Translated Tradition in the Portland Bay Settlement. Traditional Timber Framing Techniques in a Cultural Development - Some Features Revealed in the Steam Packet Inn, Portland, Victoria, Australia

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INTRODUCTION

Framing methods and jointing found during a structural inspection of 33 Bentinck Street, Portland, the former Steam Packet Inn, show a continuity of traditional building methods in use immediately prior to 1800 in East Anglia. This paper traces the development of this tradition and locates the Inn as one of the early steps within the development of Australian vernacular framing. At the time of construction, a unique situation existed whereby the nuclear settlement was supported by sea only, and the development of the Inn's two storey frame took a large degree of initiative and confidence.

HISTORICAL BACKGROUND

Portland Bay was named in December 1800 when Lt. James Grant RN, having left England in command of HM Brig "Lady Nelson" for Sydney, received modified orders in Cape Town, to sail via the dangerous waters of Bass Straight. This straight, which separates Tasmania from mainland Australia, had first been explored only two years previously by Matthew Flinders. Lt. Grant named the wide deep bay after his distant relation the Duke of Portland, George Bentinck. The bay was later visited by the French explorer, Commandant Nicholas Baudin, and again by Lt. Matthew Flinders RN, within a few weeks of each other, in April 1802.

The township which followed later took its name from the Bay. It is the most westerly port of Victoria, and lays claim to be the State's birthplace. A planned but illegal settlement by the Henty family took place between 1833 and 1835, hard on the heels of the establishment of a whaling base there by William Dutton. Both groups of pioneers used Launceston, in Van Diemen's Land, as a base. By then various groups of sealers had been active in the area for many years, as large fortunes could be made from seal oil and furs. This select and hardy group had solved the problems of navigating these dangerous waters, but had kept such information to themselves.

An exploratory expedition sent overland from Sydney, led by the experienced Peninsula War veteran, Major Thomas Mitchell, stumbled on these activities in August 1836, thereby bringing, what had hitherto been an open secret, to the notice of the authorities. Charles Latrobe, Superintendent of the Port Phillip Region, determined to regularise the situation, and in October

1839 he dispatched a team under Surveyor C J Tyers to inspect and to report back. This led to an official survey, the setting-out of a new township, and land sales by auction in Melbourne, in October 1840.

One of the bidders was an ex-convict, Samuel Hutchinson, then an overseer in a Launceston woodyard. He organised the construction of the Inn, and shipped the necessary materials across Bass Straight. In December 1841, he and his wife sailed from Launceston, bringing with them furniture and crockery, and a signboard for the new inn.

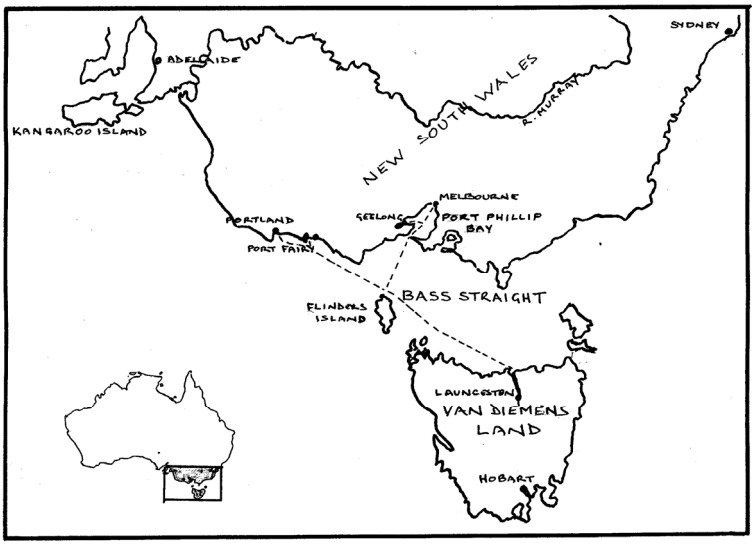

Figure 1. South-east Australia in 1840. The Sea Roads.

THE INN

The Steam Packet Inn in Bentinck Street, Portland, was the second public house built in Portland (Register, 1978), and probably dates from 1841. (Cash, 2002). It was classified by the National Trust (Victoria) in 1959, and has been on the Register of National Estate since 1978.

The Inn is known to have been operating as a hotel in July 1842. (Nat. Trust, 1959), which makes it one of the oldest timber buildings in Victoria, and it is also one which has suffered little internal change. (Register, 1978).

Historian Damien Cash has shown that the timber, windows and doors were all imported from Van Diemen's Land on the vessels 'Dusty Miller' and 'Minerva' between April and December 1841. (Cash, 2002). A total of four staggered shipments were made from Launceston under the name Hutchinson. The loading lists correspond to the timing and sequence of the erection of the Inn,

along with its fences and outbuildings, while the quantities shown equate those used in the full development. The manifest for the last voyage in December 1841, shows that Samuel and his wife Catherine, (both former convicts), took passage for Portland, to take up permanent residence there.

Figure 2. The Steam Packet Inn as it is today

Inspection

In July 2002 a structural inspection was carried out on behalf of the Shire of Glenelg, to assist Heritage Architect, Amanda Jean. Parts of the original frame were exposed on three elevations, and inspections made from below ground floor level and within the roof space. These show a technology which would have been current in South-eastern England (particularly East Anglia) at the time and which are refinements of methods carried over from the late Middle Ages. The structure of the Steam Packet Inn gives an insight into construction methods in the embryonic colony, which at the time formed part of the colony of New South Wales as Separation did not occur until July 1851.

