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HOUSES AND MINING SETTLEMENT IN NORTH QUEENSLAND 1861 - 1920

Peter Bell

Volume Two

CHAPTER FIVE

Materials and Techniques

"For sale. A Comfortably-
Furnished Bark Humpy, in a
delightfully cool situation,
and close to water."

The methods of constructing dwellings in North Queensland mining areas varied considerably with time, prosperity, ease of access and the degree of confidence in the community. In general, habitation naturally tended to become more substantial with increasing age of the settlement, but there were cases where the reverse occurred. Nor was the level of prosperity and confidence evenly distributed across a community at any one time, and there could be a great diversity of techniques in use in a single town simultaneously. In general however, the majority of new habitations in mining towns were fairly uniformly constructed of sawn timber and iron, and it is in most cases the buildings of this phase which survive today.

The initial influx of population to alluvial mining areas was invariably housed in tents. This is well illustrated in the Palmer rush, where in 1876 fully 2,784 of the 3,023 habitations on the field – 92% – were tents.[1] As Bowly described the Palmer settlements only days before the census: "The houses in these outside places are merely calico stretched over a slight framework of wood and tarpaulins thrown over [as] a roof."[2] Descriptions of the coastal towns in their establishment phase demonstrate the same tendency: "Cooktown at this time (towards the end of 1873), was composed wholly of tents."[3] A panoramic photograph of Cooktown, taken within weeks of its establishment in October 1873, shows an encampment of 81 tents, about eight timber buildings and several others of indeterminate construction.[4] Rachel Henning, describing Bowen in the wet season of 1864, commented ironically: "A great part of the population there dwelt in tents; and very desirable abodes they must have been in that wind and rain."[5] Some caution is necessary in the interpretation of

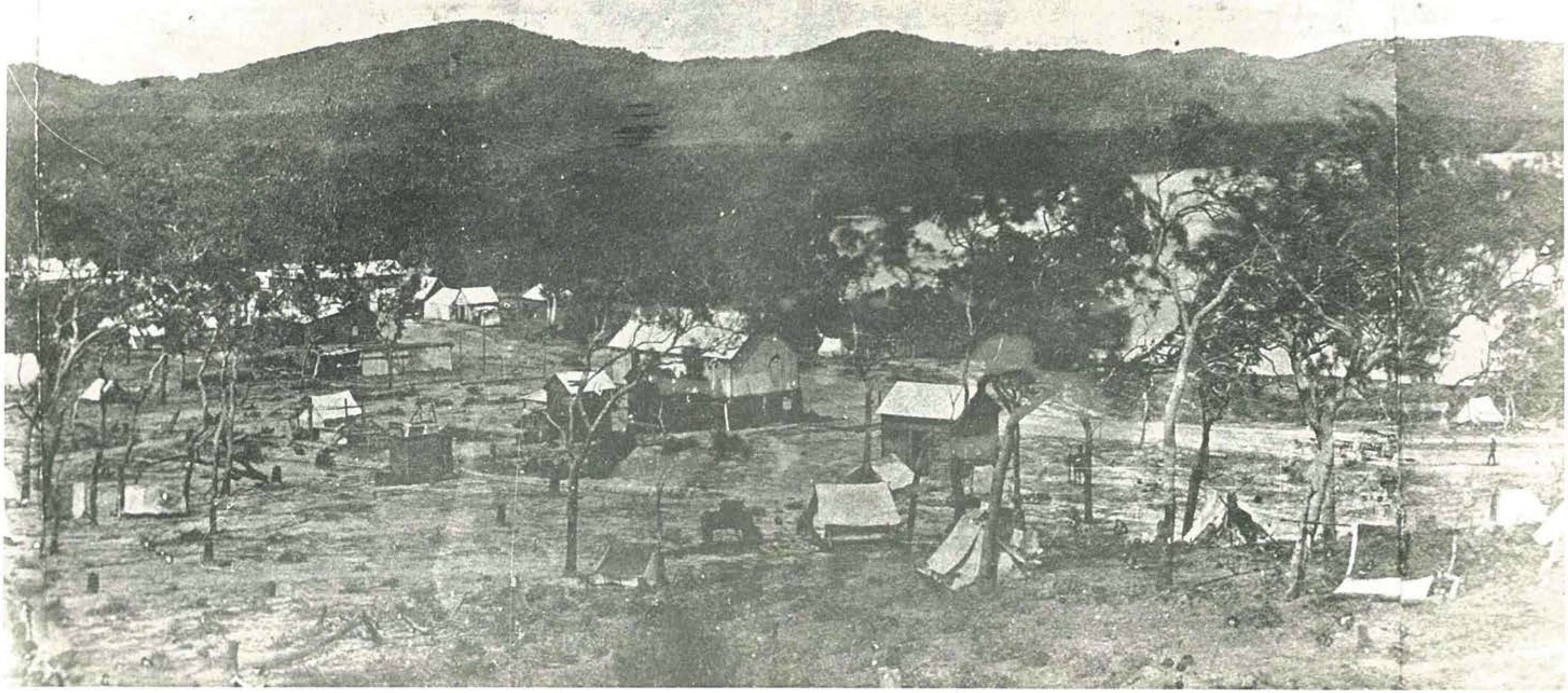
[1] *Fifth Census of Queensland*, p. 14. This compares with 5,101 tents among 36,552 habitations in the colony as a whole, or 14%.

[2] Bowly letters 30 April 1876, p. 129.

[3] Corfield, *Reminiscences*, p. 52, and see Weitemeyer, *Missing Friends*, p. 219; A.C. Grant, Early Station Life in Queensland, n.d., p. 126, both also describing early Cooktown.

[4] Marten album, Mackay City library.

[5] Henning, *Letters*, p. 158.



Tent encampment and framed buildings, Cooktown, late 1873 - early 1874. (Mackay City Library) purely documentary evidence, however, for the word "tent" was at times used loosely to describe any small informal structure. A description of Cardwell in 1864 mentions a "temporary tent of saplings and iron".[6]

Recourse to tents was not confined to initial settlement of a district; any new influx of settlers was frequently housed in this way. As Charters Towers entered its period of prosperity, new arrivals lived in tents on the outskirts of town,[7] photographs of Cairns in the early twentieth century show tents in built-up suburban streets,[8] and transient miners carried them to established towns in the 1920's.[9] "Portable tent buildings" were not an unusual form of government school until the first world war,[10] and as late as 1932 the Under-secretary for Mines still regarded a cluster of tents as "A Typical Queensland Gold Mining Camp".[11]

The tents in use on the mining fields were normally a simple ridged form with end flaps, exhibiting no particular regional characteristic. Probably very few were locally made: as it was necessary to import the fabric in any case, overseas and southern tent-makers were able to supply North Queensland demand competitively, leaving little incentive for a local tent-making industry in the primitive and unstable conditions that accompanied maximum demand for tents. There is little indication of local tent-making in early directories or newspaper advertisements, but some evidence that the market was supplied from a distance.[12]

[6] A.J. Scott to Governor Bowen, 8 February 1864, Bowen documents p.4.

[7] *Northern Miner* 30 July 1886.

[8] Panoramic photographs of Cairns from harbour beacon, c. 1905, held by Cairns Historical Society.

[9] Bell, *Mount Mulligan*, p. 57.

[10] Annotation on District Inspector of Schools to Undersecretary for Public Instruction 29 March 1914, 14/10555, EDU Z 522 Q.S.A. refers to removal of a 24' x 16' portable tent building from Zillmanton to Cardross.

[11] *A.R.* 1932, photograph facing p. 8.

[12] Kennedy, *Four Years*, p. 209, refers to tents on the Gympie goldfield bearing New Zealand brandnames; J. Owens of Rockhampton was the only tent maker advertising locally in the early months of the Palmer rush: see *Cooktown Herald* 25 March 1874.

Where the duration of the occupant's stay justified it, tents were converted to more stable and comfortable dwellings by the construction of a frame of saplings or sawn timber: photographs show this development in Croydon and Townsville,[13] and there is reference in a police report from Byerstown to "assisting the Carpenter in erecting a frame for a Tent".[14] According to an 1887 immigrants' handbook:

> A tent badly pitched - that is, in the usual manner, according to the maker's idea, with pegs and stakes - is a great discomfort.... but a tent erected on a light frame of either round saplings or sawn battens is always strong and taut, and with a fly over is very comfortable. If you cannot get light sawn battens - 2in. by 2in. or 3in. by 2in. or 3in. by 1in. - then light rough saplings will do. 15

The technique was widely used on southern goldfields.[16] In North Queensland, probably the best known examples are the Mount Isa tent houses, two of which still survive.[17] These progressed a step beyond the framed tent by adding timber and iron cladding to the frame when the original canvas began to deteriorate; and while they date from well after the period under study here, they provide a well-documented example of the process whereby temporary accommodation was minimally upgraded when a longer service life was called for.

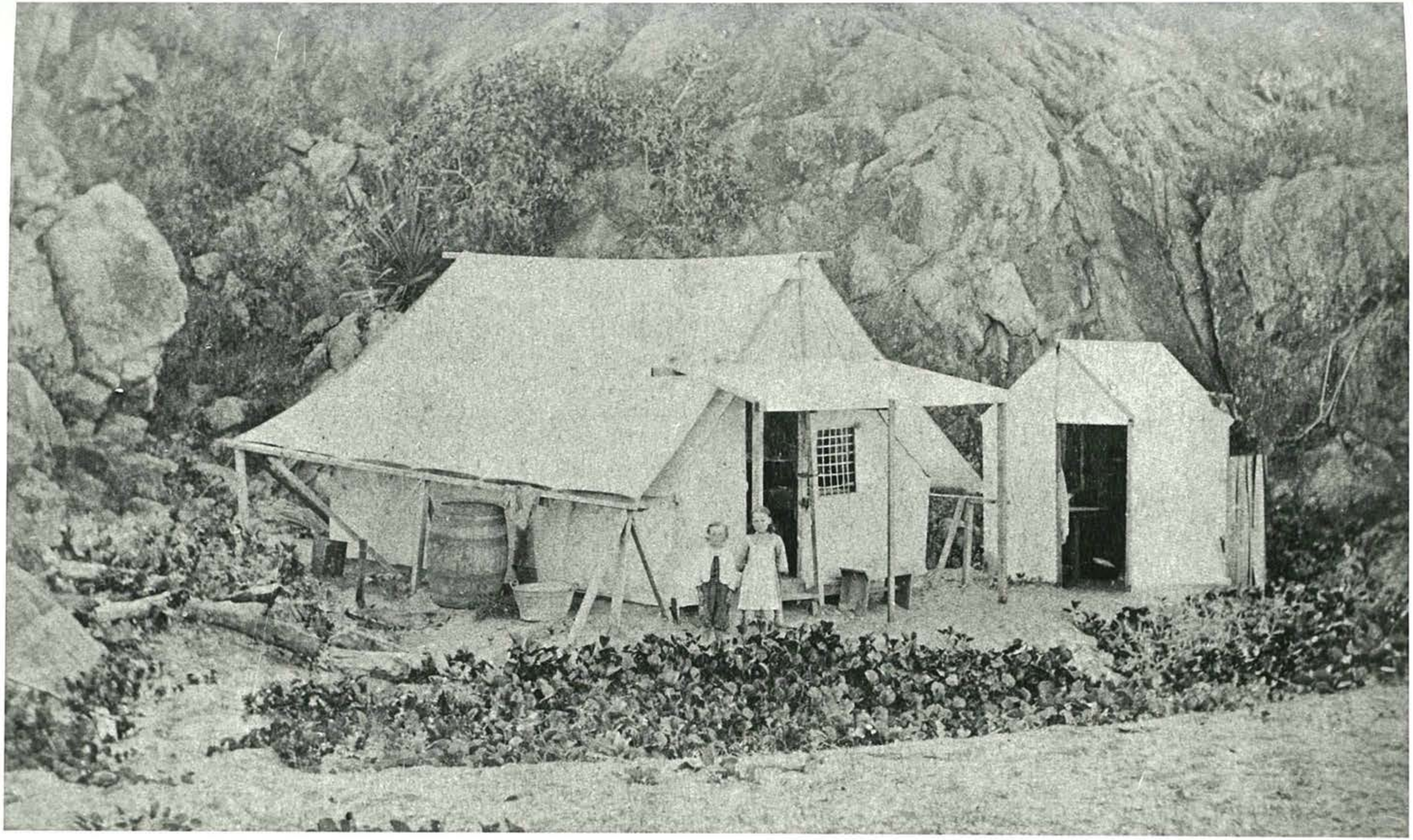
[13] See "The First Newspaper Office in Croydon", *North Queensland Herald* 8 February 1899; "One of the First Habitations 1869", held by Townsville City library. Very similar structures were encountered until recently in railway camps.

[14] S. Sgt. Devine to Inspector of Police, Cooktown, 9 February 1876, 76/561, COL A219 Q.S.A.

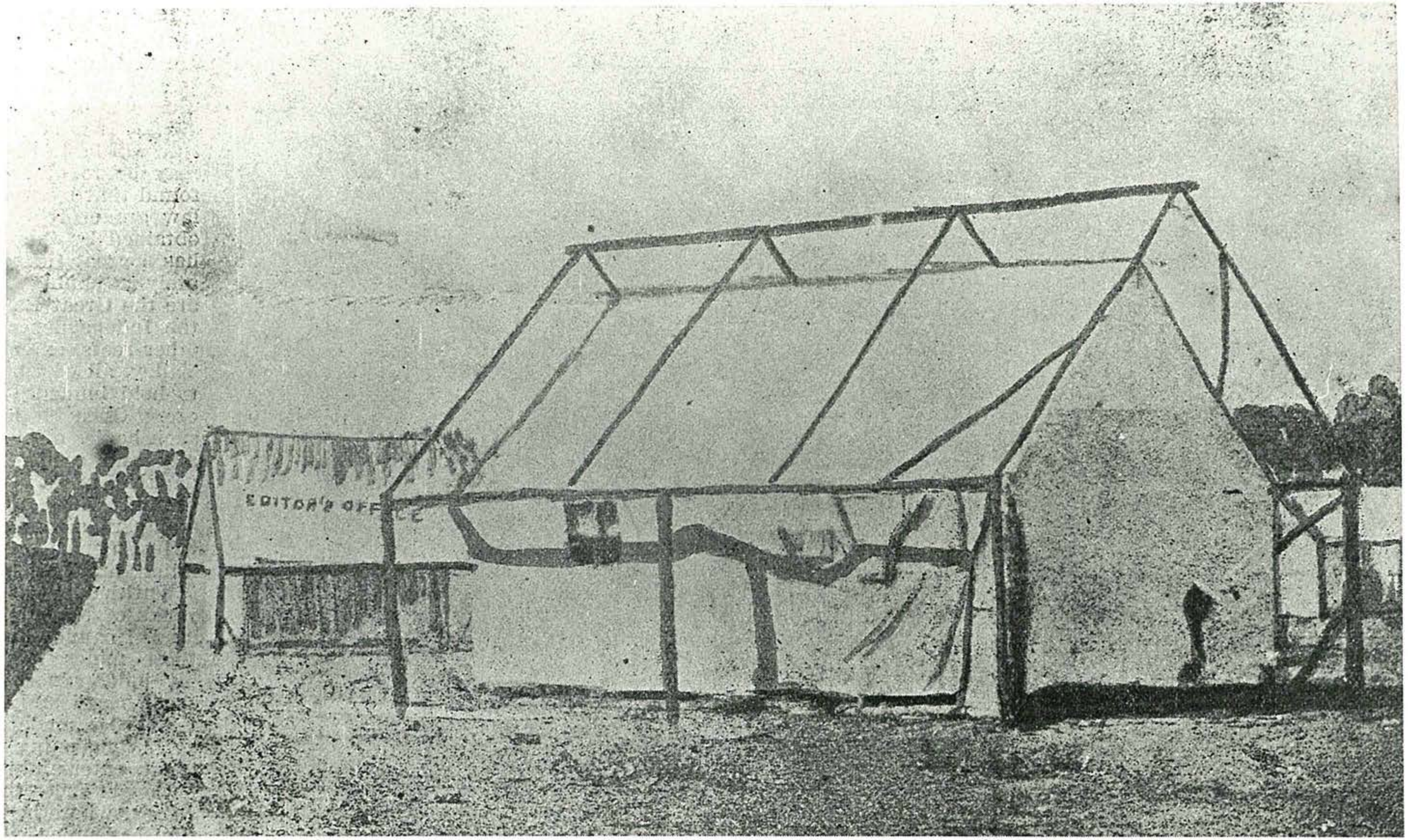
[15] Fletcher, *Hints to Immigrants*, p. 13.

[16] Sherer, *Goldfinder*, p. 260.

[17] J. Hogan, *Building Queensland's Heritage*, Richmond 1978, p. 119.



Framed tent, Townsville, 1860's. (Townsville City Library)



Framed tent, Croydon, 1880's - retouched. (*N.Q.H.* 8 February 1899)

Contrary to most published accounts, the Mount Isa tent houses do not exemplify the early primitive state of housing in the settlement. From the outset of large scale mine development, the company had earlier gone to some expense to provide substantial accommodation for employees in the form of timber cottages and dormitories.[18] However, when adversity fell on the lead industry in 1930, the company cut costs by accommodating new workmen in tents. By 1933 these were in poor condition, and with little financial improvement in sight, the occupants were provided with cladding materials to upgrade them:

> A portion of the community consists of 60 tents erected in 1930. These were in a bad state of repair, and after representations by the employees in this section, the Company agreed to furnish the material for converting these temporary dwellings into tent-houses. The employees, co-operating among themselves, furnished the labour. [19]

A stay of more than a few days permitted settlers to adopt local materials for the construction of shelters, but substantial primitive structures were not common on the mining fields, partly because the climate permitted disregard for shelter during much of the year, and partly through the alluvial miners' reluctance to invest labour in any property which was not portable. Chapman's diary is notable for its complete indifference to habitation. His accounts establish that he owned a tent, but his one reference in four years to construction of a dwelling is, "Getting a few sheets of bark for fire place".[20] If shelter could be found without need for construction, it was utilised. At Ravenswood in 1903, six miners

[18] See *Q.G.M.J.* August 1929, p. 332; September 1929, pp. 374-75; May 1930, pp. 191-192.

[19] Mount Isa Mines Ltd., Directors' Annual Report 1934, p. 8. The tent houses are thus a reversion to less substantial construction, post-dating more sophisticated housing.

[20] Chapman diary 25 April 1897.

slept for a month in "a huge iron cylinder, a discarded remnant of a treatment plant".[21] As a result there evolved shelters which took a multitude of forms, incorporating local natural materials and introduced components, and whose principal function was simply to provide shade and protection from rain. Weitemeyer described a house near Townsville in the early 1870's:

> It was very small, the walls were built of saplings, the roof was covered with bark, tin and all sorts of odd materials. The door was made of a sapling frame with bagging stretched across it. 22

And this diversity of materials extended to whole settlements:

> The "humpies", for houses they cannot be called, are of all shapes of architecture, and are formed of the materials which come readiest to hand. The great object seems to be the securing of a dry roof overhead. Most of them have their walls formed of saplings, and are covered in with bark. Many there are, however, roofed with calico. Some, indeed, are composed of calico altogether, and one or two of the more pretentious are protected overhead with sheets of zinc, which has done duty on half the goldfields in the colony. 23

A correspondent visiting Charters Towers in 1878 lamented the working miners' disregard for substantial housing, and described typical cottages as "battered wrecks of places, built of bark and old

[21]*Queenslander* 5 September 1903.

[22]Weitemeyer, *Missing Friends*, pp. 109-110.

[23]A.C. Grant, *Bush Life in Queensland or: John West's colonial experiences*, Edinburgh 1882, pp. 370-71. Although Grant here writes in semi-fictional style, a comparison with his Early Station Life, p. 124, makes it clear that the town described is Palmerville, built of "bark, old iron, shingles, boxes and torn canvas." See Carrington, *Colonial Adventures*, p. 177 for a similar description of the Crocodile Creek diggings.

kerosine tins".[24] There is considerable pictorial evidence of such makeshift accommodation on almost every mining field in later years; the partial revival of mining in the 1930's led to a variety of flimsy huts that conform closely to the written descriptions from earlier decades.[25] Such shelters of course fall rapidly into complete decay when abandoned, and the only examples surviving are of very recent construction.

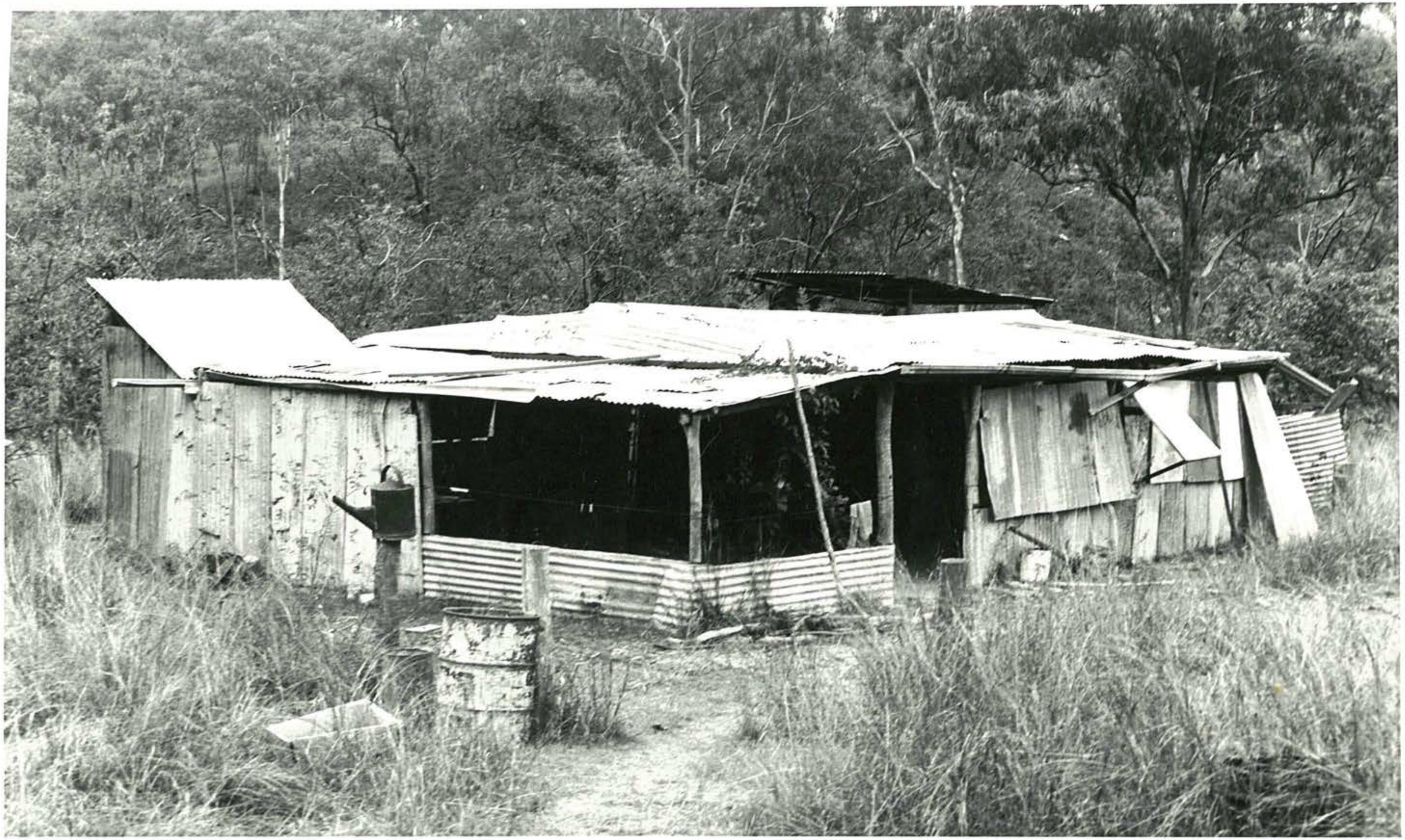
The transition to more permanent structure usually occurred only after relatively long-term underground mining seemed assured; and the nature of the materials adopted depended largely on means of access to industrial sources of supply. When sawn timber, sheet iron and brick were cheaply available in ports and railway towns, they were adopted immediately. But inland towns frequently experienced long delays in railway and road construction, and the cost of overland transport prohibited the use of imported building components. Thus the alternative of local primitive materials came into use when two conditions were met: confidence in long-term operation, and high transport cost.

While it is convenient to group bark and slab construction together as primitive techniques, because both involve utilization of local timber with hand tools; they are really quite different in their costs and their implications for settlement. Where suitable forest is available, the labour involved in building a bark shelter is not great: probably no more than one or two working days for two men. Slab construction, however, requires far greater labour and considerable skill. Felling, splitting and transporting timber for even a small cottage would require many working days; the greater weight of the structure necessitates a robust foundation, and the whole needs to be assembled with great care if the slabs are to align accurately with the posts to form a stable building. Slab buildings also demand a greater

[24] *Queenslander* 8 November 1878.

[25] An excellent source of such evidence is L.C. Ball's photographs of the Cloncurry and Cape York mining fields 1935-40, held by John Oxley library.

Miners' camp near Cloncurry, 1935. (John Oxley Library)



House near the Louisa mine, Palmer goldfield, of recent construction but utilising old materials.

range of tools: a crosscut saw, maul and wedges, broadaxe or adze, trimming saw and usually a hammer and nails; all in addition to the simple felling axe and wire which would suffice for a building of saplings and bark.

Thus slab construction demanded a far greater commitment of energy, capital and skill than bark, and was unlikely to be attractive to miners on an alluvial field, where the time spent in one locality rarely justified such a commitment. Undergound miners might more probably be prepared to invest the necessary labour in expectation of a longer stay, but the commencement of reef mining on any scale was usually promptly attended by transport facilities and a commercial infrastructure necessary to the operation of mines, which were also capable of supplying industrialised building materials; so that construction in slab was always unusual on mining fields, and when it occurred was normally confined to the initial period of underground working.

The local authority valuation registers at Ravenswood and the Palmer in the early 1880's give useful information on the material of dwellings in the settlements in that very period while cautious underground mining was in train, but transport facilities were as yet inadequate. Unfortunately some anomalies in describing materials make this data less than clear: its full interpretation is presented as an appendix to this chapter. But the incidence of bark and slab constituting at least part of a building's fabric can be determined. In Ravenswood in 1882, of 429 buildings valued, 206 were at least partly of bark, and 15 of slab. On the Palmer in 1880 of 368 buildings, bark is mentioned for 120 and slab for 65. By 1884 the Palmer figures had altered dramatically: there were 248 buildings valued, of which 138 were partly of bark, and only 3 of slab.[26]

[26] Hann Divisional Board Valuation Registers 1883-1887, A/23413; Rate Books 1880-1884, A/23412; Ravenswood Valuation Registers 1882-1883 in COL 063; Q.S.A. These figures demonstrate one of the many interpretative problems in the registers: why had 95% of the slab buildings on the Palmer vanished or became unoccupied in 4 years?

Slab and bark techniques in North Queensland seem to resemble very closely those reported elsewhere in Australia; not surprisingly, as careful descriptions of construction methods were regularly appearing in printed form by the 1870's, quite apart from oral methods of transmission.[27] No bark structures from the period survive, but there is photographic evidence of their prevalence in Ravenswood, Gilberton and Charters Towers in the 1870's.[28] Bark seems to have been used more commonly for roofing than as a wall material, and some photographs show bark roofs in conjunction with slab or sapling walls. Sheets of bark thus played precisely the role of galvanised iron, which replaced them in most areas within a few years.[29]

A prominent feature of bark roofs was their external framing. The bark sheets were not normally nailed to the underlying structure; simply tied with wire or hide strips, but to prevent the bark's tendency to revert to its original curved form it was weighted by a frame of logs suspended from the ridge. Lewis has pointed out that this device resembles forms of framing used to weight thatched roofs in many parts of Europe.[30] Curiously, external weighting is not mentioned in early written descriptions of bark construction, although it appears almost universally in contemporary photographs of bark roofs.[31] By 1887,

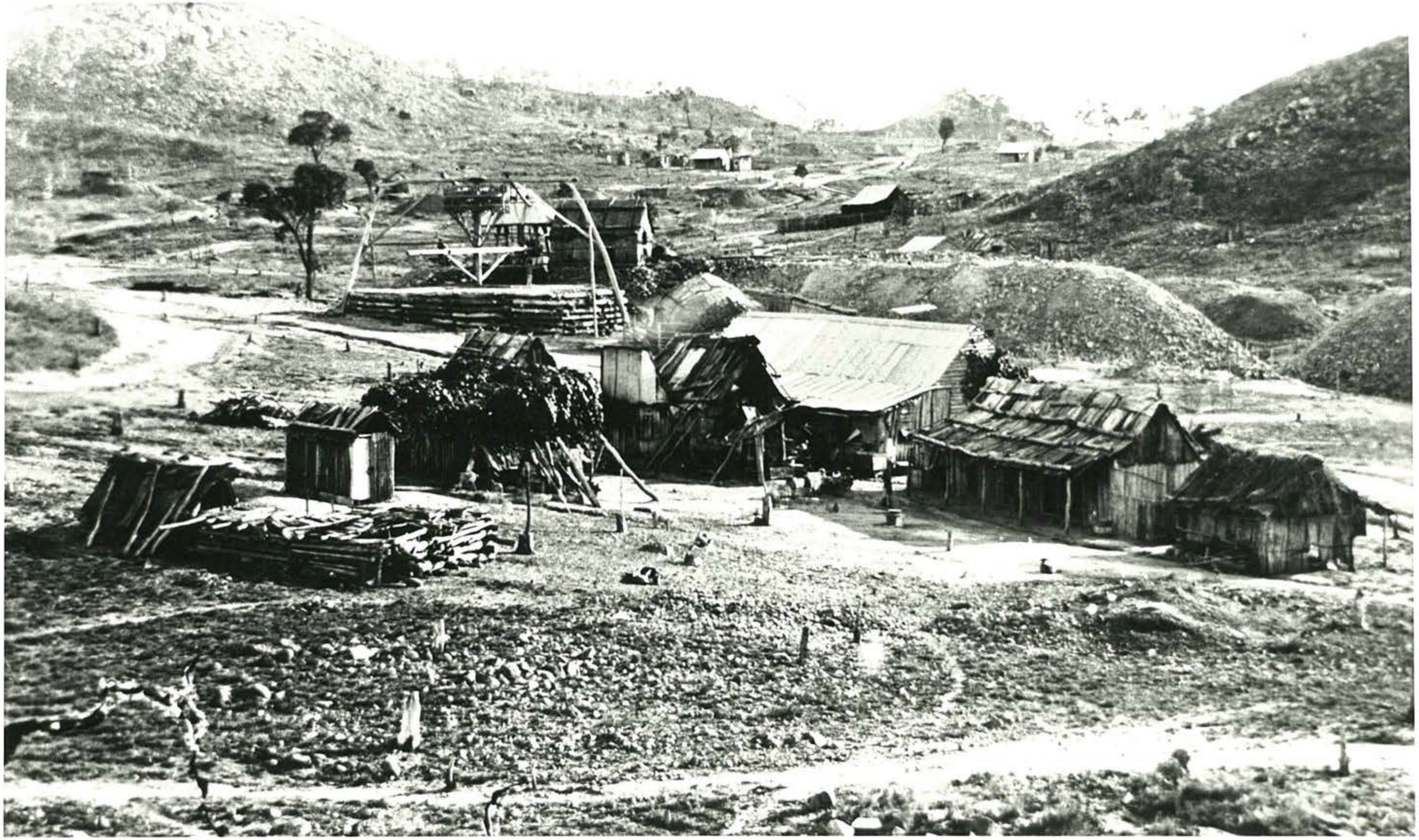
[27] See for example descriptions of bark construction techniques in Carrington, *Colonial Adventures*, pp. 216-219; Eden, *My Wife and I*, pp. 63-64; Neame diary, p. 14.

[28] Notably in Daintree's photographs, the most accessible collection of which is in I.G. Sanker, *Queensland in the 1860's: the photography of Richard Daintree*, Brisbane 1977.

[29] The use of bark is poorly documented, as it was almost never approved as a material for government buldings, which are the most reliable source of documentary evidence on North Queensland construction techniques. The transition from bark to iron is shown in a scattered collection of photographs of Charters Towers about 1874, probably by Mathewson, many of which are in an album held by the North Queensland Newspaper Company.

[30] Lewis, *Victorian Primitive*, p. 16; and see D. & L. Langsner, *Handmade: vanishing cultures of Europe and the Near East*, New York 1974, p. 98.

[31] cf. footnotes 27 & 28; and see contemporaneous photographs of New South Wales mining settlements in K. Bourke, *Gold and Silver: photographs of Australian goldfields from the Holtermann collection*, Harmondsworth 1973.



Slab, bark and iron buildings, Charters Towers c. 1875. (North Queensland Newspaper Coy) however, bark builders were advised to:

> ...get a spar the length of the house and about 6 inches through, lay it upon the bark about 3 feet from the top, lay a similar spar on the opposite side of the ridge, and tie these two together, every 6 feet or so, by strands of wire; the wire being pliable will bend over the ridge, and so keep the sheet of bark that does duty for a ridge-cap always nicely curved. Now place another pair of similar spars about 1 foot from the eaves and suspend from the ones above, and your roof is fixed and firm; it will keep out wind and rain, heat and cold...;

and the writer mentioned in passing that "the old plan used to be by hanging spars pegged to the horizontal ones,[32] suggesting that the practice was still in evolution during the 1870's and 80's in Queensland. In some places the external roof frame persisted after the adoption of iron roofing: Ravenswood still has four iron-roofed cottages with some form of wooden or steel pipe weighting device on their roofs. In one case this is a fully-developed wired frame of round timber suspended from the ridge, on an otherwise conventional two-roomed cottage of sawn timber and iron.

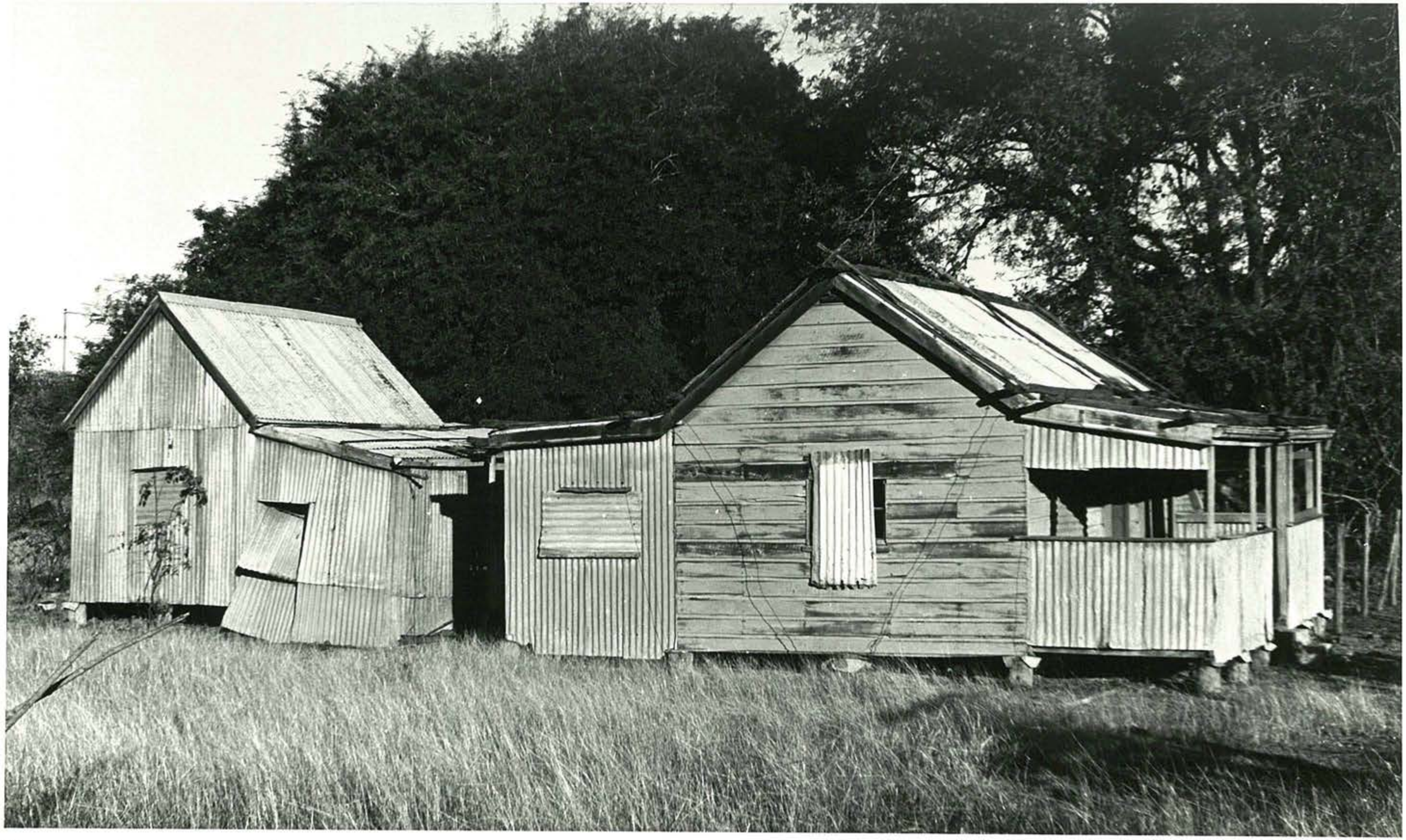
Relatively few slab structures exist in North Queensland today, and only one is known within a town.[33] Sumner described one slab building at Wambiana near Charters Towers,[34] and other examples exist on pastoral properties, most of them unrecorded. The former *Bowen River* Hotel, originally built as a pastoral homestead, has been surveyed by the National Trust of Queensland.[35] As Sumner points out, there is no way

[32]Fletcher, *Hints to Immigrants*, p. 19.

[33]An out-building in Petford, in poor condition in 1978.

[34]Sumner, *Settlers & Habitat*, p. 35.

[35]See National Trust of Queensland *Journal*, (Annual Report Issue) 1977, pp. 36-40; C. Lloyd, *The National Estate: Australia's Heritage*, Stanmore 1977, pp. 230-231; Hogan, *Building Queensland's Heritage*, pp. 120-121.



Two-roomed cottage with external roof frame, Ravenswood.

of calculating the number of slab buildings in North Queensland between 1864 and 1911 because the census tables combined all timber habitations, whether split or sawn, into the single category "wood".[36] The same descriptive term appears in the Palmer valuation registers somewhat mystifyingly, for both "weatherboard" and "slab" are given as separate categories. However, in urban areas documentary and photographic evidence suggests that slab construction was never very common, and it is unlikely that any significant numbers of slab buildings were erected in mining settlements after the early 1880's.

The few slab buildings extant in North Queensland present little evidence of the evolution of local building techniques, but seem to reproduce methods familiar in the south.[37] There is however, some evidence of evolution in technique throughout the continent toward more "carpenterly" methods, with greater dependence on sawn timber components, framing techniques and nails. If this is presumed to have been a steady chronological process, the North Queensland slab structures probably represent a fairly late stage of development in the transition from an entirely primitive use of local materials to a degree of dependence on imported technology.

No example of horizontal slab construction involving grooved posts exists in this region, and there is no evidence that the technique was ever adopted. Instead, wall posts about 100mm square had light battens, usually of sawn timber, nailed to them to form a channel to receive the shaped slab ends. The slabs were rectangular panels of uniform length split from a log, with ends dressed to fit the vertical channel. The finishing of these slabs varied greatly. Some were left extremely rough on both faces and edges, but more commonly an attempt was made to trim the split face with an adze or broadaxe; and the horizontal edges of slabs usually met very closely, the most likely means of trimming being to run an old saw between each adjacent pair of

[36] Sumner, *Settlers & Habitat,* p. 10.

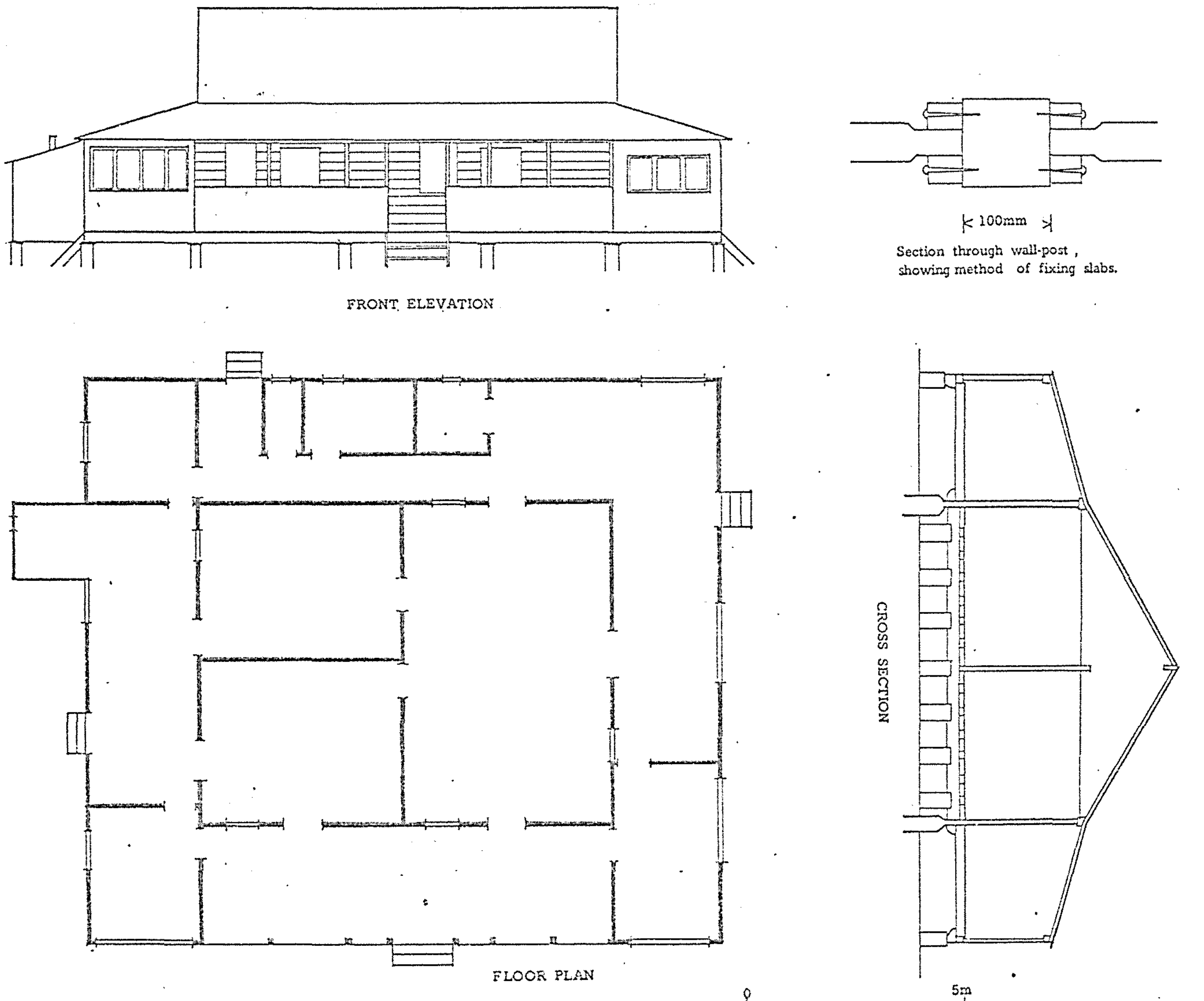
[37] See Cox & Freeland, *Rude Timber Buildings,* pp. 21-22; Lewis, *Victorian Primitive,* pp. 23-32.

slabs to remove irregularities after they were in position. If the block from which the slabs were split was sawn from the round, the slab edges would naturally be flush as they fell from the wedges, without further trimming.

