the interior of Fort Regent above St. Helier. There are at Fort Regent a specific instance of what appears to be a typical Carboniferous Limestone for some low placed quoins at a sloping angle on an inner wall; they show grooving marks as if caused by cables dragging around the corner but no explanation is known. Carboniferous limestone was imported from the quarries at Régneville (Figure 1) for use in the brickmaking industry that flourished in the nineteenth and early twentieth century in Jersey.

Exotic stones of the later twentieth century

The major granite-faced harbour works of the nineteenth century in Jersey finished in the 1870s and it was not until almost exactly a century later that new harbour extensions were undertaken. These have made widespread use of reinforced concrete forms and rough diorite block infill — blocks of several tons weight — from Ronez quarry. However, this quarry along with the other large island quarry, that of Granite Products, has only a limited supply of stone left and for more recent work in the 1990s large squared waste monumental rock from various sources including the larvikite quarries has been used. Monumental stone has also been imported for many purposes from other far away sources.

SUMMARY AND CONCLUSIONS

From the moment that the independent yeoman farmers in Jersey accumulated enough wealth to replace their ephemeral dwellings of wood and other perishable materials, principally in the sixteenth century, a desire for granite finishes to buildings is apparent. Property owners were only satisfied if they could match their neighbour and aspired always to what the most wealthy seigneurs were able to achieve (Figure 6D).

The aesthetic of the "perfect" granite ashlar

Retrospectively, a limited number of trends can be identified. The most striking of these is the drive for perfectly squared ashlars of even-textured and even-coloured granite, which was achieved in the early nineteenth century. On the way, house frontages of the sixteenth and seventeenth centuries demonstrate that the more important houses and manors were using roughly squared ashlars for whole frontages with lesser ones making do with more roughly, though definitely shaped, often elongated quoins and an irregular infill. Because the stone sources were tapping into superficial rock, neither colour nor surface texture could be guaranteed and houses from these two centuries - manor or less important farm alike - are characterised by the use of mixed granites with varying textures and colours. In spite of this variety the masons of the time had as good an eye as the best of today for harmony of shape and colour and generally these house frontages have stood the test of time, being as much prized now as they were when built.

The main advance in the eighteenth century lay in the use of better squared stone ashlars for the quoins and more use of ashlars for frontages. As the century advanced there are more examples of matching granite usage though none achieves the uniformity that sprang into existence in the first decade of the nineteenth century and is exemplified by what the masons of Mont Mado achieved.

The search for the perfectly worked square granite ashlar with finely picked flat surface and uniform colour could only be achieved with the advent of deep quarrying. Pre-nineteenth century granite usage had been limited by the techniques available for working stone and the absence of the need for deep quarrying. Within these limitations it is evident that there was a clear aesthetic driving the use of granite, an aesthetic that was a search for the "perfect" ashlar. It is an unconscious aesthetic in that it was never codified but received its expression in deed, in what actually occurred. Ironically it was the result of competition to keep up with the neighbour or at least those of like station.

The *nouveau riche*, the merchant adventurers of the late eighteenth and nineteenth centuries, entered the arena in the early nineteenth century and the best example of the Mont Mado "perfect" ashlar is in the house of the merchant Nicolle quoted earlier (now the museum). His example was copied in a number of buildings elsewhere in the island over a period of less than twenty years and this seems to represent both the peak of the trend to achieve the "perfect" ashlar and its end.

The aesthetic of the granite texture

The new aesthetic was based on a perception that the uniformly fresh granites available from a number of quarries were best enhanced by making use of textured rather than flat surfaces. The sparkle of fresh broken quartz and feldspar surfaces represented this new aesthetic and has remained the common element in granite usage after 1830 right down to the present day.

Throughout the remainder of the nineteenth century masons experimented with ashlar finishes. A common pattern was for the forming of a flat picked margin to the ashlar with the centre deliberately left rough-broken and sparkling. The availability of a variety of granite types of different colours - Mont Mado even-grained rose-pink; coarse southwestern varieties often with some specks of black-seeming hornblende; variably coarse, some very coarse, southeastern granites and generally greyer, fairly uniformly textured, northwest granites - can all be identified in buildings with a variety of surface finishes to the ashlars. A number of flat surfaces were produced principally for specific purposes such as the flat 1870s arch and other Victorian Gothic expressions, but these were only features set in a more varied granite usage. Present usage still reflects the use of the strongly textured surfaces of broken granite with a continuing preference for the more colourful types available.

Concluding remarks

The warm coloured Jersey granites, both in their weathered pre-nineteenth century dress and subsequent fresh state from deeper quarrying, are inherently set to appeal to a greater number of people than the very dark greys of the diorites. The abundance of such granites is a feature that distinguishes Jersey from Guernsey where the better quality stone in the latter island derives from grey dioritic and granodioritic rocks; their widespread use is reflected in the more sombre aspect of house frontages

there. In Jersey the love affair with granite began early and has never shown signs of abating though it must be admitted that the aesthetics of the matter are more unconscious than conscious and do not reflect a concomitant awareness of the geological, technical and sociological forces driving the issues.

ACKNOWLEDGEMENTS

The author would like to thank James Urry for comment on important issues and all those Junior Activities Group members followed later by many schoolchildren all of whom had to be shown the new discoveries. Discussions with Warwick Rodwell have always been most valuable and no more so than in the case of the Écréhous stone. A special debt is always owed to Old Jersey Houses by Joan Stevens.

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