The timber used in the frame is pit-sawn to a general size averaging 95mm by 68mm corresponding to sawyer's marks of 4 inches by 2.5 inches nominal. Some lighter timbers were used for jack-rafters and top-plates, both keeping a 2.5 inch nominal measurement in one plane. The quality of the timber could best be appreciated in the roof space where the rich colour, straight grain and relative freedom from defects of the Blackwood (*Acacia melanoxylon*) could be observed. The wall stud spacing of 480mm nominal centres continued through to the roof rafter and ceiling joist spacing.

Once exposed, the similarity of the Inn's framing to the close studding of the counties of south-eastern England was almost tangible. In Australia today we have become accustomed to seeing slender studs in which intermediate lateral support by noggins is provided. The Inn's studs look altogether heavier and rise to their full height without intermediate noggins.

The Frame

The external walls of the Inn are framed using full height studs, which run from the bottom plate (at ground level), through to the top plate (at eaves level), in single lengths. This type of two-storey framing is one of the defining aspects of "balloon-framing" and examples occur from the 17th century in East Anglia, although this type of two-storey framing is far from universal. (Cummings, 1975 p74).

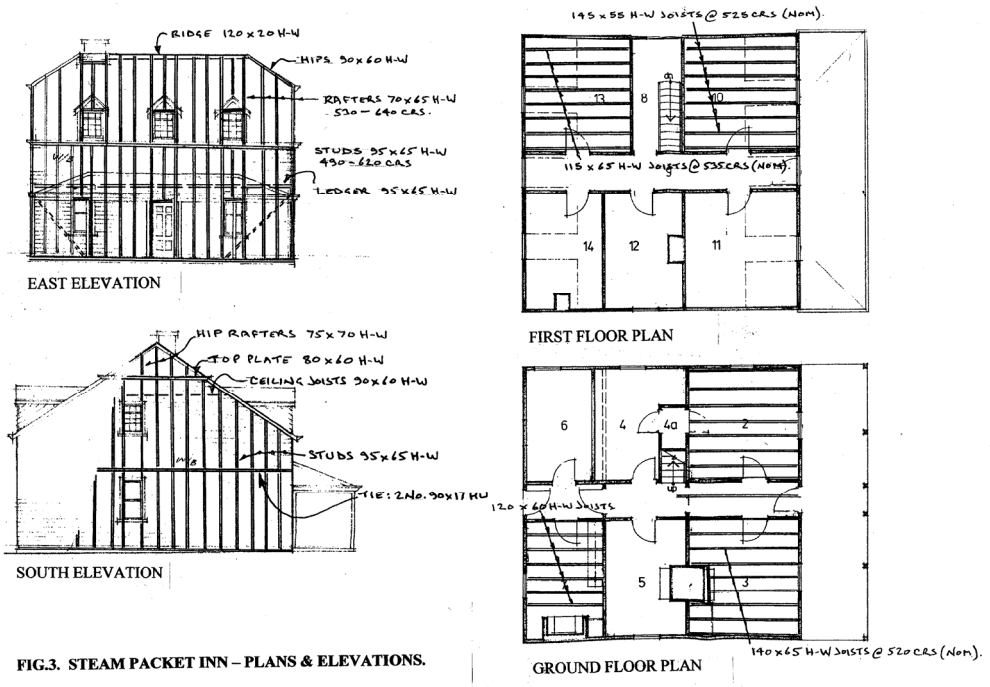

Figure 3. Steam Packet Inn - Plans and Elevations

In order to provide support for the joists of the first floor, a horizontal member, or "ledger" is needed, which is fixed to the studs. The ledger acts as a seat (or ledge) on which rest the ends of the first floor joists. The Inn's ledger is of lesser width than the studs themselves. In this feature, the ledger does not show to the external elevation but retains the "uncluttered" look of close studding. It is notched to fit around the studs, which are also notched. Hence each stud carries part of the load of the floor, and of the roof also via the top plate. This half ledger and half stud rebate is a form of

halving joint and **Fig. 4** shows the joint as revealed during the structural investigation. The ground floor joists sit directly onto the bottom plates and are the same dimensions as the upper floor joists. This is common in most pioneer buildings in the Western District of Victoria, and is the reverse of current Australian practice, in which walls are erected off a ground floor platform of joists and bearers.