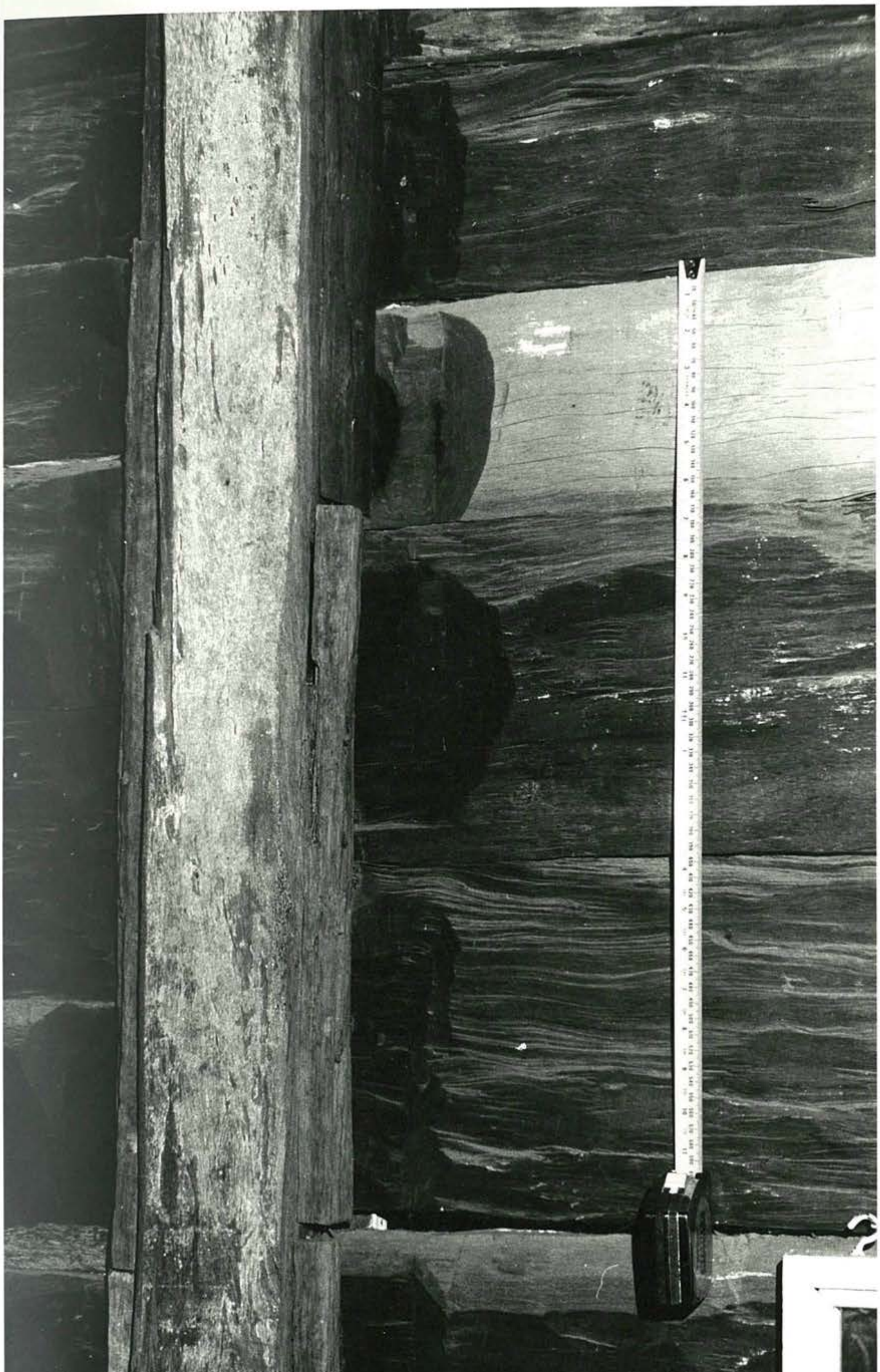
The quality of finish can vary within one building. At the *Eureka* hotel west of Townsville some slabs have been painstakingly trimmed to a nearly flat surface, while in other parts of the building they have been left completely rough as they came from the wedge; with the ends formed by two rudimentary axe blows in a manner resembling railway sleeper trimming. In buildings with any degree of social standing, such walls were never meant to be seen. Scraps of calico and fragments of beaded cover strips nailed to the *Eureka* hotel's wall posts show that the rougher wall sections were originally lined.

A practice sometimes adopted was to form foundation stump and wall post from a single length of timber, typically 30cm in diameter, set in the ground and shouldered down to 100mm square below floor level to serve as a post. The shoulder seems not to have been used to support the floor; the bearers normally being supported by shorter independent stumps, while the stumps lengthened into wall posts carry only the roof load. This practice contributes to the stability of the structure, as the fixed wall posts serve to prevent racking, which would otherwise be a serious problem in buildings of loosely fitted components with no bracing and relatively few fastening devices. This probably accounts for the rarity of vertical slab buildings: several collapsed or collapsing examples demonstrate their instability.

It is likely that many early vertical slab buildings were without floors or foundations, and simply had their slab ends based in the earth. The slabs would thus be vulnerable to soil movement, fungal rot and termite attack, and the building's life would be short. Both the extant vertical slab buildings surveyed had their walls seated on substantial part-round timber bearers, in one case raised on stumps; a measure which would contribute greatly to the buildings' stability, and probably accounts for their survival. If this variation in foundation technique - between wall posts or slabs sunk into the ground, and



FORMER *EUREKA HOTEL* AT THORNTON GAP



Detail of slab construction, *Eureka* hotel near Townsville (1865).

Foundations of *Eureka* hotel, near Townsville (1865).

separate stumps supporting a horizontal member functioning as both bearer and wallplate - occurs more widely throughout Australia, it may reflect regional origins in the British Isles. Smith reported that whereas wallposts of framed buildings in most areas were sunk into the ground, the practice in the southeast of England was to base the posts on a continuous sill.[38]

One vertical slab building in good condition until recent years was protected by internal wall bracing. Leopold Stamp's house at Murray Upper was of vertical slabs with two diagonals nailed inside its front and rear walls. The house was elevated on stumps and sufficiently stable to survive removal to another site. Other details of the house - sills, plates, window and door frames - have, like the braces, been handcut from local wood, in a manner suggesting a builder experienced in carpentry and adapting its techniques to primitive circumstances. The technology employed is clearly descended from, not ancestral to, formal carpentry.

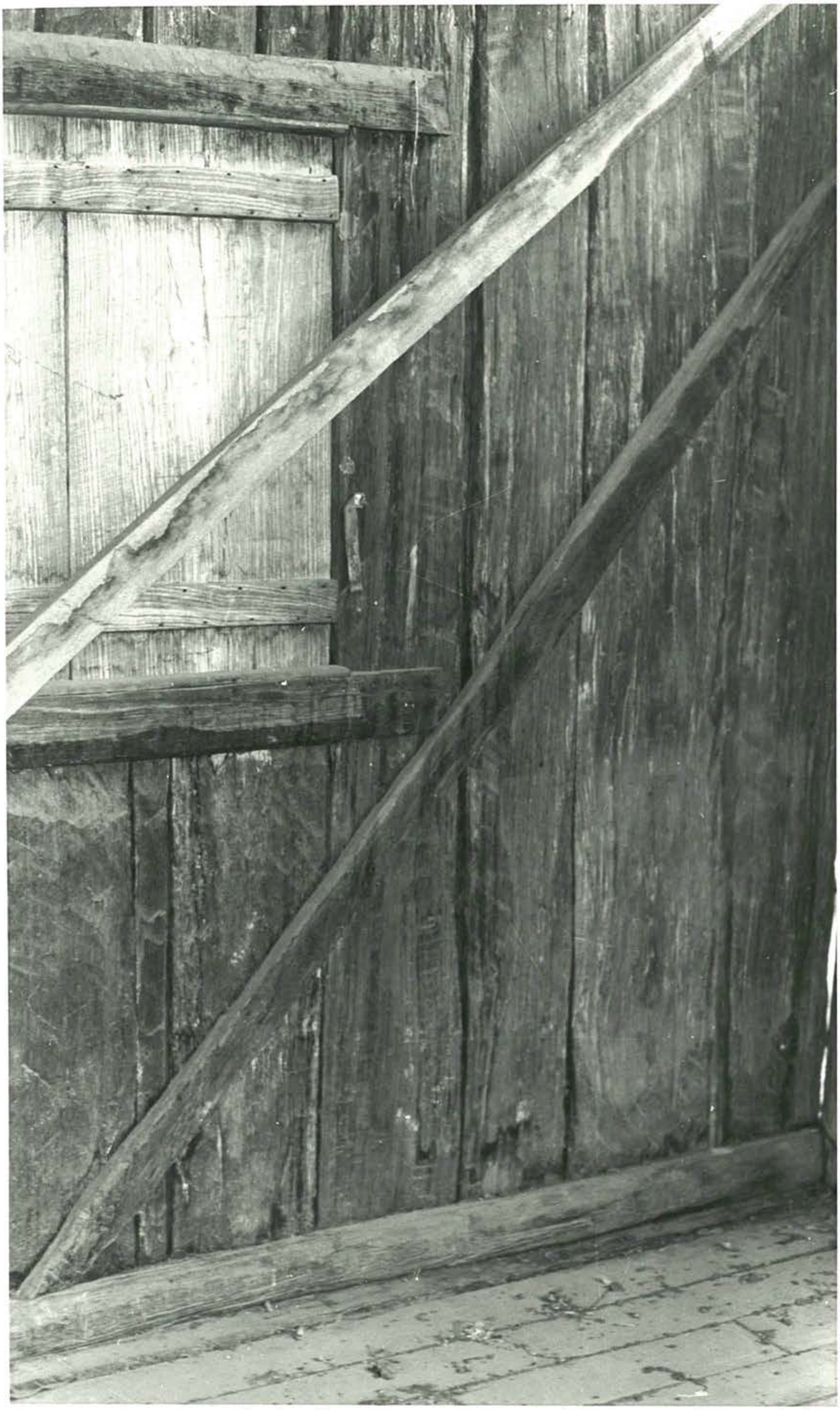
The normal dependence of the primitive building on some degree of carpentry method militates against any suggestion of the evolution of a local vernacular. Manuals on slab construction were available for new settlers, derived from earlier experience in the south, and offering essentially the same advice over decades.[39] In practice, of course, slab construction was somewhat more demanding of effort and skill than these cheerful guides suggested:

> According to the formula neatly printed in official journals, the building of a slab hut is absurdly easy - quite a pastime for the settler eager to get a roof of bark or thatch over his head. The frame, of course, goes up

[38] Smith, "Timber-framed building", p. 153.

[39] Price, *Hints to Immigrants*, pp. 29-38; A.J. Boyd, "Bush Work", *Queensland Agricutural Journal 4*, 1899, pp. 20-26, 108-112, 180-184, 341-342; and "Hints to New Settlers", *ibid.*, 1913-14 *XXX*, pp. 11-16, 75-81, 152-154, 216-219, 279-281, *XXXI*, pp. 76-77, *I* (New series) pp. 371-373

Blechynden, Murray Upper.   (On temporary foundations after removal)



Diagonal bracing, *Blechynden*, Murray Upper. (The upper diagonal is a temporary brace)

> without assistance, and then the principal item is the slabs for the walls. When you have fallen your tree and sawn off a block of the required length, you have only to split off the slab. Ah! but suppose the timber does not split freely, and your heavy maul does; and the wedges instead of entering have the habit of bouncing out as if they were fitted with internal springs; and your maul needs renewal several times, until you find that the timber prescribed is of no account for such tools; and at best your slabs run off to nothing at half length; and several trees have to be cut down before you get a single decent slab, and everybody is peevish with weariness and disappointment - then the rudest house in the bush will be a long time in the building. [40]

Many written accounts of construction in local materials mention the assistance of a tradesman. Gray in the 1860's had the core of a slab house built for him by a carpenter, and completed by another "well-known shearer and bush carpenter named Matthews".[41] Eden likewise had his house "built by a town carpenter with bush material", so that it "partook of the characteristics of both".[42] Neame also refers to employing a " ship's carpenter" at his Herbert River plantation.[43] These were probably men of the kind Kennedy described:

> Some men do well by going about the country and taking contracts for fencing, erecting stockyards, splitting slabs, putting up "humpies", digging wells & c., but these are men who have gained colonial experience. [44]

[40]E.J. Banfield, *The Confessions of a Beachcomber*, rev. edn. London 1980, pp. 7-8.

[41]Gray, *Reminiscences*, p. 108.

[42]Eden, *My Wife and I*, p. 65.

[43]Neame diary, p. 77.

[44]Kennedy, *Four Years*, p. 201. One notable contemporary writer, Weitemeyer, was himself a carpenter by trade.

The legend of the pioneer creating buildings with no tool but "a tomahawk thrust under the rider's belt"[45] cannot survive in the face of such accounts; or of such skilfully crafted buildings as the *Bowen River* and *Eureka* hotels, clearly the work of professional or at least semi-professional tradesmen working on the boundary between the carpentry and primitive traditions.[46]

The use of whole logs for walls seems unknown in the region: no examples are extant, and there is no documentary evidence of the technique. The scarcity of straight uniform timber in itself probably deterred the practice. However, a vertical screen of light saplings was occasionally used as a wall. The Bank of New South Wales built at Maytown in 1876 appears to have been such a building, presumably plastered with clay internally, or calico lined.[47] Both Grant and Weitemeyer mention sapling walls in the early 1870's, at Palmerville and Townsville respectively.[48]

A technique which may have been a carpentry adaption to primitive materials was used in a few cases: the use of thin slabs roughly lapped. A photograph of the hotel at Boar Pocket on the Cairns-Herberton road, probably built soon after 1880, shows the method most clearly.[49] Bryde described the construction of a house of round timber studs and "slabs weatherboard fashion".[50] (Bryde's house also had an iron roof and mill-sawn floorboards.) Bowley's 1874 reference to "rough hewn laps" at

[45]Newell, "Origins & Development", p. 8.

[46]The similarity between these buildings may not be coincidental. The *Bowen River* hotel was built in 1862 as a homestead for Philip Somer; the *Eureka* hotel in 1865 as a way station on the edge of Dotswood run, owned at that time by Somer and Hervey. Their shared connection with Somer makes it not unlikely a tradesman employed by him built both.

[47]See photograph in album: Photographs of Premises Occupied by Branches of the Bank of New South Wales (c. 1877), held by Bank of New South Wales Archives.

[48]Grant, *Bush Life*, p. 370; Weitemeyer, *Missing Friends*, p. 109.

[49]Held by Cairns Historical Society.

[50]Bryde, *Chart House*, pp. 92-93.

Split planking at Boar Pocket, near Cairns. (Cairns Historical Society)

Dotswood suggests the same walling technique.[51]

The most striking instance of a single material achieving almost total dominance during the whole period under study is the adoption of corrugated galvanised iron for roofing buildings. Iron was in use from the first weeks of European settlement, and apart from some relatively short-lived experiments with bark, shingles and thatch, was virtually the sole roof cladding employed in the region until well after the second world war.

Thatching was occasionally used on early pastoral buildings, such as the Hann's *Maryvale* homestead,[52] but achieved its greatest prominence on Chinese houses on alluvial mining fields. Even there the proportion was not great: under 5% of the habitations on the Palmer were described as "thatch" in 1880, and about 3% as "grass" in 1884.[53] At Ravenswood in 1882 where the Chinese were fewer, 1% of habitations were described as "grass".[54] Its flammability in the dry season probably provides sufficient explanation for its unpopularity; and it is difficult to imagine how the sparse, short grasses of most inland areas could be crafted into a waterproof cover for the wet. Nevertheless it persisted into the twentieth century on buildings by Chinese farmers,[55] on Aboriginal missions,[56] and for Pacific Islander accommodation on sugar plantations:[57] all in areas supporting relatively lush coastal grasses.

[51] Bowly letters 24 January 1874, p. 41.

[52] Allingham, *Taming the Wilderness*, facing p. 76.

[53] Hann Divisional Board Valuation Registers 1880-1884.

[54] Ravenswood Divisional Board Valuation Registers 1882-1883.

[55] C.R. May, The Chinese in Cairns and District 1876-1920, PhD thesis, James Cook University, 1977, pp. 190-193 & 199.

[56] P. Smith, Like a watered garden. Yarrabah 1892-1909: the foundation era, BA Hons thesis, James Cook University 1980, p. 65.

[57] C.R. Moore, Kanaka Maratta: a History of Melanesian Mackay, PhD thesis, James Cook University 1981, vol 2, pp. 487-494.

Thatched cottage at Chinese farm near Cairns, c. 1925. (Cairns Historical Society)

Within the mainstream of European building practices, thatch is not encountered in photographs taken after 1870. Thatching must not be confused with the widespread construction of makeshift bough shelters, either freestanding or as an adjunct to a more formal building. These temporary roofs of leafy branches were intended simply to provide shade, not to be waterproof as is true thatch.

Shingles were sometimes used as roofing material in the early years of settlement, and were still advocated in rural areas as late as 1913.[58] They were said to be preferable to iron because of their insulating properties, on the ground that "iron roofs contributed largely to the mortality (particularly infant) returns of Queensland".[59] Shingles should not necessarily be regarded as a handmade primitive device: they were part of the stock of the timber merchants throughout their period of popularity. William Pettigrew of Brisbane was advertising "Pine Shingles, 25s. for 1000" in Bowen in 1865,[60] and Charters Towers' first steam sawmill offered "Shingles at reduced prices, £2.5.0 per 1000" a decade later.[61] However their normal life was relatively short, probably because of the extremes of wet and dry weather encountered throughout the north, accentuated perhaps by the unsuitability of much of the timber used; ten to fifteen years seems to have been the limit of their serviceability, a much shorter period than is claimed for southern Australia.[62]

> Shingles are nothing but wooden slates;
> and though they look more finished, I prefer
> bark, for the hot weather shrinks them to such

[58] Boyd, "Hints to New Settlers", pp. 153-154.

[59] *Northern Miner,* 2 September 1880.

[60] *Port Denison Times,* 17 June 1865.

[61] *Northern Advocate,* 8 January 1876.

[62] C. Lucas, *Conservation and Restoration of Buildings: Preservation of Roofs,* Sydney 1979, p. 8 gives "a lifespan of 25 to 30 years".

> a degree that, when the breaking up of the dry season comes, for the first few days you might as well be protected by a sieve ... 63

In some cases the shingles were later covered by iron: this was done at the Cardwell Telegraph Office before 1890, but the shingles continued to decay; and were removed, and the iron replaced, in 1904.[64] Only one case has been found in the course of this survey where a shingled roof survives under iron sheeting.[65] More commonly the roof was replaced entirely by iron when decay became apparent or superseded by a new iron-clad building. A photograph of the *Telegraph* hotel at Ingham shows its extension from a small shingled building to a much larger iron roofed one.[66]

The shingled roof to the kitchen of the Ravenswood school residence was by 1882 in "a bad state and past repairing."[67] Its date of construction is not certain, for it was brought from another site to the residence in 1877; but it could not have been built earlier than 1870.[68] The Bowen school, built in 1862, was also roofed with iron in 1876:

> The shingles are of *Pine* and are now rotten. The Committee recommended removing decayed shingles but this would be filling a leaky cask. A Works officer inspected, and reported

[63] Eden, *My Wife and I*, pp. 65-66.

[64] The date of cladding with iron is not recorded, but it was first mentioned in a letter dated 11 April 1890, 90/3264; and see E.H. Alden, memo 17 March 1904, WOR A577 Q.S.A.

[65] Stamp's house at Murray Upper. Sumner, *Settlers & Habitat,* p. 16 records another.

[66] Held by Mrs. Fardon, Townsville.

[67] Foreman of Works to Undersecretary for Public Instruction 17 April 1882, 82/1848, EDU/Z2309 Q.S.A.

[68] The kitchen was described as "weatherboarded", and the construction of the first sawn timber buildings in Ravenswood was described in the *Port Denison Times* 16 July 1870.

Transition from shingled to iron roofing, Ingham. (Mrs. Fardon, Townsville)

> that the only complete remedy is to cover the roof with iron. [69]

Iron steadily replaced all forms of inferior roofing on buildings whose lifespan justified the expense. W.R.O. Hill, based at Byerstown in 1876 in a bark and calico police station, complained that the expenditure allowed him had been insufficient to procure waterproof housing: "I could scarcely get the bark for the money.... my office tent is in pieces."[70] The following year he requested a ton of galvanised iron to roof the building before the wet season.[71] This process assured the ascendancy of iron within a few years, in most settlements that lasted as long as that, but the process did not move beyond iron when alternatives became available in later years. As Sumner points out, the use of commercial substitutes such as terra cotta tile, asbestos cement and malthoid was insignificant in North Queensland before 1921.[72]

All forms of brick, stone and earth construction were rare in North Queensland settlements. Brick and stone entries in the census tables show their infrequency: at no time did the proportion of brick habitations exceed 1%,[73] and even the figures given seem at times questionably high. The 1876 census identified one brick habitation on the Palmer, and it is difficult to imagine where this structure may have been. There is no later documentary evidence of such a

[69] Office memorandum 3 August 1876, EDU/Z284 Q.S.A.

[70] W.R.O. Hill to Undersecretary for Mines 8 August 1876, 62/1876, MWO 13A/G1 Q.S.A.

[71] Hill to Colonial Secretary 28 August 1877 , 88/4626, WOR A139 Q.S.A.

[72] Sumner, *Settlers & Habitat*, p. 16.

[73] *Ibid.*, p. 13.

building,[74] nor any trace of one on the Palmer today; the only brick structures of any kind are three or four boiler foundations and a baker's oven.

The rarity of brick houses is not explained by the absence of bricks. Brickworks were established fairly early on most mining fields: Charters Towers had two by 1880,[75] and Ravenswood at least one in that same year.[76] One Andrew Murphy was offering "good quality bricks" at £5 per thousand in Normanton in 1889, just four years after the discovery of gold at Croydon.[77] There is some doubt about their quality and cost, for nothing further is heard of Murphy; no brick building stands today in Croydon, and only one - the shire office - in Normanton. By that year, however, Townsville had at least two pressed brick works, one capable of producing 12,000 bricks a day.[78]

The mining industry had a large demand for bricks: boiler beds, buddles, machinery foundations, furnaces, retorts, forges and stacks were most appropriately made of brick, and the industry carried with it brickmakers and bricklayers throughout North Queensland. Even a town such as Mount Mulligan, whose population never exceeded 400, had its own brick kiln.[79] Brick stacks and furnaces survive today in some surprisingly remote locations: Argentine, Chillagoe, Cumberland, Donnybrook, Ewan and Mount Garnet. Logic and economics strongly suggest these bricks must have been fired on the spot, for granted a

[74]The Palmer census district included the Hodgkinson, where brick buildings were later built; but none had been constructed there by May 1876.

[75]*A.R.* 1880, p. 11.

[76]W.B. Barker to Undersecretary for Public Instruction 6 February 1880, 80/726, EDU/Z2309 Q.S.A. complains about the poor quality of bricks made in Ravenswood.

[77]A. Murphy to Colonial Architect 21 August 1889, 89/2821, WOR A401 Q.S.A.

[78]Ivimey, *Mining & Separation,* pp. 28-29, describes two Townsville brickworks. It is likely that one was that of the Townsville Brick and Tile Company with its name slightly altered. If not, there were three works operating in Townsville by 1888.

[79]The Mount Mulligan brick kiln, built by the Chillagoe company about 1915 to supply bricks for a cokeworks, is extant in fairly good condition.

Brick kiln, Mount Mulligan (c. 1915)

suitable local clay, the cost of building puddling works, brick press and a kiln was slight compared to the cost of overland carriage of a large quantity of bricks for any distance.

However, there were also cases when bricks were transported long distances, especially by railway. Marked bricks of the Townsville Brick and Tile Company and Campbells of Brisbane are found in Ravenswood and Charters Towers. Specialised vitreous firebricks are found in small numbers in most mining areas, bearing the marks of Stourbridge and Glasgow firms.

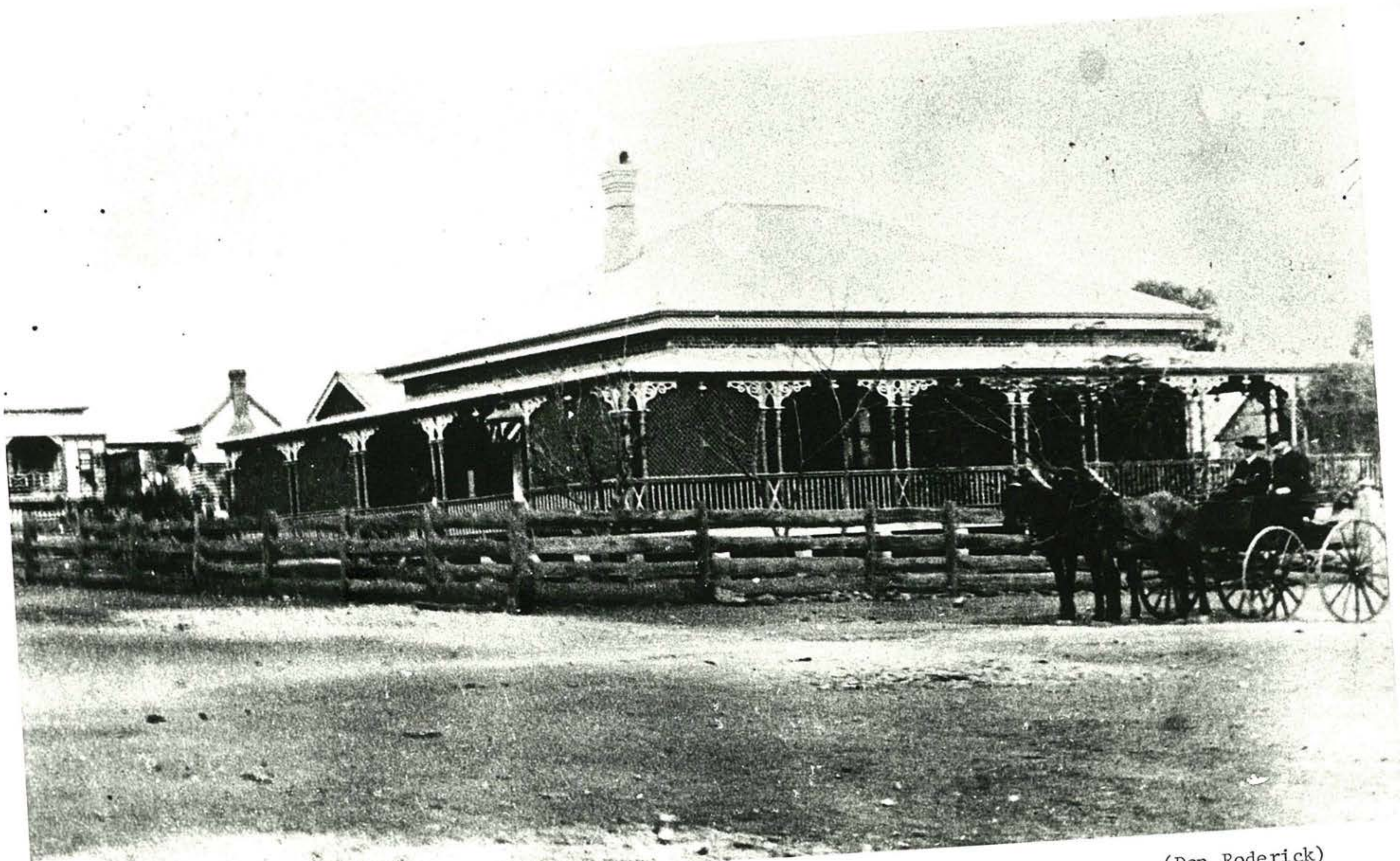
Thus from either local or distant sources of supply there was the potential for brick construction in almost every significant mining settlement. In at least one case there was also vigorous and partly successful local pressure to usher in an age of brick construction. J.S. Reid used his *Hodgkinson Mining News* in a noisy campaign to bring permanent buildings to Thornborough in 1877:

> Ere long we may expect to see a better class of buildings in the principal towns on the Hodgkinson than the wooden erections which now line our streets. Good bricks are now being made in Thornborough, and there is abundance of limestone of a superior quality within a mile of town. We believe for building purposes these articles will cost but little more than timber at its present price. [80]

Reid's campaign resounded in almost every issue of his paper, scolding even such institutions as the Bank of New South Wales; "It is to be regretted that the Bank is not building with brick"; and descending to outright personal abuse in naming individuals who built in wood: "Bird-cages are being constructed here and there, amongst which the rat-trap of Mr. Gough must not be left unmentioned."[81] The weight

[80] *Hodgkinson Mining News* 17 March 1877.

[81] *Ibid.*, 24 November 1877.



(Don Roderick)

Brick four-roomed house with encircling verandahs, Charters Towers.

of James Mulligan, as chairman of the Thornborough Progress Committee, was brought to bear on the colonial government:

> ... beg to urge upon Government the desirability and public utility of Brick materials being substituted for wood in local Court House as local timber is unfit for Government buildings ... [82]

The issue of local timber hardly arose, as Thornborough merchants stocked "Kauri Pine and Cedar – Weather Boards, Lining Boards, Flooring Boards, Studding, & c ",[83] but Reid's campaign had the effect of attracting two brick makers to the town,[84] and the partial success of seeing the Post Office,[85] the Court House[86] and at least one private store built of brick.

On the whole, however, the campaign failed. No more than five buildings in Thornborough were ever of brick, and none was a house.[87] Clearly there was resistance to the campaign, partly because of the cost of brick, for Reid's estimates were undoubtedly too rosy. Partly too, because of the poor quality of the bricks; one cynic took obvious delight in gloating over the destruction of a local brick building in a storm.[88] And probably Reid's tub-thumping had little chance of overcoming the miners' caution in investing in non-portable assets. The

[82]Mulligan to Minister for Works, telegram 8 October 1877, 77/5049, WOR A537 Q.S.A.

[83]*Hodgkinson Mining News* 3 November 1877.

[84]Thomas Harris of the Thornborough Brick Yard advertised early in the year; Heinrich Boucher in later months. It is possible Boucher took over Harris' brickworks.

[85]Documents in 06/1897, WOR A534 Q.S.A.

[86]Indenture 3 December 1877, 77/6248, WOR A537 Q.S.A.

[87]No trace of brick buildings remains in Thornborough. They were undoubtedly cannibalised in later decades to build tobacco curing barns in the Dimbulah district about 20 km away.

[88]*Hodgkinson Mining News* 16 March 1878.

Hodgkinson never had the air of a permanent field, and a campaign to create a solid long-term settlement was in conflict with the needs of the mining community. Even Reid must have mused over the irony of printing brickmakers' advertisements beside notices that read: "For Sale. A Comfortably-Furnished Bark Humpy, in a delightfully cool situation, and close to water."[89] Of all the mining towns, only Charters Towers and Ravenswood had any significant numbers of brick buildings in their prosperity phases, and even there brick houses were very rare.

Stone was even rarer. Only one extant photograph shows an urban house of stone: a two-story substantial house of undressed stone in Helen street, Cooktown, which has now vanished.[90] Others undoubtedly existed; the censuses reveal stone houses in very small numbers, and there are isolated documentary references to them. In 1881 a "four roomed stone cottage" was offered for sale in Charters Towers.[91] As with brick, the scarcity of stone buildings can not be explained by the unavailability of suitable material. Stone was used in large quantities for retaining walls and foundations on the slopes of Melton and Stanton hills in Townsville, but was apparently never employed as the fabric for a house there. Sumner's explanation that the granite of Charters Towers is too hard for masonry construction is not entirely satisfactory.[92] While it may indeed have been too hard for economic ashlar cutting, it was being worked roughly in the mines at the rate of thousands of tonnes yearly; and stone, presumably from mullock heaps, was widely used for rubble fences in Charters Towers and occasionally for out-buildings.

[89] *Ibid.*, 3 November 1877.

[90] Held by Cairns Historical Society, showing 1907 cyclone damage to Masonic Hall.

[91] *Northern Miner* 2 July 1881.

[92] Sumner, *Settlers & Habitat*, p. 13.

In some pastoral areas there are examples of stone house construction. *Rockwood* homestead, for example, 120 km south of Hughenden, was constructed in 1882 of local sandstone in dressed ashlar, obviously the work of a skilled mason. Sumner eschews Lumholtz's explanation of the economics of such construction,[93] but it is hard to escape the suggestion that in such an area with no suitable local building timber, 350 km from the nearest railhead and sawmill at Charters Towers, with abundant surface sandstone, there *may* have been economic sense in stone construction if a permanent house was sought.

In many places where it was readily obtainable, stone served a subsidiary purpose in forming fireplaces, retaining walls, foundations and paving flags for buildings of timber and iron. Maytown, where outcropping laminar shales split readily into flat slabs, has the remains of a number of such elements, but there is no indication that stone was ever used structurally in the town.

Earth is not even mentioned in the building materials table of the census returns, nor in any of the valuation registers searched, and only occasional references to earth construction appear in documentary sources of any kind: a hotel of "wattle and dab" was built at the Broughton in 1880.[94] Scarcity in this case may have been connected with construction of varying quality, and poor wet season performance. During heavy rain in Charters Towers, "Rev. Mr. Wall's house being partly of wattle and dab ... gave out on Tuesday night, one of the side walls being melted away."[95] Only one earth house was encountered during the survey of North Queensland towns, an adobe house in Georgetown of unknown age.

Occasional experiments involved the use of less conventional materials. Smelter slag was employed for building blocks at Mount

[93]*Ibid.*

[94]*Northern Miner* 31 August 1880.

[95]*Ibid.*, 9 March 1882.

Stone fireplace (2m in length) at cottage site, Byerstown.

Chalmers in 1910,[96] but its use was not repeated elsewhere, and receives mention entirely as a local oddity. The material however was not novel; slag blocks had been used in Britain in 1750 by William Reeve to construct a stable and office building.[97]

When access to industrially processed materials was provided, sawn timber became almost universal for walls of buildings, and was most commonly employed in the form of a stud frame clad with horizontal boards. This adoption of formal carpentry techniques occurred in mining towns when transport permitted, and thus could normally be expected to accompany the phase of stability in a settlement. It is probably significant that the construction of Ravenswood's first sawn timber cottage was reported in the same news item that announced that the town's first ore crushing machine was "fast nearing completion".[98] However, this process of transition was often shortened by the desire of administrators and entrepreneurs to erect substantial buildings as rapidly as possible; and in the ports, where cheap sea transport made building materials available from the earliest days of settlement there was virtually no transition process; primitive materials were almost never used.

In Townsville's early months, J.M. Black's letters to Robert Towns show his reluctance to build in other materials while awaiting timber and iron from the south: "I find it practically impossible to proceed to any extent without sawn stuff, and other milling materials".[99] J.G. Macdonald's story that Black's house was built of hand-sawn planks of local ti-tree is simply not believable.[100] Black's letters and the

[96]*Q.G.M.J.* January 1910, pp. 6-7.

[97]Turnor, *Smaller English House*, p. 133.

[98]*Port Denison Times* 3 September 1870.

[99]Black to Towns, 21 November 1864, in Doherty, *Townsville Book*, p.33.

[100]Quoted in *Souvenir Programme of the Jubilee Carnival*, Townsville 1913, no p.

details of the house are entirely in accord, leaving no doubt that the house was built in mid-1865 from imported materials. It is possible some other temporary structure nearby was of hand-sawn ti-tree.

Timber and iron provided an essential component of the cargo for every coastal settlement. When Cardwell was founded in January 1864, building materials were shipped from Bowen with the first party to construct "a small iron store" and "a cottage of timber".[101] Merchants in the ports were quick to grasp the possibilities of the enormous trade in building materials in the early months. F.C. Hodel began shipping cargoes of timber to Townsville in January 1865,[102] probably at the behest of Robert Towns, who with Black's assistance planned to monopolise the sale of timber in the new port of Townsville. Both were distressed by the ability of a Bowen agent to undersell them from the same source of supply - Gladwell and Greathead's sawmill on the Mary River.[103] Pettigrew's Brisbane mill was also supplying a Bowen agency at the time, and the advertisements for these building materials demonstrate a standardization of components apparently pre-supposing a standardised method of construction:

> American and Baltic Timber & c., & c.,
> consisting of -
> Scantling - 3x2, 3x3, 4x2, 4x3, 6x2, and 9x3
> T and G lining and Ceiling Boards
> Ditto Flooring Boards
> Weatherboards, hardwood Battens, ditto
> Scantling, 3x2, 6x1½, & c., hardwood
> Shingles, Palings
> Clear Pine, ½, 1 and 2 inch
> Cedar, ½ to 2 inches, assorted .... [104]

[101] Bowen documents pp. 4–5; and see James Morrill, diary 27 & 28 January 1864.

[102] Doherty, *Townsville Book*, p. 85; Perry, *Sir Robert Philp*, p. 82.

[103] This intention is made quite explicit in Black to Towns 11 July 1865, in Doherty, *Townsville Book*, p. 44.

[104] Advertisement of Ellis Read, *Port Denison Times* 5 November 1864.

> Wm. Pettigrew & Co., Dundathu Saw Mills, have reduced the price of their timber to the under-noted rates -
>
> Pine Shingles, 25s per 1000.
> Pine battens and Scantling, 17s per hundred.
> Ditto Flooring and Weather-boards 17s per do.
> Ditto T & G Flooring and lining 20s per do.
> Ditto Chamferred Boards 20s per do. ... [105]

The uniformity of the materials offered clearly played a part in determining the construction techniques adopted in northern settlements. From earliest settlement the wall construction technique most frequently used was the light stud frame of southeastern England, imported among the "invisible baggage" of the predominantly English-born settlers. Its advantage lay in its fast, simple and cheap construction, and Weitemeyer, accustomed to more challenging carpentry, sneered at the northern building trade:

> The houses in Bowen are all built of wood, and a very easy affair it is for any one to build them. Indeed housebuilding in the small Queensland towns can scarcely be called a trade, insomuch that any practical man who can use carpenter's tools could easily build his own house. A hammer and a coarse saw was about a complete set of tools on many jobs we did up there. [106]

It was as though the stud frame had lain dormant, awaiting an environment where thin timber walls could flourish. Long banished to the fringe of formal building practices in Britain, suitable only for internal partitions and utilitarian structures not inhabited by night unless brick or other insulation was added to negate the cheapness of its framing; it now came into its own in a colony where insulation was not an important consideration in building construction, and very quickly dominated northern building practice.

[105] Advertisement of George Smith, *ibid.*, 17 June 1865.

[106] Weitemeyer, *Missing Friends*, p. 92.

Wall cladding was not at first standardised. Photographs of Townsville in December 1873[107] show a range of cladding techniques which correspond to the range of sawn timber offered by the merchants. External weatherboard cladding appears most commonly: we can only speculate on whether these walls were internally lined.[108] External chamferboards were also used: Black's house was clad with chamferboards and fully lined with tongue and groove boards. But the rear verandah of the house had its studding exposed:[109] the earliest documented example of exposed framing in North Queensland. Exposed frames appeared more prominently in small numbers; Townsville's first substantial hospital was built in 1868[110] with exposed framing on its front verandah. Bowly's 1873 photographs of Townsville show the *Olympic* theatre and three cottages with exposed stud frames. Several of the contemporary substantial buildings of Cooktown also had exposed studding,[111] and Hill's reminiscences include a photograph of an exposed stud framed cottage, said to be his residence in Ravenswood in 1870.[112]

No very early exposed frame structure is known to be extant. The oldest surviving may be Pfeiffer's house (1881), and others date from soon afterward: John Moffat's house (1884), the Carter Street cottage (c. 1884), Matthew Rooney's house and *Rosebank* (c. 1885). The use of exposed framing seems at first to have been restricted to walls protected by verandahs, usually at the front of the building, while the side walls if without verandahs were more often protected by weatherboards or chamferboards. However by the time the technique achieved

[107]By Charles Bowly, held by James Cook University library. Bowly letters, pp. 37-38 establishes they were taken between 21 & 29 December 1873.

[108]The *Eureka* hotel (1865), mostly slab, has a chamferboard front wall with studs exposed internally.

[109]Plan held by Townsville City Council.

[110]*Port Denison Times* 4 July 1868.

111 Panorama in Marten album.

[112]Hill, *Forty-five Years*, p. 56.

Townsville Hospital (1868). *(Souvenir Programme)* widespread acceptance in the 1880's exposed frames were regularly in use on the side walls of houses with only a front verandah.

This early tendency to protect exposed framing parallels practice in southern Queensland, where the heavy X-braced exposed frame commonly used there is almost never seen on an exposed wall. Perhaps the stud and chamferboard wall was considered less prone to water retention than the braced frame with its more extensive horizontal surfaces. The southern braced frame was also used at times in North Queensland, although very few examples are extant. Where it exists it is usually the work of a southern designer.[113]

One source of resistance to exposed stud framing was the colonial architect's office. Early extant government buildings such as the Cardwell Post and Telegraph Office (1870) and the Ravenswood School Residence (1873) are always externally clad; although the Cardwell building is partly unlined, and the Ravenswood residence was not lined until 1887. The Works Department clearly saw the cost advantages of a single-clad wall in a warm climate, but insisted that the exposed frame be on the interior side. Not until 1881 did the colonial architect specify externally visible studs, and then for the most remote and austere building imaginable: barracks for shipwrecked seamen on Thursday Island![114]

Confusion then apparently crept into government policy. By 1885, plans were being drawn for buildings which not only tolerated exposed framing, but even reflected regional preferences for different framing patterns.[115] But more frequently the practice was actively

[113] For example the Bank of New South Wales at Normanton, designed by Brisbane architect Richard Gailey. This point is taken up more fully under decorative detail in a later chapter.

[114] Specifications of Government Buildings, 1878-1881, WOR P2 Q.S.A.

[115] See plans for lockup, Beenleigh 7 January 1885, with X-braced framing; and Inspector of Police Quarters, Townsville, 12 December 1885, with stud framing; held by Department of Works & Housing, Brisbane.

discouraged. Despite its misunderstanding of transport and labour difficulties in rural areas, and consequent routine underestimates of building costs, the office insisted for decades that structural members should be concealed, contrary to local practice. A proposal by the Ravenswood Junction school committee in 1892 to construct a school building was gruffly annotated "bad!" over the words "studding to be outside."[116] Those studs were tolerated, however, and remain visible today.[117] Other buildings which slipped through the net later had their studs concealed beneath respectable cladding, as happened to the five years old Mount Garnet school residence in 1908: "Sheeting with weatherboards the outside walls of old portion of building where studs are exposed."[118]

Crusty officialdom aside, it is obvious from the speed and uniformity which characterised the organization of the North Queensland building industry from the 1860's onward that little innovation or experimentation was in train. Merchants in Maryborough, Brisbane and Rockhampton were supplying components obviously already standardised within their markets, and it was accepted that similar buildings would be built in the new areas. This is unsurprising, and is confirmed by the physical evidence of those source areas, for broadly similar buildings are found everywhere along the Queensland coast. But in the absence of detailed study of sawn timber construction in Australia, the degree of development in other areas and the timing of the adoption of various construction techniques remain unknown. Certainly the construction techniques adopted immediately in North Queensland coastal settlements do not represent the full range of techniques known in the ports of origin. It must be assumed that transport cost ruled out all forms of imported masonry, leaving the

[116] Secretary to Undersecretary for Public Instruction 19 March 1892, 92/02770, EDU Z2311 Q.S.A.

[117] The building became the teacher's residence in 1897. Superseded by a new residence in 1978, it was moved to the Mingela showground in 1980.

[118] Printed tender notice 13 June 1908, EDU Z 1894 Q.S.A.

northern settlements to rely on light materials – timber and iron – and that labour cost made prohibitive any form of construction heavily dependent on labour at the building site, and thus militated against the establishment of local masons, brickworks and primitive industries in the short term.

However the fact that this was *known* to be the case from 1861, and was not the result of local experimentation, suggests an industry already geared to the supply of light pre-cut timber components. The origin in Brisbane and Maryborough of much of the timber imported to North Queensland further suggests a locality where this formula of light timber framing may have been established, or at least brought to a high level of refinement; and further research in southeastern Queensland is required to reveal more about the evolution of this industry. Certainly the demands of the Gympie goldrush were not a formative influence, for the light stud frame was in use in Bowen and Townsville in its standardised form several years before the discovery of gold at Gympie.

Given the early southern-based supply of timber, a historical problem is raised by the divergence in framing technique within Queensland. The reasons for the relative popularity of the X-braced frame in the south and the stud frame in the north can only be a matter for speculation. Since it is known that the stud frame was in early use in North Queensland, and not a later development, two possibilities present themselves: either in the early years the southern timber merchants were providing an adapted product for a distant market, differing from their normal stock; or the evolution of the X-braced frame in the south occurred *after* the 1860's, when the pattern of the northern industry was already fixed.

Once established in the ports, the light stud frame horizontally boarded on one or both sides was adopted in inland settlements as soon as transport facilities permitted economical supply of sawn timber. In construction it followed a simple pattern. Bed logs may have been used occasionally,[119] but a foundation of low timber stumps or occasionally

[119] This is questionable. One source referring to log "ground plates" is J.G. Macdonald's dubious account of early Townsville in *Souvenir Programme*, no. p.

brick piers was usual. On these stumps bearers about 100 x 150 mm ran longitudinally - that is, from front to rear of the house. Wall studs 50 x 100 mm or sometimes 50 x 75 mm were mortised into these bearers and secured by a nail driven horizontally through the tenon of the stud, and also mortised into a top plate. The joists and floorboards also rested on the bearers, and thus the floor of the house was higher than the bearer by the height of the joist, leaving a pronounced visual gap on both sides of the building. This gap was sometimes concealed by lengths of chamferboard between the ends of the joists.

The frame was usually protected against racking by two braces let diagonally into the inner face of the studs on each exterior wall: typically these run from centre top of the wall to the lower corners, but they may be inverted. Sometimes only one brace is present on each wall, or even none. The Carter Street cottage (c.1884) has only one brace on each of its front and rear walls. Cladding varied: chamferboards, usually single or double-beaded internally, nailed to the inner face of the studs and left exposed externally were usual. Sometimes, especially in government buildings, the studs were externally clad with weatherboards or chamferboards and left unlined. Relatively rarely, walls were clad with weatherboards and lined with tongue and groove boards. Internal partitions were often of tongue and groove boards, either horizontally, nailed to widely spaced studs, or vertically, nailed to rails. The appearance of the inner face of the beaded chamferboard wall was usually identical to that of beaded horizontal tongue and groove boards used in the same room.

The space above windows and doorheads on exposed walls was externally clad with chamferboards and gable ends were externally clad with weatherboards, even when the wall immediately below was of chamferboards. All horizontal boards were about 200 mm in width in early decades, but gradually narrowed with the passage of time. By 1914, 140 mm was not unusual.