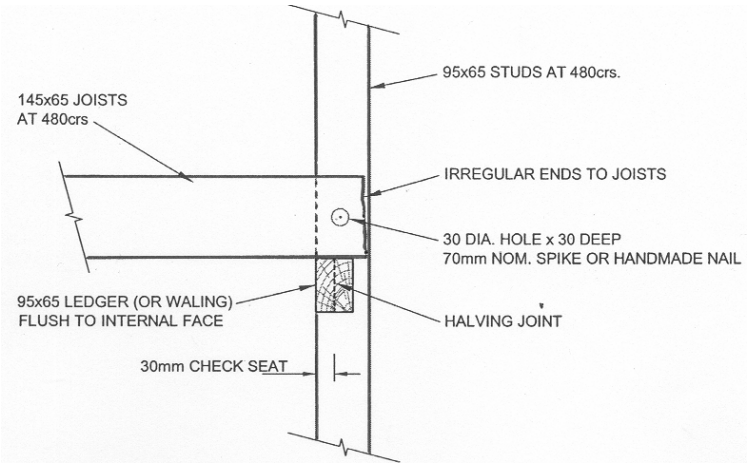

Figure 4. Section through front wall at first floor level

Across the end walls of the Inn, and at the same height as the waling, a horizontal girding, or tie, has been provided. This is unusual and comprises two thin strips, which lap each other at joins in order to maintain effectiveness in tension. The strips are each 90mm deep by 17mm wide. Together they sit into 35mm deep notches cut into in each of the end studs. This follows a practice common in Victorian masonry buildings of having a perimeter tie, which occurs both in Victoria and in southern England. Similar, but larger, girdings in timber frames are reported in the early American frames and are credited by American engineers as imparting a secondary reserve of support to the frame. It is doubtful that these light strips found on the Inn would have been as effective.

The structural system of balloon-framing still used throughout the English speaking world is often referred to as the American balloon frame as it is one of the break-through inventions which changed the whole development of the Mid-west USA. In this system, a lighter and thinner strip known as a 'ribbon', takes the place of the former wider ledger. The thinner ribbon requires only a notch to sit in, so there is no halving. The ribbon plate is one of the determining features of the American balloon frame as it later evolved. **(Fig.5)**

Studs and Bracing

From a modern analytical perspective, the way of inserting the frame brace was irregular as it started between studs at bottom plate level and terminated well below the ledger. This caused some

puzzlement until it was realised that this insertion feature, which in Australia we are accustomed to seeing as corner to corner, was simply a traditional brace position seen in half-timbered construction in parts of southern England. A further curiosity was that the brace was rebated on the inside face of the studs, as would be normal for close studding, in contrast to the usual bracing to outside face. The straight downbrace is a traditional feature of East Anglia, and numerous examples can be seen in Lavenham, Saffron Walden, and parts of Cambridgeshire, etc. The brace width was 90mm wide and 19mm thick, a transition from the heavier English brace, showing an early change towards the Australian vernacular.

Richard Harris, of the Weald & Downland Museum, nicely describes the internal brace position as a special feature of close studding in south eastern England: "Frames need diagonal bracing for stability, but this would spoil the close-studded appearance, so braces were therefore often halved across the inside faces of the studs and concealed by the plaster panels externally." (Harris, 1978 p61)

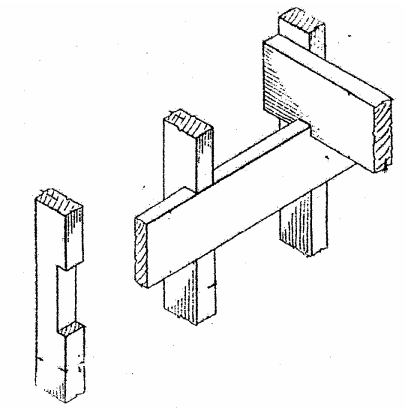

Figure 5 Modern ribbon plate

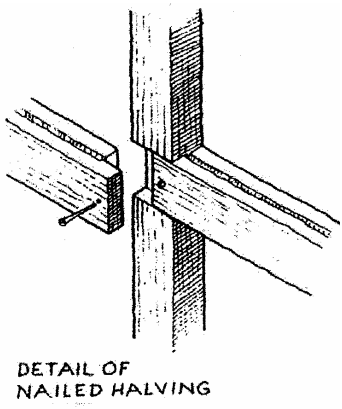

Figure 6. Ledger halving, circa 1750.(After Harris)

THE TRADITION

Close studding is a feature common to East Anglia and lowland England and can be traced back to the 15th century. Studs were set fairly close together, sometimes with as little as 150mm gap. Later, as timber became more expensive and scarce, the spacing opened up to as much as 600mm. To enhance the elegant effect of the rows of full height studs, diagonal bracing was concealed on the interior of the walls, and horizontal bands either omitted or similarly concealed.

From the 17th century English timber sizes became progressively lighter and studs were cut to a smaller section. In parts of East Anglia this resulted in to the braces becoming lighter and their being simply notched into the studs, as opposed to being halved. The Inn's framing corresponds

chronologically with this later practice in that it reflects its spacing, stud size, rebated brace, and absence of noggins. Some studs measured just over 70mm in width, and in some cases the face clearance between studs was down to 410mm.

In other parts of England, including most of south-eastern England, the concept of each wall being a braced box frame was retained well into the 20th Century. Bracing took precedence over studwork, and studs were cut to fit onto the brace in each frame, the long members comprising top and bottom plates, and the two sides of the particular panel. Many of the buildings in East Anglia have a façade of close studding and concealed bracing, but show this alternative assembly, with an exposed brace on the return walls.

Model Examples

Immediately prior to Australian settlement, books of design, which included framing layouts, became generally available to artisans and property owners. An example of two-storey framing similar to the Steam Packet Inn was published in 1775 by Nathaniel Kent **(Fig.7)**. It can be seen that this is a development towards balloon-framing.