Although bracing and cladding were subject to variation, the stud frame itself and its joinery were virtually identical in all buildings. Mortise and tenon joints persisted until well after 1914: they are frequently found in buildings dating from as late as the 1950's. Only on very rare occasions in the later years of the period under study did this standard vary. One cottage in Georgetown, under demolition in 1979, had its studs simply let into the bottom plate in the modern manner, and skew-nailed. There was little indication of its age, but generally light components on the site sugested a fairly late date. One example of even shoddier construction was encountered: a building in Kidston in which the studs were skew-nailed to the bearer through the floorboards. This building could be no earlier than 1907. It seems the true balloon frame finally arrived in North Queensland in the early twentieth century.[120]

The second most common walling material adopted was corrugated galvanised iron, although its use for walls was not practised in the early years of settlement. It was quickly adopted as a roofing material during the early life of every coastal town, and soon found its way inland along with sawn timber. Iron roofs appeared in Bowen and Cardwell by 1864,[121] Townsville in 1865,[122] Ravenswood by 1870,[123] the Lower Herbert by 1871,[124] and both Cooktown and Charters Towers by 1874.[125] They penetrated to the most inaccessible settlements. Byerstown, which in early 1876 was "chiefly built of calico" had eight months later been roofed with galvanised iron.[126]

[120] On that topic, in no example of a two story exposed frame building noted in North Queensland, are the studs continuous; usually they are not even aligned.

[121] Sumner, *Settlers & Habitat,* p. 15; Morrill diary 28 January 1864.

[122] Black's house and his correspondence above.

[123] Daintree photographs in Sanker, *Queensland in the 1860's;* dated by Daintree's report, *Q.V.& P.* 1871, p. 663.

[124] Neame diary, pp. 22 & 28.

[125] Photographs in North Queensland Newspaper Company and Marten albums.

[126] *Cooktown Herald* 19 February & 4 October 1876.

Stud let into plate, house of early twentieth century construction under demolition, Georgetown, 1979.

Stud skew-nailed through floorboard into joist, Kidston (c. 1910).

However, despite its immediate widespread acceptance as a roofing material, iron was only slowly adopted for walls. This was undoubtedly in part because of its unpleasant thermal performance, but there must have been other reasons as well. It must have been apparent that the thermal load of the walls would be small relative to that of the roof, and in any case the practice of shading walls with a verandah was common from first settlement, further reducing the critical nature of the walls' performance.

There was no innovation called for in adopting iron for walls; this use had been envisaged at the time the first patent for corrugated sheet iron was granted in 1829.[127] There were presumably economic or aesthetic reasons for resistance to iron wall cladding. It does not often appear in photographs of coastal or mining settlements in the 1860's or 1870's as the walling of houses or commercial buildings. Only stove recesses (not at first the whole kitchen) were of iron. Probably the earliest photograph of a substantial iron-walled building shows the Australian Joint Stock Bank, built in Maytown in 1876.[128] Photographs of Cooktown in 1873-74 show a form of light-coloured continuous cladding, but whether it was iron or stretched calico cannot be determined.[129] These early buildings are absent in later Cooktown photographs. Several iron buildings appear in photographs of Georgetown dated 1880,[130] and are supported by a report from the police magistrate there in 1884 that "the inhabitants ... erect new buildings of iron", as though commenting on a recent development.[131]

[127] G. Herbert, *Pioneers of Prefabrication: the British contribution in the nineteenth century*, Baltimore 1978, p. 34.

[128] Subsequently the Queensland National Bank: held by National Bank Archives.

[129] Marten album.

[130] Lees, *Goldfields of Queensland* (Chillagoe-Etheridge volume) p. 27: the date is probably a guess.

[131] W. Samwell to Undersecretary for Public Instruction 21 June 1884, 84/3820, EDU Z 1020 Q.S.A.

Iron Bank, Maytown (1876).

(National Bank Archives)

Isolation and consequent transport costs may have influenced the choice of iron for walls, for it appears to have been adopted earlier - and later in a greater number of cases - in remote areas. It was adopted by the Postmaster General's department in the mid 1880's and specified for the Georgetown and Geraldton post and telegraph offices, drawn in June 1884, and for the Cape York telegraph chain (1886-87).[132] The defensive function of the latter buildings probably influenced the choice of materials, but transport and labour costs were certainly considered, for these were among the most remote buildings ever erected by the colonial government. These reasons are insufficient however, for the telegraph stations of the transcontinental telegraph, built in even more remote conditions by the South Australian government 15 years earlier, were of stone.[133]

There may have been other considerations. In 1876 the Superintendent of Electric Telegraphs passed on a recommendation that an iron telegraph station be erected at Maytown:

> The Station Master suggested that it should be constructed of galvanised iron because white ants are so very destructive in that locality. 134

The suggestion was apparently acted on in part, for the Palmerville and Maytown telegraph offices were specified to be "pine or cedar wood work with iron outer walls".[135] The limitation of this solution is obvious: the weak point of iron construction was its timber frame, but there seems to have been little investigation by the Postmaster-General's department or anyone else in North Queensland of the great range of iron framed buildings available by the 1870's which might have solved the termite problem completely.[136] There is no evidence

[132]Plans held by Australia Post Historical Section, Brisbane.

[133]P. Taylor, *An End to Silence: the building of the Overland Telegraph line from Adelaide to Darwin*, Sydney 1980.

[134]W.J. Cracknell to Undersecretary for Public Works 25 April 1876, 77/5357, WOR/A140 Q.S.A.

[135]T.H.Cowl to Undersecretary for Public Works 29 March 1877, *ibid.*

[136]Herbert, *Pioneers of Prefabrication*, effectively describes developments in this sphere.

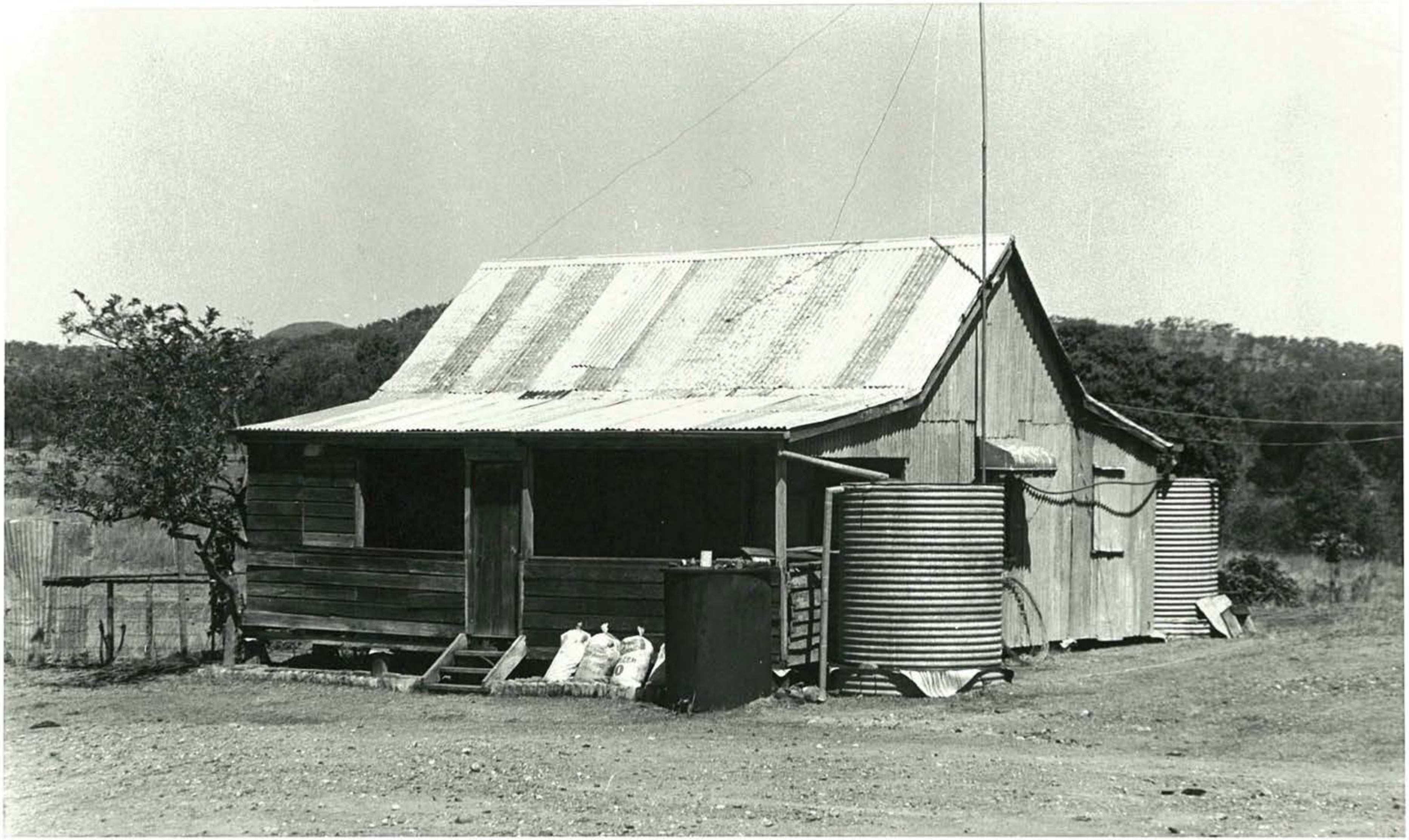
of the adoption of prefabricated iron framed buildings in the region, although they were occasionally advertised.[137]

Instead, iron buildings were framed in timber, with a heavier and more widely spaced structure than the stud frame. Timber posts, usually 100 mm square, were erected at corners and the sides of openings, mortised into top and bottom plates. There were normally no intervening studs. A rail, usually 50 x 100 mm, was let into the posts at window sill height, and diagonal braces were added. The iron was nailed directly to the exterior of this frame. Larger houses often had their main rooms lined with tongue and groove boards, but two-roomed cottages were left unlined, or lined with calico, or paper glued to the iron. Contrary to the usual practice of externally exposed timber framing, iron cladding was almost always nailed externally, leaving the frame exposed inside: one extant exception is the Normanton railway station, where the timber frame is exposed externally as an elaborated X-braced decorative element.

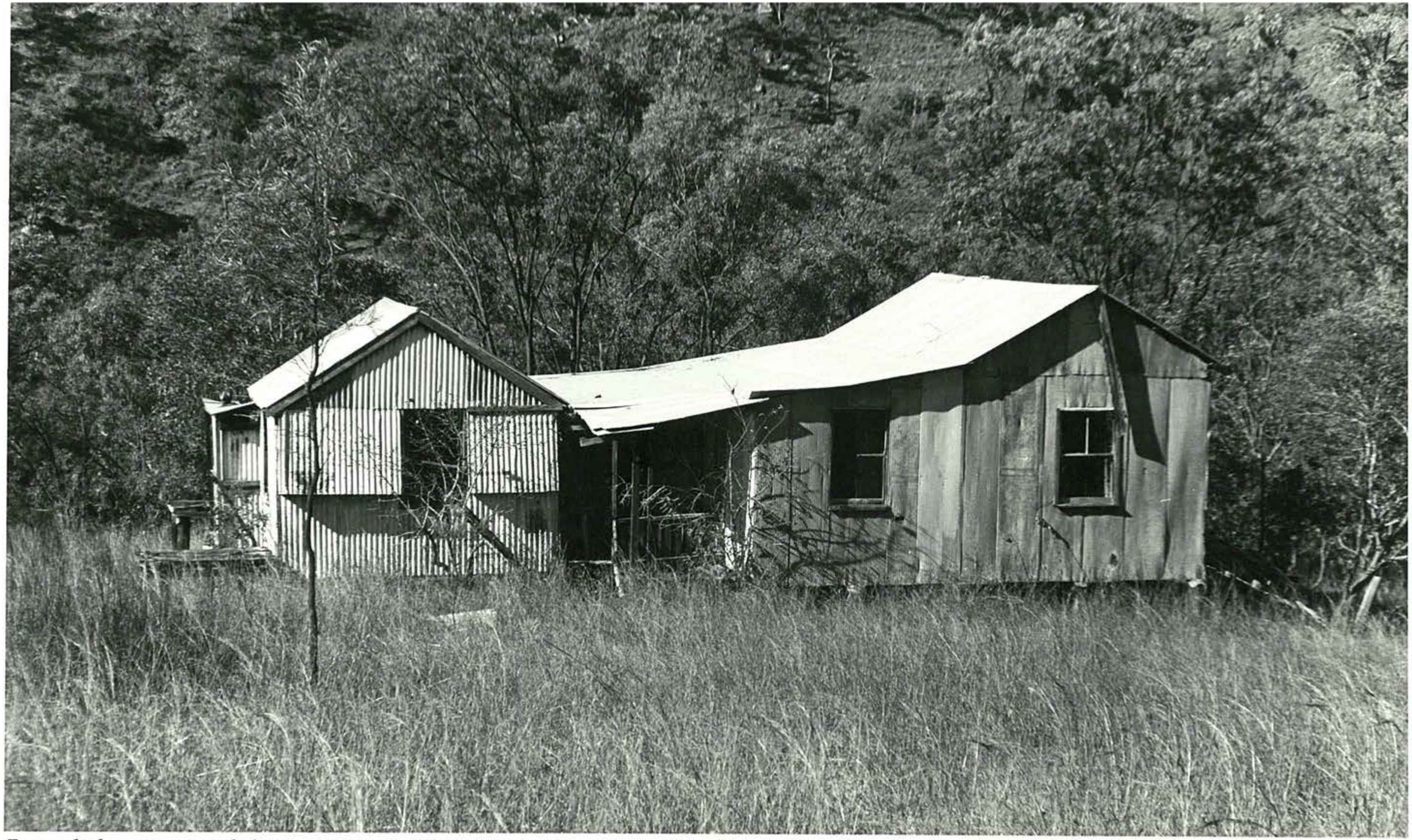
In remote areas, iron was also used as an external cladding for round timber frames, often wired to the frame through holes punched in the iron rather than nailed. This technique may be directly adapted from bark construction. Iron wall cladding is frequently found even in major urban centres on rearward extensions to more formal timber buildings, suggesting three things: its relatively late popularity; its continuing social unacceptability; and its economy.

When the adoption of iron walling began in domestic buildings, apparently in the 1880's, it was at first restricted to kitchens, suggesting that fire resistance was one characteristic favouring it. Great numbers of timber cottages have iron kitchens either joined to the rear verandah or detached from it and linked by a covered way. By the 1890's, cottages and some more substantial houses were being

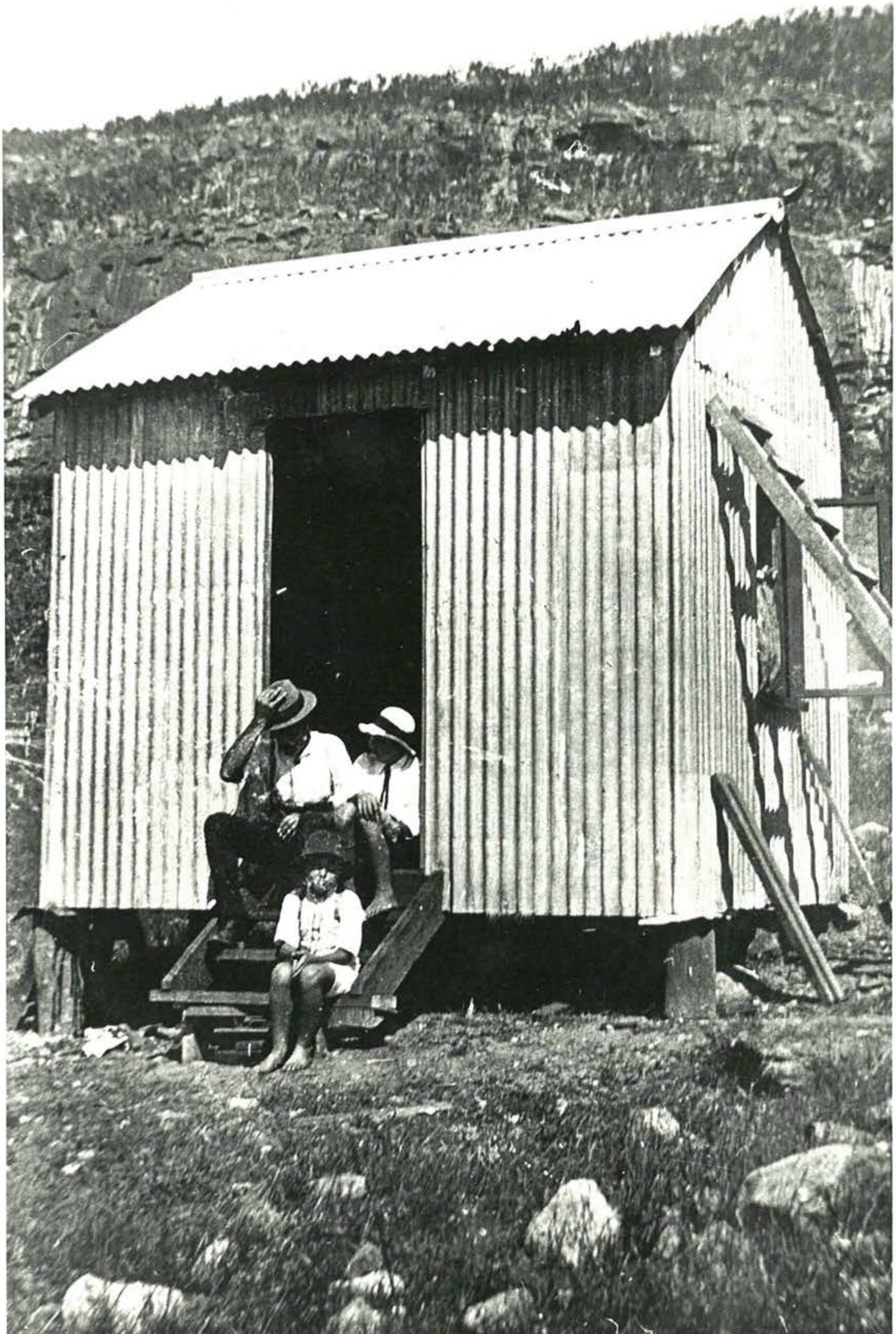
[137] See advertisement of W. Cooper Ltd. of London: "Builders of IRON HOUSES, CHURCHES, BUNGALOWS, CONCERT HALLS, MISSION HALLS, HOSPITALS, BILLIARD ROOMS and PRIVATE RESIDENCES of every description", *Queenslander* 12 June 1897.



Iron two-roomed cottage, Thornborough, removed from Wolfram.



Extended two-roomed iron cottage, Tyrconnel mine near Kingsborough. The front verandah has been demolished by a thunderstorm.



Iron cottage, Mount Mulligan (c. 1914). (Mrs. Franklin, Malanda) built entirely of iron. They were never numerous in the larger towns; only 7% of the houses surveyed in Charters Towers and less than 2% of those in Townsville have iron walls.[138]

The real heyday of corrugated galvanised iron construction came in the early twentieth century, with the rise of the small base metal towns of the Cairns hinterland. There, whole settlements were built predominantly of iron, and many of them retain that character. Croydon and Ravenswood also have high proportions of iron houses; the latter's probably dating from the years of regeneration under the New Ravenswood company after 1900. The town of Kidston which grew up to serve the Oaks rush of 1907 effectively shows the altered nature of mining town construction: photographs of the town in 1908 show no transitional period of construction, simply an almost complete adoption of iron for building all elements of the town.[139]

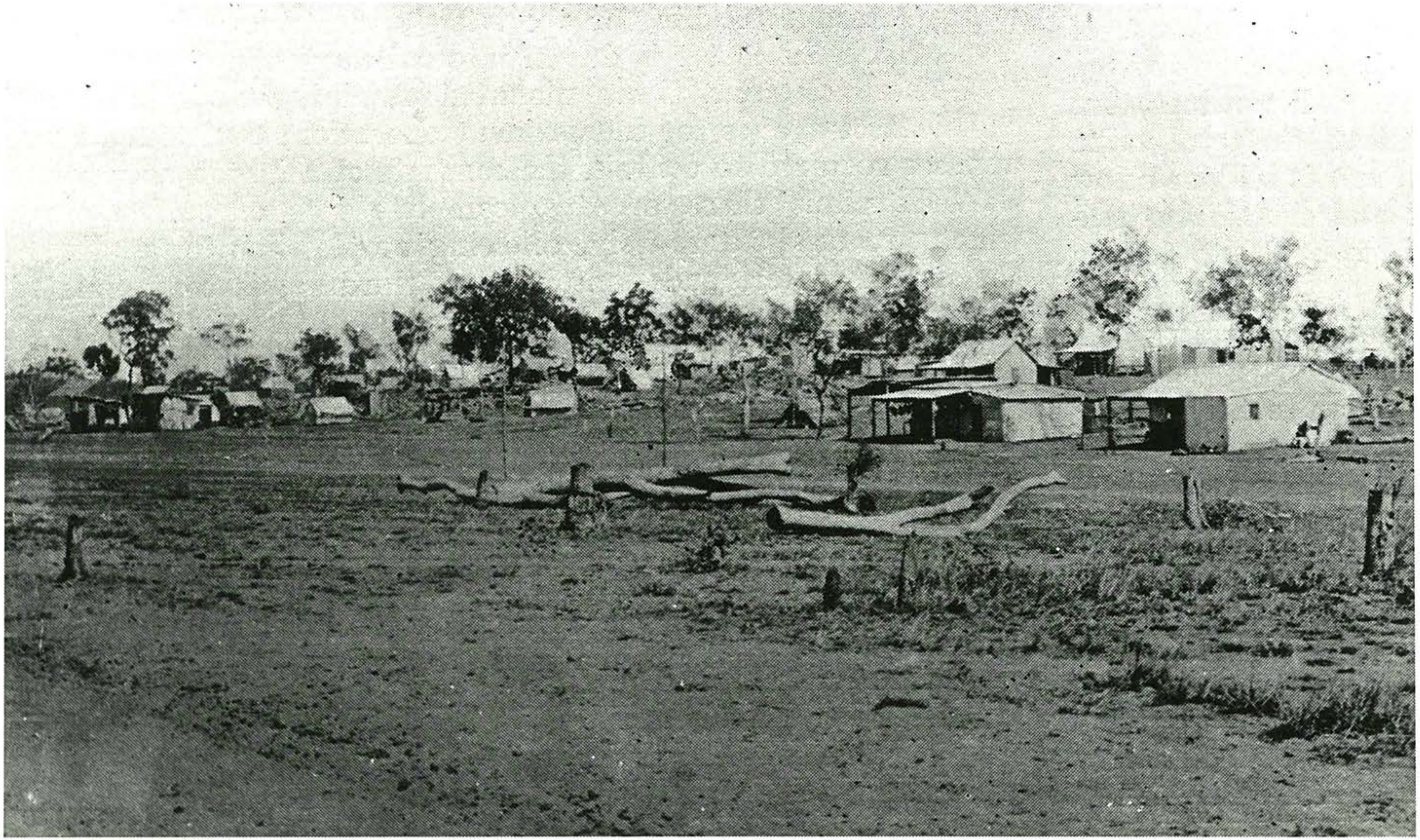
There is no simple explanation for the slow adoption of iron walling, and its subsequent popularity after the 1890's. Iron was available from 1861, and was in almost universal use for roofs from the 1870's. Iron walls were used in other colonies earlier: Herbert cites and illustrates the adoption of iron construction in South Africa in the 1870's in precisely the cultural and environmental context of North Queensland towns: British immigrants mining in a warm climate.[140] There was no substantial change in the methods of manufacture and supply of iron to North Queensland during the period. All corrugated galvanised iron was imported from Britain; none was manufactured in Australia until 1921.[141]

[138] These survey figures for iron wall material are slightly inflated by the practice of nailing sheetmetal to the outer surface of studs on an otherwise conventional timber wall. This is particularly common in Cairns, giving a figure of 20% iron there although most of these are stud framed timber with an extra iron skin.

[139] Photograph by Rev. F.C. Hall, in *Q.G.M.J.* November 1908, p. 560. Of 11 buildings standing in Kidston in 1979, 9 had iron walls.

[140] Herbert, *Pioneers of Prefabrication*, pp. 123-148.

[141] K. Warren, *The British Iron and Steel Sheet Industry since 1840*, London 1970, p. 124.



Kidston, 1908. (*Q.G.M.J.* November 1908, p. 560)

There are certainly good reasons for not building in iron. It is not usually regarded as an attractive material, although appearance was not a highly influential value in the design of many North Queensland buildings. But aesthetic acceptance of corrugated iron came quickly: *Ay ot* in Charters Towers,[142] a two story stud framed house probably built during the 1890's, employed iron panels for verandah shades on its ground floor - constituting an enormous area of its facade - but used it cunningly, with each sheet cut at a slight diagonal to create a subtle herringbone texture surprisingly delicate for a material normally regarded as one of the most monotonous devised.

Its thermal performance is the crucial determinant of iron's unpopularity. An unpainted iron building rises rapidly in temperature from the first minutes of insolation in the morning, and unless the building is shaded by vegetation or verandahs and well ventilated, will rise to stupefying and even dangerous levels in the afternoon. There is a popular belief that iron buildings will then rapidly cool during the evening, compensating in part for their poor day time performance. However, observations conducted by Ray Sumner show that this is not necessarily the case; unless aided by effective ventilation, the temperature remains high throughout the night. In a series of eight experiments in four North Queensland iron buildings in both winter and summer, Sumner found that in every case the interior temperature remained appreciably above that outside from 12 noon until the following 4 am or later. In four of the eight cases, the interior temperature was higher for the entire 24 hour period.[143]

These figures are surprisingly similar to Sumner's observations in buildings of timber and stone, suggesting that the wall's insulating properties are not an important determinant of interior temperature. Presumably shading and ventilation play a greater part. This is intuitively quite sensible, for despite the good thermal conduction

[142] Sumner, *Settlers & Habitat*, pp. 33-34.

[143] *Ibid.*, pp. 52-53.

Ay ot, Charters Towers (c.1890).

of iron, only a very small part of the air mass inside the building is in contact with the walls and roof, and the remainder is self-insulating. If the air inside is still, heat-loss by conduction alone will be very slow.

Thus if iron was avoided for its thermal properties, it was being unjustly maligned, for it was blamed for poor shading and ventilation, which are matters of design rather than material. Perhaps part of its poor reputation arose from its early association with small cheap structures, inadequately ventilated and shaded, whose unpleasantness for habitation had little to do with the fact they were built of iron.

In any case the insulation properties of the material are no more important than their absorption properties, and the thermal absorption of corrugated galvanised iron can be reduced dramatically by the use of white paint.[144] This was common practice, at least in wooden buildings. Although Sumner suggested that the technique of reducing insolation in buildings by increasing the reflectivity of their surfaces has been developed only in recent years,[145] there is abundant evidence of the use of white "refrigerating paints" for this purpose in the nineteenth century. One Jack O'Neill advertised in Charters Towers in 1880:

> Professor O'Neill begs to call attention to the great heat of the coming summer in consequence of Mercury's contact with the Sun, and Leo running into Aquarius, so that the iron roofs will certainly roast you. He is prepared to prevent these fatal consequences by using his PATENT COMPOSITION, which is economical and adhesive. [146]

[144] J.W. Drysdale, *Designing Houses for Australian Climates*, 3rd edn. Canberra 1975, p. 25 gives thermal absorption coefficients of materials including:

aged galvanised iron	.90
new "	.64
whitewashed "	.22

[145] Sumner, *Settlers & Habitat*, p. 45.

[146] *Northern Miner* 6 November 1880.

This colourful claim was given some coherence by Thadeus O'Kane's editorial endorsement, inviting the public "to go in for refrigerating their roofs in consequence of the terrific heat of the approaching summer."[147] Wyatt and Gates, contractors of Brisbane, were agents for "the Patent Vesuvius Refrigerating Paint, Reducing the Internal Temperature of Buildings 15 to 20 Degrees",[148] and Louis Severin, Cairns ironmonger, advertised that he was a "Manufacturer of REFRIGERATING PAINT for Cooling Houses under the Hotest [sic] sun".[149] An inspector reported of the school building at Calcifer in 1899: "The roof is to be coated with refrigerating paint".[150]

A number of visitors to the north commented on the practice of painting buildings white. Garran in 1887 mentioned in Townsville, "Castle Hill ...its spurs dotted with the white wooden cottages of suburban residents ..."; reported that the residences of Cooktown were "invariably wooden cottages painted white", and said of Charters Towers:

> ...the township at first glance from a distance might be mistaken for an encampment under canvas. The little white cottages of wood and galvanised iron shine under the tropical noon like snowy tents. [151]

Ivimey also mentioned the "white and glistening hillside dwellings" of Townsville,[152], and Parker praised its public buildings, "built

[147] *Ibid.*, 7 September 1880.

[148] Printed letterhead, Wyatt & Gates memorandum 11 January 1896 in EDU Z 1765 Q.S.A.

[149] *P.O.D.* 1896-97, p. 231.

[150] O. Radcliffe to Undersecretary for Public Instruction 16 December 1899, 99/18600, EDU Z 460 Q.S.A.

[151] Garran, *Picturesque Atlas* vol. 2, pp. 396, 397, 404.

[152] Ivimey, *Mining & Separation*, p. 4.

in refreshing white".[153]

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The striking thing that emerges from a study of the materials and building techniques of early North Queensland is the strong uniformity of the great majority of extant buildings. After a brief period of occupance of tents and in some place bark shelters, house-builders became dependent on a narrow range of construction techniques based on a small, standardised range of materials.

This is particularly evident when one compares the visual evidence in the small range of photographs of Townsville, Charters Towers, Ravenswood and Cooktown in the early 1870's with the contemporary photographs of Hill End and Gulgong by Beaufoy Merlin in 1872.[154] These demonstrate an extraordinary variety of techniques: timber construction of many different kinds, weatherboards, flush planks, vertical tongue and groove boards, slab, logs, bark, wattle and daub, corrugated iron, stone, brick, canvas and an array of rendered surfaces which presumably conceal unknown forms of earth construction. While undoubtedly most of these techniques appeared in North Queensland on rare occasions, no town in the region ever presented such a diversity of construction at one time. On the other hand, one of the most common North Queensland building methods never appears in Merlin's photographs, although it was in use in Townsville seven years earlier: the exposed stud frame.

The reasons for this regional divergence in building techniques are not immediately apparent. The comparison is between similar types of settlement; Gulgong and Ravenswood in 1872 were both shallow gold-mining towns. Indeed Merlin's towns and the North Queensland mining

[153]Parker, *Round the Compass*, p. 277.

[154]Burke, *Gold and Silver*.

fields shared some of the same population. Both Gulgong and Hill End appear as places of marriage in the Palmer birth register, and Cooktown in 1873 boasted a barmaid known as "Gulgong Kitty".[155] Merlin even photographed one identifiable later North Queenslander: Sam Hand, boarding house keeper of Gulgong,[156] who was involved in the Lukinville riots six years later,[157] and ended his days as a farmer in the Innisfail district.[158]

Thus no differences in the nature of the staple industry or the cultural backgrounds of the people involved suggest themselves as influencing methods of building. There are three possible alternative influences: climate, isolation and the organization of the building industry. The influence of climate was negative; it affected North Queensland buildings because it did *not* behave as it did elsewhere. The absence of cold, a revolutionary experience for immigrants from Britain, had profound implications for building. The aspects of building design intended to ensure insulation could be disregarded, and the consequent weight, transport costs and labour simply left out of building calculations. The result was an enormous burden lifted from architects, builders and householders, a fundamental freedom conferred; builders were free to choose *any* construction technique, unconstrained by the insulation problem.

The choice was instead influenced by the lack of commercial and industrial infrastructure in early North Queensland, and the distance that materials had to be transported from their sources of supply; it made sense to employ the lightest, simplest and most portable building technique in the repertoire of the English builder, the

[155] Grant, Early Station Life, p. 126.

[156] Burke, *Gold & Silver*, p. 121.

[157] P.F. Sellheim to Undersecretary for Mines 7 September 1878, 78/168, 13B/G1 MWO Q.S.A.

[158] May, Chinese in Cairns, p. 473.

light stud frame. But this choice was not a spontaneous one on the part of North Queensland settlers. The majority can be assumed from their behaviour in so many other respects to have been largely indifferent to the forms and techniques of their habitation. The standardisation of housing was the doing of the building industry: the millers and merchants of Brisbane and Maryborough understood that a market was burgeoning to the north, and made shrewd business decisions on what to ship to supply it.

Uniformity of construction techniques was undoubtedly engendered by the practice of precutting or prefabricating to the greatest possible extent to minimise both transport and on-site costs. In the early years of settlement this was standard practice for government buildings, which were usually the first substantial structures in new settlements. In the urgent provision of government buildings in Cooktown during the Palmer rush, prefabrication was explicitly specified for the new school and teacher's residence:

> The Building is to be constructed in Brisbane, taken down & packed... in readiness to be transferred to a vessel for conveyance to Cook Town, which will be chartered by the Board for the purpose. [159]

The cost estimate breakdown for the nearly contemporary Customs House and Bonded Store at Cooktown was given as:

Framed & ready to ship (ex Brisbane)	£580
Shipment	£200
Erection at the Endeavour	£120
	£900 [160]

[159] Specification April 1874 with Undersecretary for Public Instruction to Undersecretary for Works 25 January 1877, 77/352, WOR A 129 Q.S.A.

[160] F.D.G. Stanley to Undersecretary for Public Works 20 December 1873, 73/5351, WOR/A81 Q.S.A.

While such explicit information survives for only a small number of government buildings, prefabrication can be inferred for others from the choice of builder and the timing of payments. The Cardwell Telegraph Office, designed in 1869 as part of the drive to reach the north coast before South Australia could, was built by a Brisbane contractor, George McCallum.[161] Payments to McCallum took a rather curious form:

March 1870	£ 40	
April 1870	£300	
July 1870	£ 22.15.0	162

An inspection of the extant building reveals that it was cut by mechanical means throughout, even to the joinery details; for example, the tenons of the windowsills clearly show the marks of a circular saw. There was no steam saw in the Cardwell district until 1876,[163] and therefore all cutting was done by McCallum at his Brisbane works. The timing of payments suggests the building was completed in Brisbane in April 1870, shipped in the following two months, and erected in Cardwell in July. No such details exist for any private house in North Queensland, so the extent of prefabrication is uncertain, but the account of Swallow's Hambledon house having been prefabricated in California is thought-provoking.

Whether or not prefabrication was common, the supply of precut components certainly was, and builders were able to select materials in local timberyards which left only a minimum of joinery to be done on-site. These materials arrived early in every coastal settlement: by March 1874, Pocock's timber yard in Cooktown was offering "sawn

[161] Signed plan dated 2 December 1869 held by Department of Housing & Construction, Brisbane.

[162] Colonial Architect's Ledger 1864-1875, p. 245, A/13138 Q.S.A. The month is that in which work was done, not in which payment was made.

[163] *Queenslander* 11 March 1876 refers to the establishment of a sawmill on the Herbert, and the previous need to import sawn timber from Maryborough; Neame diary p. 30 mentions imported sawn timber in 1871.

PINE, HARDWOOD and Building Materials of every Description";[164] then with some delay and greater cost spread to the inland mining towns. Corrie and Coy. opened a timber yard in Thornborough in 1877, the year after the goldfield was discovered.[165] The "first comfortable weatherboard cottage" appeared in Ravenswood in 1870,[166] and nine months later it was reported, "substantial weatherboard buildings with iron roofs ... are now packed as close as possible all along the main street."[167]

Demand soon led to the establishment of local sawmills: the first in the region Seaward, Marsh & Coy's at Bowen in 1865.[168] Within little more than a decade steam sawmills were operating at Charters Towers,[169] the Herbert River,[170] the Daintree River[171] and Cairns.[172] However the transition to local milling did not necessarily mean the use of local timber. The importation of logs then commenced alongside sawn timber, especially from Maryborough. A few months after its establishment, despite an abundance of local timber, Port Douglas was built predominantly of Maryborough pine.[173] When a Charters Towers sawmill was destroyed by fire in 1888, its owner estimated he had lost timber valued at £42,000 supplied by the

[164] *Cooktown Herald* 20 March 1874.

[165] *Hodgkinson Mining News* 3 November 1877.

[166] *Port Denison Times* 3 September 1870.

[167] *Ibid.*, 10 June 1871.

[168] Report from Engineer of Harbours and Rivers, *Q.V. & P.* 1866, p. 1574, and correspondence in 66/291, LWO/A29 Q.S.A.

[169] Ivimey, *Mining & Separation*, p. 171; *Northern Advocate* 8 January 1876.

[170] *Queenslander* 11 March 1876.

[171] *Northern Advocate* 19 February 1876.

[172] J.W. Collinson, *Early Days of Cairns*, Brisbane 1939, p. 131: this may have been the Herbert River mill relocated. Townsville too must surely have had a steam sawmill by the late 1870's, but I can find no documentary reference establishing this.

[173] Proforma application for school, 16 February 1878, 78/623, EDU Z 2252 Q.S.A.

Maryborough firm of Hyne and Sons.[174]

As facilities were established in northern ports, they became in their turn bases for the prefabrication of buildings in their hinterlands. The Maytown Telegraph Office was framed in Cooktown in 1877, and transported to the site for re-erection.[175] The cost structure of such an exercise, however, was markedly different because of the land freight component: the lowest tender for the Maytown building was £582 for construction, £700 for transport; and the steep rise in labour costs in inland towns caused the Postmaster-General's Department to extract as much work from the relatively cheap Cooktown-based contractor as possible.

> The necessary doors, &c, will probably cost but little while the Contractor is there, but if done by local tradesmen would cost a considerable sum. 176

If the scale of work to be done justified the fares, it could be cheaper to transport labour from Brisbane to northern building sites. The Queensland National Bank in 1887 sent its Clerk of Works and three men from Brisbane to erect its new premises at Croydon and Cumberland.[177]

This pattern of prefabrication and centralised labour cost was adopted in the 1880's by the local building firms. Business records do not exist for any northern firm, but their advertisements frequently mention their expertise in precutting or prefabrication.

[174] Benjamin Toll to J. Millican 14 February 1922, Toll papers held by Bill Mann, Townsville. The estimate seems improbably high, but the fact that a Charters Towers mill was sawing Maryborough timber remains of interest.

[175] Undersecretary for Postmaster-General's Department to Undersecretary for Public Works 24 October 1877, 77/5357, WOR / A140 Q.S.A.

[176] *Ibid.*, and attached schedule of tenders 21 July 1876.

[177] Premises Register, N.B.A.

Griffith and Terry of Queenton advertised "Buildings of every description framed on the premises and sent out with competent workmen to any part of the field";[178] Richard Craven nearby had "Cottages Prepared and Framed, ready for Erection";[179] McGregor and McKee of Croydon offered "Buildings of all Sizes framed at the yard and sent to any part of the field".[180] Charters Towers' largest steam joinery was that of Benjamin Toll, established principally as a furniture manufactory in 1880,[181] which by 1889, despite a disastrous fire the previous year, was employing 120 men and turning out five framed houses each week.[182]

The most prominent firms in the northern building industry from the early 1880's to about 1900 were Rooney and Coy., timber merchants, and Rooney Brothers, builders. Members of the Rooney family had established themselves in the Maryborough timber trade in the 1860's, probably soon after the expansion of Maryborough by the Gympie gold rush of 1867-8.[183] Their first appearance in the documentary record came with acceptance of their tender for additions to the Maryborough lockup in 1868.[184] In the same year they successfully tendered for the construction of a lighthouse at Sandy Cape on Fraser Island, a much more ambitious project worth £4,524.[185] This commenced a long

[178] *Northern Miner* 27 July 1886.

[179] *Northern Mining Register,* Christmas Number 1891.

[180] *Croydon Mining News* 25 February 1898.

[181] *Northern Miner* 11 January 1881.

[182] Ivimey, *Mining & Descriptive Queensland,* p. 172.

[183] J. Lennon, *Maryborough and District, Queensland 1842-1924,* Maryborough 1924, p. 69 lists the district's builders, including John & Jacob Rooney.

[184] *Q.V. & P.* 1868 p. 502, contractor J. Rooney.

[185] Public Works Department Loan Expenditure Ledger 1865-1876, p. 248, A/13141 Q.S.A.

Benjamin Toll's *Phoenix* steam joinery works, Charters Towers. (Bill Mann, Townsville) succession of government contracts: between 1869 and 1876 John and Jacob Rooney were involved in the complete or partial construction of lighthouses at Lady Elliot Island, Cape Bowling Green, Cowan Cowan, Comboyuro and Cape Capricorn.[186] The latter contract demonstrates the colonial architects' recognition of the Rooneys' expertise in the field after eight years experience, for they were retained to superintend work by another contractor.

The Rooneys' focus of activity moved steadily north, still following government contracts: they erected a number of public buildings in Townsville in the 1870's, including the customs house, court house, telegraph office and gaol.[187] By 1880 it appears that John Rooney was occupied fulltime in the Townsville building industry. There is no evidence, however, that Jacob was ever in Townsville and it is likely that he remained in Maryborough and supplied timber for John's contracts. After 1876, written sources identify the contractor as "J. Rooney" instead of "J. & J." as previously, and the Rooney firms continued to be supplied by timber from Maryborough, still receiving 40 - 50,000 superficial feet a week from that source as late as 1902.[188]

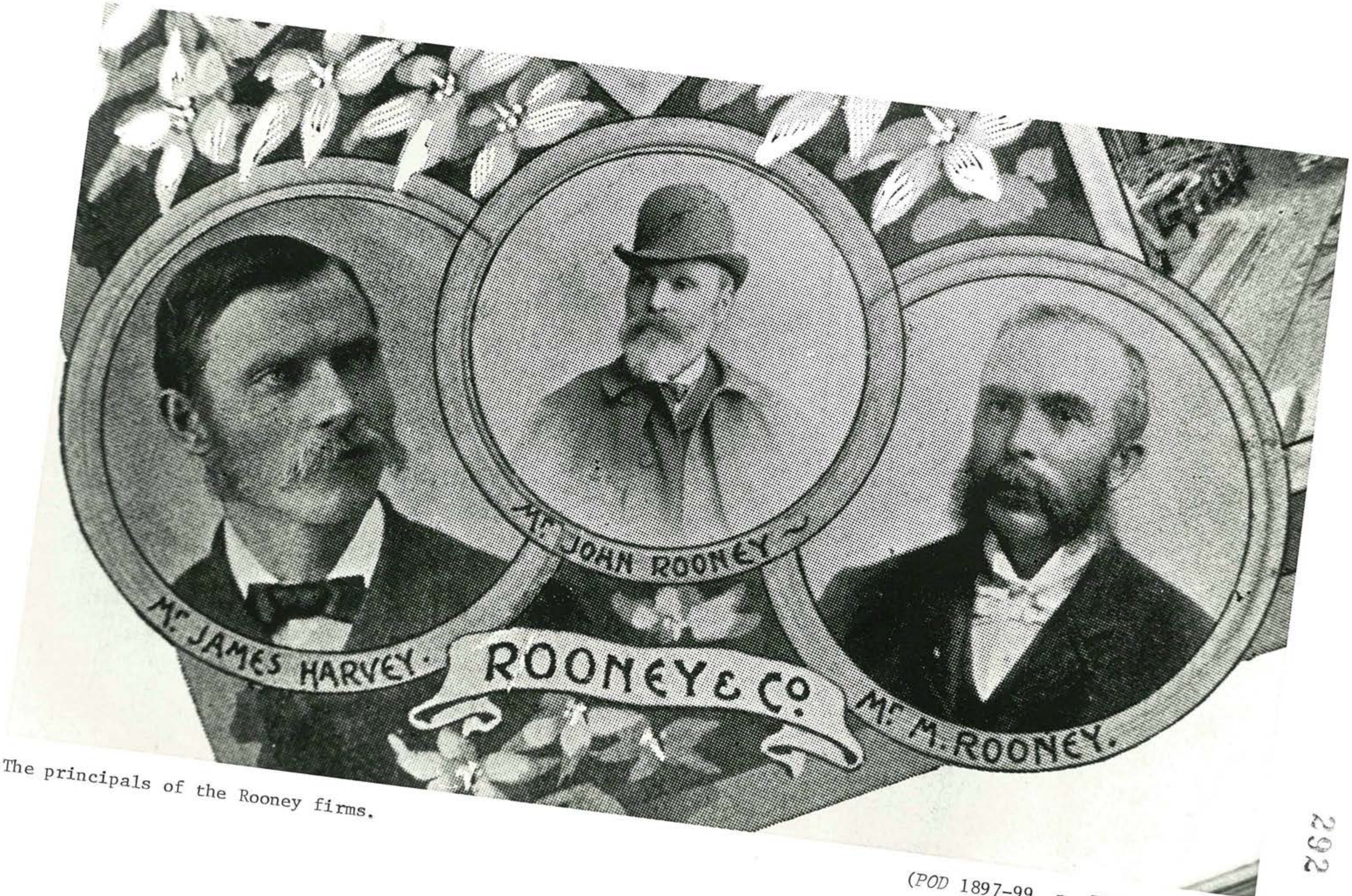
In 1882 John Rooney joined forces with his brother Matthew[189] and another Ulsterman, James Harvey, to form two Townsville-based companies. Rooney Brothers worked as architects, builders and contractors, drawing their timber from Rooney and Company, a partnership of the three. The companies built an elaborate mill and timber yard on Ross Creek in Townsville, supplying timber with their own traction engines and fleet of nine coastal vessels. In the late 1880's there

[186] *Ibid.*, pp. 387, 437, 444 & 459; and for general background see J.H. Thorburn, "Major Lighthouses of Queensland", *Queensland Heritage I*, 1969, 6, pp. 18-29 & 7, pp. 15-24, who strangely makes no comment on the Rooneys' regular success in winning tenders.

[187] A/13141 pp. 358, 359, 442, 461 & 514, A/13142 p. 97, Q.S.A.; *Q.G.G.* 1878 pp. 618 & 1042.

[188] *North Queensland Herald* 8 February 1902.

[189] There is no previous mention of Matthew in the Queensland building industry, although according to his entry in the register of deaths he migrated in 1874.



The principals of the Rooney firms.

(*POD* 1897-99, p. 703)

came an expansion of milling operations, and Rooney and Coy had moved to a new site on Ross River by about 1893. Their milling capacity was by that time 25,000 superficial feet per day, and the workforce at the new mill was about 200.[190] A claim that the mill was "capable of supplying the joinery requirements of the whole of North Queensland" was probably no exaggeration.[191]

A number of public, commercial and institutional buildings were built or supplied by the Rooneys: the Bank of Australasia (1884), the Criterion Hotel (1888), the Boys' and Girls' Central Schools (1888 & 1890) and the new Customs House (1902) in Townsville; the municipal offices (1887), a hotel (1888) and the Stock Exchange (1889) in Charters Towers; the Administrator's quarters, offices and other government buildings in Port Moresby (c. 1884), and buildings in Croydon. The firm did much building for the Roman Catholic church: churches at West End, Stuart and Ravenswood, and school buildings at St. Patrick's, North Ward, are known to be their work, and it is suspected, although evidence is wanting, that others in the Townsville district were also Rooney-built.[192] They also tendered, apparently unsuccessfully, for Townsville's quarantine station, (1884) Geological Survey Office (1885) and new post office (1888).[193] A number of extant private houses in Townsville can be attributed to the firm, as they are known to have been built for members of the family: Matthew's house in Fryer Street (c. 1885), a house in The Avenue, and two in

[190]The records of the Rooney firms were destroyed by fire, and they seem never to have been registered in Queensland. This account is based principally on an undated clipping from the *Clarion* in an album donated by a member of the Harvey family to James Cook University library; *Townsville Herald* 24 December 1887; W.F. Morrison, *The Aldine History of Queensland*, Sydney 1888, vol. 2, no. p.; *Queenslander* 16 March 1895; *North Queensland Herald* 8 February 1902.

[191]*Clarion* n.d.

[192]*Northern Miner* 26 January 1884; *Clarion* n.d.; Ivimey, *Mining & Separation*, p. 163; Morrison, *Aldine History; Townsville Herald* 16 July 1887, 27 November 1888, 1 February 1890; *North Queensland Herald* 8 February 1902; I. Stuart, *Port Moresby*, Sydney 1970, p. 266; information supplied by Dorothy Gibson-Wilde and Don Roderick.

[193]Works Department Tender Book 1884-1891, A/13068 Q.S.A.

Second Street (c. 1896 & 1900). The stylistic details of the known Rooney houses lead to suspicion about others whose quality of workmanship and correspondence in detail to these is high, but a definite attribution is not possible on this evidence. The Rooneys catered as well for a wider and humbler market: "They also do a considerable business in portable tents and houses, constructed in sections for transportation to and erection in distant places".[194]

From the information available on the Rooney company members, it is plainly absurd to think of them as vernacular builders: their background, outlook and methods of operation put them entirely within the British timber building tradition. John and Matthew were the sons of Matthew Rooney, a carpenter of Portadown, Co. Armagh. Both made regular and protracted visits to Britain, and sometimes to the U.S.A. where they inspected milling and building operations and purchased machinery.[195] James Harvey, born in Clare, Co. Down, had worked in the Birmingham timber trade before emigrating in 1878. In Brisbane he worked for the timber firms of Hiram Wakefield and Ramsay & Coy before joining the Rooney brothers in 1882 as managing partner of the mill.[196] Harvey, who "practically had supreme control of the concern",[197] purchased his milling, planing, turning and fretcutting machinery from American and British suppliers and clearly kept abreast of foreign developments.[198] The firm provided much of its own timber from the northern ports of Cardwell, Geraldton and Cairns, but also regularly imported softwoods from Maryborough and Hobart, and Oregon pine and Redwood from San Francisco.[199]

[194] *Clarion* n.d.

[195] *Townsville Herald* 24 December 1887; *North Queensland Herald* 23 March 1892 & 8 February 1902.

[196] Harvey's obituary, *Star* 14 May 1904.

[197] Morrison, *Aldine History*.

[198] The mill plant is described in detail in *Townsville Herald* 24 December 1887.

[199] Matthew Rooney's own house appears to be built entirely of Oregon.

It is apparent that by adopting highly mechanised methods of milling and finishing timber, a large through volume, and by controlling every aspect of the industry from forest logging to erection of the pre-cut building on-site (and then selling paint and furniture to equip it) the Rooneys were able to compete with great success, and indeed to dominate the northern market for much of the period 1880-1900.

Precisely how they came to lose that dominance is not clear, but southern competition, and the deaths of the founding partners explain much of the decline. John Rooney spent increasing periods away from Australia, and died early in the twentieth century.[200] James Harvey died in 1904.[201] All accounts of the Rooney firms consistently allude to Matthew as general business manager, John as building specialist and Harvey as timber trade specialist, so this dual loss of expertise must have been most damaging.

Competition on the northern market was beginning in earnest simultaneously. The Brisbane firm of James Campbell and Sons had operated in southeastern Queensland since 1854.[202] In 1903 they expanded their operations into provincial Queensland, advertising a standardised range of cheap and simple timber buildings, entirely prefabricated and supplied with all fastenings, fittings and tools necessary for on-site construction, even to paint and brushes. "Cheap Cottages, 4 Rooms and Verandah. All material numbered and ready for erection. First-class timber: £98. Second-class timber :£86."[203] The houses' degree of prefabrication is made explicit in the company's later literature:

[200] He was alive in 1902, when he was described as having been in "the old country" for 5-6 years. (*North Queensland Herald* 8 February 1902). However neither John Rooney nor the firm of Rooney Brothers is mentioned in the papers to do with Matthew's estate in 1911, so John apparently predeceased him.

[201] *Star* 14 May 1904.

[202] Campbell, *Redicut Homes*, p. 2.

[203] *Queenslander* 8 August 1903. A 1914 catalogue of Campbells' designs is held in the Pioneer Mill records, James Cook University Library, and see *Redicut Homes* for further evolution in the 1920's.

> the frame work...is cut, shaped and finished to the exact measurements....this prepared frame material is erected in the mill yards at Albion exactly as though the house was to be completed on the spot. 204

Two years later Brisbane builder Edmund Broad combined with sawmiller George Brown to form Brown and Broad Limited, adopting construction and marketing methods virtually identical to those of Campbells.[205] Brown and Broad too offered completely prefabricated houses by mail: "All sawing and fitting is done on special machinery in our own mills and come to you Ready-to-Erect."[206]

The two companies' houses were very simple, and on the northern market quite distinctive in appearance. They employed stud framing only for walls exposed to the weather, and these were externally clad with chamferboards. To eliminate stud frame joinery, the verandah walls and partitions were of vertical tongue and groove board, secured by a rail. Most materials were lighter than was usual in the north: studs were 75 x 50 mm, iron sheeting was 26 gauge. Walls were single-clad and frame members widely spaced.[207] All these features were calculated to cut costs, and other labour-saving innovations brought substantial change to the external appearance of houses: roof profiles were simplified into a straight line, with the core-to-verandah step eliminated; decorative details such as brackets were reduced to minimal complexity, and casement windows replaced sliding sashes.[208] Labour shortage from 1914 onward undoubtedly greatly accelerated the process of simplification and standardisation.

[204] Campbell, *Redicut Homes*, p. 2.

[205] The company was registered on 11 February 1905: Register of Companies 261 book 11, 1905, A/18941 Q.S.A.

[206] *North Queensland Register*, regular advertisement 1915-16.

[207] Plans & Specifications, 1914 catalogue.

[208] *Ibid.*, and see Brown & Broad advertisements in *North Queensland Register* 1916, the first year in which casements were plainly illustrated.

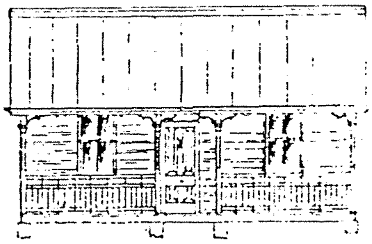
James Campbell & Sons Ltd.,

12-20 CREEK STREET,
AND ALBION, BRISBANE.

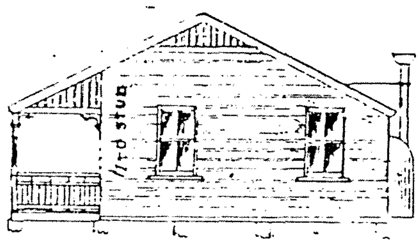
MANUFACTURERS OF

READY-TO-ERECT BUILDINGS.

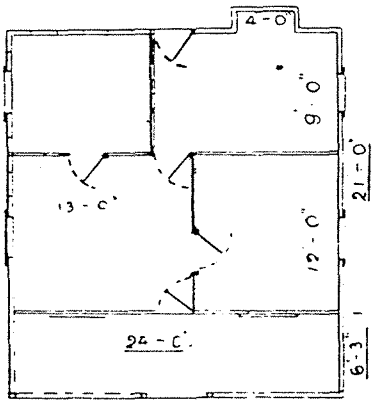
1st Class 116·10·0
2nd Class £104·15·6
~~Painting~~ Weight 19 tons.



FRONT ELEVATION.



SIDE ELEVATION.



GROUND PLAN

SPECIFICATION AT BACK.

JAMES CAMPBELL & SONS LTD.

SUPPLIERS OF ALL
BUILDERS', PAINTERS' AND PLUMBERS' MATERIALS,

CREEK STREET, BRISBANE.

COMPLETE PRICE LIST ON APPLICATION

Campbells' Leaflet c. 1914

[ames Campbell and Sons' advertisement. (*NQR* 1916)

Brown and Broad advertisement. (*NQR* 1916)

There is no record of the sales of these mail order ready-to-erect houses in North Queensland.[209] However a comparison of their illustrated catalogues with the extant building stock of the region suggests that either their sales were very large indeed, or their influence on local builders was profound, for in the years preceding the first world war there was a steady transition to vertical boarding, straight roof profiles, external chamferboards and simplified ornament in the urban areas of the north.

There was a further source of pressure for conformity throughout the state's building industry after 1909, when the Kidston government passed the *Workers' Dwellings Act*, under which a worker with an annual income less than £200 could receive a state loan of up to £300 to build a house on his own land.[210] By 1914, 235 workers' dwellings had been built in northern areas, 128 of them in Townsville alone.[211] Naturally the act provided minimum specifications for eligible dwellings, and all the firms supplying ready-to-erect houses found it prudent to conform: "All our designs meet the requirements of the Workers Dwelling Act".[212]

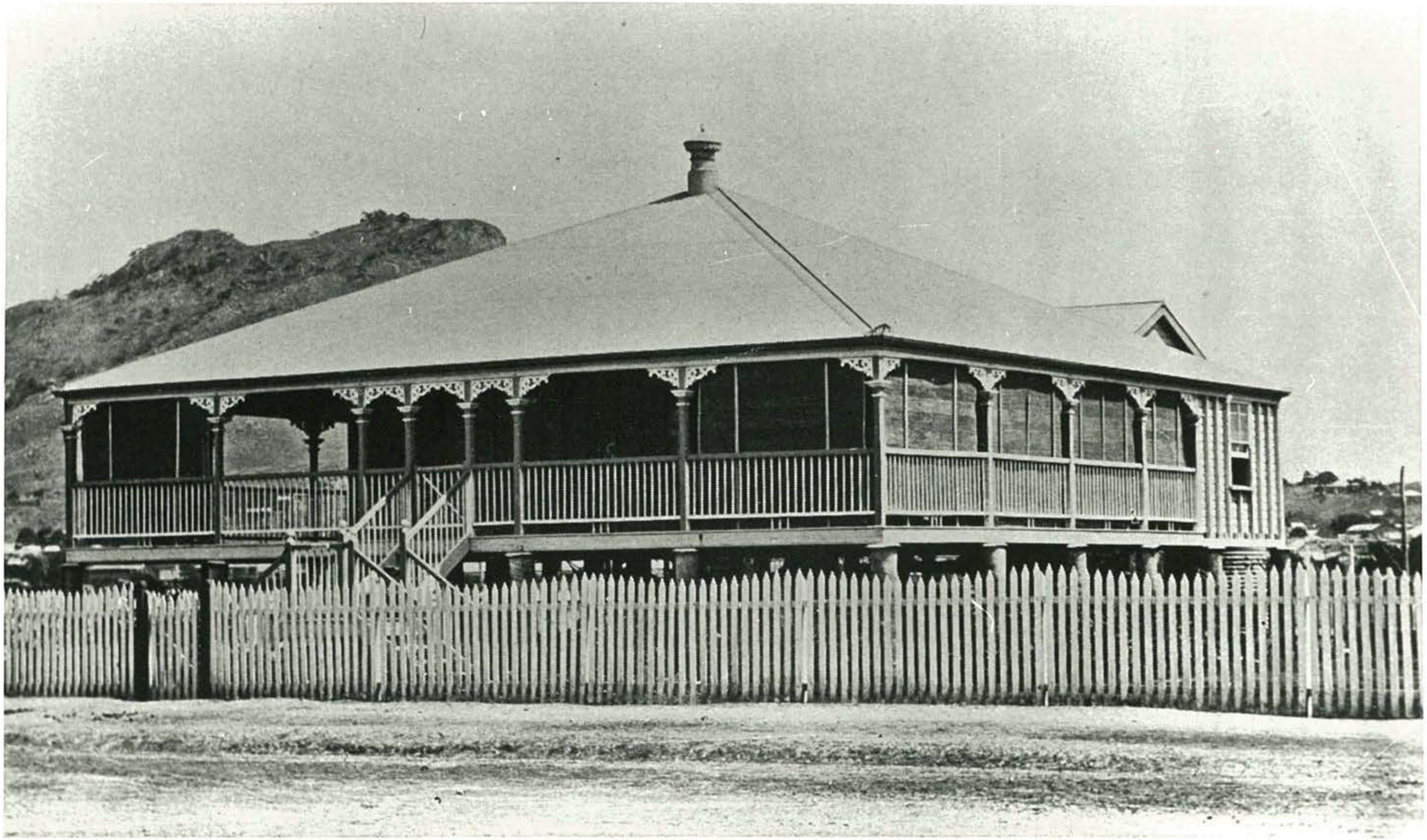
Rooney and Company found itself in the same disadvantageous position in which it had placed all other northern building firms for over twenty years. Suddenly the gamekeeper was turned poacher. Its southern competitors were using precisely the same methods: control of the product from forest to construction site, advanced mechanization and utilization of cheap sea freight to undercut Rooneys' market. And probably their larger turnover, newer plant and lower southern labour costs were enabling them to do it more efficiently.

[209] Brown & Broad no longer exists. James Campbell & Sons were in 1979 unable to provide information on company activities before the late 1930's.

[210] *Queensland Statutes* 1910, Vol. II, p. 1342.

[211] *Fourth Report of the Workers' Dwellings Board*, 30 June 1914.

[212] Campbell, *Redicut Homes*, p. 4. By 1918, Rooneys Limited's letterhead bore the legend: "Workers' Dwellings Act (Full information how to proceed)" Letter 27 February 1918, 18/02559, WOR A 878 Q.S.A.



Workers' dwelling, Townsville (1915). (*Q.P.P.* 1915-16, *3*, after p. 954)

Rooneys finally collapsed in 1911 with the death of Matthew, who vanished with his wife and one daughter in the wreck of the SS *Yongala*.[213] The heirs reconstructed as Rooneys Limited,[214] and the new company attempted to continue competition in the prefabricated building trade: "Old Methods of Building now Give Way to Rooney's Ready-to-Erect System".[215] While the wording of their advertisement explicitly recalls that of Campbells' and Brown and Broad, it is difficult to imagine what was new, for the old company had supplied buildings "all prepared and ready for erection" for years.[216] The company's heyday in the building industry was gone; Rooneys Ltd concentrated on furniture manufacture and retail trading until wound up in 1946.

Collapse in the mining industry, the Great War and resulting labour shortage, and the prolonged rural depression of the 1920's put an end to large-scale operation by northern building firms. The opening of the North Coast Railway to Townsville in 1923 and Cairns in 1924 linked North Queensland more effectively to the mills of the southern building firms, and the region has ever since been within their market place.

The building materials and techniques employed in North Queensland houses, while diverse, seem to have been constrained by economic circumstances. There was less experimentation in local primitive materials than occurred in others parts of Australia, and probably even less in mining settlements than in pastoral and agricultural housing within this region. Inhabitants of mining communities seem to have been content to live in tents or occasionally bark shelters until permanence was assured, and then to have relied on a supply of industrially prepared timber and iron components for the construction of habitation, usually

[213]*North Queensland Herald* 1 April 1911. The *Yongala*, a passenger steamer on her regular east coast run, vanished in a cyclone south of Townsville with the loss of 120 lives on the night of 23 March 1911.

[214]Register of Companies 237 book 11, 1911, A/18943 Q.S.A. The company changed its name to Rooneys Pty.Ltd., in 1932, and was wound up in 1946.

[215]*North Queensland Register*, regular advertisement 1916.

[216]*North Queensland Herald* 13 March 1911.

by craftsmen. Thus the nature of house construction was determined largely by the building trade, and especially by the timber millers, whose products were passively accepted by their clients. Volition on the part of the occupant was rarely a formative influence on the region's building tradition; the initiative was more often in the hands of the timber merchants.

Appendix to Chapter Five.

Summary of building materials in selected Valuation Registers.

The documents treated here are strictly "Forms of Valuation and Return", proforma valuer's reports under the *Divisional Boards Act* of 1879 to provide information for local authorities in levying rates. They are headed as follows:

Occupier	Owner	Description & Situation...	If let...	Net Annual Value

Depending on the valuer's interpretation of the headings, the column "Description and Situation of Rateable Property" usually lists in brief form the materials of which any buildings on the property are constructed, and this provides the basis for an objective description of the materials of buildings in a divisional board area in a given year.

However, a number of shortcomings reduce the usefulness of the registers; first is their internal inconsistency and vagueness. There is no indication of the relative significance of the materials named, whether they are used for walls or roofs, or whether other materials also appear. For example, the categories "weatherboard and bark" and "weatherboard and iron" seem to make a clearcut distinction between wall and roof, but what is to be inferred from the description "weatherboard": that the roof is shingled, or has been ignored? Often, too, the valuer did not write the description in full, but abbreviated, often inconsistently: one can only assume "WB & B" to mean "weatherboard and bark". Then, too, houses are described interchangeably as "iron and Bark" or "bark and iron", leaving their relative positioning unclear. Other buildings are described as "hut", "shed", or "humpy" without any description of materials. Some categories of materials are unexplained: "wood" appears frequently, beside "weatherboard", "slab" and "saplings", creating ambiguity. Finally, the descriptions vary from year to year. "Grass" will be replaced by "thatch"; or in a year when "wood" predominates, "weatherboard" will be found to diminish. All of these problems make the use of the registers far less precise than a first reading suggests is possible.

In an attempt to bring some order from this confusion, summarised below are the entries in two registers, described in three different ways:

1. Each description of materials in combination that appears in the registers is listed, with its frequency of appearance both as a number and as a percentage of the number of buildings.

2. Each individual material named is listed, with its frequency of appearance both as a number, and as a percentage of the number of mentions of individual materials (not of buildings - i.e. "bark & iron" is two *mentions*);

3. The number of mentions of each material is expressed as a percentage of the number of buildings, i.e. the percentage for "bark" is the percentage of buildings of which bark constitutes any part, thus no percentage column will total 100.

In the case of the Palmer, a further distinction has been made between European and Chinese occupiers in each category of material. This distinction has been made on the bases of the occupier's name: while possibilities for error exist through the potential ambiguity of English names such as Lee and Hann, and the anglicization of Chinese names; it is thought these problems are not likely to seriously affect accuracy.

The registers summarised are from the Ravenswood Division, then roughly approximating the Ravenswood goldfield, and now within the Dalrymple shire; and the Hann Division, then roughly the Palmer goldfield plus the Laura district, and now part of the Cook shire. Both are held at Q.S.A., and cited in the bibliography.

1. Descriptions of Material in Combination

Ravenswood 1882

Description	Number	% of buildings
Bark	126	29
Weatherboard & Bark	4	1
Bark & Iron	61	14
Weatherboard	54	13
Weatherboard & Iron	27	6
Tent	17	4
Bark & Slab	9	2
Iron & Slab	3	0.7
Iron	22	5
Hut	86	20
Slab	3	0.7
Calico & Bark	5	1
Iron & Calico	4	1
Grass	5	1
Iron & Saplings	1	0.2
Saplings & Bark	1	0.2
Wood & Iron	1	0.2
	429	buildings

Descriptions in the register have been summarised, e.g. Bark & Iron includes: "B&Iron", "Iron & B", "Iron & BK".

1. Descriptions of Material in Combination - Palmer 1880

Description	Chinese Number	Chinese %	European Number	European %	Total Number	Total %
Slab & Bark	21	5.7	11	2.9	32	8.7
Bark	52	14.1	8	2.2	60	16.3
Slab & Thatch	10	2.7	1	.3	11	2.9
Bark & Thatch	5	1.3	-		5	1.3
Thatch	5	1.3	2	.5	7	1.9
Slab	2	.5	-		2	.5
Iron	9	2.4	18	4.8	27	7.3
Slab & Iron	6	1.6	13	3.5	19	5.2
Weatherboard & Iron	-		2	.5	2	.5
Calico	8	2.2	1	.3	9	2.4
Bark & Calico	14	3.8	-		14	3.8
Slab & Calico	1	.3	-		1	.3
Iron & Bark	2	.5	6	1.6	8	2.2
Wood	133	36.1	11	2.9	144	39.1
Iron & Wood	6	1.6	20	5.4	26	7.1
Wood & Bark	-		1	.3	1	.3
	274		94		368	buildings

2. Number of Mentions of Material

Ravenswood 1882

Material	Number	% of mentions
Bark	206	44.9
Iron	119	25.9
Weatherboard	85	18.5
Tent	26	5.7
Slab	15	3.3
Grass	5	1.1
Saplings	2	0.4
Wood	1	0.2
	459 mentions	

Note: This excludes 86 "Hut" descriptions in table 1.

2. Number of Mentions of Material - Palmer 1880

Material	Chinese Number	Chinese %	European Number	European %	Total Number	Total %
Wood	139	28.5	32	6.6	171	35.1
Bark	94	19.3	26	5.3	120	24.6
Iron	23	4.7	59	12.1	82	16.8
Slab	40	8.2	25	5.1	65	13.3
Calico	23	4.7	1	.2	24	4.9
Thatch	20	4.1	3	.6	23	4.7
Weatherboard	-		2	.4	2	.4
	339		148		487 mentions	

3. % of buildings of which given materials constitute any part

Ravenswood 1882

Material	% of buildings
Bark	48
Iron	28
Weatherboard	20
Tent	6
Slab	3.5
Grass	1.2
Saplings	.5
Wood	.2

Note : this excludes 86 "Hut" descriptions in table 1.

Palmer 1880

Material	Chinese	European	Total
Wood	38*	9	46
Bark	25	7	32
Iron	6	16	22
Slab	11	7	18
Calico	6	.3	7
Thatch	5	1	6
Weatherboard	-	.5	.5

The interpretation of table 3 is limited, as no percentage columns total 100. (*) can only be taken to mean: 38% of houses in the register are Chinese-occupied and partly or wholly of wood.

CHAPTER SIX

Details and Modifications

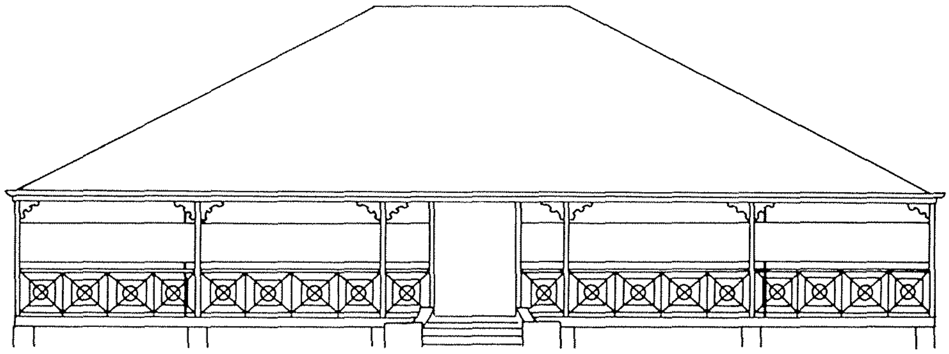
"Our street architecture is
of the most primitive and
savage style, and a reform-
ation is much needed."

This chapter deals with the details of North Queensland houses: the non-structural elements, whether decorative or utilitarian. It also describes the processes of modification which have affected almost all houses in the region to a greater or lesser extent since their construction.

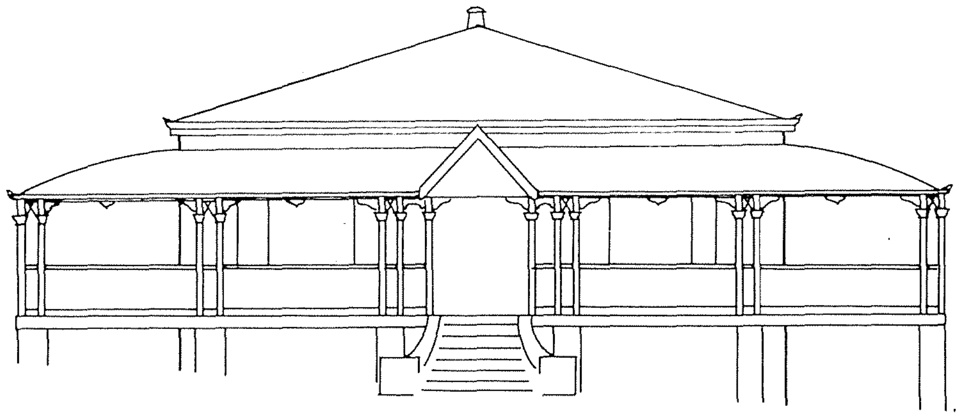
The use of ornamental detail in North Queensland is limited. The number of decorative elements is small, and they occur in only a few of the applications where decoration is applied to buildings in other regions. Some elements common elsewhere such as elaborated bargeboards, valencing and roof crestings are almost unknown in the region. The number of decorative designs encountered is also quite small, and it is evident that the prefabrication of building components extended to detail such as timber fretwork and cut sheetmetal edging, which were supplied by a small number of mechanised plants. This pattern of supply created a small number of widely distributed ornamental elements.

The external appearance of the North Queensland house was dominated by its verandahs, which occupied the street frontage and sometimes other sides of the house. Certain principles were followed in their design. The front elevation of the house, usually symmetrical at the time of construction, was divided by its verandah posts into bays of equal length. There was usually an odd number of bays, and the entrance was positioned midway in the central bay, with flanking posts only to handrail height, finished by a turned ball or other simple ornament. Naturally there were variations, but the principal alternative, an even number of bays with central entrance flanked by two posts of full height, was less popular. It appeared in greater numbers in later years when shading devices were commonly adopted, and is often the result of late modification.

Each bay of the verandah was further subdivided horizontally by the balustrade, which itself usually consisted of a geometrically repeated motif; and the severity of this rectilinear arrangement was then reduced in most houses by fairly subdued decorative details. The screen of posts and balustrades was backed by the timber verandah wall, with its own repeated subdivisions by doors, windows and studs. No attempt was made to harmonize these two patterns. The core wall and



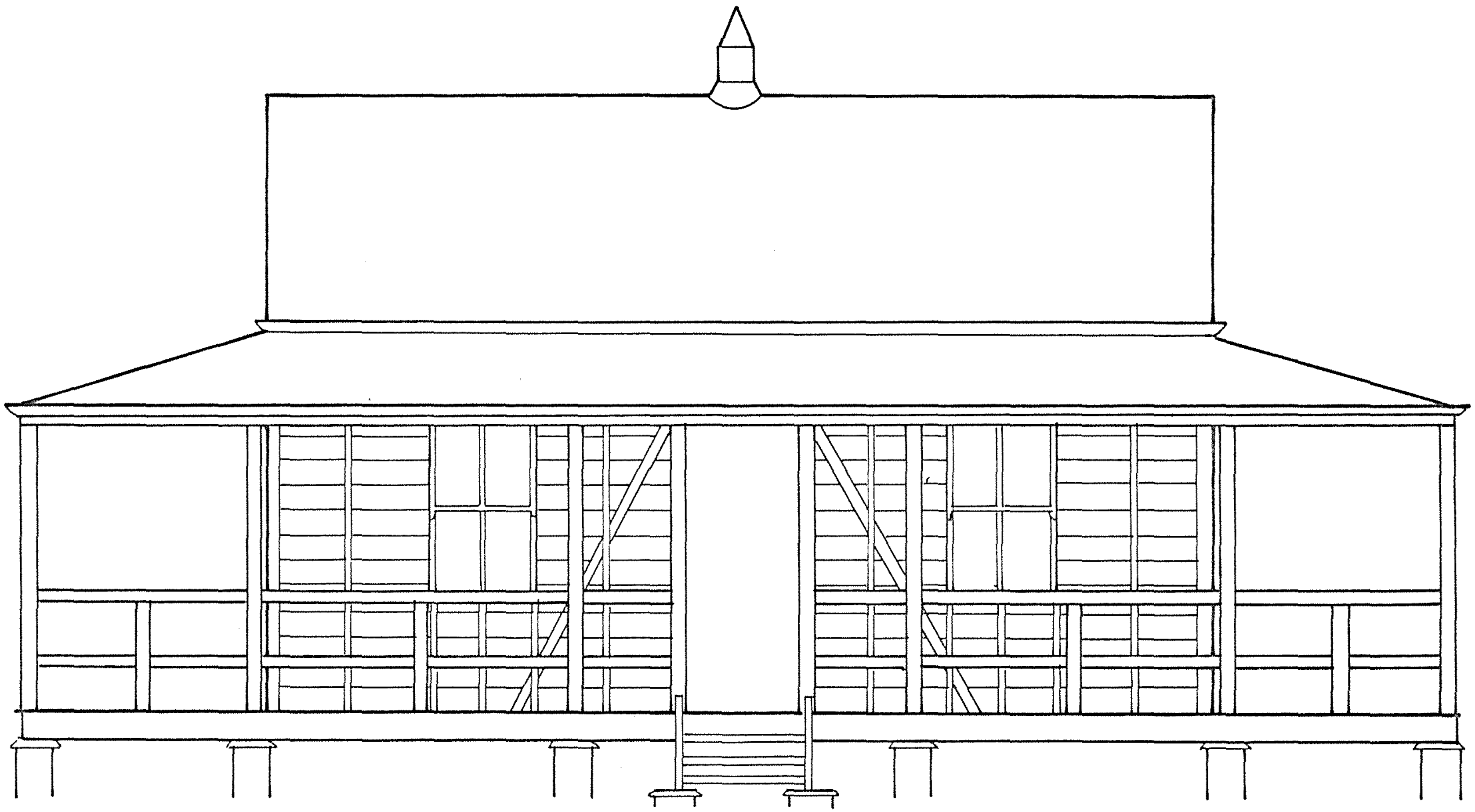
Currajong (c. 1889)



Warringah (1912)

FRONT ELEVATIONS : four-roomed house with encircling verandahs.

Four-roomed house : front elevation



Two-roomed cottage with encircling verandahs: Ravenswood Junction School residence (1892-97)

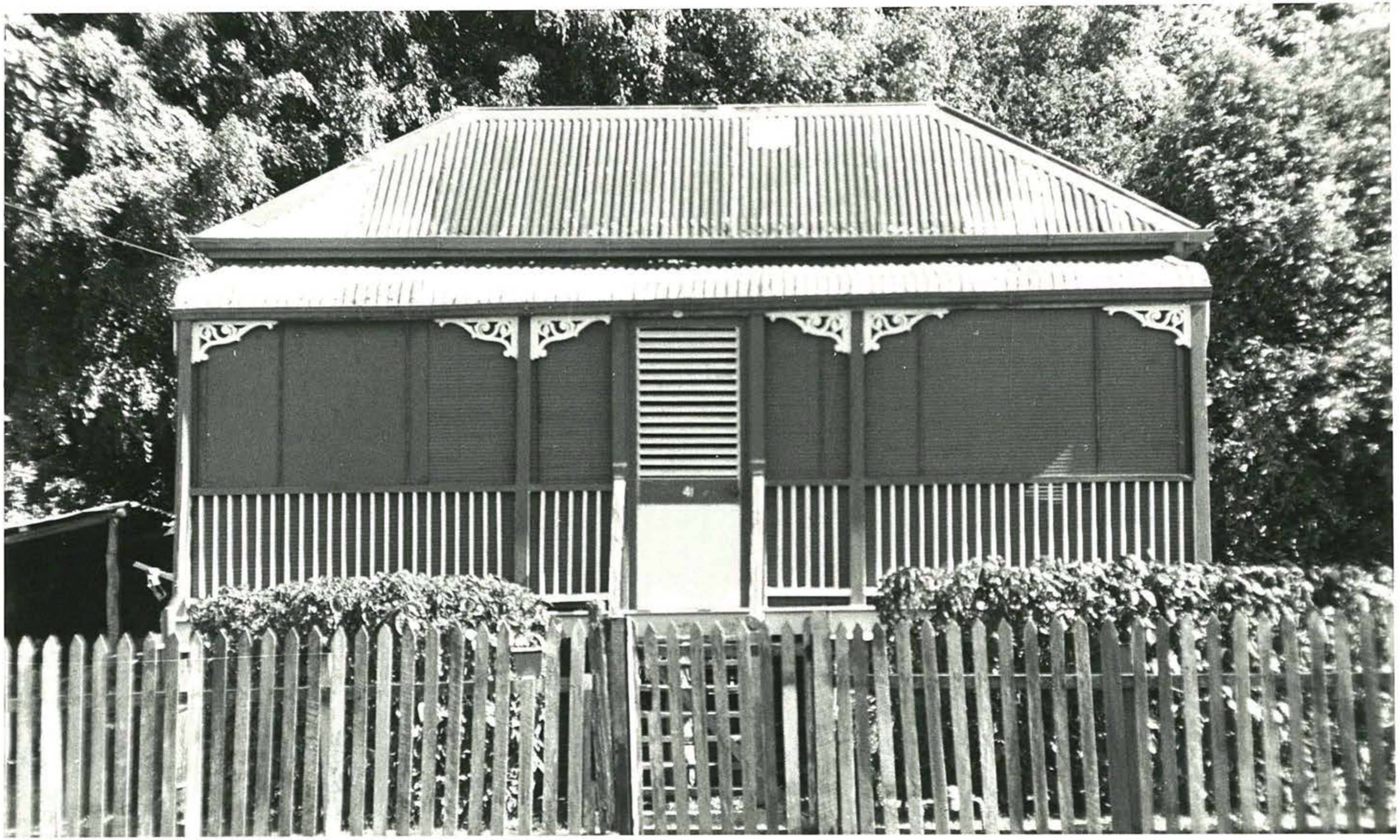
Elevated four-roomed house with verandah posts flanking entrance, Charters Towers. (Mrs. Jackson, Townsville) the verandah facade were treated as separate symmetrical design exercises, and it was not usual for the verandah posts to align with subdivisions of the wall. When a post does align with the side core wall, it is frequently evidence of late addition of a side verandah, for the space between verandah posts was usually longer than the verandah's width.[1] A few larger houses had an entrance porch projecting over the head of the stairs and gable roofed. The gable was sometimes elaborated with fretwork brackets and bargeboards: the only context in which decorative bargeboards are found on North Queensland houses today.

The verandah facade usually adhered to closely standardised dimensions and proportions. The posts were normally 2200 mm in height, of 100 mm timber, with arrises stop-chamfered where they were clear of other timber. The balustrade handrail was usually between 900 mm and 1000 mm above floor level, with a smaller rail about 100 mm above the floor to support the balusters. The verandah brackets varied considerably in dimensions, but about 500 x 300 mm was common, and they were cut from timber panels ranging from 20 to 50 mm in thickness: about 30 mm is typical. Generally speaking, more durable thicker brackets are associated with better quality houses, but there are many exceptions. The bracket was almost always arranged with its longer dimension horizontally.

Immediately below the bracket, two cornice mouldings encircled the post, the upper larger in section Although small in scale, they were made prominent by the paint scheme. Where original paintwork is visible, the usual practice seems to have been to pick out the brackets, mouldings and balusters in white or cream against posts, balustrade rails and walls of a dark, solid colour such as tan, chocolate or green.

The brackets topping the verandah posts were the most prominent decorative element on the majority of houses. Although they might

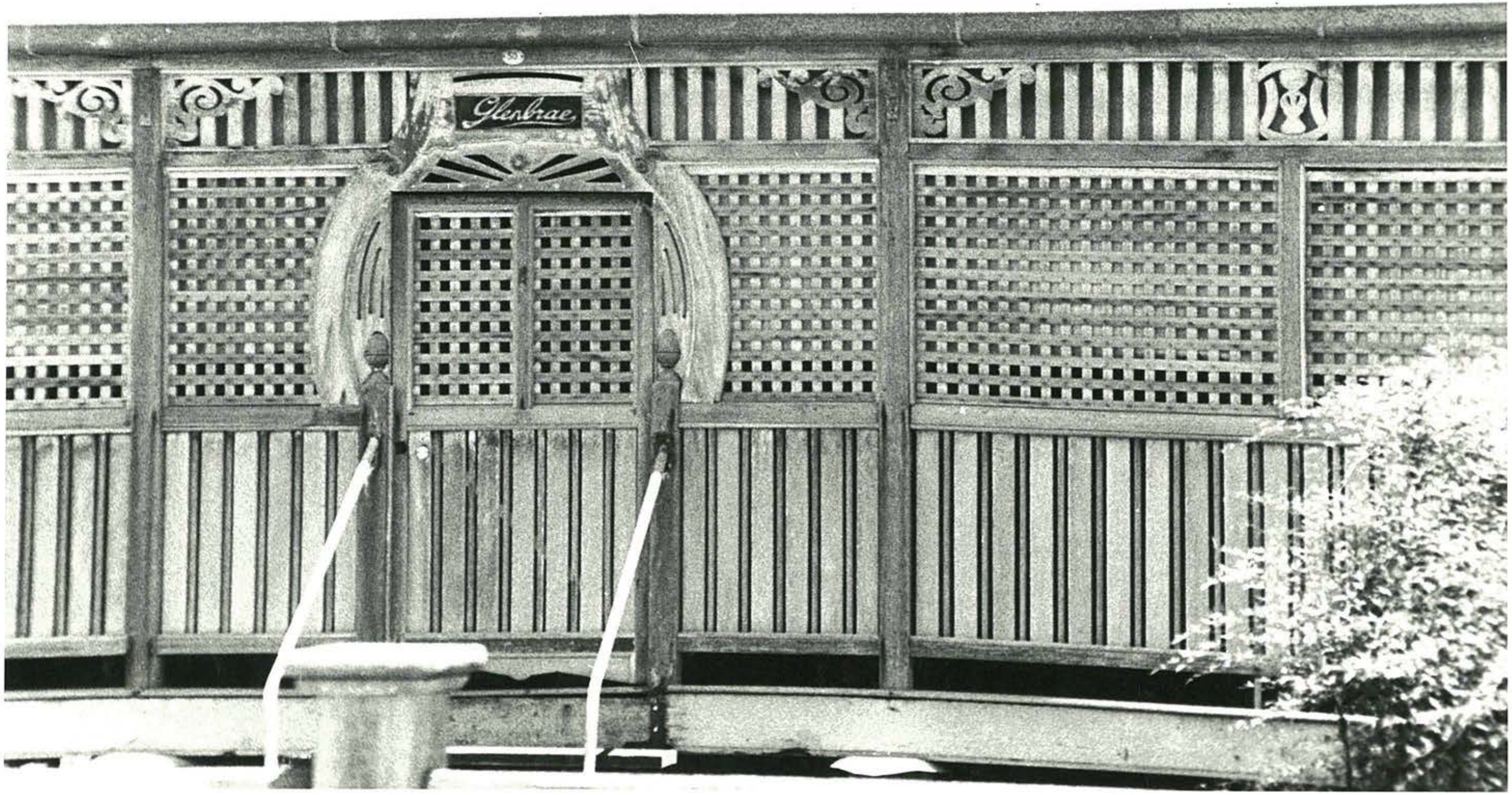
[1]This also leads to irregular spacing of foundation stumps, for those on the outer perimeter conform to the verandah posts, and the rest to the core walls. This irregularity is usually concealed by shadow under the house.



Conventional verandah facade, two-roomed cottage, Townsville.

Verandah facade of two-roomed cottage, Mingela (1892-97). Spacing of posts results from late addition of side verandahs.

Verandah details, four-roomed house, Charters Towers.



Detail of latticed verandah facade, Townsville.

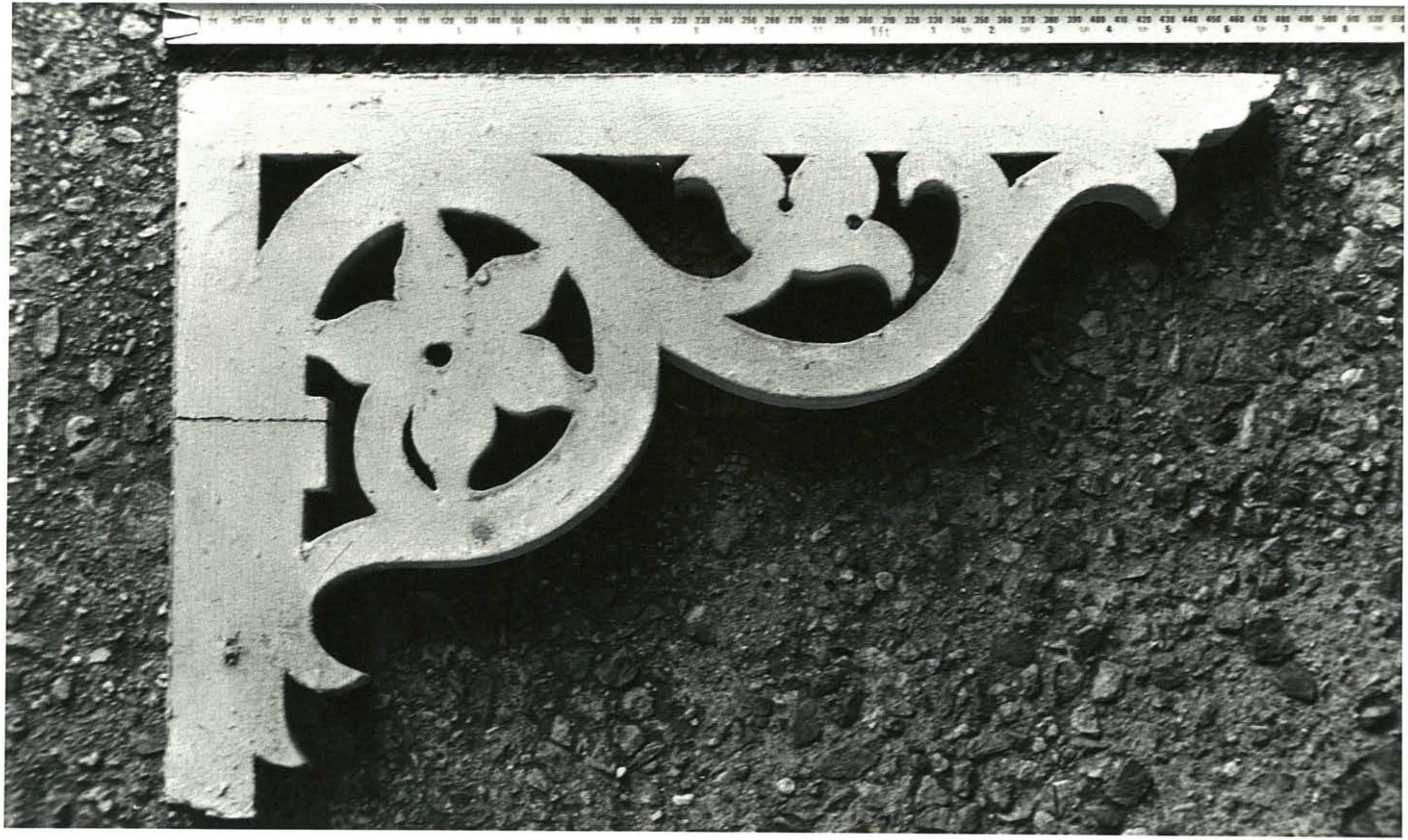
have had a slight bracing function when in good order, these brackets can safely be regarded as entirely decorative. With their accompanying mouldings, their visual function is to ease the abrupt transition from post to roof beam: their origin is undoubtedly a remote visual derivation from the column capital of masonry architecture.