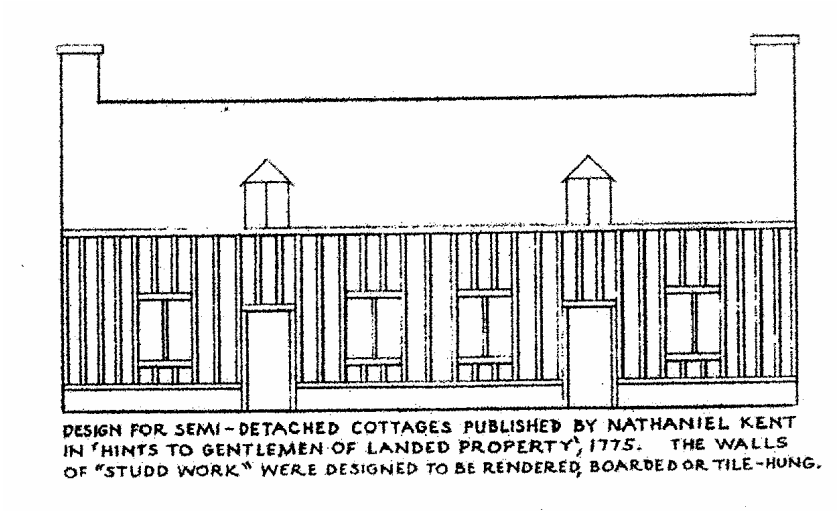

Figure 7. English two-story frame in 1775

The National Estate Statement of Significance refers to the Inn's half-hipped, steep roof, and dormers as being "consistent with many early Tasmanian buildings", to which the Portland Urban Conservation Study added that the dormers are; "unusual within Victoria". The Conservation Management Plan sees it as "a typical example of early buildings---- in the Portland and Port Fairy regions". The cultural denominator for the architecture is not traced back further than the Tasmanian connection, and several citations state as a fact that the Inn was prefabricated there.

Figure 8. Balloon Framing at Hunsdon, Hertfordshire

With the strong structural clues linking the frame to East Anglia, a review of published literature revealed that there is a contemporary building, of similar size and style, quoted by L F Cave as a balloon frame example, at Hunsdon in Hertfordshire. (Cave, 1981 p97). In searching out this building a few examples from an earlier period were discovered with exposed two-storey studs, in styles suggesting early and mid 1700s. Cave implies that the balloon frame made its debut in the form of a softwood frame, (Cave, 1981p138), however these earlier examples which show exposed studs are clearly of hardwood.

A review of English vernacular sources showed strong similarities in the roof shape and proportions to many buildings in Suffolk and Essex. These repeat in transatlantic New England in the style, popularly known in Australia, as “Cape Cod”. The American expert, Abbott Lowell Cummings, in his magnum opus, sees the East Anglian vernacular style as dominating New England architecture. (Cummings, 1975 pp15, 95).

As noted in Fig 7, this type of frame would normally have a cladding of weatherboard or hung tiles to complete the walls. Weatherboards would have been radially cleft from hardwood using wedges and maul, or shorter lengths split using a heavy wedged blade called a ’frow’’. This process enhances durability, as the cleft timber is left with most of the cellular structure intact, whereas sawn timber has the cells laid open and is prone to decay etc. (Brown, 1986 p32).

There is extensive use of this split weatherboard as an internal wall lining within the Inn, with only a small area of sawn board lining found near the stairwell. Unfortunately none of the original

external cladding has survived. Each of these internal shiplap boards is fixed in a lapping arrangement, as for conventional weatherboard. They are faithfully rounded-off to give a quirk bead on the exposed edge to avoid presenting splinters, and the raised grain of the boards is most evident.

HASTE, NECESSITY AND SCARCITY

The Material Shortage

In 1840 the timber industry in Van Diemen's Land was in full production, and with the increased number of settlers arriving there was a shortage of sawyers. Split timber, on the other hand, was quicker and easier to produce, given the abundance of suitable timber available at the time, as it required less skill in production. The decision to use an external cladding in the interior speaks of an urgency to get the Inn into commission and of a necessity to overcome shortages of available sawn board. Although, as has been noted, a small amount was obviously obtained and used in a relatively prominent position, perhaps to add a little prestige to the establishment. Nevertheless, the rapid assembly and transport of the materials from Launceston, all within a seven month period, tells us something of the organising ability, energy, determination and impatience of Samuel Hutchinson to see the Inn built. By comparison, the Henty house, Richmond Cottage, which was three times smaller on a per room basis, and single storey, took ten months to final occupancy. (Peel, 1979?).

The Trades

It is known that there was an ongoing interchange of people between Port Fairy and Portland. In 1837, when Whaling Master John Griffiths sent his right hand man, John Mills to Portland he also imported two carpenters and a stonemason from Launceston for the construction of a new whaling station on Griffith Island at Port Fairy. (Powling, 1980 p15). This would appear to have been a relatively common occurrence as there was regular and ongoing movement of vessels between Launceston, Portland and Port Fairy, so that the new township would have attracted builders able to thrive on the building boom. It seems doubtful, therefore, that a significant shortage of carpenters would, in 1841, have necessitated the prefabrication of the frame in Van Diemen's Land. In any case, a search of all visible joints did not reveal any assembly marks on any of the timbers, which would have been necessary for a prefabricated frame. What was evident, however, was that the ends of nearly all floor joists had irregular, roughly sawn ends suggesting that many floor timbers were assembled directly from their original lengths, and that timbers were supplied to a framing schedule and off a plan. Within the roof space it was observed that the joints were expertly made, even though the structure is now severely distorted. In the less protected studs of the exterior walls and the ledger beam, weathering due to sun induced heat warp and shrinkage, has left many joints looking decidedly sloppy.