The fretwork brackets still in existence display about 80 separate designs, although a much smaller number accounts for the majority of examples found. Most designs are rare; many are found only on a single house. The total number of examples is not great: slightly more than 200 houses in North Queensland have visible brackets, but on closer inspection a number of others have been encountered behind lattice work or extended eaves, or on a rear verandah, so that a richer variety probably remains to be studied. However, many houses have had brackets and mouldings removed to install shading devices, because they were thought unfashionable in later years, or simply through decay. The timber used was in many cases not suitable, and elaborate fretwork exposed to the weather is vulnerable to splitting along the grain and consequently falls apart. Unless drastic renovation has occurred, the paint work of the verandah posts shows the location and dimensions of the missing details.

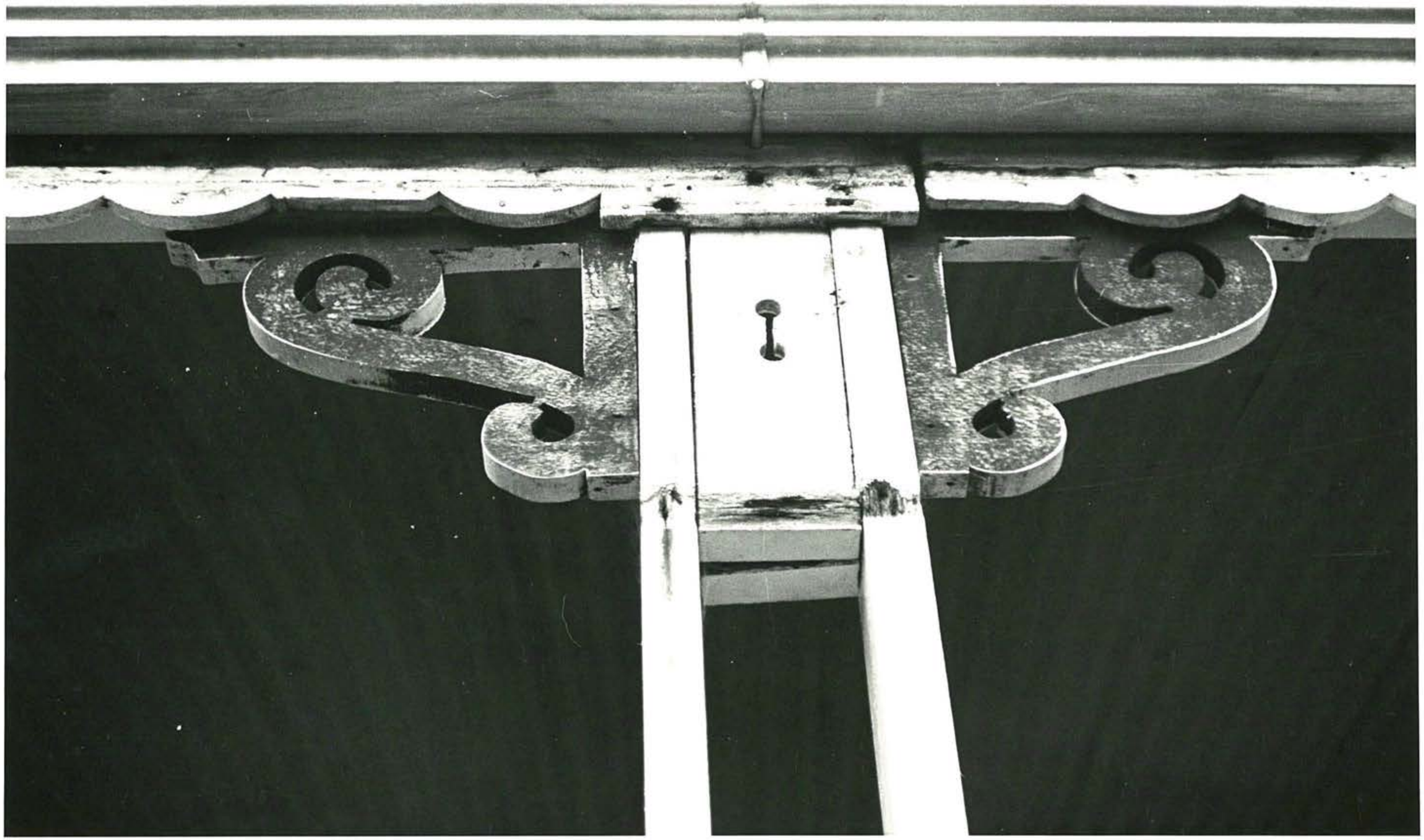
Occasionally brackets are encountered in materials other than fret sawn timber: there are a few in cast iron, expecially in Charters Towers, and one distinctive example in Herberton; two in pressed metal in Bowen; and three or four handcut from sheetmetal in Charters Towers, imitating a common timber design.

A general chronological development can be observed in the usage and design of verandah brackets. They were not common in the two decades after 1861: the few timber buildings extant from the 1860's and 70's do not have brackets, nor any trace of their existence in the past. Photographs of northern towns in that period do not usually show them, although two known exceptions are Black's house (1865) and the New South Wales Bank (1869) in Townsville, both now demolished.[2]

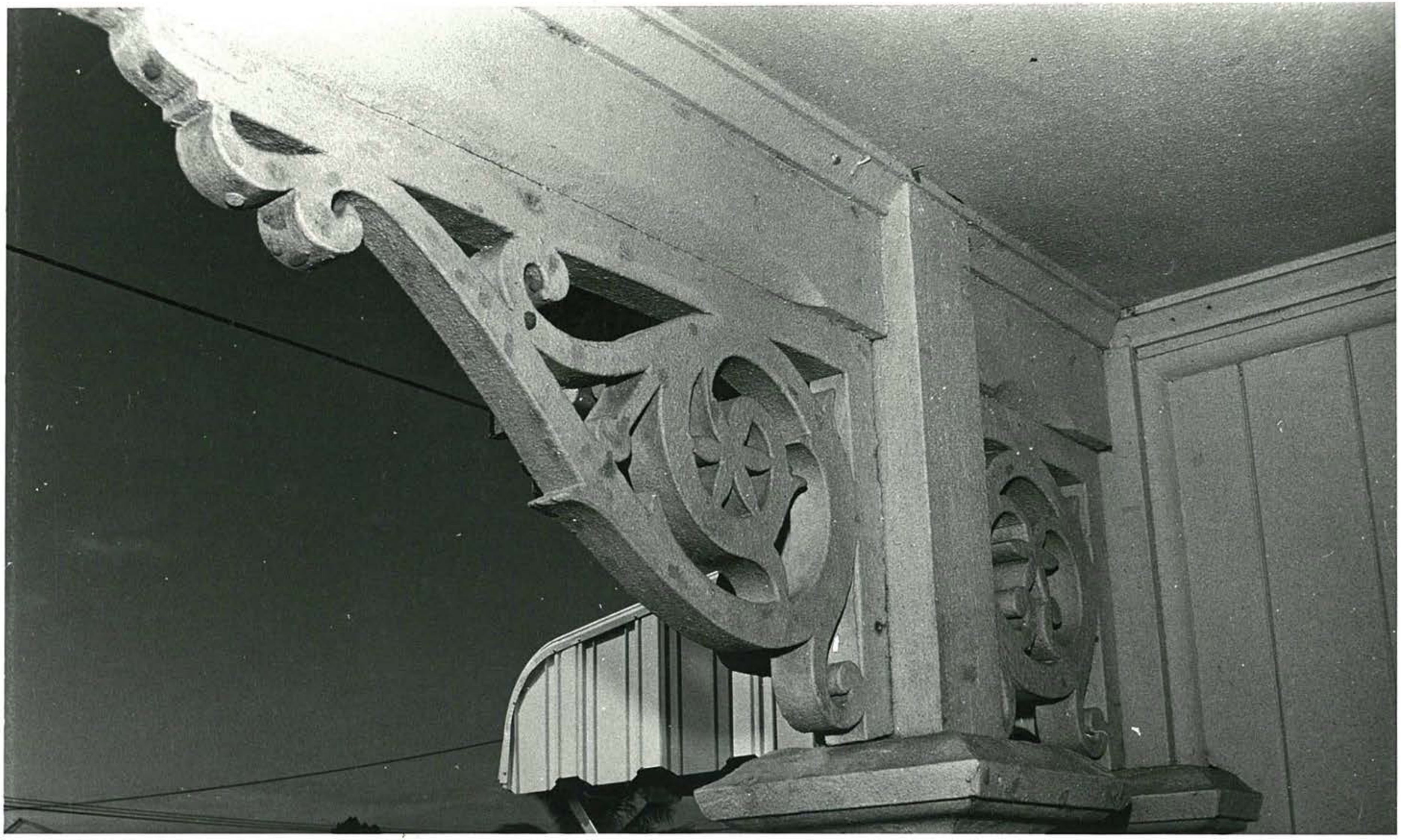
[2] A problem arises in knowing whether such details are original. In the case of Black's house, a late photograph shows two different bracket designs suggesting re-use. The NSW bank is unequivocal: the building was erected in 1869, and the brackets appear in a photograph before its extension in 1871.



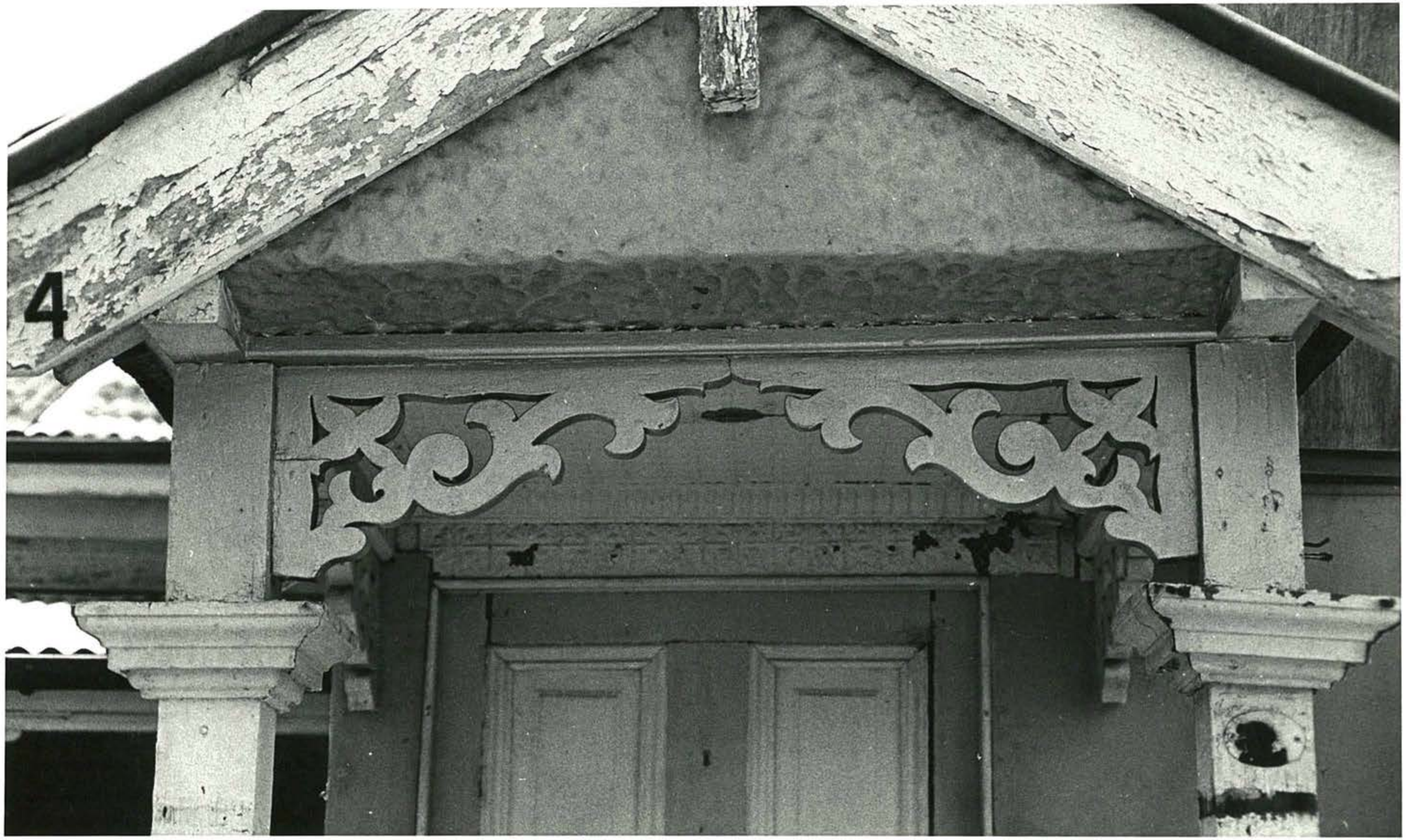
Fretwork bracket, Townsville (c. 1910). A similar design is on Pfeiffer's house, Charters Towers (1881).



Fretwork brackets, John Newell's house, Herberton (c. 1883).

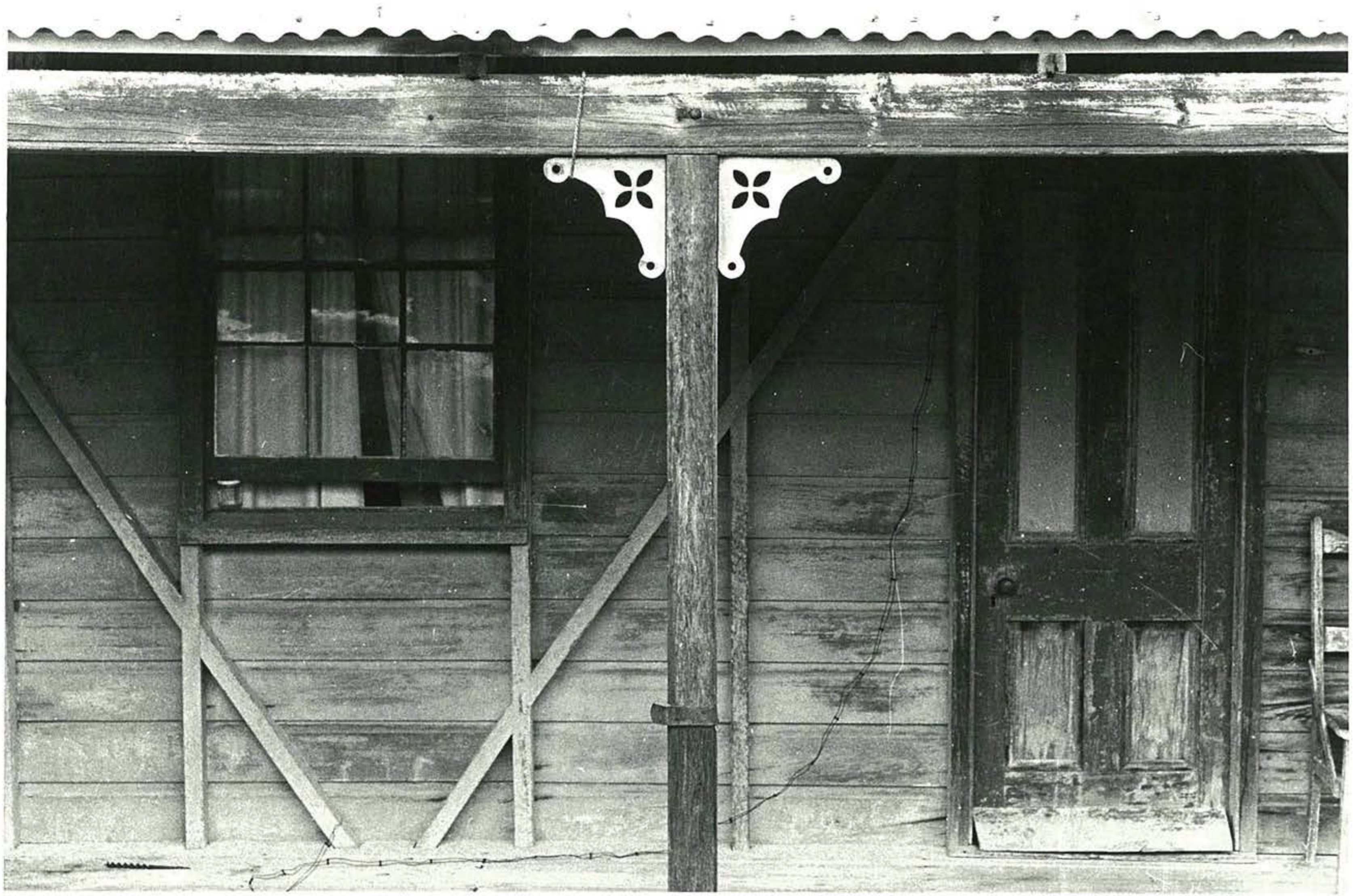


Bracket by Rooney & Coy, Townsville (c. 1900).



Fretwork brackets in entrance gable, Townsville.

Detail of fretwork bracket, Bowen. The rotated verandah post is most unusual.



Stamped sheet iron brackets, Bowen.

Wooden bracket design imitated in sheetmetal, Charters Towers.

However, photographs of Townsville in 1881 show five houses with brackets, and from that time they became increasingly common; indeed they were universally adopted in larger towns, except on the cheapest cottages. Pfeiffer's house in Charters Towers (1881) has brackets and mouldings of forms which remained standard for several decades, as do most other known 1880's houses surviving. Once this usage became general, it then underwent little variation for a considerable time; the greater mechanization of the northern building firms in the early 1880's probably accounts for this, for the period of maximum standardization in building details corresponds closely to their time of ascendancy in the market.

Valencing, shaped valence boards and rails were almost never used in North Queensland, and the brackets which came into favour in the 1880's were mostly of a uniform type. Frequently employing a reverse curve, loosely based on a classical console,[3] their curvilinear forms and "leafy" appearance often suggest highly conventionalised foliage designs. The same designs remained in use for decades.[4] A very few fretwork designs can confidently be attributed to a particular supplier: three or four designs for brackets and ventilating panels are repeated on buildings known to have been built by Rooney Brothers. Four fretwork bracket designs appear in a photograph of Benjamin Toll's joinery works.[5]

But it is uncertain how useful this information is in attributing buildings to a specific builder. The Rooneys and Toll were merchants as well as builders, and undoubtedly supplied materials such as fretwork, which they were uniquely qualified to provide, to other builders and carpenters. Thus the wide distribution of the known Rooney fretwork

[3]See F.S. Meyer, *Handbook of Ornament*, facsimile of 4th edn., New York 1957, pp. 237-38.

[4]For example the design on Pfeiffer's house in Charters Towers (1881) - probably among the oldest extant - recurs little changed on a house in Townsville built about 1910.

[5]Held by Bill Mann, Townsville. One is the Pfeiffer design, another is mentioned below.

in other buildings probably provides no information about the likely builder, or the means by which these designs were diffused. One bracket in the photograph of Toll's works exemplifies the problem. The same bracket is found on seven houses in Charters Towers (and imitated in sheetmetal on two others), which might seem to confirm local workmanship. But the same design is found on three houses each in Townsville and Cairns, and two each in Bowen and Cooktown; an unlikely distance for Toll to trade. The design with slight variations is also found on houses in Brisbane, Ipswich and Rockhampton, and is especially common in Maryborough.[6]

These relatively elaborate foliated brackets were still in use until the first world war, although they appear to have lost popularity in the south much earlier. Very few appear in the photographs of houses published in the *Reports of the Workers' Dwellings Board* after 1910 - probably the last shown on new houses are on five houses in Boundary Street, Townsville, built in 1915.[7] Brackets of this general type were used on a Townsville church in 1914.[8]

The usage of timber decoration on verandahs in North Queensland in the period 1880 - 1914 in many ways resembles that recorded in other parts of Australia, but with one important omission. The highly elaborate ornamentation that evolved in the 1890's sometimes featuring sinuous motifs influenced by the Art Nouveau movement,[9] made no impression whatever on the region. These stylistic tendencies, particularly evident in Victoria, are detectable as far north as Brisbane, but seem to have been ignored throughout provincial Queensland. The same can be said for the whole range of design tendencies of the Federation period, which had some influence on commercial buildings in North Queensland, but virtually none on houses.

[6]See brackets survey in appendix to this chapter. Although wide, this distribution is interesting in being restricted to Queensland in responses to the rough survey.

[7]Photograph in *Q.P.P.* 1915 - 16 vol. 3, after p. 954.

[8]B. Hedges, *The Methodist Church in Townsville: one hundred years*, Townsville 1976, pp. 49-50. Now the Aitkenvale Uniting Church Hall.

[9]See Freeland, *Architecture*, p. 214; Cox & Freeland, *Rude Timber Buildings*, pl. 113 for differing modes of elaboration.

In the early twentieth century simpler bracket forms began to increase in popularity. While various, these all tended to eliminate internal fretcutting, which necessitated the laborious processes of first drilling, then repositioning the saw blade for each internal cut. The new designs were of two principal types: one a freestanding strut connecting the verandah post to the beam, with fretsawn edges of greater or less complexity, the other a geometric form much crisper than the older foliated bracket, butting onto both post and beam, but exhibiting a bold simple outline frequently of straight lines and arcs of circles or other simple curves. When such brackets had internal openings, they were usually drilled rather than sawn. Brackets of these kinds are common in the reports of the Workers' Dwellings Board and the catalogues of the ready-to-erect house suppliers and remained strongly evident until the second world war.

Verandahs elevated even a short distance above ground level were usually equipped with a balustrade, whose functions were probably to protect children from falling, to provide a psychologically comforting barrier, and to define the boundary of the house.

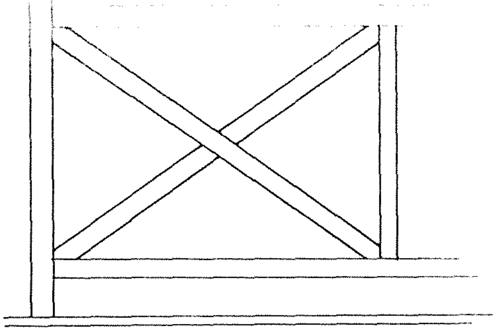
Balustrades in North Queensland have taken a number of forms. In recent decades there has been a tendency to enclose verandahs, concealing older balustrade forms and leading to a plethora of materials such as asbestos cement sheeting and glass or aluminium louvres in use in the balustrade space. It appears that a small number of houses always had a solid balustrade, either boarded or clad with corrugated iron; Cairns has a single fairly late example of verandah balustrading in ornamental pressed sheetmetal. In other cases a material allowing air movement, such as wire netting, wooden louvres or lattice work was in use from an early date. From the 1880's until the first world war a small number of houses, usually of superior social standing, employed cast iron balustrade panels; a material treated at greater length later. But the vast majority of houses from 1861 until recent decades were built with timber balustrades.

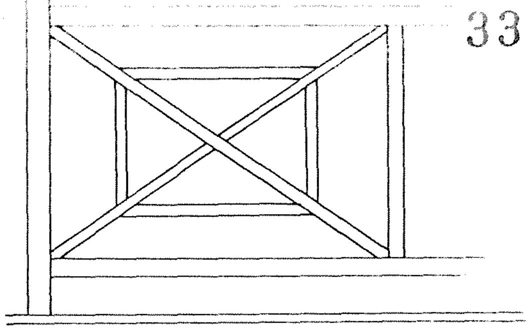
There were two principal forms of timber balustrading employed in North Queensland. The earlier in common adoption had vertical widely spaced balusters connecting top and bottom rails, dividing the balustrade into regular rectangular panels. Each panel was filled by an X form, consisting of two diagonal members joining the corners of the rectangle to form a cross. If solidly crafted, the resulting battery of diagonal braces must have made a substantial contribution to the racking strength of the house. The simple X-braced balustrade is very widely distributed throughout North Queensland, and seems to have enjoyed almost universal popularity in the first decades of settlement. This pattern was frequently elaborated by the addition of horizontal and vertical members in each panel, forming a "Union Jack" motif, or more commonly by the addition of an inner rectangle or circle, framing the crossing of the diagonals. Diagonal balustrading never entirely vanished, although its popularity declined after the 1880's. It remained continuously in use on a few new houses until after the second world war,[10] and has enjoyed a slightly self-conscious revival in recent years.

In the early 1880's however, a second form of balustrading gained favour. This consisted of simple vertical balusters, each usually a 25 mm diameter dowel spaced on 125 mm centres, and set into top and bottom rails. A variant employing 25 mm square balusters is sometimes encountered; and may indeed be more common than this statement suggests, as the two forms are indistinguishable except at close range. The vertical dowel balustrade was in use from first settlement in the region, but is prevalent only in photographs from the early 1880's onward, which matches the period of the earliest extant examples.[11] By about 1890 dowels were the dominant form, their popularity probably assisted by reduced labour cost as the joinery of the diagonal balustrade was eliminated.

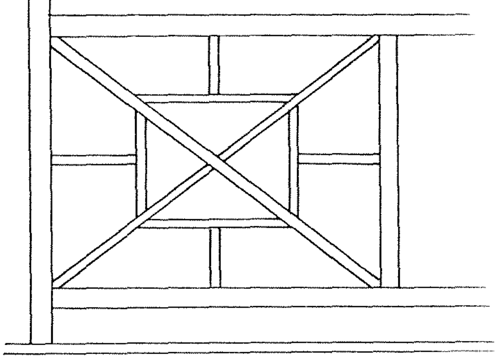
[10]For example a house near Wondecla, built in 1949.

[11]Black's house (1865) had dowels. The Ravenswood school residence (1873) has square balusters, but rebuilding of the verandahs leaves no indication of the original form: those extant may be no earlier than 1887. Pfeiffer's house (1881) has square balusters, the Carter street cottage (c. 1884) had dowels until recent renovation.

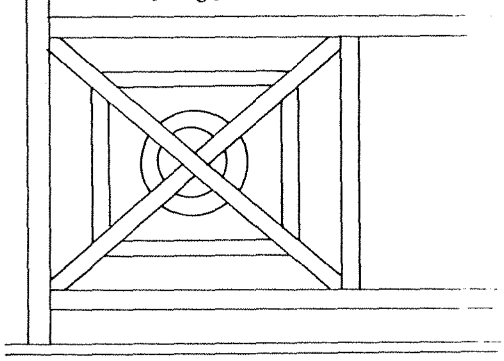




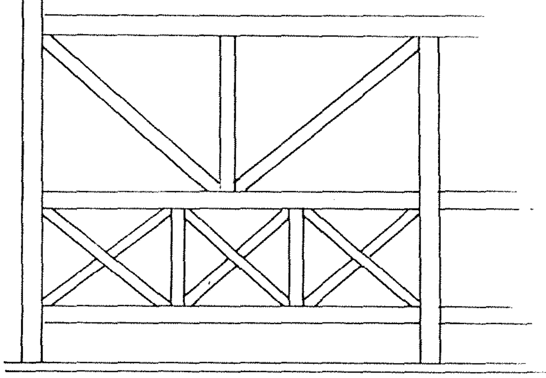
Charters Towers 1880's



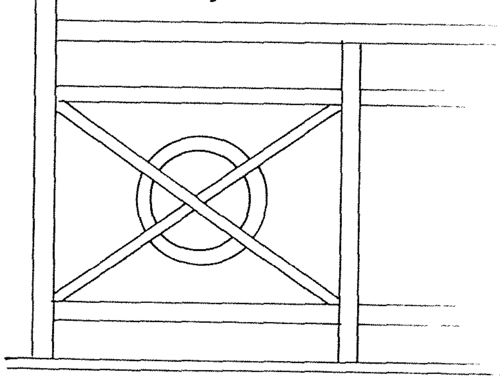
Currajong, Townsville c. 1889



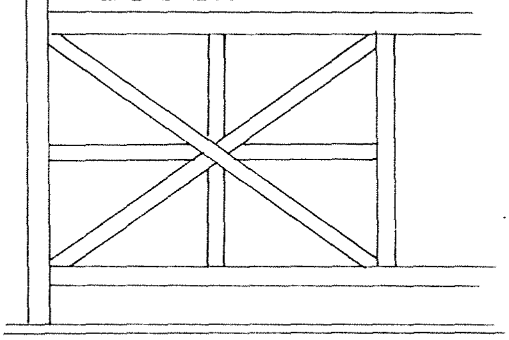
Charters Towers 1880's



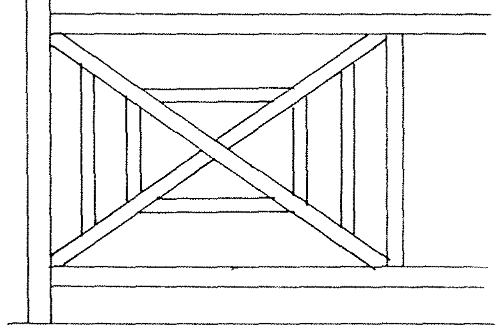
Rosebank, Townsville c. 1885



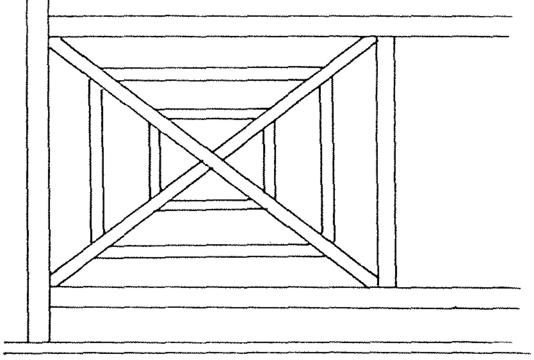
Cairns 1880's



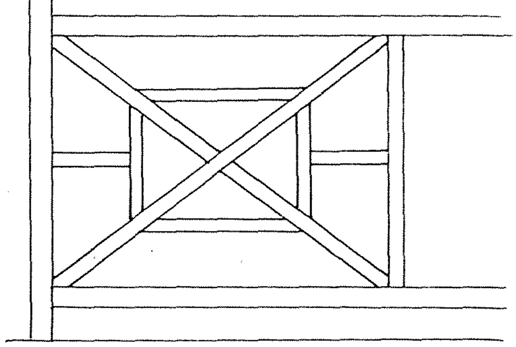
Cairns 1880's



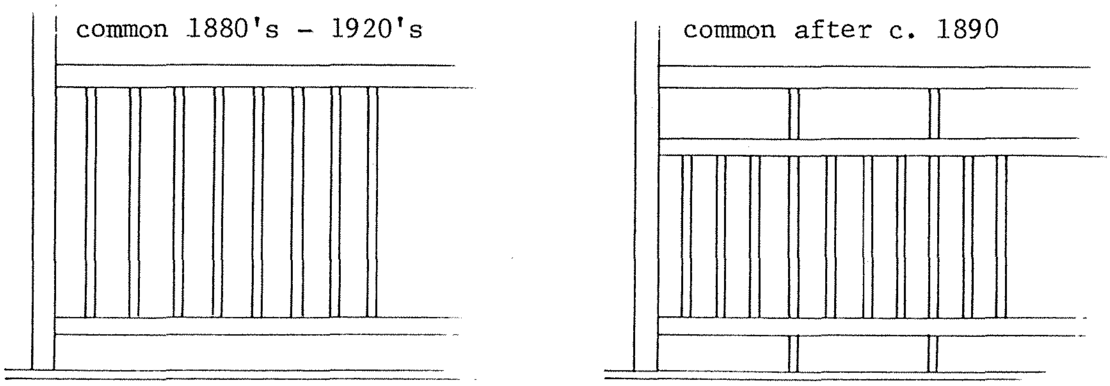
Cairns 1880's



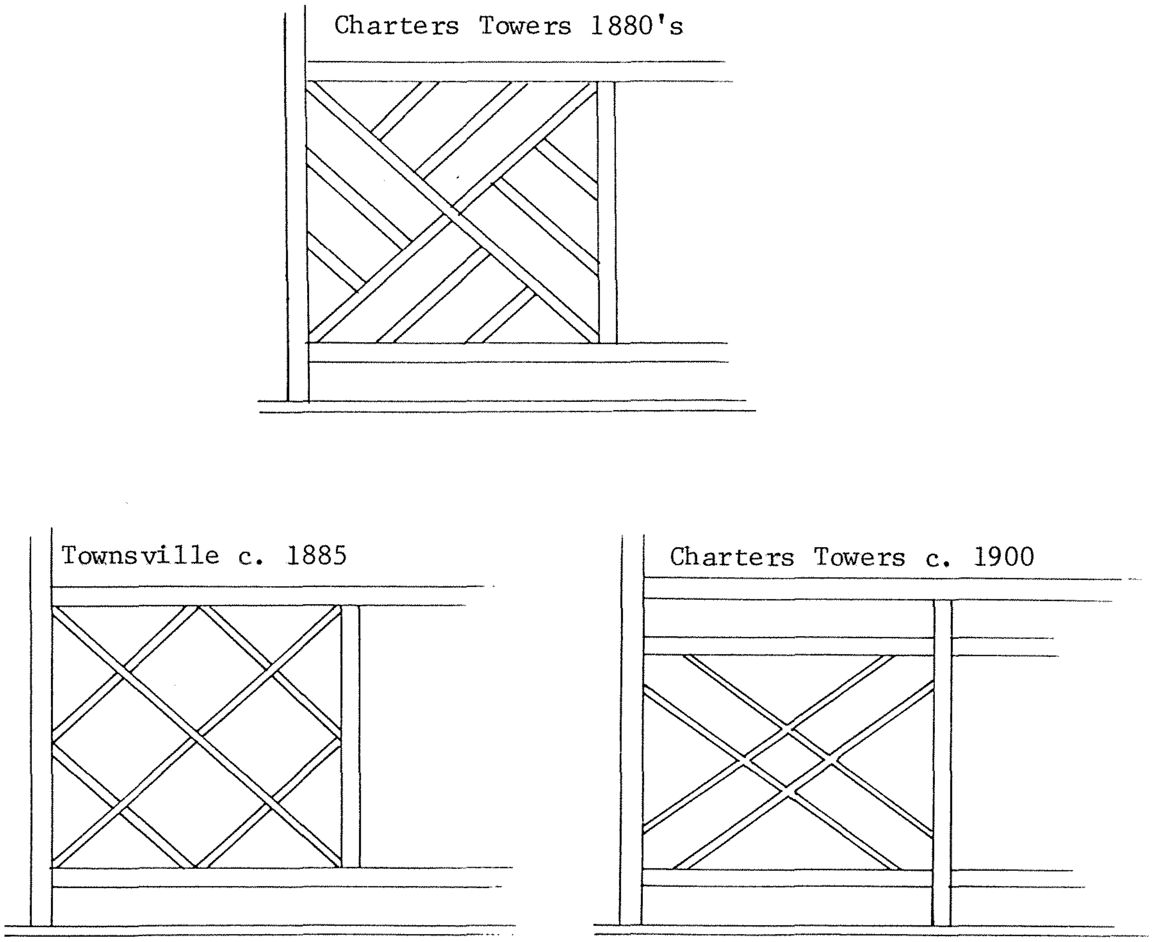
Charters Towers & Cooktown 1880'



DIAGONAL BALUSTRADE PANELS



VERTICAL DOWEL BALUSTRADING



CHINOISERIE BALUSTRADING

Very little elaboration of the simple dowel balustrade was possible, but in the late 1890's a variant developed employing a third rail a short distance below the handrail. Most of the dowels stopped at the third rail, but at intervals of perhaps one dowel in every five, or in the centre of each bay, a regular set of one to three dowels would project upward to the handrail.

These third rail dowel designs appear in almost all illustrations in the early twentieth century ready-to-erect catalogues. All forms of dowel balustrading, however, were largely superseded after 1918 by flat battens; again a move toward greater economy, as these replaced turning by straight saw cuts. In a concession to ornament, however, the batten balusters were sometimes embellished by a wider batten with a highly stylised fretsawn foliage motif or a single X-braced panel in the centre of each bay. Local builders occasionally elaborated flat battens by relieving their edges with a simple notch, or a more complex fretsawn curving line; this practice is particularly evident in Cairns, where it persisted until the 1950's.

Two minor timber balustrade traditions existed alongside these dominant ones. A very prosaic form consisting simply of horizontal rails, or one horizontal rail crossed by a simple upright in the middle of each verandah bay, is sometimes encountered: the latter especially common on government residences. The second tradition, now rare, is a delicate variation on the diagonal form, in which the diagonal members are reduced to very light dimensions and are arranged in more intricate patterns. This elegant balustrading appears to have antecedents in the chinoiserie movement which affected decoration in Europe from the sixteenth to the nineteenth centuries.[12] While it was probably never common, its rareness today also undoubtedly reflects its fragility: the more robust diagonal forms are capable of lasting a century on a well-maintained house.

[12] O. Impey, *Chinoiserie: the impact of oriental styles on western art and decoration*, New York 1977; see balustrade designs, pl. before 141, pp. 142, 145, 151 & 153.

The use of cast iron ornament on North Queensland houses illustrates the complexities that arise in determining origins of materials and the methods of diffusion of ornamental motifs. In comparison with other parts of Australia, cast iron was seldom used in this region: of 3,978 houses surveyed in 1978-80, only 19 had cast iron balustrading. However there is ample photographic evidence of demolished or renovated examples, suggesting that while cast iron balustrades were never a major form, they were probably once proportionately more numerous than the surviving .5% suggests. One cottage in Townsville had its cast iron verandah balustrading removed and replaced by asbestos cement sheeting while the survey was in progress. Obviously the pattern of original usage is obscured by removals of this kind, and by the transfer of iron panels from one house to another. Modern replicas of traditional patterns are a further potential source of confusion, but these seem invariably detectable from their method of installation and context.

A comparison with the works of E.G. Robertson, which deal chiefly although not exclusively with the use of cast iron ornament in Melbourne, shows several characteristics of domestic cast iron usage in North Queensland which differ from those found elsewhere.[13] Cast iron on North Queensland houses is almost entirely restricted to verandah balustrading. Other uses more common in southern Australia are very rare in the region; original iron valencing is not found on any pre-1914 house today, although it is common enough on commercial and institutional buildings in Ravenswood, Charters Towers, Cooktown and Townsville. Likewise, cast iron posts are not found on any house, but are prevalent in the commercial area of Charters Towers. Their introduction there can be dated with some precision from a newspaper report:

> Mr. Hugh Ross has made a great impovement in the appearance of one of his blocks in this street by the removal of the old verandah and the substitution

[13] E.G. Robertson, *Victorian Heritage: ornamental cast iron in architecture*, Melbourne 1960; *Ornamental Cast Iron in Melbourne*, Melbourne 1967; E.G. & J. Robertson, *Cast Iron Decoration: a world survey*, Melbourne 1977.

> of a style which is quite a novelty here. It consists of a row of metal pillars with arched iron roof on top. The pillars and fretwork were cast at the Townsville foundry, and the workmanship reflects credit on that establishment. They vary in height with the rise in the ground, averaging nine feet; between the pillars runs fretwork joining into brackets at the corners. The whole gives a light and elegant appearance to the shop fronts, more light is admitted and more heat excluded. It would be an advantage to the town if Mr. Ross' example were generally followed. Our street architecture is of the most primitive and savage style, and a reformation is much needed. [14]

Iron verandah brackets and roof crestings are restricted to a very small number of examples. Ceiling ventilators are occasionally encountered in cast iron, but are more usually of fretwork timber or pressed sheetmetal.

The balustrade designs in use are surprisingly few in number. Only six designs are now extant on North Queensland houses in their original context, and three of these each occur on only one house. A number of others (and further examples of these six) can be identified in photographs, are extant on recent houses or have been re-used as houseyard fences. A grave in the Ravenswood cemetery has been fenced with re-used balustrade panels at a fairly recent date. Commercial buildings exhibit further designs, although even these usually fall within a small range.

Further, the North Queensland cast iron designs are in most cases relatively simple in pattern, and are almost invariably single-faced, with either flat or concave rear surfaces. Robertson clearly regarded double-faced castings as the norm, although he acknowledged that single faced iron was "commoner in Queensland than in other states".[15] Brand names or registration marks are never shown on balustrade panels in the region,[16] and few of the designs in use can

[14] *Northern Miner* 30 January 1884.

[15] Robertson, *World Survey*, p. 74.

[16] The valencing of the bandstand on the Strand, Townsville has the words "Registered No." on the reverse, with no number following.

be associated with a pattern registered by a manufacturer known to be engaged in supplying North Queensland.

The period of maximum popularity of cast iron balustrading in the region also falls outside that described by Robertson in southern Australia. Robertson found the use of cast iron most prevalent between 1870 when the first designs were registered in Victoria, and 1893 when the depression "practically ended the use of cast iron in Melbourne".[17] The oldest extant cast iron balustrading in North Queensland (and probably the earliest used) is on the Townsville branch of the Queensland National Bank (1878) Other examples on commercial buildings and a few on houses date from the 1880's. But the majority of the examples surviving today date from the early twentieth century. As late as 1912 *Warringah* in Townsville was built with cast iron balustrading, and numerous examples in Charters Towers, Townsville and Ravenswood date from the decade after 1900.

The origin of most North Queensland cast iron balustrading is uncertain. Some cast iron ware for other uses was certainly imported; grave railings in many northern cemeteries bear the names of southern or British foundries. Iron gates and posts were frequently imported. Those at *Thornburgh* and the Ravenswood cemetery are by Francis Morton of Liverpool; the Cooktown cemetery's are by Bayliss, Jones and Bayliss of London; the Queenton railway gates by McKenzie Holland of Worcester, and telegraph poles throughout the region were cast by Siemens Brothers of London.

But there is no consistent pattern of supply, for in Charters Towers only a few hundred metres from the Francis Morton gates of *Thornburgh* (1890) stand the very similar iron gates of Lissner Park (c. 1910) bearing the mark of the local Walton's foundry. The 20-year difference in their dates implies that local manufacture was more likely in a later period.

[17] Robertson, *Victorian Heritage*, pp. 65 & 76.

The small range of designs in use in North Queensland also suggests local manufacture, for builders importing regularly from catalogues would presumably have exercised greater choice from the range available. This narrowness in selection is made particularly evident by a comparison of the use of cast iron panels on verandah balustrades with that on grave railings. The cemeteries of Townsville, Charters Towers, Cooktown and Ravenswood have a far greater variety of ironwork than the houses of the same towns, and these grave railings are far more various and more ornate, are usually double-faced castings, and are in many cases identifiably the work of southern or overseas suppliers. All of this contrasts strongly with the few, simple, single-faced castings found on domestic verandahs; iron grave panels in Cooktown and Ravenswood in the 1870's and 1880's displayed a variety enormously greater than that of iron verandah railings in the same period. This contrast is perhaps most evident in the case of Maytown, where a rich variety of iron grave railings is found, although it is highly improbable that any building in Maytown was ever adorned with cast iron balustrading. Obviously the social motivations for the two forms of ornamentation were quite different, so that their use responded differently to economic forces, even within the same settlement. Considerable use of cast iron grave railings occurred in the 1870's and 1880's,[18] coinciding with the first period of verandah balustrade iron. The first grave iron probably predates the first verandah iron; several iron railings in Cooktown and Maytown cemeteries are on graves older than the Queensland National Bank balustrade in Townsville. Grave iron of similar patterns continued to be imported well into the twentieth century.

Local foundries existed from the 1870's, capable of producing iron castings of some size and sophistication. Deep mining and ore treatment demanded the services of foundries, at first to provide replacement parts for machinery, and later to manufacture it completely. The larger mining towns generated sufficient demand to justify the establishment of foundries, the earliest Deane and Sadd's in Charters Towers in 1878:

[18] Dating depends on the presence of a dated gravestone.

Cast iron grave railing, Maytown (1878).

Cast iron balustrading, *Ay ot*, Charters Towers (c. 1890).

> Messrs. Deane and Sadd, in conunction with their pyrites works, have, with commendable enterprise, during the year erected a foundry, which has already proved of incalculable benefit to the public. Hitherto, when any accident to our machinery occurred, the delay and stoppage in consequence of having to send to Maryborough for fresh castings, have been very great; now, however, berdans, stamper-shoes, pinion-wheels, and portions of all maner of castings, up to half a ton, are turned out with despatch and in a manner that reflects every credit on the spirited proprietors. [19]

Stuart and McKenzie's Union foundry was established at Croydon in 1891, and was later capable of producing whole gravity stamps.[20] These foundries later multiplied: the *Post Office Directory* lists three in Charters Towers in later years, and three advertised in Townsville by the 1890's catering for the mining and sugar industries, shipping and other markets. These firms never dominated the mining industry; machinery imported from Maryborough, from Victoria and from Britain was far more common than locally made machinery,[21] and there is some doubt about the quality of the local castings, at least in the early years of operations. In 1881 a broken camshaft at a Charters Towers mill was replaced by one from Deane's foundry, but only until " a new one can be ordered from Maryborough".[22]

[19] *A.R.* 1878, p. 14. A foundry was established in Townsville at about the same time, perhaps the previous year. In 1876, Walkers of Maryborough had proposed to establish a foundry at Townsville if the Charters Towers mill owners subscribed a third of the capital, £1,000, but nothing eventuated: *Northern Advocate* 19 February 1876.

[20] First listed in *P.O.D.* 1892-3, p. 185. A battery of stamps at Kidston bears their mark.

[21] This statement is based on the brand names observed on North Queensland mining fields today. Plant from Walkers of Maryborough, Langlands' and Thompson's foundries in Victoria, and many British makers, especially Robey and Tangye, is abundant. Apart from the Croydon work at Kidston, only the stampers of the Mabel Mill in Ravenswood bear the name of a North Queensland foundry: Brand & Drybrough of Townsville. Much machinery of course is unmarked, and much more has been destroyed.

[22] *Northern Miner* 20 January 1881.

Nevertheless the capacity of northern foundries after 1878 to produce the simple non-structural castings required for ornamentation on houses is undoubted. In two instances, local tradition names a nearby manufacturer for balustrade iron on extant buildings. That on a Croydon hotel is said to have been cast by Stuart and McKenzie;[23] and the balustrading of St. Patrick's boarding school in Townsville (1910) is believed by the older teaching sisters to have been cast locally by Brand and Drybrough.[24] Such assertions are entirely in keeping with the quality, simplicity and small range of castings found in North Queensland.

There is occasional documentary and circumstantial evidence of local supply of castings. Townsville builders Rooney Brothers in 1890 disputed the pattern specified for the Townsville Girl's School, claiming "Local palisading better pattern than one sent";[25] and the Colonial Architect's reply, "palisading must be double faced",[26] bears out the observation that single-faced castings had greater acceptance in North Queensland than in the south, for the Rooneys had intended the local iron to be "not double faced back face smooth finish would look well when fixed",[27] and the suggestion was clearly anathema in Brisbane. Unfortunately there is no documentary record of the proposed local supplier, or the outcome of the dispute; and the building no longer exists.

Circumstances suggest local manufacture in other cases. If it is correct that the iron of St. Patrick's boarding school is locally made,

[23]Iron light standards in the town bear their mark, and the date 1895; two examples of these have been removed to St. John's cathedral, Brisbane.

[24]The name given by a sister who remembered the event was "Mr. Brown's foundry". This attribution was incomprehensible until it was discovered that the *manager* of Brand and Drybrough's foundry in 1910 was indeed named Brown.

[25]Rooney Brothers to Undersecretary for Public Instruction, telegram 17 December 1890, 90/12978, EDU Z 2738 Q.S.A.

[26]Annotation on *ibid.*

[27]*Ibid.*, text.

then by inference the balustrades of *Buchanan's* hotel and the *Great Northern* hotel in Townsville, both built in the same decade as the school building, are very probably also by Brand and Drybrough; for all three designs are distinctive variants of a pattern widely used throughout Australia.[28] The variations involved are clumsy, and their motivation is not clear, although evasion of copyright naturally comes to mind. However, even these debased variants have a curious distribution. One of the presumed Brand and Drybrough patterns is identical to the one in Croydon attributed to Stuart and McKenzie, and is also found on the Queensland National Bank in Rockhampton (1890) and a house in Brisbane![29] While the original design may easily have been widely dispersed by purchase, and many local vatiations of it may have occurred through copying; it is difficult to account for this state-wide diffusion of a less attractive variant, said in two cases to be of local manufacture.

Charters Towers has a particularly elegant cast iron balustrade design which appears on two houses, *Aldborough* and *Ay ot*, and has been removed from a third (*Yelvertoft*, now Blackheath College). The same pattern appears on the Lissner Park Kiosk, whose posts bear the mark of Walton's foundry, which stood only a hundred metres from the Kiosk site. Attribution of the balustrading to Walton's foundry seems not unreasonable, for the design is found nowhere in North Queensland outside Charters Towers, and it is not illustrated by Robertson. But again its wider distribution proves problematical, for the same design is on the verandahs of the *Empire* Hotel in Fortitude Valley, Brisbane, where it was unlikely to have been ordered from Charters Towers.

A very distinctive iron balustrade which does seem to have been imported was used on a small number of Townsville and Charters Towers

[28] The design was registered in Victoria in 1877 and still advertised there in 1901. Robertson, *Melbourne*, pp. 42 & 44: Excelsior catalogue, p. 8, design 4.

[29] On the rear verandah of a house at the corner of Leichhardt and Birley streets, Spring Hill. These examples are all single-faced with concave reverse.

buildings, all dating from the period 1885-1890.[30] The panels have been fabricated by welding cast elements: the technique is a compound of cast and wrought iron. Identical panels appear in the catalogue of Walter Macfarlane's Saracen foundry, Glasgow, along with others employing the same cast elements in various combinations, suggesting this compound fabrication was routinely used by Macfarlane.[31] Macfarlane's mark is not visible on the surviving ironwork of Matthew Rooney's house, which is odd because the legend "on every casting" appears above the trademark in his 1882 catalogue.[32] But is difficult to imagine another source for these panels, given their unusual and laborious manufacture, their exact correspondence to those in Macfarlane's catalogue, and their small date range. No documentary evidence establishes that they were imported, but there is a suggestive omission in a newspaper report of the construction of Plant's *Thornburgh*. Striving to support local industry, the journalist wrote:

> It must be mentioned that as far as possible Mr. Plant has obtained all material in the North. The iron castings for the staircase banisters were made by Smally and Burns, of Townsville. 33

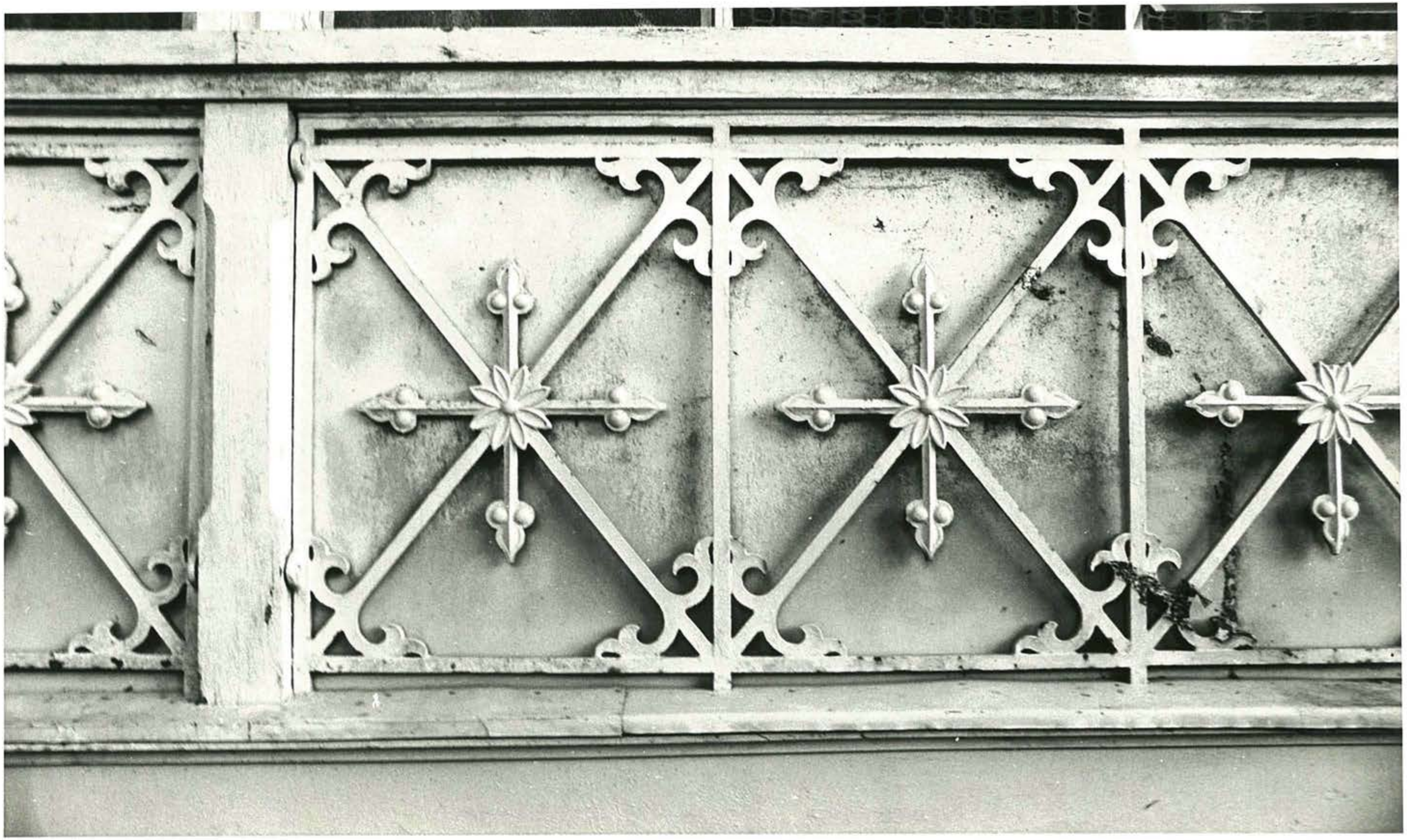
But there is no mention in the article of the far more conspicuous verandah balustrading, which if locally made would surely have demanded advertisement. A plausible hypothesis is that the Macfarlane iron was imported in one lot, almost certainly by Rooneys, as it was used on the houses of two of the firm's principals; and sold for superior buildings over a period of about five years.

[30]Matthew Rooney's house (extant), James Harvey's house (destroyed by fire), a house in Victoria Street (extant), a bank in Flinders Street (balustrade removed) and *Tattersall's* hotel (extant), all in Townsville; *Thornburgh* (balustrade removed) in Charters Towers. A photograph of Blackheath College in 1926 shows the same design on an extension, but this was probably re-used iron from *Thornburgh* after the verandahs there were partially enclosed.

[31]*Illustrated Catalogue of Macfarlane's Castings*, vol. 1, 6th edn. Glasgow [1882], pp. 201, 214, 227, 230, 294, 296, 297, 345, 352.

[32]*Ibid.*, p. 5. The balustrades are heavily painted, and the mark may be obscured.

[33]*Northern Miner* 21 February 1890. The Francis Morton gates are not mentioned.



Cast and wrought iron balustrading, Matthew Rooney's house, Townsville (c. 1885).

Although the paucity of both extant examples and documentation leaves much confusion, the use of cast iron balustrading seems to fall into two distinct periods. The first in the late 1870's and 1880's involved occasional use of imported work; the second in the 1890's and early twentieth century saw a resurgence of the popularity of cast iron, supplied by local foundries. The watershed seems to have fallen about 1890; interestingly there is circumstantial evidence that Matthew Rooney supplied the last of the Macfarlane iron panels to Plant's house early in that year, and no doubt that he attempted to employ locally cast iron at the Townsville Girls' School a few months later.

* * * * * * * *

Protection against termites was a major design consideration in timber buildings throughout Australia. The problem was recognised before the settlement of North Queensland, but it appears that no systematic measures had been adopted before 1861 to alleviate termite infestation of wooden buildings, and a number of modifications were undertaken subsequently in search of a means of control. These involved constructing buildings of a material unattractive to termites, treating timber with a toxic substance, installing an impermeable barrier between the ground and the building, and providing for regular inspections of termite activity.

The search for a material which termites would not consume was successful, but oddly was never carried to its logical conclusion. For a time a myth flourished that termites would only infest softwoods, and that hardwoods were impervious. This is reflected in statements like "a hardwood floor is insisted on as a protection from the ravages of white ants",[34] and "...there being no pine or other softwood about it the white ants cannot injure it".[35]

[34]Undersecretary for Public Instruction to Secretary, Charters Towers Girls' School Committee 20 January 1882, EDU Z560 Q.S.A.

[35]George Seymour to Secretary for Public Instruction 1 May 1883, EDU Z606 Q.S.A.

Such beliefs were not long sustained, for the Superintendent of School Buildings reported from Townsville in 1883:

> The white ants in this ground are the largest I have ever seen, being about half an inch in length, and equally destructive, eating hardwood as readily as pine. [36]

In later years the contrary belief was occasionally expressed, that certain softwoods were immune from termite attacks because of their resin content:

> Cyprus Pine....is used in preference in railway buildings for blocks and almost exclusively for telegraph poles in this district on account of their durability. White ants never touch it. [37]

This assertion appears to have no foundation, and in the context of the letter in which it appears is best dismissed as sales talk. There are no timbers which termites will not attack, although some species and some parts of the log are less attractive.[38]

Brick was resorted to only rarely because of its cost, but a number of timber houses in Townsville were built on brick piers from the 1880's onward, possibly in response to the ferocious reputation of the local termites. Concrete was recognised as a desirable foundation material as early as the 1870's, but only irregularly specified, and rarely used until the twentieth century. In 1878 the specification for light-keepers' cottages read:

[36] R. Ferguson to Undersecretary for Public Instruction 20 March 1883, 83/62, EDU Z 2738 Q.S.A.

[37] A. Taylor & Son to Undersecretary for Public Works 23 May 1903, EDU Z 2539 Q.S.A.

[38] W.D. MacGregor, "Termites, Soil and Vegetation", *Forestry Abstracts 12*, 1950, 1, p. 3.

> Foundations of Buildings: Are to be concrete piers moulded in a timber box 12" square at head and 18" at the foot, & 4ft. in length; Sunk 2 ft. in the ground. [39]

And again in 1889 the Collector of Customs at Normanton advised:

> I would further recommend that any new buildings which are erected at Normanton should be placed on concrete blocks, as the white ants at that place are exceedingly destructive. [40]

Two houses in Walker street, Townsville were built in 1890 with 30cm circular concrete piers, and occasional examples occur from that time onward, but the material did not achieve real popularity for decades, presumably because of its cost relative to timber stumps until serious timber shortage hastened the use of concrete in the 1950's.

It was obvious enough that iron buildings would resist termites. The Superintendent of Electric Telegraphs recommended in 1876 that the Maytown post and telegraph office be built of galvanised iron, "because white ants are so destructive in that locality",[41] and the Georgetown Police Magistrate pointed out in 1884:

> The white ants are such dreadful pests that an elaborate building as specified would be utterly destroyed in three (3) years - it would at the least be a constant source of trouble in annual repairs. The inhabitants having proved this erect new buildings of iron, with hardwood frames... [42]

[39] Specification 1878 in WOR P2 Q.S.A. The place is not given.

[40] Collector to Colonial Treasurer 30 January 1889, 89/454, WOR A401 Q.S.A.

[41] W.J. Cracknell to Undersecretary for Public Works 25 April 1876, 77/5357, WOR/A140 Q.S.A.

[42] W. Samwell to Undersecretary for Public Instruction 21 June 1884, 84/3820, EDU Z1020 Q.S.A.

But this discovery seems never to have been logically applied in North Queensland. Although iron was routinely employed for telegraph poles and sometimes for railway sleepers[43] in the region, it was not put to use by builders as a structural material, simply as a cladding; the frames of iron houses remained vulnerable to termite attack.

Experiments with toxic substances were legion. A Bowen school-teacher in 1882 reported treating termite infestations with arsenic in treacle; "the remedy prescribed in the offical Circular".[44] Although the possible consequences of daubing that mixture on the stumps of school buildings are horrifying, similar reports are common in school correspondence; as are experiments with such substances as kerosene, copper sulphate and various patent preparations such as Streets and Faulding's White Ant Poison, an arsenic compound. The same remedy was specified to contractors:

> At the surface level, bore (with one (1) inch auger) into each of the new stumps, about half way through same, with a downward slope and fill the hole with arsenic and treacle, mixed to the consistency of thick paste. Also treat in a similar manner, all the old stumps, and tar same two (2) coats. The treacle and arsenic must be mixed in the presence of the Head Teacher, or other person appointed by the Department. [45]

The defence finally adopted uniformly throughout the north was to elevate timber buildings above ground to provide access for checking termite activity in the foundations,[46] and to install a metal barrier between the stumps and the bearers. Bicknell described this as standard practice by the 1890's:

[43] Phillips' steel sleepers were adopted for the Normanton-Croydon railway after testing on a short section of the Fassifern railway: *Cairns Post* 8 June 1887.

[44] R. Abraham to Undersecretary for Public Instruction 13 March & 17 April 1882 82/1305 & 82/1850, EDU Z 284 Q.S.A. The circular mentioned has not been found.

[45] Specification for State School, Normanton, January 1894, Specifications of Government Buildings 1891-1898, WOR P9 Q.S.A.

[46] The evolution of the elevated house is treated in more detail in chapter four.

> The white ant is a curse to this country, and great precautions have to be taken against it when building a house. The usual plan is to drive into the ground wooden piles steeped in creosote; on the top of these are placed dished galvanised iron plates, and on these the house is built. 47

The evolution of these ant caps (or stump caps) was gradual. No such protection seems to have been used at the time of first settlement; the early extant buildings were originally without a termite barrier. The Cardwell post office (1870) was re-stumped with ant caps in 1897,[48] and the Eureka hotel (1865) is still largely without them, although the verandah perimeter has been re-stumped with caps in recent decades.

Provision for a termite barrier appears in an 1867 specification for buildings at the Bustard Head lighthouse: "Cap with strong sheet zinc projecting 1½" all round".[49] It is clear that no standard form was developed by that time, nor indeed by 1874, when the school buildings at Cooktown were simply specified to have "galvanised iron for the tops of stumps, between them and the plates."[50] But by the mid-1870's a galvanised iron barrier was being widely adopted. The Australian Joint Stock Bank at Maytown was built in 1876 with stumps capped by squares of sheet iron, roughly hammered down at the corners.[51]

This requirement was formalised in succeeding years, and in government buildings from 1875 stumps were to be "capped on top with No 11

[47] Bicknell, *Travels & Adventures*, pp. 57-58. See also Rowan, *Flower Hunter*, p. 143: "This is why houses are built on piles coated with tar..."

[48] Specification December 1896 in WOR/A577 Q.S.A.

[49] Specification 1867 in WOR P1 Q.S.A.

[50] Specification April 1874 in WOR A129 Q.S.A.

[51] Photograph in *North Queensland Register* 18 July 1921, taken between 1876 and 1878. This appears to be the earliest photograph of a precisely dateable building with stump caps in this region.

VM brand zinc overlapping stump 3" all round".[52] About 1880 mass-produced dish shaped caps came into use, and by 1884 both the form of the item and its nomenclature were established in government contracts:

> Cap each stump with an approved 24 gauge galvanised iron stamped stump cap projecting from stump at least 3" all round. 53

But conservatism in specifications for some years afterward allowed contractors' practices to outrun the Works Department's requirements. In 1892 the District Inspector of Schools reported indignantly that the builder of the Ravenswood Junction State School had supplied stamped stump caps instead of the galvanised iron sheeting specified![54] The stamped galvanised iron stump cap gained ascendancy in the 1880's and has remained in use on round timber stumps to the present. But for its rolled edge, the stump cap has a curious resemblance to the alluvial miner's dish in form and size: it might not be altogether fanciful to speculate on how the design of one influenced the other.

The exposed timber frame[55] is a conspicuous feature of the majority of North Queensland houses built in the period under study. Given its visual impact it seems surprising that builders rarely attempted to treat the framing timbers as a decorative element. In this respect there is a pronounced regional variation in those parts of Australia where exposed frame construction was customary; part of northern New South Wales and all of Queensland. In southern Queensland the exposed

[52] Specification for Reception House, Cooktown, July 1875, WOR P1; and see essentially similar clauses in specifications for Cooktown lockup April 1878; additions to receiption house May 1878; and Thursday Island seamen's barracks 1881, WOR P1 Q.S.A.

[53] Specification for Boatmen's Cottages, Cairns, April 1884, WOR P5; and see similar provision in specification for Maytown post & telegraph office, July 1888, WOR A401 Q.S.A.

[54] M. Cripps to Undersecretary for Public Instruction 23 July 1892, 92/07372, EDU Z 2311 Q.S.A.

[55] The development of the stud frame was treated at length in chapters three and five. There the emphasis was on its structure: here it is considered as a visual element.

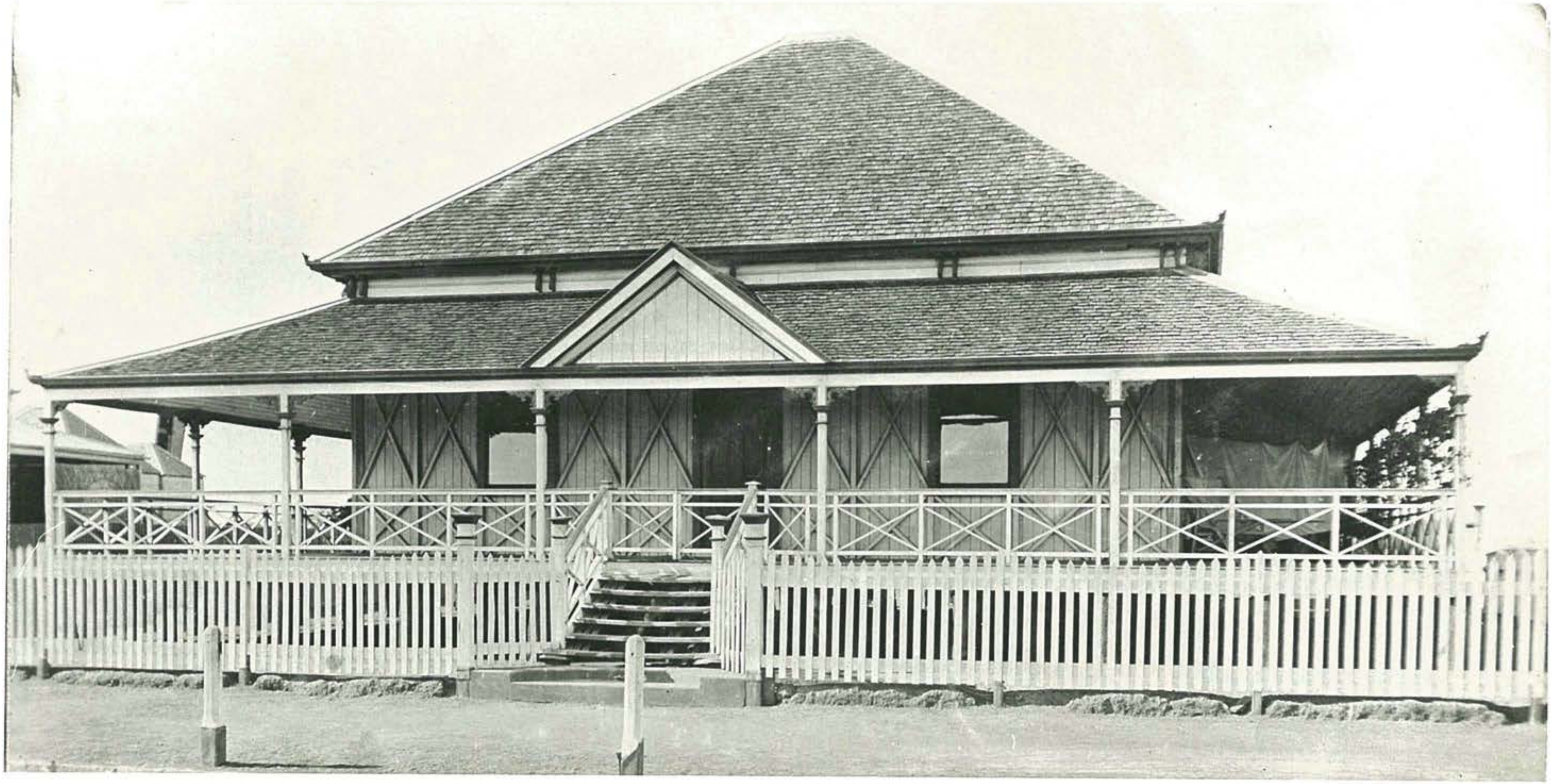
frame often takes the form of a robust diagonally framed pattern composed of sturdy structural members, clad internally either with horizontal chamferboards or vertical tongue and groove boards. The usual frame in the north is subdued and utilitarian, simply composed of vertical studs, usually with two light diagonal braces let into their inner face, and normally lined with chamferboards. There is however, no line of demarcation; both forms of framing are found in all parts of Queensland, although even casual observation in the older towns of the east coast shows the stud frame declining and the diagonal frame increasing in frequency with distance travelled south.

The overtly decorative diagonal frame was built at times in North Queensland. One example is extant and visible: the Bank of New South Wales at Normanton (1886), designed by Brisbane architect Richard Gailey.[56] No example of diagonal framing was recorded in the survey of North Queensland houses, but the high proportion of houses with enclosed verandahs suggests that examples might exist which would not be identified by street photography. However, closer inspection of a smaller sample of houses located only one extant example, a hipped-gable two-roomed cottage in Cairns, probably built c. 1914. Other examples no longer standing are known from photographs,[57] but all evidence suggests their number was always small in this region, and diagonal framing may be regarded as exceptional in North Queensland.

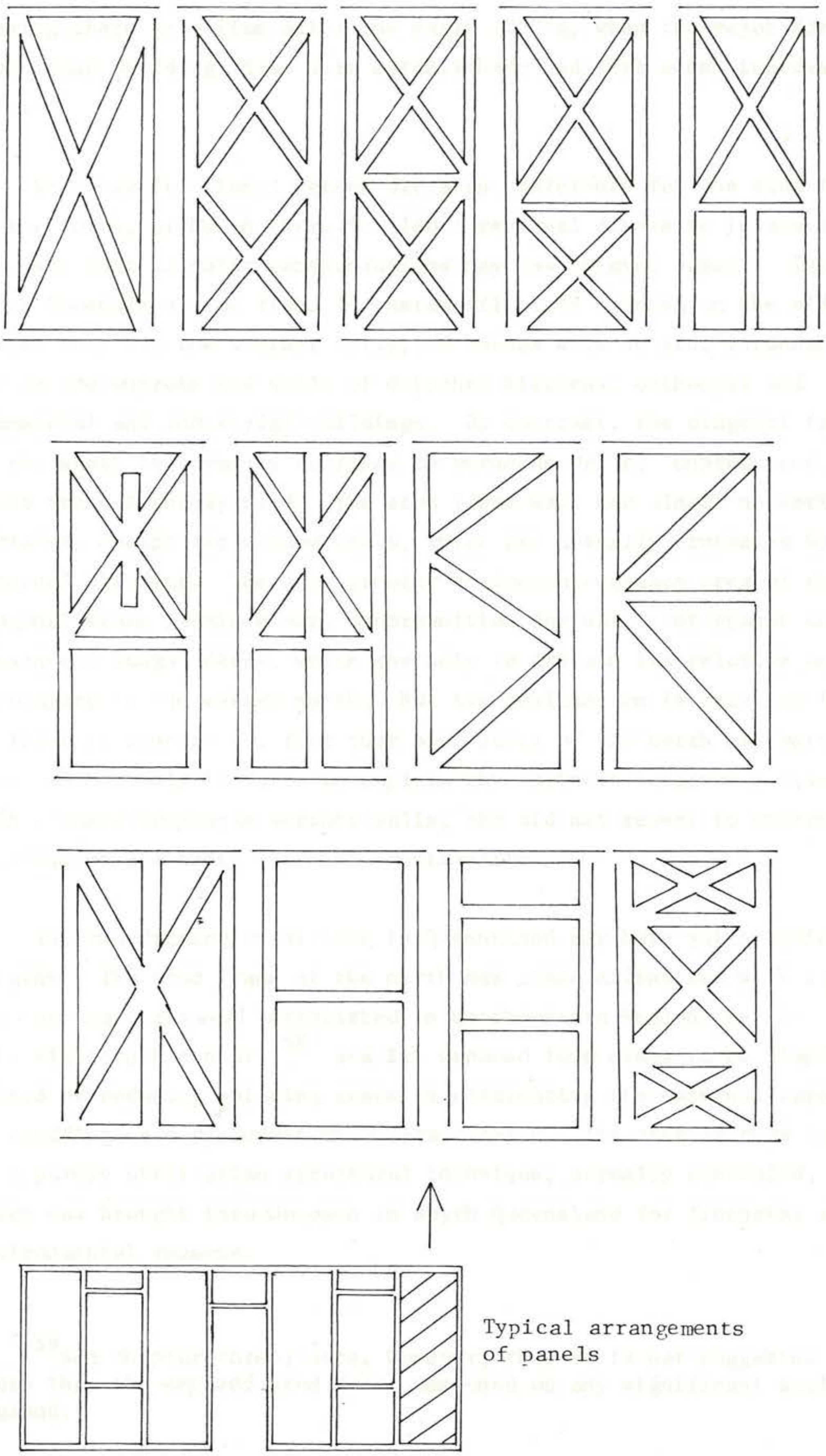
No good explanation for this regional variation in preferred framing methods is available. Indeed, the prefabricated or precut origins of many North Queensland houses from timber suppliers in Maryborough or Brisbane would suggest little diversity ought to have arisen. A tentative explanation is that the diagonal tradition only arose in southern Queensland after the establishment of a self-sufficient building industry in the north. While this theory must await research in southern Queensland, it would necessarily put the popularisation of diagonal

[56]Research file compiled by National Trust of Queensland. The Normanton railway station is also externally diagonally framed, but its cladding is corrugated iron.

[57]Photographs of cyclone damage are particularly valuable in yielding information on such details which are usually concealed from view.



Bank of New South Wales, Normanton (1886). (Cairns Historical Society)



HEAVY TIMBER FRAMING IN SOUTHERN QUEENSLAND: Wall panels observed in the Brisbane Valley.

framing there at a time after the early 1880's, when the major North Queensland building firms were established; and that seems improbably late.

No clear functional reason dictates preference for the stud frame in the north, although there is also a regional diversity in usage which suggests that climatic considerations may have played a part. The North Queensland stud frame is customarily left exposed on the side walls, that is, the weather walls, of houses with no side verandahs, and on the unprotected walls of detached kitchens, outhouses and commercial and industrial buildings. By contrast, the diagonal frame of the south is normally confined to verandah walls; unprotected walls are externally clad. The stud frame wall has almost no horizontal surfaces, except for window heads, which are normally protected by external cladding. The much greater horizontal surface area of the diagonal frame provides more opportunities for water entrapment and consequent fungal decay, which may help to explain its relative unpopularity in the wetter north. But the explanation is only partial, as first it ignores the fact that many parts of the north are very dry; and secondly it fails to explain why northern builders persisted with exposed framing on weather walls, and did not revert to external cladding as did their southern counterparts.

The two framing traditions in Queensland may have quite different origins. The stud frame of the north has close affinities with light framing practices well established in southeastern England by the late eighteenth century,[58] and its exposed form seems to be simply a method of reducing building costs by eliminating the external layer of cladding made redundant by a warm climate. Its origins thus lie in a purely utilitarian structural technique, normally concealed, which was brought into the open in North Queensland for financial and environmental reasons.

[58] See chapter three: note, however, that it is not suggested there that the *exposed* stud frame was used on any significant scale in England.

The diagonal framing technique more probably originated as a conscious method of decoration. Its affinities with European half-timbering are obvious, although the technologies of the two are quite distinct. Its emphasis on visual pattern reflects forms of heavy timber framing developed in Britain[59] and parts of northern and central Europe.[60] Diagonal framing in southern Queensland is unlikely to be descended directly from the much earlier half-timbered wall, but may well be its indirect successor through its influence on the romantic movements of the mid-nineteenth century.

Expression of the structure of timber framed buildings on their external surface was popularised in both Britain and North America from the 1830's. The Ecclesiological movement spread the influence of such surface treatment through the Anglican church at a time of missionary expansion,[61] and its effects were being seen in buildings in Australasia by the 1840's, notably in the churches built in New Zealand under Bishop Selwyn.[62]

Exposed timber framing reached a high degree of visibility and elaboration in American domestic architecture of the mid-nineteenth century, where its development has been carefully described by Vincent Scully.[63] He concluded that exposed framing, the "stick style" of the United States, was diverse in origin, with antecedents in separate aesthetic and structural developments which were parallel but independent, eventually merging into a single tradition.[64]

[59] Smith, "Timber-framed building" describes the regional distribution of such framing patterns in England.

[60] Suzuki, *Wooden Houses*, p. 100 illustrates a highly elaborated example of exposed diagonal timber framing in the Tirol.

[61] G.L. Hersey, *High Victorian Gothic: a study in associationism*, Baltimore 1972, pp. 83-92.

[62] C.R. Knight, *The Selwyn Churches of Auckland*, Wellington 1972.

[63] Scully, *Shingle Style*, pp. xxiii-lix. The text of this section is identical to that of Scully's article cited below.

[64] Scully, "Romantic Rationalism and the Expression of Structure in Wood: Downing, Wheeler, Gardner, and the 'Stick Style', 1840-1876", *Art Bulletin 35*, 1953, p. 132.

> This sensitivity to the wooden frame, in part remotely inspired by half-timber, in part by the balloon frame and other light framing methods, worked toward a single result in the houses of the later sixties. 65

Leaving aside the balloon frame,[66] the main problem in Scully's description of separate traditions merging is that the structural tradition of light framing was almost invariably concealed in the USA. His reasoning becomes extremely loose when he argues for a link between appearance and technique on the basis of the purely visual resemblance between the *surface* of a board and batten wall and the concealed *structure* of a stud frame.[67]

In fact his description of the two traditions merging into one is probably easier to support in Queensland than in North America. Whereas the stud frame was rarely left exposed on the exterior of American buildings,[68] it certainly was throughout much of Queensland; and was used here alongside methods of framing which appear to be influenced by romantic tendencies of the mid-nineteenth century. That the North Queensland frame was utilitarian in origin seems established by the fact that its specification and treatment were identical whether it was to be concealed by external cladding or left exposed. The belief that the southern diagonal frame was decorative in origin might be illuminated by a corollary investigation to establish whether the elaborate braced frame was ever specified in that region for a wall to be concealed by cladding.

[65] *Ibid.*, p. 139.

[66] Chapter three of this thesis expresses reservations both about the "balloon frame" and its treatment by architectural historians.

[67] Scully, "Romantic Rationalism", p. 133. Jensen, "Board and Batten" points out the essential incompatibility of these techniques.

[68] A rare example of an exposed frame house in Utah is illustrated in Spencer, "House Types", p. 454.

Obviously it was not by coincidence that the two traditions of exposed framing were used alongside each other in Queensland. Indeed, the two actually merged on occasions; there are examples in southeastern Queensland of houses with exposed stud frames lined with chamferboards, and braced at the corners by large diagonal panels rather than the paired slender braces of the north.[69] The link between the two is not easy to explain. Perhaps it is not more substantial than that the fashionable ascendancy of one facilitated the acceptance of the other; the pattern book respectability of the diagonal frame helped to break down prejudice against exposing the utilitarian stud frame.

There is some slight evidence that by the 1880's there was already a recognition of the distinct framing traditions within Queensland. The colonial Architect's office, having grudgingly accepted the exposed frame, began to specify appropriate regional variants in its arrangement. Thus plans drawn for police buildings at Townsville and Beenleigh in 1885 showed respectively an exposed stud frame and a diagonal frame.[70] The timber branch offices and residences of the Queensland National Bank, many of which were designed by Colonial Architect F.D.G. Stanley, also differ in their wall framing, although the regional pattern is not always sharply observed.[71]

While overtly decorative treatment was avoided in the construction of the exposed stud frame wall, there is a degree of variety in the arrangement of its elements. The spacing of studs varies from one house to another, and is rarely uniform even in the length of a single wall. This spacing is determined by the positioning of openings, which is itself determined by the floor plan.

[69]The few examples seen in the course of this survey appear to be of late date, and represent a later merging of the two traditions, not a distinct technique from which the two have diverged.

[70]Plans for Inspector of Police Quarters, Townsville, 12 December 1885 and Lockup, Beenleigh, 7 January 1885, held by Department of Works & Housing, Brisbane. The majority of government buildings, however, remained externally clad.

[71]Photographs of premises held at N.B.A.

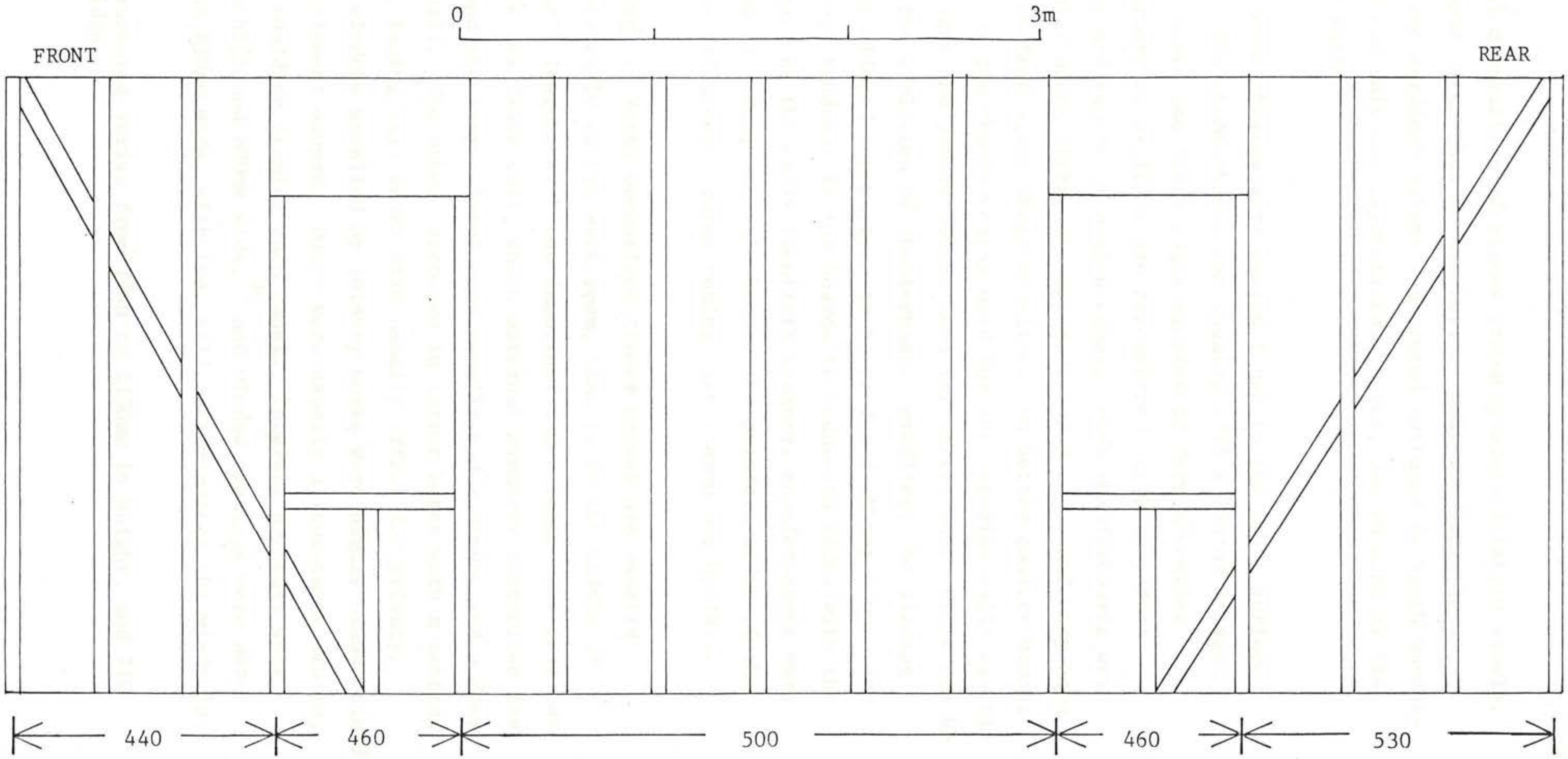
On the outer side wall of a four-roomed house, for example, there are normally two windows. These are not uniformly spaced so as to trisect the external wall; they are placed in the middle of the inner wall of each room, and as the front rooms of the house are usually larger than those at the rear, this leads to an unbalanced arrangement on the outer wall. Thus internal symmetry in each room is achieved at the expense of external symmetry. The windows then effectively divide the outer walls into five panels of unequal length: the first from the front wall to the window of the front room, the second the width of that window, the third from it to the rear window, the fourth the width of that window and the fifth from the rear window to the rear wall. The frame was constructed by placing studs at corners and sides of windows (the width of the window opening was determined by the dimensions of the sash provided by a joinery); and each intervening space was than allotted evenly-spaced studs. Typically there were two between the window and the end of the wall, five between the windows and one under each window sill. Within each panel the studs were uniformly centred, but over the wall length there were likely to be four different spacings, varying from 300 to 500 mm.

Two braces were normally allotted to each external wall; usually 25 x 75 mm, and let into the inner faces of the studs to form a flush interior surface. Their most usual configuration is an arrangement between the upper end of the outermost studs, and the lower end of the studs under the windows. Because the end wall panels are of unequal length these braces are often at noticeably different angles. The braces may be inverted, running from the lower corner to the wall head above the window, but this is more common on front and rear walls, where the arrangement is symmetrical, than on side walls.

Other brace arrangements are found. Side walls are sometimes fitted with only a single brace between the windows, and front walls may have their two braces meeting or crossed above the doorway. Occasionally front walls have two crossed braces at each end: perhaps a light and spindly concession to the diagonal framing tradition. Rarely, braces are found on the outer faces of the studs, suggesting either they were afterthoughts, or that external cladding was intended but never done.

STUD ARRANGEMENT ON THE SIDE WALL OF A FOUR-ROOMED HOUSE

IN WALKER STREET, TOWNSVILLE



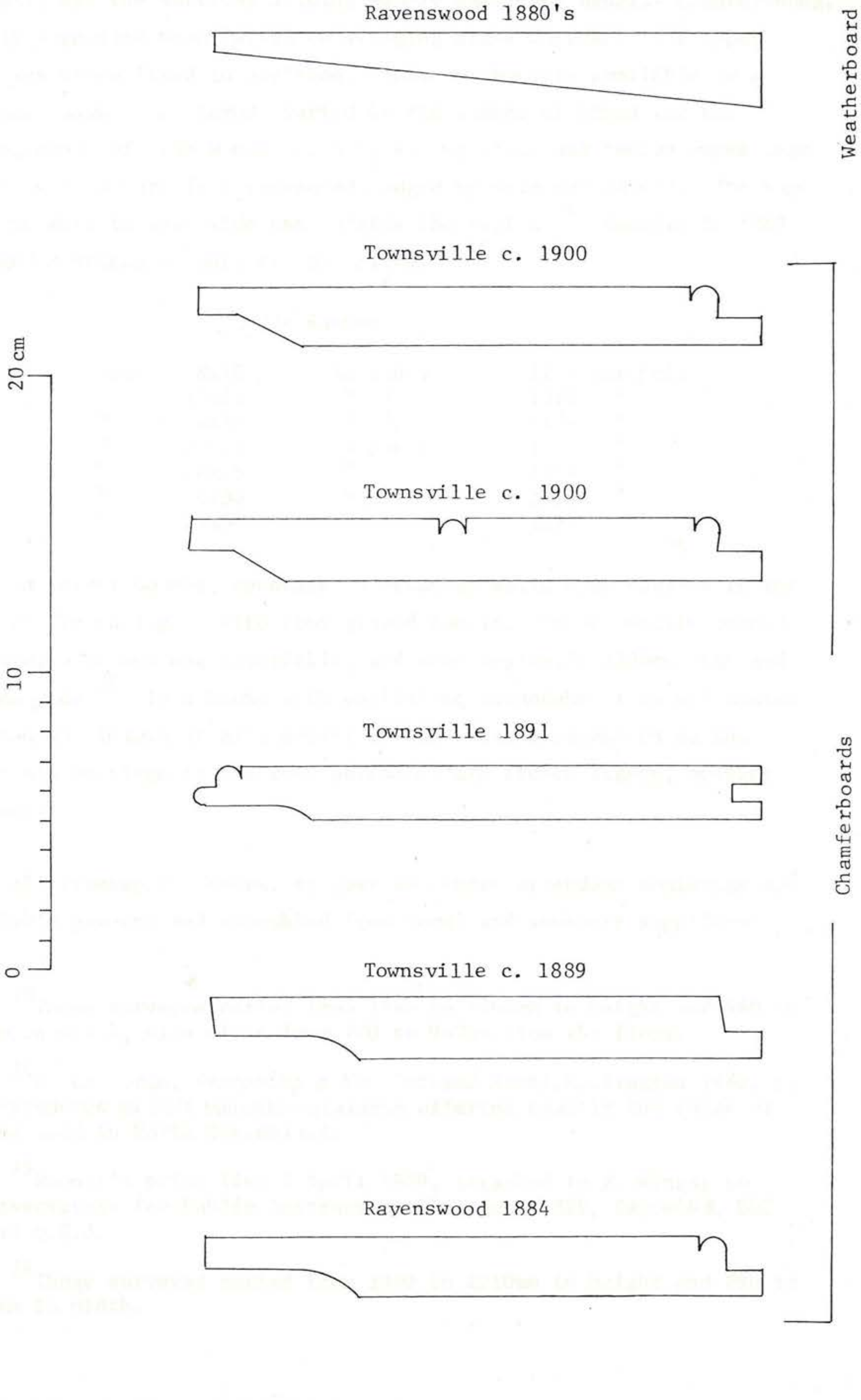
(stud centres within each panel in mm)

The symmetrical disposition of braces probably evolved fairly slowly. Early photographs often show no bracing, or only one brace to a wall. One of the earliest extant two-roomed cottages in North Queensland (c. 1884) has only two asymmetrical braces, one on each of its front and rear walls.

Finally, chamferboards were nailed flush to the inner surface of the frame. The chamferboard was usually a 25 x 200 mm dressed board with its upper and lower edges rebated to form a weather overlap. A variety of profiles are encountered, with curved or angular rebates and square or angled edges. Most chamferboards were beaded internally along either the upper or lower edge, and many have a second bead incised along their mid-line. On better quality houses the inner face of the chamberboards used for the exterior walls exactly matched the tongue and groove boards used for partitions. Litle can be deduced about the evolution of chamferboard profiles; the planing machines in use allowed any pattern to be produced at any time. The one chronological tendency is for boards to reduce in width with the passage of time. By the early twentieth century, chamferboards were often as narrow as 140mm, and this became the standard width of the vertical tongue and groove boards coming into common use by 1914.