Production and Erection

In a long standing practice, which extends back to Saxon times, timber frames of any size were first fitted together in the fabrication yard, then numbered by chiselled or gouged marks, using a

modified form of roman numeral. The heavy sections were then taken apart, transported to site, and erected. (Hewitt, 1980 pp14-20, 28-34). By 1750, however, price rises and the timber shortages in southern England had accelerated the use of lighter sections in building work. The shortages were aggravated by the after effects of the Great Fire in London, the rapid growth of the British Merchant Marine, Industrialisation, and the voracious demand for charcoal used in iron production These shortages accelerated the importation of softwoods from Norway and the Baltic.

Possibly as a result of these changes, the smaller timber sizes and lighter frames facilitated the fabrication and erection on site of whole or partial lengths of walls, as happened till recently in Australia. The conservative British continued to pit-saw their home grown timber products, in sizes which we find reflected in pioneer Victoria up until 1855 or so. This was in part due to the erratic progress in technology affecting the development of nails. Nail production had moved from fully wrought, to part industrialised, rolled iron sheet, and the grainy wrought iron nails produced thereby had a reputation for being unreliable. (Nicholson, 2003 p69). Larger members permitted a carpentry resolution to bearing and fixity problems within the joints. This lessened the reliance on nails, which in any case, in Australia were frequently in short supply. The early American industrialised nails were shunned as they suffered brittle fracture in the dense Australian hardwoods, (Lewis, 2003) and cut brads are rarely found in the Western District prior to 1900. The astonishingly successful “Ewbank” nail, produced by J.J.Cordes in South Wales, did not appear on the Australian scene until 1838.

Although the wall frames of the Inn follow the earlier tradition of tenoned studs to morticed top and bottom plates, common to the English speaking world, it seems certain that sections of completed wall frames were raised as complete elements after assembly on the ground. There is an indirect indication of this, given in the Henty Journals. (Peel, 1996). The walls and roof of Richmond Cottage, located some 300 metres north of the Inn, were completed only three days after the messmate logs, serving as the fore-runner of stumps, had been installed in the ground. This rapid erection could only have been achieved if pre-assembly of the walls had taken place first. It equals the time achieved in Australia today, but without the benefit of site cranes and power tools, which are now available.

The Assembly

L F Salzman shows that there is evidence from an earlier period of raising pre-assembled wall panels, (Salzman, 1952). American researcher, Abbott Lowell Cummings, who relies on the earlier East Anglian connections, quotes three New England examples of much heavier framed walls being raised as complete units in 1677,1773, and 1850. (Cummings, 1979). The front and rear walls of the Inn, each about 4.2 metres high, were almost certainly raised this way, being tenoned to top and bottom plates. The alternative scenario of scaffolding is improbable, as insufficient material would have been available for two-storey scaffold in the circumstances pertaining at the time.

The Carpenter's Solution and Frame Rigity

The halving joint used in rebating a continuous ledger is a legacy of an earlier period when buildings were pegged rather than nailed. (Brown, 1986 p61). Fig 6 shows how this practice continued to be used in the 1750's, after nails were widely adopted. It eventually gave way to a notched rebate of lesser depth, a thinner ribbon plate, and greater reliance on steel nails, as is still the current norm.

By 1750 the larger timber sizes of pegged construction seen in the Middle Ages, were replaced with lighter studs, and fixed by steel nails or spikes, which required less timber edge distance. (Brown, 1986 pp56,57). However, the frame stiffness developed by multiple close-fitting joints, as used in the Inn, has resulted in an inherently stronger structure than one would nowadays expect. In this regard there is no doubt that the frame of the Steam Packet Inn has performed better than its modern equivalent, even though it has been subjected to significant unequal settlement and consequent major racking forces.

Curious Drilled Pockets

The large drilled holes in the face of each upper floor joist seen in **Fig. 4** and in **Fig. 9**, were at first not understood and it was as if trenails (pegs) had been intended as fixings. It was possible to feel the head of a spike or nail inside the rebated well. By fortunate chance an unused fallen nail was later discovered within the wall cavity of unusual, sharp-point, rose-head design. The head matched those used to secure the floor joists in the rebated wells, and as it was only lightly corroded, it may have been lightly tinned or galvanised.

Figure 9. Rebated wells in floor joist ends.

Figure 10. Tenoned end to centre wall stud

This is almost certainly the type of nail adopted for securing the floor joists, the ledgers and the top plate. The nail measured 69mm long, had a square section of 3.5mm, had a head of 11mm diameter showing only slight faceting, and it tapered on both axes to a point. The use of a single nail, only 69mm long at each joint, together with the laborious drilling of wells necessary to enable the

construction to proceed, demonstrates shortages at the time both of the size and the number of nails available.