The openings in North Queensland timber houses are usually arranged symmetrically within each room, that is in the middle of the interior wall length, with two important exceptions. One involves the openings in the front wall, where external symmetry controlled the arrangement, and the larger front room usually had a window and a door in its front wall. The other occurred in larger homes with a central hallway, whose facing hall doors were usually offset for privacy. The doors and windows supplied by joinery works were highly standardised from first settlement onward. Doors were usually a four-panel design, with a simple moulding framing each panel. Internal doorways were usually 2000mm high and 800mm wide,[72] and window openings were about 1400mm high and 850mm wide, with the sill approximately the window's

[72]Those surveyed varied from 1960 to 2130mm in height, and 710 to 870mm in width.



CROSS-SECTIONS OF SOME CHARACTERISTIC CLADDING BOARDS width, 850mm, from the floor.[73] The window adopted almost universally was the vertical sliding double sash, not usually counter-hung, simply supported when raised on swinging brass catches. The upper sash was often fixed in position. These sashes were available in a limited range of patterns, varied by the number of panes and the arrangement of the wooden sash bars: two, four and twelve panes were usual, with a rare form two-paned, edged by narrower panels. The same designs were in very wide use outside the region.[74] Rooneys in 1889 offered a standard range of sash sizes:

Cedar Sashes

Glass	8x10	12 panes	12/- per pair
"	12x10	" "	13/6 "
"	14x10	" "	14/- "
"	24x15	4 panes	14/- "
"	28x15	" "	15/- "
"	24x30	2 "	15/6 "
"	28x30	" "	16/- "

[75]

In larger houses, openings in verandah walls were usually in the form of French lights with four glazed panels. These usually opened outward, although not invariably, and were typically 2100mm high and 1000mm wide.[76] In a house with encircling verandahs it is not unusual to find no windows at all, except in the kitchen extension at the rear: all openings in the core perimeter are French lights, opening as doors.

All framing for doors, windows and their attendant mouldings was available pre-cut and assembled from local and southern suppliers:

[73]Those surveyed caried from 1140 to 1960mm in height and 680 to 900mm in width, with sills from 770 to 960mm from the floor.

[74]C. Corcoran, *Restoring a New Zealand House*, Wellington 1980, p. 35 reproduces an 1874 Dunedin catalogue offering exactly the range of sashes used in North Queensland.

[75]Rooney's price list 1 April 1889, attached to F. Winzar to Undersecretary for Public Instruction 20 August 1889, 89/06468, EDU Z 2311 Q.S.A.

[76]Those surveyed varied from 2080 to 2210mm in height and 890 to 1020mm in width.

> Doors, Frenchlights, Sashes, Turnery, Skirting, Architraves, Mouldings, c. & c., & c., of every description manufactured on the shortest notice, and at Lowest Rates. 77

Thus the individual components are fairly uniform in detail over the entire region. Mouldings vary in elaboration, tending to be both wider and more refined on larger houses; and front doors, bay windows and their surrounds are especially ornamented in houses of some pretension. Front doors are usually larger in dimensions, more vigorous in their panelling and moulding, and often framed by narrow panels of coloured glass. Each segment of a bay window is usually a large double vertical sash window, often large enough to permit entry over a low sill when the lower sash is raised.

The common sash window is present in houses of virtually every level of social standing, even in otherwise quite rudimentary iron cottages, indicating its wide dispersal as a standard part of the building industry's stock in trade. Its popularity must have been simply the result of its easy and cheap availablity, for it was by no means well chosen for the climate. Whether the upper sash was fixed or free, the vertically sliding design permitted only half the total window area, about 700x850mm or $.6m^2$, to open, admitting ventilation.

At first sash windows were left unprotected on the exposed wall, but two practices subsequently evolved to reduce water and glare penetration. The space above the window head was externally clad with chamferboards between the studs, to prevent water pooling above the lintel; and a small skillion eave was erected above the window to throw off water.

In time this small eave was replaced by a large sheetmetal window hood nailed to the lintel and the studs besides the upper sash. The introduction of these hoods cannot be dated with any certainty, and examination of extant houses provides little information, for they

[77] Rooney & Coy advertisement, *Townsville Herald*, 10 July 1886.

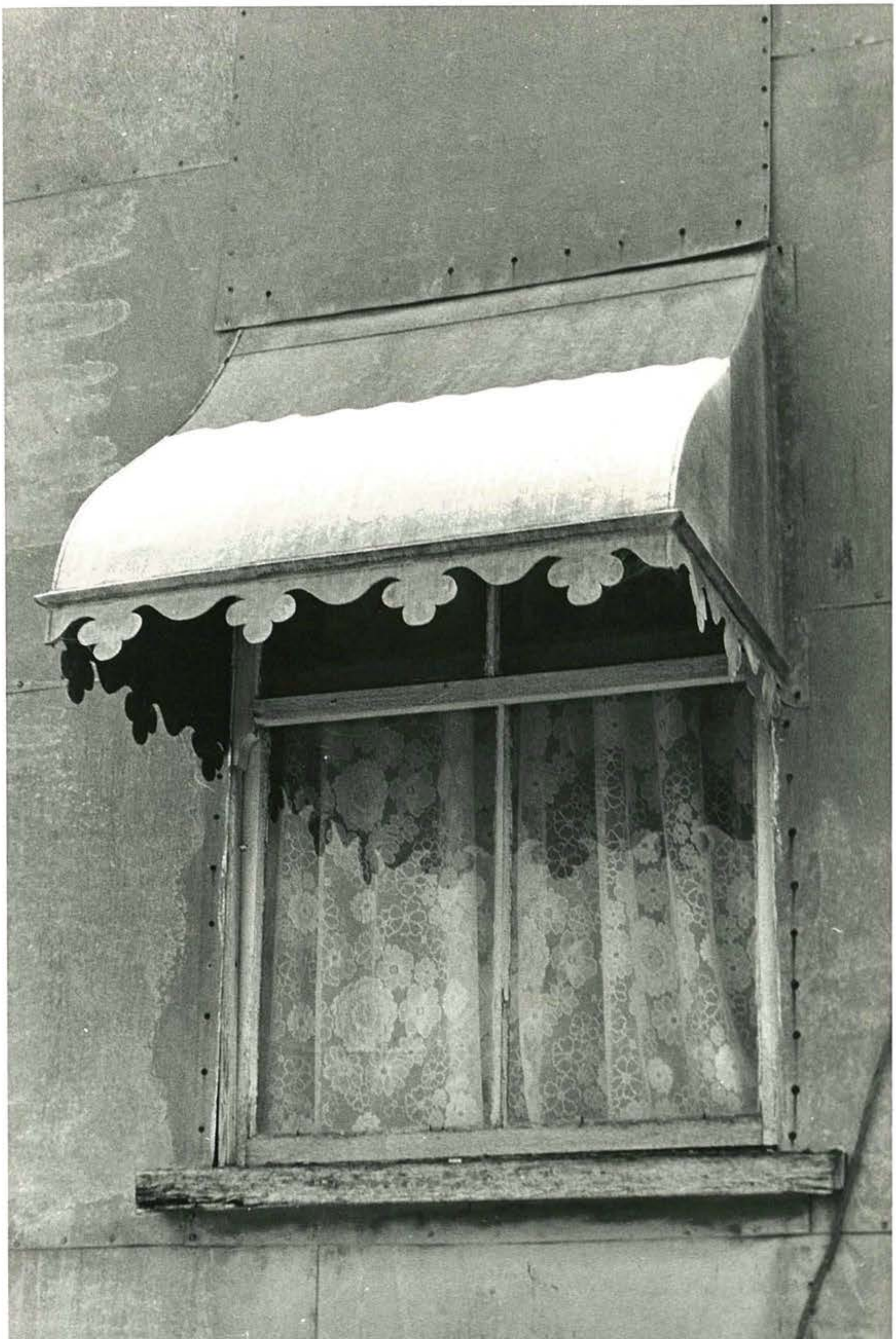
were often added long after original construction without alteration of the original fabric. Indeed re-used window hoods are still on sale in Charters Towers today, and examples are found on quite recent houses. But they do not appear in photographs before the 1890's, and remain fairly rare in photographs until about 1900. The effect of the window hood, which usually extended about halfway down the sides of the window opening, was to eliminate half of its light penetration: the hood's design suggests it was intended to provide protection from glare as much as from rain. Thus the sliding sash window fitted with a hood was 50% useless; only half its area could admit either light or air.

The hoods vary in design, but the most common form was of light galvanised iron sheeting, curved to an ogee profile, and trimmed with an ornamental cut edge. The general form seems regionally determined, for this ogee form with solid sides which predominates in North Queensland is not common in the central and southern parts of the state, each of which has its own characteristic forms. These tend to be mounted higher, with cutaway sides, further suggesting that glare reduction was an important function of the northern window hood.

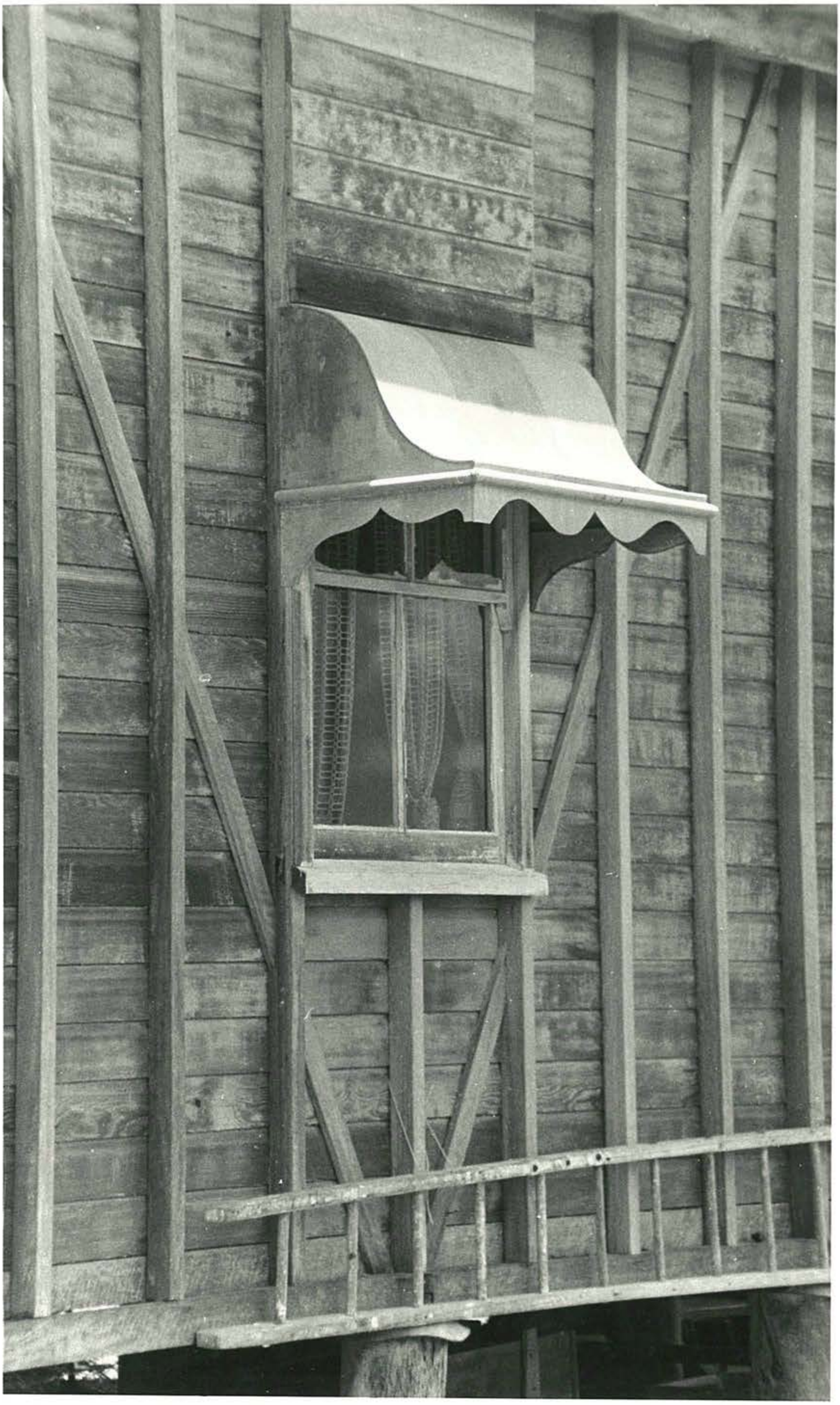
The sheetmetal trim patterns form an interesting study in diffusion. In relatively remote areas these are often hand-cut, and may be as simple as a zig-zag, formed by cutting repeated notches with hand shears. Those found in Townsville and Charters Towers are more complex, and their regularity, repetition of use, and slightly rolled cut edges indicate mechanical production. The range of designs is limited, and no clear regional distribution is apparent. Like machine-cut timber decorative devices, sheetmetal edging was probably distributed over a wide area by a small number of manufacturers selling to the building trade.

Sash windows declined in popularity early in the twentieth century, and were replaced by casements, a form which permitted ventilation through the entire window area. Documentary references mention case-emtns from 1903 onward,[78] but estimates and specifications are rarely

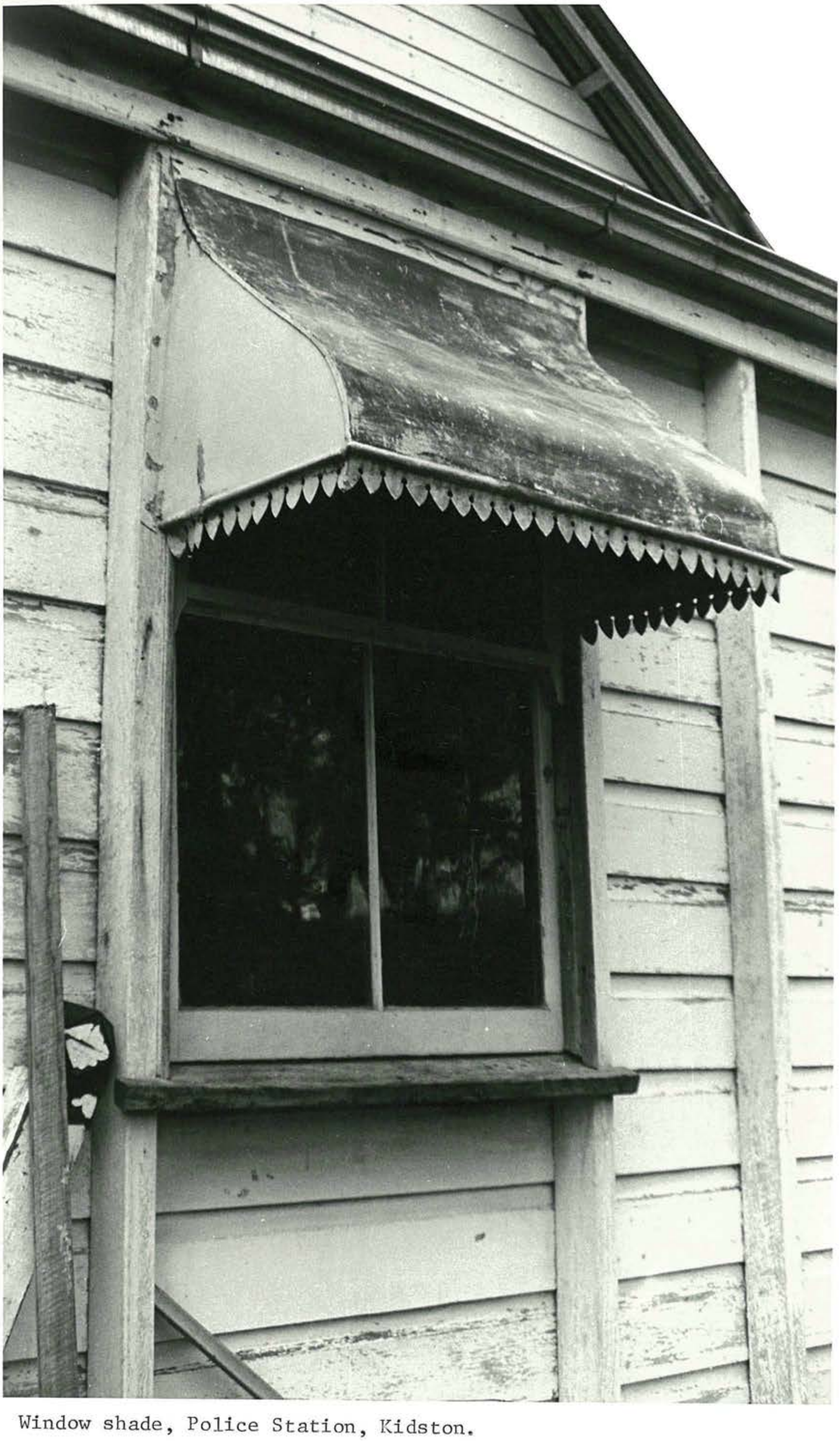
[78] "Casement sashes", estimate 29 March 1903, EDU Z 2539; "Casement windows", estimate 23 November 1905, EDU Z 1921; *cf.* "Cedar sashes com. [plete]" and "Sash Windows", estimates 29 March 1900 & 17 January 1903, EDU Z 1894 Q.S.A.



Window shade with machine cut trim, Millchester.

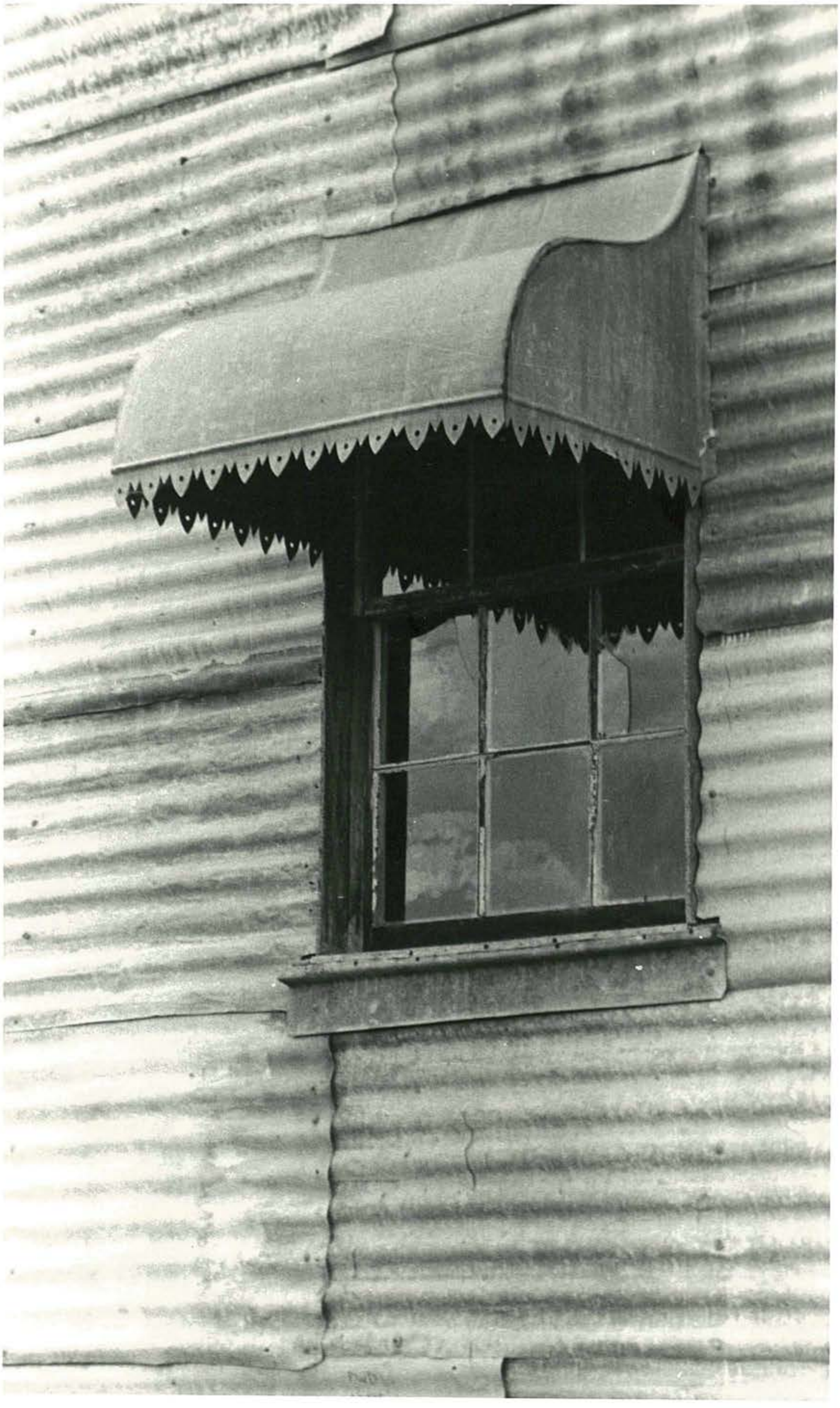


Window shade with machine-cut trim, Townsville.



Window shade, Police Station, Kidston.

Window shade with handcut trim, Einasleigh.



Window shade with handcut trim, Kidston.

precise in their terminology, and the type of window described is not always clear. The word "casement" was sometimes used to describe French doors.[79]

With the adoption of casements the deep window hood was abandoned, for it allowed insufficient space for the windows to open. It was replaced by a high-mounted shallower shade, which was being illustrated in the prefabricated house catalogues by 1916.[80] The glare reduction role of the window hood was taken over by the glass panels of the casements, which were usually textured, and often stained green or magenta. Widespread adoption of casement windows however, probably came after 1918 in new houses. They were also adopted in great numbers for enclosing verandahs of older houses, and entirely occupied the verandah space of many new houses from the 1920's.[81]

A further class of decorative detail arises from attempts to promote air circulation through the enclosed spaces of the house. The plan of the four-roomed house presents four wall surfaces to a lateral breeze, and at least three to a longitudinal breeze (the middle one usually without windows), although the central hallway with its aligned doorways simplifies ventilation in that direction. The inefficiency of the sliding sash window inhibits lateral ventilation, and a further obstacle is created by the positioning of hall doorways. While they are sometimes placed symmetrically on the internal wall, aligned with each other and with the windows, they are in larger houses often staggered to alternate sides of the rooms axis, increasing privacy, but severely inhibiting air movement.

[79] Estimate 5 October 1915, EDU Z 606 Q.S.A. lists:

5 Four panelled Doors
2 French Casements
3 Ledge Doors
4 Windows (small)
5 " (large)

[80] The earliest clear illustration of the casement shade is in Brown & Broad's advertisements in the *North Queensland Register*, 1916. Earlier illustrations are equivocal.

[81] A house in Doris Court, Townsville was built in 1920 with a window sill in place of a balustrade rail: i.e. with the intention of installing casement windows around the verandah perimeter as original construction. The house was inspected during renovation; normally where casements exist, the original form is obscured by cladding and framing.

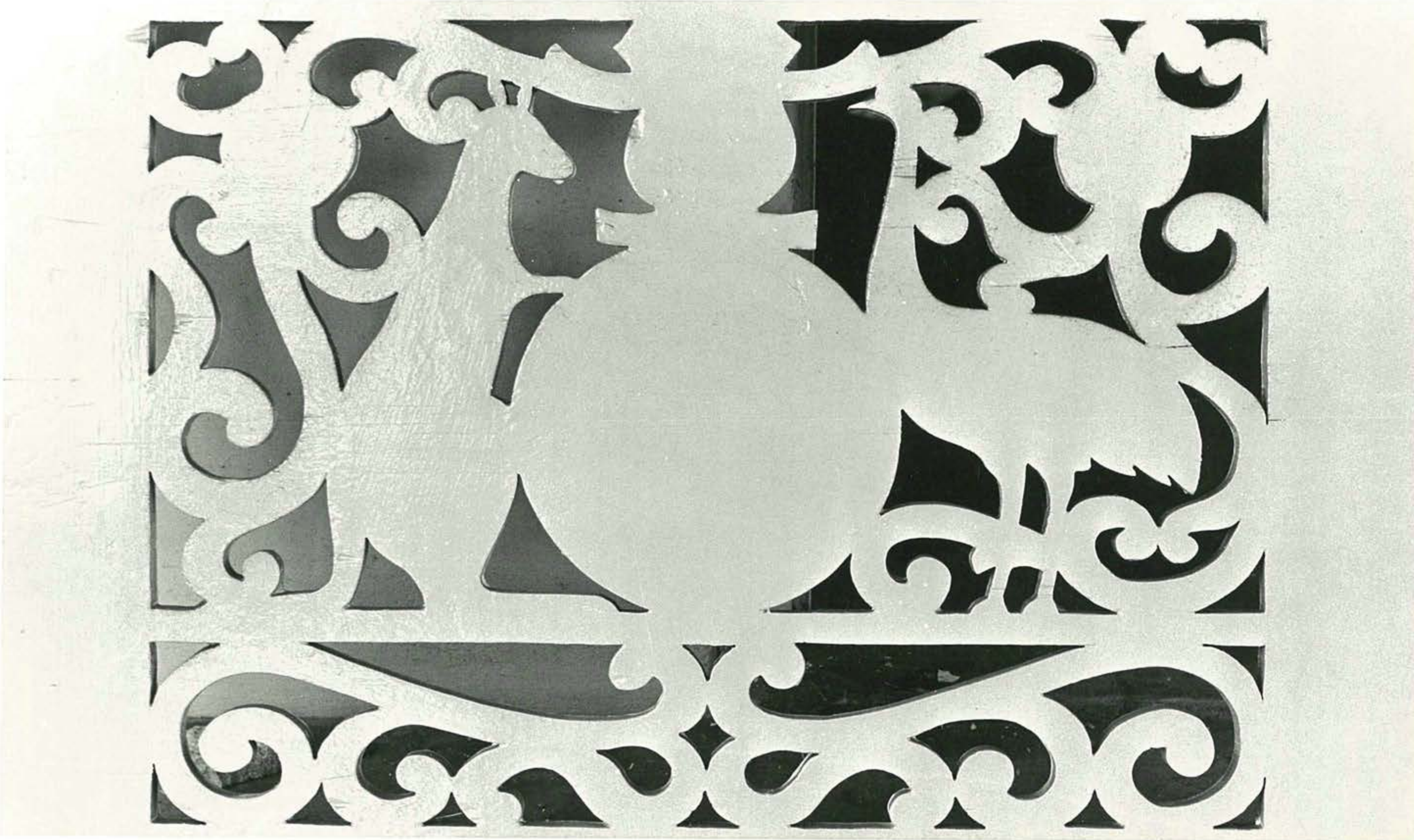
Apparently to take some of the provision of ventilation away from the doorways, the practice was adopted in four-roomed and larger houses of installing a permanently open fretwork panel above the internal doorways of the house; they are not usually found in two-roomed cottages. These ventilating panels were in use in the early 1880's and remained popular until the first world war.[82] They usually measure about 800mm in width (determined by the normal internal door width) by 510mm in height.[83] Fretsawn from thin (15-20mm) wooden sheets, these panels often provide the most elaborate elements of decorative enrichment in the entire house, although their effect is subdued by framing in heavy posts and lintels against unrelieved tongue and groove walls. The fretwork patterns are usually composed of swirling lines, often forming highly stylized leaves, fruit and flowers; the motifs and curvilinear rhythms are generally similar to those found in the most elaborate period of fretwork bracket enrichment. As with most forms of decoration in North Queensland houses, relatively few fretwork panel designs are encountered. While the general theme is usually similar, individual panels vary considerably in their treatment from extremely light and delicate to quite coarse and clumsy. It is not uncommon to find a design repeated with its appearance greatly changed by thickening of the wooden elements, suggesting that cut panels may have been used repeatedly as templates for further panels, inevitably coarsening the design with each retracing.

These ventilating panels are confined to doorways in partition walls. Verandah walls, if they have openings above doorways, usually have simple clear-glazed lights, either fixed or opening hopper-fashion and secured in the open position by a cord lashed to a fitting beside the doorway.

[82]Pfeiffer's house (c. 1881) and *Warringah* (1912) both have fretwork ventilating panels.

[83]Those surveyed varied from 780 to 870mm in width, and 450 to 560mm in height.

Unusually refined fretwork ventilating panel, Charters Towers.



Fretwork ventilating panel with Federation motif, Old Town Hall, Townsville (1899 - Demolished 1978).

Further ventilation is sometimes encouraged by the provision of openings to cool the enclosed roof space by convection. The ceilings in four-roomed houses are typically about 3500mm in height.[84] The centre of the ceiling in each core room is often provided with a ventilating opening, which may be treated as a decorative element; these are by no means standardised. The openings vary greatly in size; may be square, rectangular, circular or octagonal; and are screened by lattice work, timber fretwork, cast iron or pressed sheetmetal devices. It is not unusual for several different ventilator designs to be present in one house, and indeed examples are encountered where every room of a house has a ceiling ventilator different in size, shape, form and material. This is in marked contrast to ventilating panels over doors, which are not found in materials other than timber and are invariably of uniform design throughout a house. Ceiling ventilators are sometimes found fitted centrally with a gas pipe for lighting, and have often been adapted for other uses, as they provide a convenient opening in the centre of the ceiling. Intact examples are relatively rare, as many have been removed or mutilated during installation of electric lights or ceiling fans in recent decades.

To complement these convectional devices, the apex of a pyramid roof is sometimes equipped with a sheetmetal ventilator; while a conspicuous feature of houses in the region, these are not as common as is sometimes suggested.[85] Two principal types of ventilator are encountered. The more elaborate, a cylinder topped by an overhanging low pitched cone with a decorative edge, is usually associated with pyramid roofs. These ventilators came into use during the 1880's,[86]

[84] Those surveyed varied from 3030 to 4120mm above floor level.

[85] Lucas, *Conservation*, p. 25 makes the statement "The roofs of northern houses are invariably capped with ventilators". In a survey of 3978 North Queensland houses, only 281, or 7.2% were found to have roof ventilators.

[86] None is visible in 1881 photographs of Townsville, but a number appear by 1887 and they become more numerous from that time.

and remained popular until the first world war,[87] but their distribution today is markedly uneven. 225 examples are extant on houses in Townsville and Charters Towers, and only 4 in other towns.[88] Ventilators of this form exhibit stamped sheetmetal edging in the same small range of patterns found on sheetmetal window hoods.

The second common ventilator, an austere cylinder-conical form, is found on a small number of houses, principally in Charters Towers, and was often specified for government buildings, including residences. Other forms exist in small numbers, but these too are concentrated in Townsville and Charters Towers. Whether this is a fair indication of their original availability and distribution is uncertain: it may simply reflect those towns' greater concentration of fairly elaborate houses dating from the relatively short period when roof ventilators were in most common use. Although in use as late as 1915, roof ventilators seem to have undergone a decline in popularity by the early twentieth century; the advertisements of the ready-to-erect house merchants do not depict them.

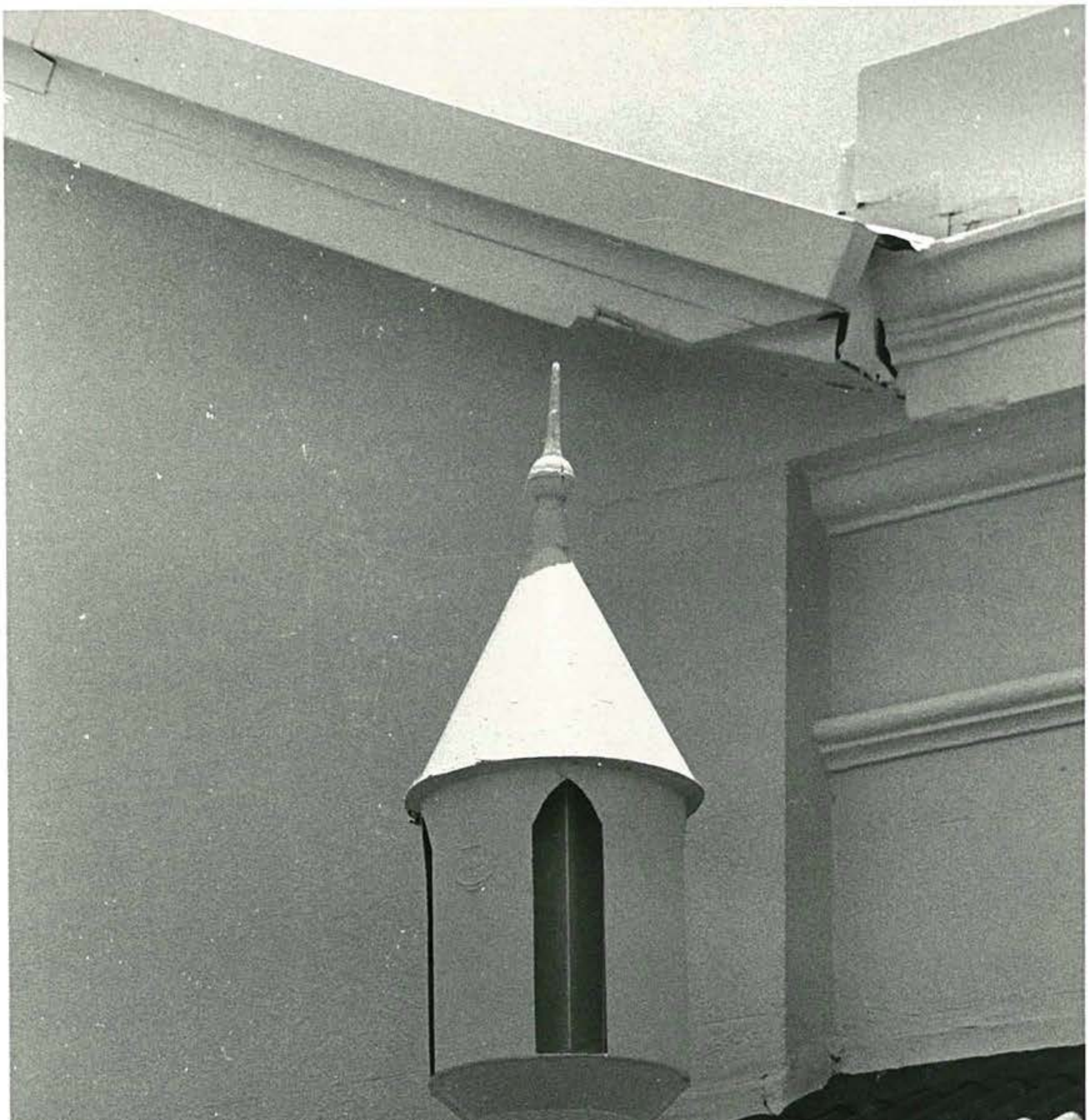
Whether these convectional devices actually made any contribution to ventilating the house or cooling the roof space is debatable. Indeed the roof ventilator's contribution may at times have been entirely decorative: *Currajong* in Townsville (c. 1889) had an unusually slender and elaborate "ventilator", apparently of sheetmetal, visible in photographs until the 1930's. But the roof of the house in the 1970's, clearly of the original iron but with the "ventilator" removed in the intervening period, showed no trace of a ventilating opening at the apex. The roof ventilator in that case seems to have been simply a decorative finial, and it is likely that the practice was more widespread.

* * * * * * * *

[87] See examples on new workers' dwellings illustrated in *Q.P.P.* 1915-16 vol. 3, after p. 954.

[88] 2 in Herberton, 1 each in Cairns and Ravenswood.

Roof ventilator, *Thornburgh*, Charters Towers.



:oof ventilator, Magistrate's Court, Townsville.

While this thesis is concerned with the houses built in North Queensland settlements before 1914, it is necessary to look beyond those houses at their time of construction, to their condition today. Much of the evidence for their forms, materials and techniques adduced in this study is of a documentary or photographic nature, but much too is derived from present observation of the several thousand houses which appear to date from that period.

The evidence provided by the extant houses must be treated with caution, for the building stock of the region has undergone profound changes in the decades since construction. But these changes are themselves worthy of close examination, for they provide information on the continuing economic circumstances and building history of the settlement, give insight into the deficiences of the houses at the time of construction, and supply information which allows inferences to be made about theoriginal condition of other altered buildings.

The most common, although least conspicuous, mode of alteration has been the demolition of buildings. It is to counteract this process that the use of photographic evidence is essential, for it provides the only satisfactory method of comparing the landscape of a settlement at several times, and is frequently a corrective to the tendency to over-estimate a building's age on the basis of ambiguous documentary evidence.

Where photographs of durable mining settlements are available over a long period, they often show that successive periods of economic development coupled with simple aging of buildings have brought about near complete demolition and replacement of houses not once, but on several occasions. In Ravenswood, for example, a settlement with a history of development both long and complex, and a fairly comprehensive photographic record, at least three generations of houses have been built. The houses of the early 1870's had, with one exception, been replaced by newer ones in the photographs of the town taken in the New Ravenswood period of the early twentieth century. And those new houses in their turn have almost entirely disappeared from the town today.

Townsville, although of greater extent, was partially photographed by Bowly in December 1873, and comprehensively covered by an unknown commercial photographer in about April 1881. Surprisingly few of the 1873 buildings survived until 1881, and none does today. Even of the 1881 settlement, no private house is extant, and only four other recognizable buildings survive today.[89] The coverage of the town is so complete that it can confidently be stated no house standing in Townsville was built before 1881.

The rate of demolition proceeding at present can sometimes be estimated. A 1974 vertical aerial photographic mosaic of Charters Towers was used to control the survey of the town's houses in August and September 1978. Twelve houses whose roof form suggested an early date of construction had been demolished in that interval, leaving an empty allotment: a certain demolition rate of three houses per year, or one every four months. This estimate is undoubtedly conservative, for there were in addition several houses undergoing what may have been radical renovation or inefficient demolition at the time of the survey, and other cases where the house on the site was a modern one which appeared not to be the house in the 1974 aerial photograph, but whose identification was indefinite.[90]

In many settlements, demolition of houses was not the result of economic cycles of growth and decay, but of sudden cataclysmic destruction. Cyclones have affected every coastal settlement south of 15° latitude on occasions, and although they diminish in intensity over land the destruction has sometimes extended well inland; Chillagoe, Mount Garnet, Irvinebank and Croydon have all experienced building damage. This attrition among buildings, whether in the form of outright destruction, severe damage leading to demolition or moderate

[89] The Magistrate's Court in Sturt Street, the Supreme Court in Cleveland Terrace, the Queensland National Bank and W.H. Green's shopfront in Flinders Street.

[90] Confirmation was not sought, because this was not at the time an objective of the survey. The significance of the demolition rate was seen only after the survey results were plotted and compared with the aerial photographs.

damage leading to reconstruction. is of major concern to this study, not only in theperiod under study but to the present. The most recent severe cyclone damage in a North Queensland urban area, at Townsville in 1971, saw the destruction of a number of pre-1914 houses and the modification, especially re-roofing, of a great many more.

Although a coherent estimate of the extent of cyclone damage is rarely available, contemporary descriptions of cyclone effects give a loose impression of their impact on building stock. The most severe cyclone to affect North Queensland urban areas to the present crossed the coast between Innisfail and Babinda in the evening of 10 March 1918.[91] Both towns were "almost completely demolished": various quantitative estimates of the damage were that only 8 buildings were left intact and 75% of houses in Innisfail were "absolutely ruined", and that 90% of the houses in Babinda were "gone". The mode of destruction was observed to be quite beyond the level of piecemeal failure usually experienced: "most of the wrecked buildings were carried bodily off the blocks for some distance and smashed." Destruction extended along the coast from Cairns to Cardwell, and buildings were damaged in inland towns as far afield as Mount Garnet and Stannary Hills. At least 14 people were killed in demolished buildings.[92] The tendency of journalists to overstate the damage is counterbalanced by the photographs of the aftermath, which show a scene of destruction in Innisfail unparalleled in Australia until the Darwin cyclone of 1974.[93]

Equally intense but more localised catastrophe struck the heart of Townsville on 9 March 1903, when cyclone *Leonta* demolished a narrow swathe of buildings in the city centre and North Ward. Eleven people were killed by collapsing buildings, and conventional wisdom was

[91]The 1899 Bathurst Bay cyclone was incomparably the most severe in Australian history in cost of human life: 239 persons are named as "Drowning by shipwreck during hurricane" on 5 March 1899 in the Cook district Register of Deaths. However, no significant property damage was done on land.

[92]*Queenslander* 23 March 1918.

[93]Photographs in *ibid.* 6 & 13 April 1918 and an album held by Cairns Historical Society.

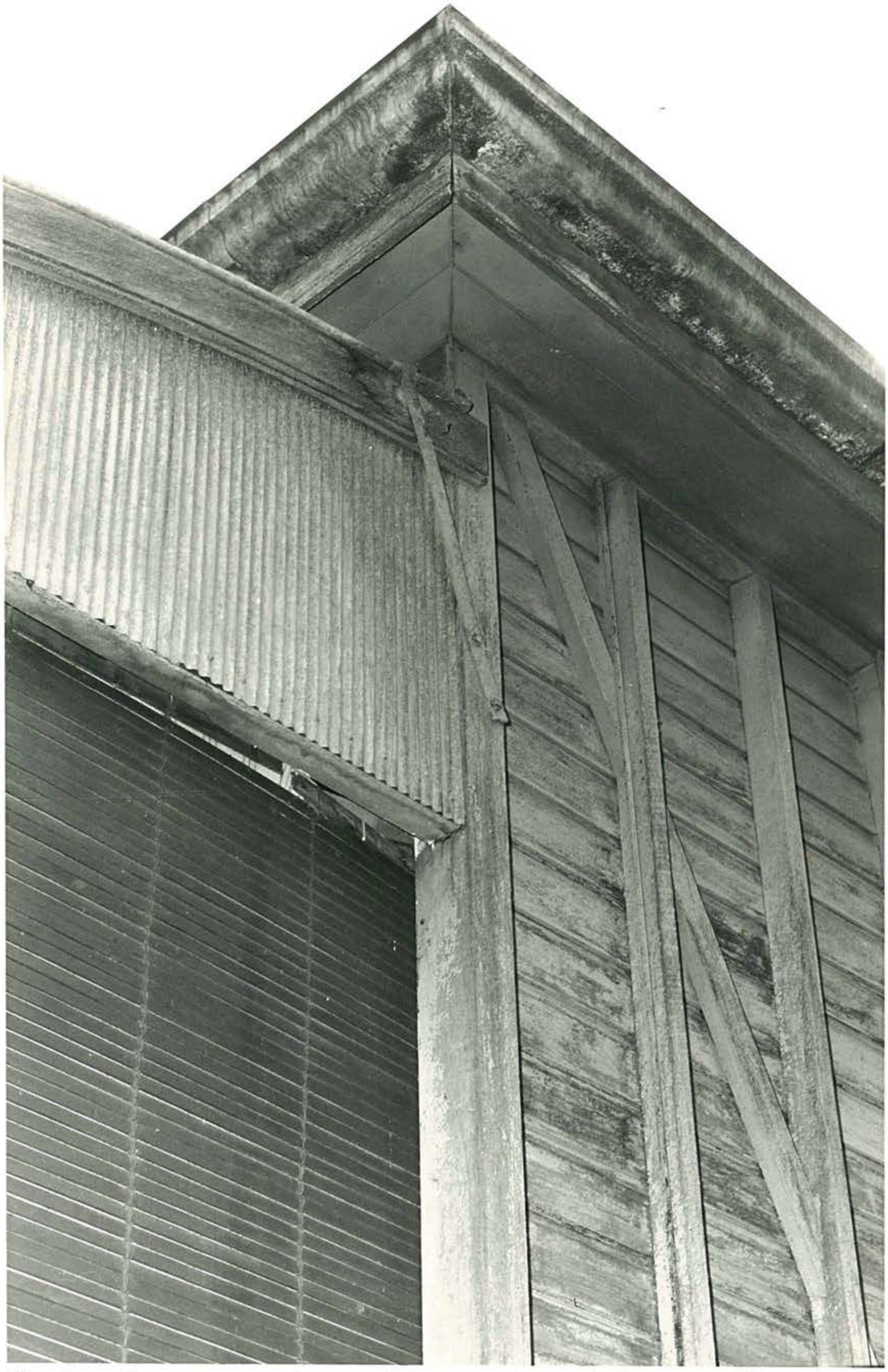
shattered by the destruction of two substantially constructed brick buildings at the hospital and the grammar school, thought to be impervious to cyclone damage.[94] In one block between Stanley and Gregory Streets at North Ward, 24 houses were destroyed. In all "hundreds of private cottages were wrecked", and "so many private houses have been destroyed that large numbers of people are homeless."[95] *Leonta's* effects are evident in photographs taken before and after the event; considerable renewal of building stock in central Townsville can be dated to 1903.

These examples are exceptional; typically the advent of a cyclone causes the destruction of a small number of buildings and damage to a greater number of roofs. But the cumulative effect of these events over many decades has led to a faster rate of turnover of buildings in North Queensland than in most other parts of the continent, and has hastened the rate of demolition of houses, in addition to the pressures of economic circumstances or normal decay.

The true extent of demolition is masked by the practice of removing houses to other sites. Timber and iron buildings are well adapted to removal; indeed this very consideration was probably one of the influences on their design. Removal may take several forms. It may involve the careful dismantling, transport and exact reconstruction of a house in its original form on a new site, in which case the extant fabric may show little evidence of the process. It was probably more common for removed houses to undergo modification on re-erection, for stylistic or functional reasons. Even more common was partial re-use of materials in the extension of other buildings; the various processes of extension and enclosure to be described later frequently employed re-usedmaterials.