The possibility of this being an original, galvanised nail was initially discounted. Later, however, a galvanised Ewbank nail appeared in the remnants from an 1850 cottage in Port Fairy. It was then realised that the nails used in the Inn could be an early corrugated iron sheeting nail. Such nails are used on the contemporary Henty barn on Muntham Station, near Casterton, north of Portland, where the original corrugated iron and fixing nails are still in place.

The Rush to Occupy

There is reason to believe that the framing, including the roof, was completed prior to the chimneys being built and, in the roof space, the main chimney flue is offset in order to locate between three of the regularly spaced rafters. The central short length of rafter, from ridge to face of flue, is still hanging loose. This is possibly another sign of haste to close-in the construction as soon as possible, with the probability that occupation of the partly finished building took place, whilst the internal finishes and chimney construction progressed. No doubt the arrival of Samuel and Catherine in December 1841 was timed to coincide with a reasonable level of accommodation being available in the new building, and the manifests show that items of furniture travelled with them, as well as numerous provisions and a signboard. (Cash, 2002).

The Henty Diaries show that a similar process occurred with Richmond Cottage, and there are many contemporary references to many settlements consisting entirely of bark huts and tents. This caused the import of many types of prefabricated dwellings, both from Britain and Singapore. (Taylor, 2005).

Inadequate Ground Support

The original ground floor joists, most of which are still extant, are the same size as the upper floor joists. The front, back and central longitudinal walls were probably supported onto stone pad supports,which is a feature of earlier construction, pre-dating the normal Australian practice of support by red-gum stumps. This can no longer be verified, as several repairs based on conventional re-stumping have taken place, the latest being in 1986. Investigations of other later buildings within the pioneer area show occasional squared stone pads, or rough basalt pads, but in the Western District the norm is for full perimeter masonry plinthwork. Unlike a modern frame, the ground floor joists were placed after the walls had been raised as they sit onto the top surface of the bottom plates. The tenon of the corridor studs could be seen projecting below floor level in this same configuration, where the central bottom plate had rotted out. (**Fig.10**).

One stone pad could be seen under the Inn and another was partly visible. However, large settlements have occurred throughout the ground floor and, at the northern end settlements of up to 190mm were recorded. It can be surmised that the three longitudinal walls were raised onto stone or

timber pads and propped, whilst the end frames and floors were inserted to stabilise the internal phase of construction. The detailed work of the roof and dormers would then have followed as individual pieces of framing work.

Local Portland historian Brendan Jarrett took part in the earlier remedial work and reports that rounded boulders of vesicular basalt, such as can still be found along the Portland foreshore, were used to make foundation pads for the brick chimney. (Jarrett, 2005). Similar boulders, some bricks and rotted out stumps of stringybark were found under some of the joists, indicative of earlier attempts at re-support. It is known, that by 1857, the Inn was already considered by the Licensing Authority to be in a dilapidated condition. (Guardian, 1857). Investigation showed that the primary cause of settlement at the Inn's north end was due to an exceptionally deep silt layer coupled with poor site drainage. In these circumstances, the shallow pads would have been inadequate to spread the load onto seasonally soft ground.

In late 2005 a similar case of an 1850 cottage incising itself into a silt subgrade was found, also in Bentinck Street, and poor drainage around the structure was again the prime cause.

The Missing Plinth

In the late 18th Century it had become long established practice to provide a masonry or brickwork plinth to the outer wall (Harris,1978 pp16,17. Brunskill, 1985 p184), but one suspects that suitable cut-stone was not available, and hence pads were judged an acceptable expedient solution to get construction underway.

It was not unusual to build the masonry sill under the frame bottom plate after the building was erected, removing the pads as the masonry was laid, a preference for an impervious natural stone was usual and the contemporary buildings at Muntham Station near Casterton use Coffee Rock (Indurated Sandstone) for the plinthwork. A survey of pre 1890 pioneer buildings in the Western District showed that nearly all were built with stone plinths and sleeper walls, and the exceptions were those on squared masonry pads or onto basalt padstones. If a masonry plinth had been inserted, then the condition of the Inn today would be remarkably better. There was probably no time to finish the building properly, and with new settlers arriving on nearly every boat, the rooms were in urgent demand.

The Time Challenge

From the date of sale of the land to the first mention of a functioning hotel, is only 21 months, which is not an excessive time even today. By 1841 the population of Portland Bay District was 1261. This is larger than Geelong, Victoria's second city, which was 453 persons. (Bonwick, 1857). Considering that in 1836, there was only the Henty establishment, with William Dutton, his Cornish whalers, and a few would-be settlers, then it can be seen that a minor population explosion, and much activity, had taken place all around the Inn at the time.

BALLOON FRAMES AND MYTHOLOGY

The Myths

Three separate myths have been attached to the Inn, they have been so frequently quoted in script as to achieved Holy Writ status. These are;

- The Inn was prefabricated in Tasmania. (Van Diemen's Land).
- Joshua Black was the builder of the Inn.
- The Inn is an early example of the American balloon frame.

Of these, the prefabrication issue is still a possibility, even though a careful check revealed no numbering system on the timbers. That Joshua Black was involved in the construction in some way is possible, but since he was a stonemason and not a carpenter, his work may have been limited to the chimney construction. The other fine bluestone buildings in Portland, which he built, have altogether heavier roof framing than the Inn. His being a Scot, this distinctive style fits with a northern carpentry style, whereas the Inn framing is altogether lighter and distinctively of the southern English school.

Whose Influence?

There have been attempts to specifically link the Inn framing with American methods. This is because balloon-framing came into vogue in 1833, as a general description of the full height, light stud, industrial framed walls, and hence, inter-alia, an influence on Australian vernacular framing. (PHPC, 1975 p7). These attempts have acquired a mythology their own.

After many years of debate in Australia, Professor Lewis of Melbourne University, had this to say on the issue:

> The balloon frame, --- made its tentative appearance in the United States in 1833, and many have surmised that that the Australian stud frame developed from this source, and particularly as a result of American migration to Australia during the gold rushes. There is, however, no evidence to support this, and in fact such evidence as there is tends to support the existence of stud framing before the gold rushes, and possibly before 1833.
>
> (Lewis, 1976 p161)

This assertion is clarified by the American balloon frame expert, Dr Paul Sprague, Emeritus Professor at the University of Wisconsin-Milwaukee, who shows that some essential features of English medieval framing were retained in the original Chicago Balloon frame. (Sprague, 1984).

The American Balloon Frame

Dr Sprague shows that in the autumn of 1832, the Civil Engineer and Architect, George Snow, designed a lightweight frame to overcome shortages of lumber in the larger sizes traditionally

associated with framed house construction.(Sprague,1981). These traditional buildings were referred to as 'Eastern Buildings', and used timbers up to 8 inches (200mm) square. They required skilled carpenters to cut and fit the joints, which depended on trenails to draw the frame tightly together. Dr Sprague points out that Snow did not abandon the use of heavy timbers entirely, as he retained 8 inch (200mm) square sills (bottom plates). He also used traditional mortice and tenon joints for tying the corners of the sills together, for securing the studs, and for joints to the sills. Dr Sprague comments:

Thus it was that when Snow conceived his new system of framing, he did not depart from the ancient system of framing wooden buildings that had existed in England since the Middle Ages and in the eastern United States from the time of the Pilgrims.

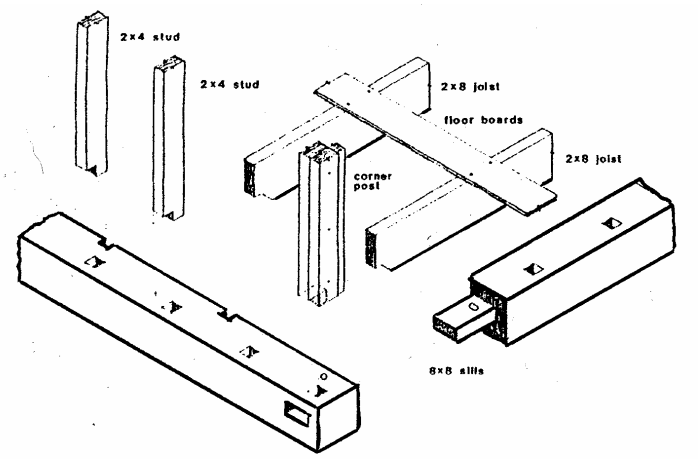

Fig. 7 Isometric drawing of the sills at the northeast corner of the two-story wing of the James C. Cowing House near Peotone, Illinois, built in 1855. *Allan Nelson, based on drawing by author*

Figure 11. Dr Sprague's drawing of the American balloon frame of 1855

In 1846 a further development of Snow's frame, was made by a Solon Robinson. His changes mainly concerned the extent of reliance on nails, although studs were still morticed into the sills, and the sills were also morticed and tenoned together. Robinson allowed a lighter sill (bottom plate), of 6 inches (150mm) width, and 8 inches (200mm) depth.

Later, by 1887, an all-nail form of balloon frame was developed, in which the studs and joists were skew nailed together, but still retained a 3 inch (75mm) by 12 inch (300mm) sill **(Fig. 3)**. It was not until 1910 that the American balloon frame adopted the nominal 4 inch by 6 inch sills, roughly equivalent to the bottom plates of the Steam Packet Inn, which were 120mm wide by 90mm deep.

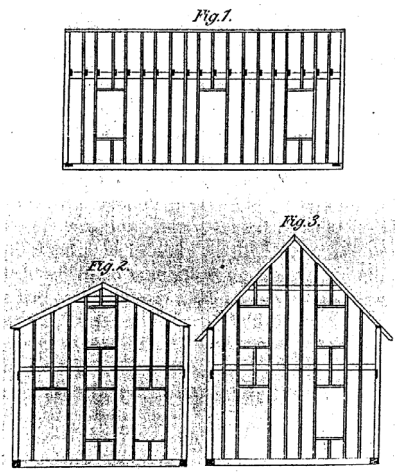

Fig. 10 These elevations of balloon frames are from William Bell, *Carpentry Made Easy* (1858). The original

Figure 12. American balloon frame of 1858

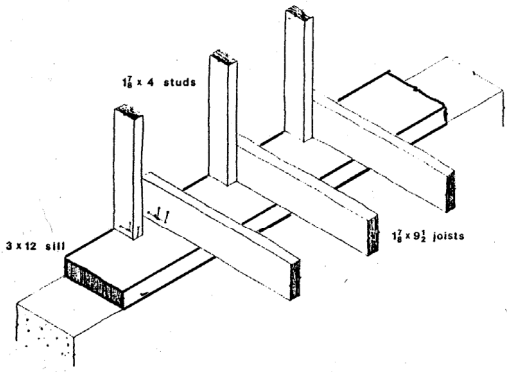

Fig. 15 Drawing showing sills of the Ella F. Beach House in the Beverly Hills neighborhood of Chicago, built in 1887. *Allan Nelson, based on drawing by author*

Figure 13. Nailed version of 1887

TRANSLATED TRADITION

Timing

The carpenter's trade is conservative, traditional, and slow to change, as can be seen in the development of tools up to the late 1900's. Roman tools found widely across Europe show that such tools as metal planes, claw hammers and pincers have remained almost unchanged in 2000 years. (Mercer, 1929).

The same conservatism is evident in timber framing which took centuries to change from palisades to principal posts, and then to studs, as the vertical supports.

The substance of the change is structural, and the word 'stud' curiously echoes the original meaning of the Anglo-Saxon *'stuthu',* for "column". It set the framework and basis for the future Australian stud frame, which is nicely put by Dr Lewis of Melbourne University, as; "a stud frame (by definition) is meaningful only when the studs themselves become part of the structure". (Lewis, 1990 p9).

It is pertinent to note that subtle changes had already taken place in England, but the developments which occurred afterwards in Australia, did so out of need and convenience. As Dr Lewis's comments; "There is no evidence that the Australian stud frame derived from America. It is, rather, a natural outgrowth of British practice." (Lewis, 1990).

The earlier translation of technique and craft to the New England colonies, created a tradition of heavier framing, (which we tend to associate with Tudor buildings), to take root in America. Thus the New England colonies and Canada were destined to use a less economical framing system to the Australian one, but eventually reached a similar point of development.

Fig 11 shows how far the Chicago balloon frame had reached by 1858, and one can identify the resistance to change away from the last vestiges of English Medieval thinking. Examination of this figure (from William Bell's "Carpentry Made Easy" of 1858), shows that a 200 by 200mm sill (bottom plate) was in use, with similar heavy timber corner posts, and horizontal tenons at the bottom plate corners. The ribbon plate is notched-in, unlike the ledger halving of the Inn.

By contrast the Inn follows a later stage of development which had occurred in England between 1750 and 1800. This was well after the firm establishment of the American colonies by 1650 or so. Thus it is that the tradition translated to Australia advanced in different ways to the American. Notably, the bottom plates had reduced dramatically, corner posts were formed from studs of the same size, and bracing eventually became tension brace strips let in to the external face of the wall studwork. Top and bottom plates were joined with simple lap joints, and the corner studs eventually became a triple stud nailed joint with blocking pieces.

It is against this far ranging background that the microcosm study of the Steam Packet Inn must be placed to give perspective. Few buildings have invited so much unwarranted controversy, and few have such an interesting story behind them. The Inn is important, and it helps to define both the Australian heritage and identity through a small collection of sticks of timber.

Evolution

The structural evidence speaks to us of a period of intense activity and change, of ingenuity and invention. We can sense through the fabric, the bustle of activity, and the urgency to establish a working base in the shortest possible time. With a little imagination, we can also sense the active mind-set of men working under pressure to arrive at a quicker framing method for the future. Little did they realise that in a few short years the district would have power-operated saw mills in some numbers. (Lewis 2001). Regular sized, light section studs, would then be cheaply produced using timber from the local Stringybark forest, also sawn battens for roofing and slender battens for bracing. In the following years, problems of warping of the studs and of bowing, would be resolved by the insertion of noggins, and eventually by trenching top and bottom plates to receive the end of the studs.

The move inland by the Henty family to establish three large stations in the Coleraine area, gave Portland access to the large resources of hard, durable red-gum timber (E.camaldulensis), an ideal material for stumps and sole-plates, which would follow. The new lighter elements could be used to

build a level platform for the ground floor, and off this lighter wall frames could be assembled by a relatively small team of two or three men.

CONCLUSION

The Inn tells of a time when shortages of materials and scarcity of components forced the early settlers to compromise and develop alternatives to an otherwise completely traditional system. This system clearly reflects the particular tradition of East Anglia in the 18th century. It also represents a transition phase from hand converted, imported timber to the industrial production of steam powered lumber mills and a change to standardised output. The Inn framing also demonstrates that lightweight two storey framing in Australia by 1840 had already reached a stage of development, which the American balloon frame would not reach till between 1880 and 1910.

It would be a tragedy if this unique and interesting building were to be lost to the Australian nation. Readers may find it of some comfort to know that the former Steam Packet Inn recently passed back into private ownership, having been sold to a local builder with an interest in historic buildings. Repairs are currently underway with a view to making it a boarding house. After some thirty years of under-funded and under-resourced struggle by a small group of enthusiasts, this current outcome offers perhaps the best conservation prospect for the future.

ACKNOWLEDGEMENTS

Fig.6 is printed with kind permission of Richard Harris and his publishers Shire Publications. Figs.11, 12, and 13 are taken from the two sources quoted for Dr. Paul E. Sprague and attempts to contact him were unsuccessful.

The generous assistance provided by Damien Cash, Brendan Jarrett, and Dr Timmothy Hubbard is hereby acknowledged.

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