[94]Much of the loss of life occurred in the collapse of a brick hospital ward, used as a shelter because of faith in its solidity.

[95]*Queenslander* 14 & 21 March 1903. *Leonta* merits further study, for the severity, small area and short duration of the damage suggest that something unusual occurred in the course of an otherwise moderate cyclone; perhaps a freak gust or a tornado cell. Oddly, a separate cyclone struck Bowen a few hours earlier, with less severity.



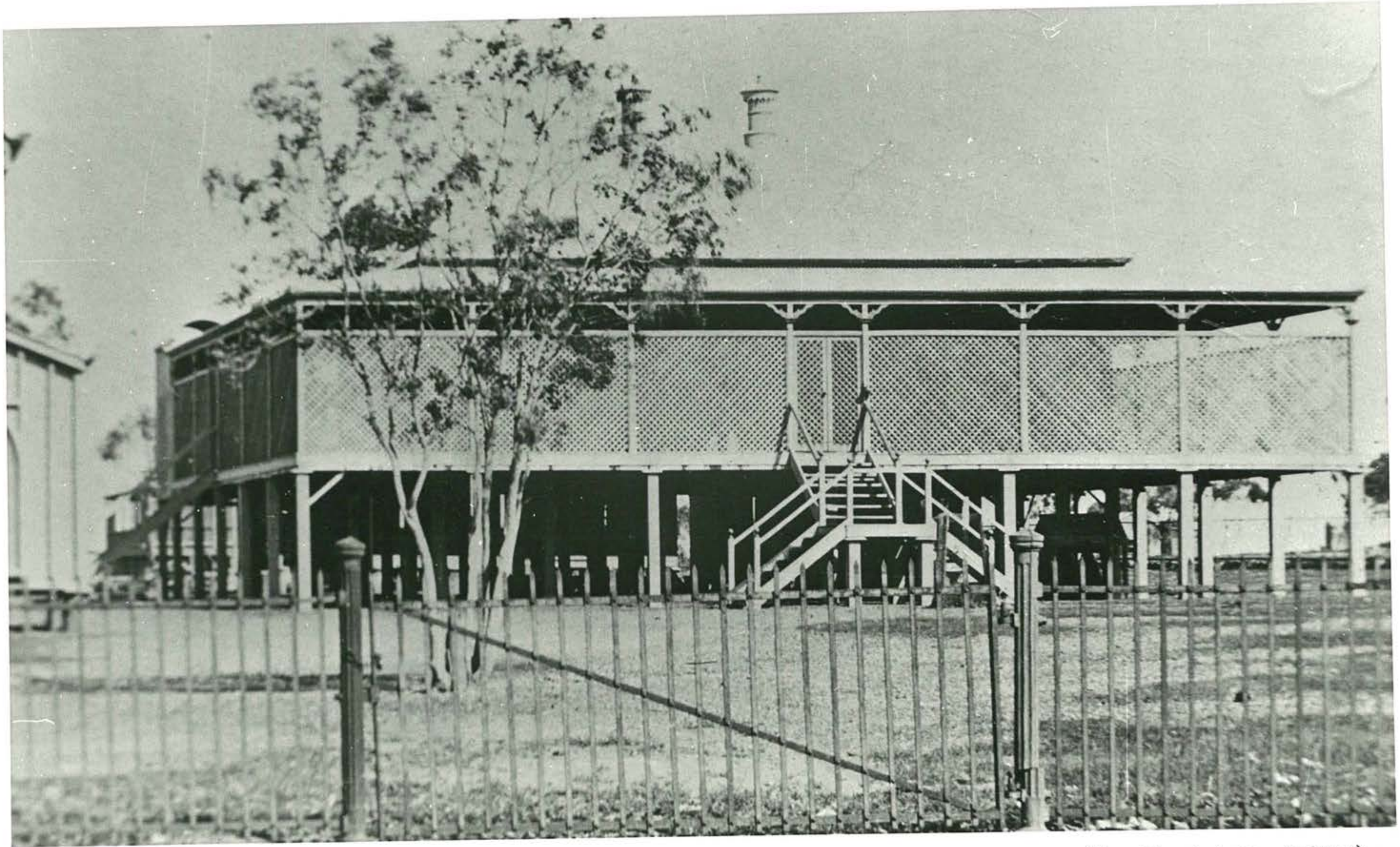
Sheetmetal strap securing roof iron against wind, Townsville.

While short-distance removal of houses was a commonplace and almost random occurrence within towns and local districts throughout the period under study, the most systematic pattern of relocation came with the decline of the mining towns during and immediately after the first world war, when large numbers of houses were removed to the coastal towns, to more viable mining settlements, or to pastoral and agricultural districts. The extent of this exodus is difficult to assess, as it left virtually no documentary evidence. Usually the only testimony available is the oral statement of an occupant or nearby resident, and after the passage of sixty years that evidence is becoming rare. However, there are houses in Cairns convincingly described as having been removed from Croydon and Irvinebank, a house in Ravenswood originally built at the Burdekin meatworks, and a house in Thornborough which was taken there from Wolfram. The latter two are interesting, as both involve houses taken *to* a mining town during its decline, from another settlement in more rapid decline.

The belief that whole suburbs of Townsville were brought from Charters Towers is undoubtedly exaggerated, although there is good reason to believe that substantial numbers of Charters Towers houses were moved to the growing suburbs of South Townsville, Hermit Park and Railway Estate in the 1920's.[96] Several reputed ex-Charters Towers houses surveyed have proved to show no physical evidence of removal, and indeed in some cases to have been demonstrably on their present sites long before the exodus from Charters Towers had begun. There is apparently a piece of nostalgic folklore abroad leading contemporary residents to assume any venerable house is "from the goldfields".

There were two modes of removal. If the house was entirely dismantled, it could be transported on rail and re-erected without substantial modification. The economic sense of such a procedure is

[96]There is no feasible way of estimating their total number, but I would incline to number the extant examples in dozens rather than hundreds, folklore notwithstanding. This folklore probably accounts for the widespread and dubious use of the term "miners' cottage".



Roman Catholic presbytery at Croydon, c. 1900. (Jewell sisters, Cairns)

Former Croydon presbytery, re-roofed with verandahs enclosed, Cairns, 1979.

clear; it was after all the very means by which the twentieth century building firms operated, and there is little doubt that an old timber house could be obtained in Townsville at lower cost both for purchase and transport from Charters Towers than a new prefabricated house from Brisbane.

Alternatively, to save labour the house might be dismantled only into whole wall sections. This method had the disadvantage that while single pieces of timber of virtually any length could be stacked on rail transport, the two-dimensional wall was too wide to lie flat, and had to be cut down to 8 or 9 feet in height to stand on a flatbed wagon.[97] Thus many of the relocated houses are identifiable by their relatively low ceiling heights, rebuilt roofs, and by the effect of wall truncation on the appearance of surviving windows, picture rails, fret ventilating panels and doorways.

A rare form of modification, for the number of eligible houses was not great, was the division of a large house into two or more smaller houses. One example in Paxton Street, Townsville, was built in 1891 as a large four-roomed house with bay windows and encircling verandahs for a well-to -do barrister, A.W. McNaughton.[98] About 1935 the house was divided into two along its central hallway, moved onto two adjacent allotments and externally modified. One of the resulting houses has been demolished, but that extant is completely disguised from the street frontage, re-roofed, clad with asbestos cement sheeting, with its original verandah bay window now projecting into the open and shingled. Only an examination of its internal construction, details and floor plan reveal its building history and allow its original form to be inferred by comparison with other houses of similar age on the broad assumption of symmetricality. The complete external transformation of the house leads one to suspect that the practice may have occurred more widely, but is unlikely to be detected by external observation.

[97]This restriction still applies on Queensland Railways: the information was obtained by asking a railway goods office for advice on transporting a demolished house by rail.

[98]*P.O.D.* 1892-93, p. 353, *et.seq.*

Much more common was the process of extension of a small house into a larger form. The practice of adding side verandahs to a basic two or four-roomed plan was very widespread; when this was done soon after construction an effort was usually made to match the details of the original verandahs, but later additions are often of simpler design, and may have been enclosed at the time of addition.

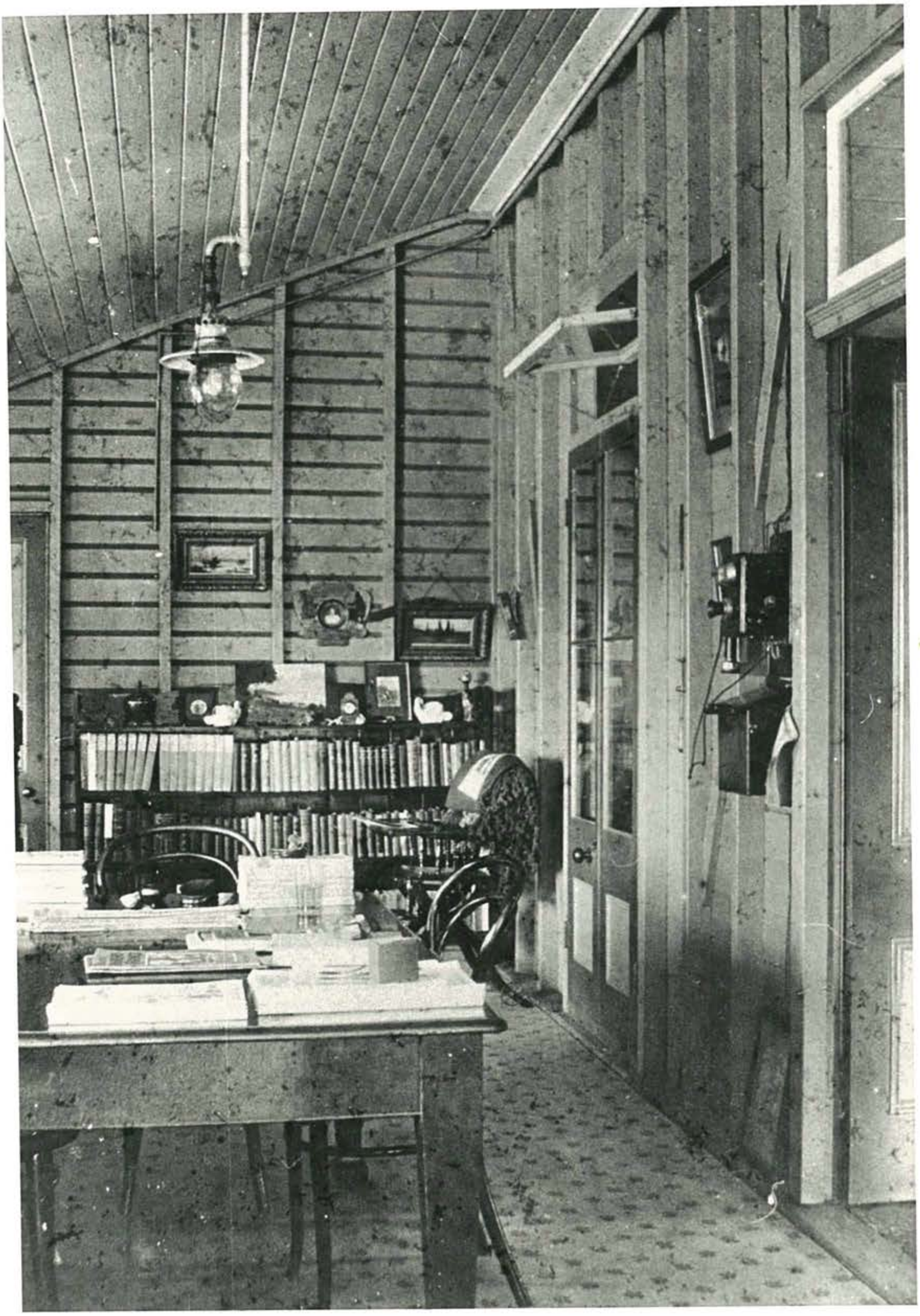
Extension of the house's enclosed area was most easily done by adding suitable cladding to enclose an existing verandah, as the roof and posts were already in position and no structural modifications need be made. Enclosure usually began at the rear of the house; the practice was underway by the 1880's and it is unusual today to find a house with an open rear verandah. The front verandah is more likely to be found left open, its facade relatively unaltered, reinforcing the suggestion that the street frontage of the house had social and territorial significance transcending its utilitarian functions. The concealed rear verandah was considered fair game for modification, and was frequently altered to incorporate extra sleeping space or the bathroom, lavatory or kitchen which at the time of original construction were housed in entirely separate structures.

Rearward extensions are usually confined to an elongation of the house's rectangular plan, a consequence of the common mode of siting urban houses symmetrically at the street frontage of a long narrow allotment, leaving greatest room for expansion at the rear. Rearward extensions are usually found to be of materials inferior to those of original construction, and are frequently the work of unskilled hands. It is not uncommon to find a sawn timber cottage extended in corrugated iron, perhaps wired to a round timber frame.

Front verandah enclosure needed greater social acceptability, and was at first done with light studding and chamferboards; but as it became more common in the twentieth century asbestos cement sheeting came to predominate. With the popularity of casement windows the usual method of enclosure evolved into asbestos cement sheeting below the balustrade rail, with a sill fitted above or in place of it, and tinted glass casements between the rail and the verandah roof.

Rearward extension of two-roomed cottage, Charters Towers. (Demolished 1980)

Iron cottage apparently extended from two-roomed form, Ravenswood.



Use of enclosed skillion verandah, Townsville, 1917.

(Mrs. M. Freer, Broadbeach)

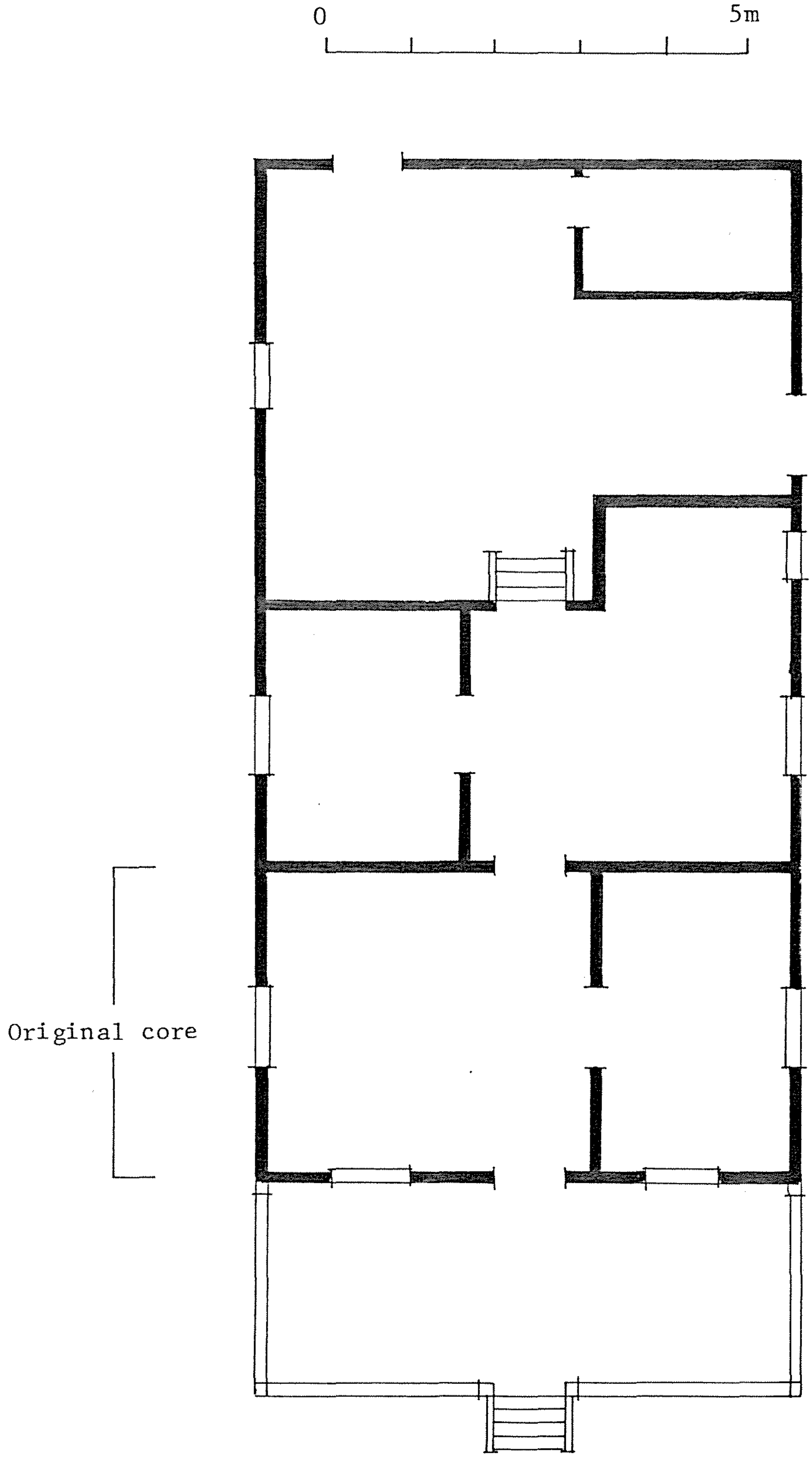
An example of the process of extension is provided by a cottage on a Miners' Homestead Perpetual lease in Palmer Road, Millchester. The house was built in 1899 to house a married couple with one small child; the father was a teamster working on contract for the nearby mills, London-born, with previous experience in the USA and the Croydon and Herberton fields. The cottage was originally only a core of two rooms, lined with tongue and groove boards and iron clad with an open front verandah. The kitchen was detached at the rear. The living space was progressively expanded to accommodate the birth of children - ten were born in all - first by the addition of two rear skillion rooms, iron walled and unlined, early in the twentieth century, then by further extensions to the rear, the last on an earth floor. At no time did the extensions project sideways beyond the lines of the original core plan, nor was the front verandah enclosed. In its final form the cottage was over 14m in length, with its kitchen incorporated under the rearmost section of the skillion extension. With the exception of minor modifications in 1960, its form is unchanged.[99] The same process of extension is evident in cottages throughout the region. One corrugated iron cottage in Petford, commencing as a standard two-roomed core, attained a length of nearly 19m.

As the rear verandah, the usual starting point for extensions, is invariably skillion roofed, the roof of the extension usually conforms to the verandah's pitch. If extension continues for any distance, however, the roof pitch presents the builder with the problem of maintaining headroom. This can be solved in two ways: either by dropping the level of the floor, which is usually done by discontinuing the elevated timber floor and having only an earth floor at the rear, or by pitching the roof upward to form a new gable. This was sometimes achieved by adding a re-used cottage core or kitchen from another building.

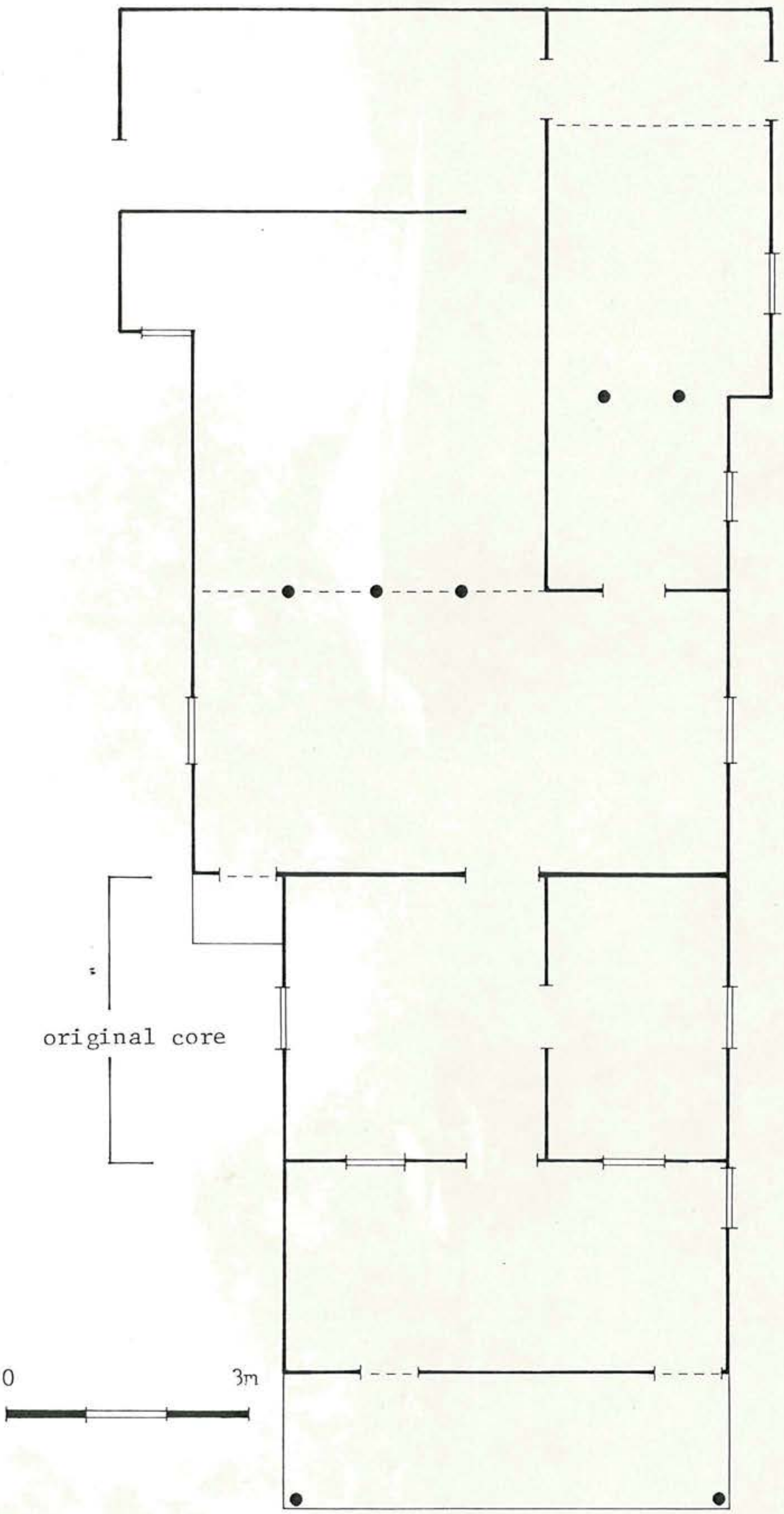
The trend toward enlargement of the basic house is a constant theme, which may reflect a variety of social and economic circumstances: the birth of children, expression of social standing, demand for shelter of activities or possesions previously housed in the open or in an out-

[99] Information from Roy Wright, the present occupant, who was born in the cottage in 1904.

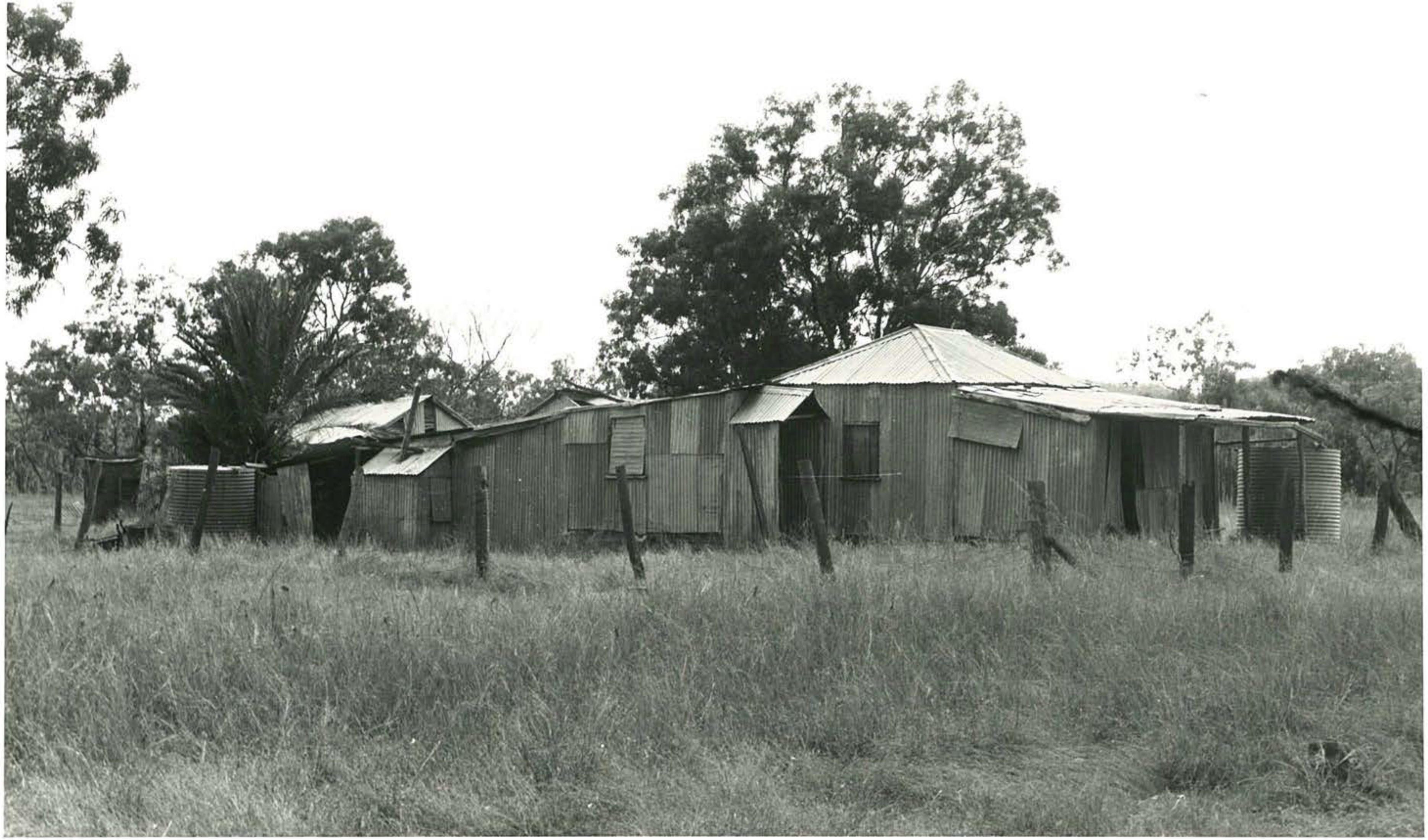
EXTENDED IRON COTTAGE IN PALMER ROAD, MILLCHESTER



Iron two-roomed cottage, Millchester (1899).



EXTENDED IRON COTTAGE IN PETFORD



Rearward extension of iron two-roomed cottage, Petford.

building. One well-documented example of the process of extension is the Ravenswood school residence, built in late 1873 and repeatedly enlarged to its present form by 1897.

Inspected as complete in 1874, when the school opened,[100] the residence was a lowset timber framed house of four rooms under a transverse gabled corrugated iron roof. The frame was weatherboarded externally, but the walls were left unlined and the roof unceiled. There was no separate kitchen; cooking was done at a brick fireplace in the gable wall, and the house had a verandah only on the front. Both the positioning of the fireplace and the absence of a rear verandah were unusual in the light of later North Queensland practices; cost probably determined both features.

However, the need for a rear verandah was pointed out at the time of completion of the residence, and one was constructed during 1874. The house then became an unusual mixture of two common house forms: in plan a four-roomed house, but resembling a two-roomed gabled cottage in external appearance. It thus predates the standardised practices of the northern building industry, which in later years would almost certainly have given such a house a pyramid roof.

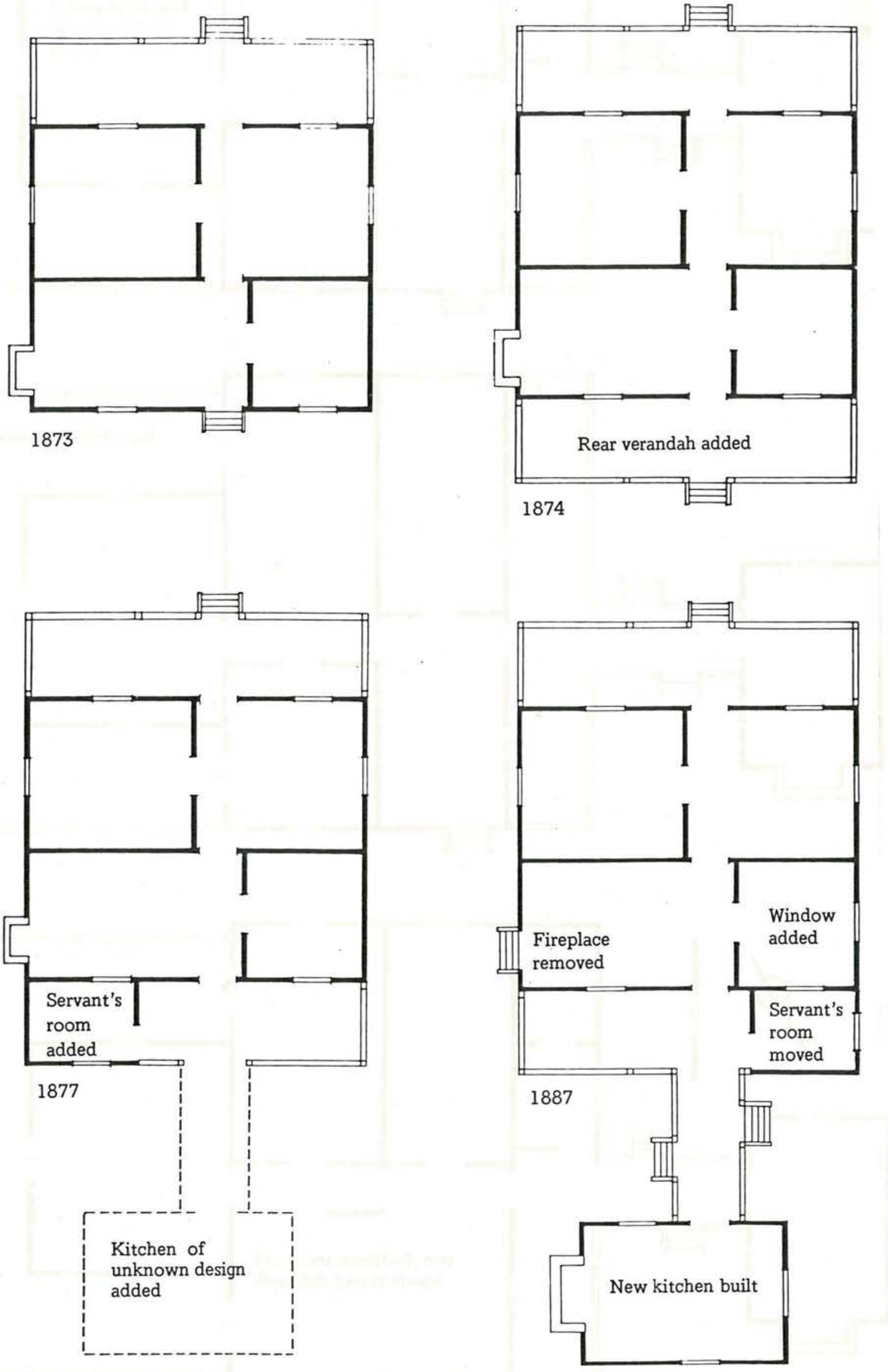
The house was adequate for its first occupants, but when they were replaced in 1877 by a new teacher with a large family the need for a separate kitchen was sorely felt, "as this climate does not admit of cooking being done in the midst of sleeping apartments."[101] A kitchen was added by November of that year, connected to the rear verandah by a covered way. It was apparently an older building from another site, for it was described as "an old weatherboarded house, shingle roofed,"[102] and already "in a bad state and past repairing"

[100]Cecil Henning to Edward Butterfield 27 and 28 January 1874, 74/307 and 74/317, EDU/Z 2309 Q.S.A.

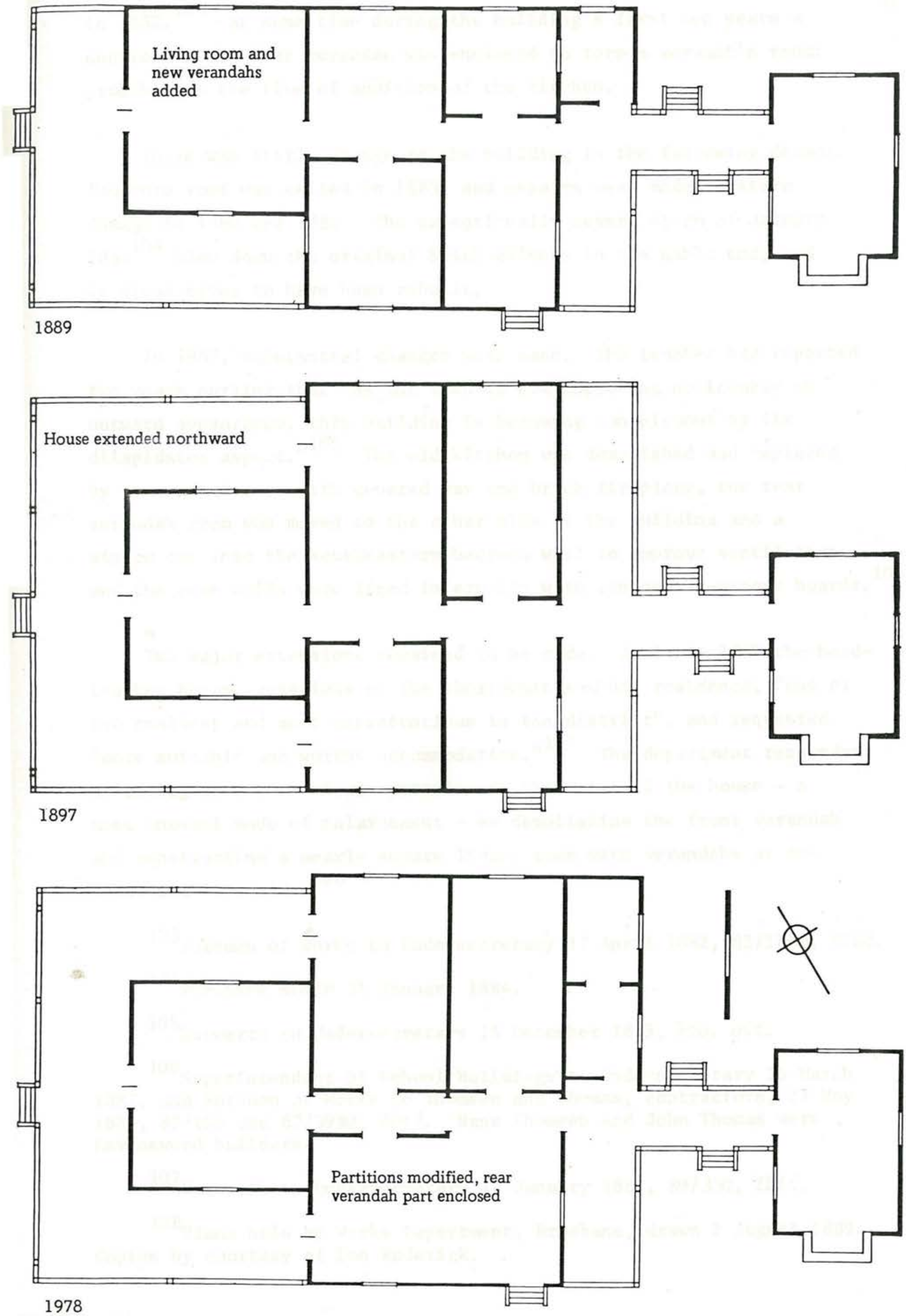
[101]William Samwell to Secretary for Public Instruction 19 January 1877, 77/291. *Ibid.*

[102]Edward Hurworth to Undersecretary for Public Instruction, 15 December 1885, 85/8512, *Ibid.*

MODIFICATIONS TO SCHOOL RESIDENCE, RAVENSWOOD



SCHOOL RESIDENCE, RAVENSWOOD



in 1882.[103] At some time during the building's first ten years a section of the rear verandah was enclosed to form a servant's room: probably at the time of addition of the kitchen.

There was little change to the building in the following decade. The core roof was ceiled in 1883, and repairs were made to storm damage in 1880 and 1884. The exceptionally severe storm of January 1884[104] blew down the original brick chimney in the gable end, and it seems never to have been rebuilt.

In 1887, substantial changes were made. The teacher had reported two years earlier that "as the town is now improving noticeably in outward appearance, this building is becoming conspicuous by its dilapidated aspect."[105] The old kitchen was demolished and replaced by a new structure with covered way and brick fireplace, the rear verandah room was moved to the other side of the building and a window cut into the southeastern bedroom wall to improve ventilation, and the core walls were lined internally with tongue-and-groove boards.[106]

Two major extensions remained to be made. Again in 1889 the head-teacher became conscious of the shortcomings of his residence, "one of the smallest and most unpretentious in the district", and requested "more suitable and worthy accommodation."[107] The department responded by adding an asymmetrical extension to the front of the house - a most unusual mode of enlargement - by demolishing the front verandah and constructing a nearly square living room with verandahs at the front and one side.[108]

[103] Foreman of Works to Undersecretary 17 April 1882, 82/1848, *Ibid.*

[104] *Northern Miner* 31 January 1884.

[105] Hurworth to Undersecretary 15 December 1885, *loc. cit.*

[106] Superintendent of School Buildings to Undersecretary 25 March 1887, and Foreman of Works to Thomsen and Thomas, contractors, 27 May 1887, 87/155 and 87/3980, *Ibid.* Hans Thomsen and John Thomas were Ravenswood builders.

[107] Hurworth to Undersecretary 12 January 1889, 89/330, *Ibid.*

[108] Plans held by Works Department, Brisbane, drawn 2 August 1889. Copies by courtesy of Don Roderick.

The last extensions were made in 1897. A request by a new head-teacher for "a small verandah on the east side of the house"[109] led to enlargement of the entire side of the residence by extending both rooms and the rear verandah eight feet to the northeast, and building a verandah on the third side of the living room. The verandahs were ceiled at the same time.[110] The resulting nearly symmetrical house has been little altered since. When surveyed in 1978 it differed from the 1897 plan only in the arrangement of some internal partitions and partial enclosure of the rear verandah.

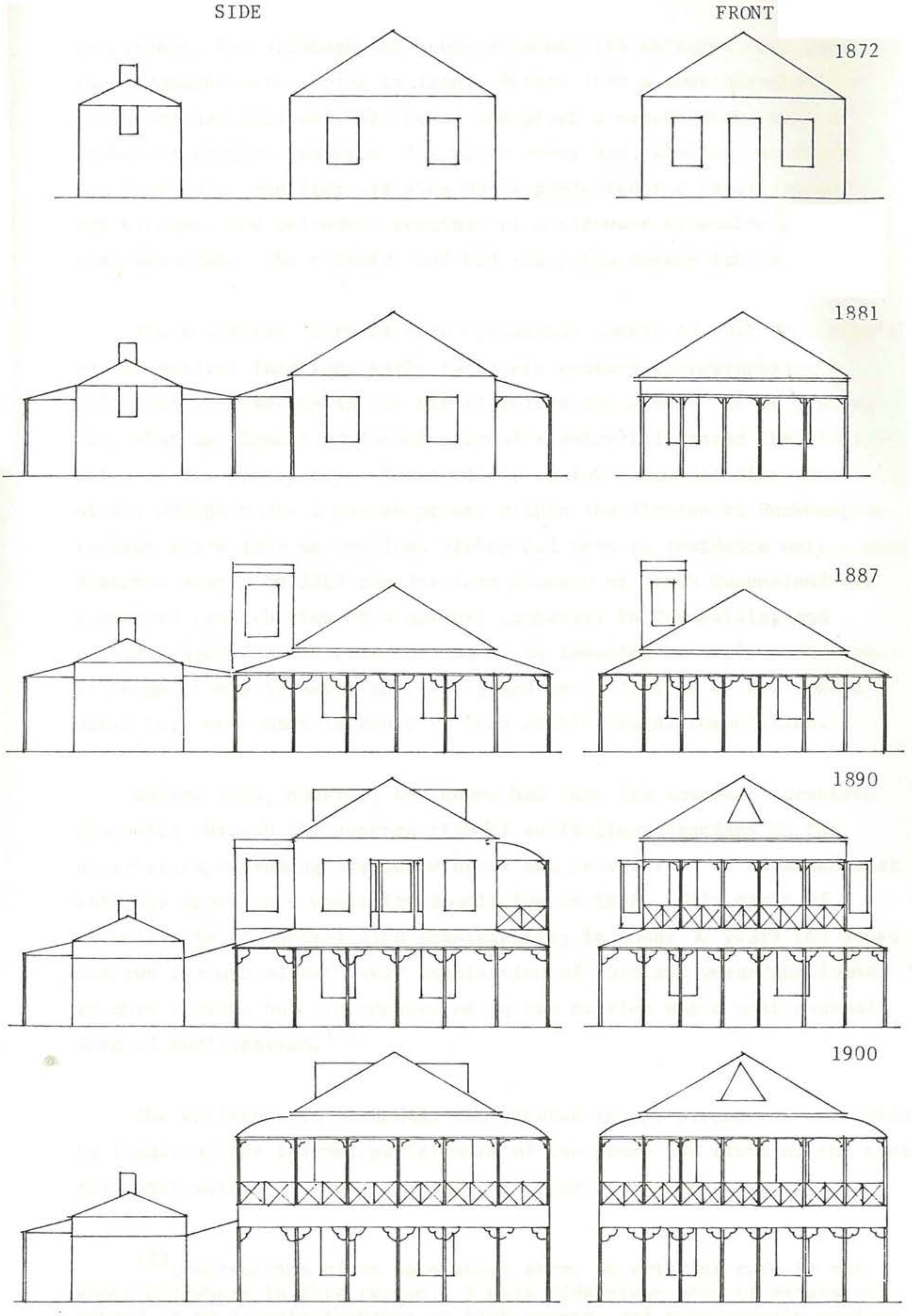
An even more impressive example of house extension is entirely without documentation, but can be followed through five distinct phases of growth in photographs.[111] St. Joseph's presbytery in Fryer street, Townsville, was probably built in 1872, and is recorded in early photographs as a simple four-roomed pyramid-roofed core with a detached gabled kitchen at the rear. Its construction is not clearly shown, but it appears to have been externally weatherboarded, with a shingled roof. Neither the core nor the kitchen had any verandahs at the time of construction.

By 1881 both structures had been given verandahs at front and rear, the rear core verandah linking with that of the kitchen to form a wide roofed area. Between 1883 and 1887 the core was also given side verandahs with elaborate fretwork brackets, but no balustrade, and a belvedere was built above one corner of the verandah, apparently reached by an internal stair. Changed building technology

[109] J.L. Fowler to Undersecretary 10 July 1896, 96/8771, *loc. cit.*

[110] Foreman of Works to Government Architect 21 August 1896, and Schedule of Tenders 12 February 1897, 96/10901 and 97/2120, *Ibid.* See also plan of additions 22 February 1897, 97/2314, *Ibid.* The 1889 and 1897 extensions were by Thomsen.

[111] The house's location was in the foreground of a popular vantage point for photographs of North Ward, and its development is shown in at least 18 photographs between 1874 and 1908, held by James Cook University or John Oxley library. Dates are inferred from known construction, extension or demolition of other buildings.



MODIFICATIONS TO ST. JOSEPH'S PRESBYTERY, TOWNSVILLE.

is evident, for although the house retained its shingled core roof, the verandahs were roofed in iron. Before 1890 a most remarkable extension had occurred; the house was given a second story with a number of unusual features. Its upper story had verandahs at front and rear only, and from its side walls projected two cantilevered bay windows; the belvedere remained as a sideways extension of the rear verandah. The pyramid roof had two blind dormer gables.

These curious features were presumably connected with the house's ecclesiastical function; early twentieth century photographs show religious processions in the street before the house. It is likely, too, that an element of denominational rivalry influenced the elaboration of the presbytery. Townsville's senior Roman Catholic cleric at St. Joseph's was a parish priest within the diocese of Rockhampton, whereas since 1878 an Anglican bishop had been in residence only a short distance away. In 1887 the Anglican diocese of North Queensland had commenced construction of a masonry cathedral in Townsville, and obtained land for the construction of an imposing bishop's residence. It seems highly probable that the grandiose additions to St. Joseph's presbytery were made in reply to this architectural competition.

Before 1900, however, the house had lost its somewhat eccentric character through the construction of encircling verandahs on the upper story, subsuming the bay windows and belvedere. It retained that external appearance until its demolition in 1958. This cycle of extension is of unparalleled completeness; in under 30 years the house had run through almost every combination of core and verandahs found in this region, but its conversion to two stories was a most unusual form of modification.[112]

The enclosure of verandahs contributed to the process of extension by impairing the thermal performance of the house and creating the need for construction of a new verandah or other shading device. Once a

[112]Construction of an upperstory above an existing core is not known elsewhere in this region. A more widespread mode of extension upward is to elevate thehouse on high stumps, and subsequently enclose the ground level.

verandah was enclosed, air movement was prevented, and insolation on the new outer wall raised the internal air temperature. One solution was the construction of a new verandah to shade the new outer wall, which in turn offered a cheap means of extending the enclosed space by enclosing its outer perimeter. This process can in some cases be inferred from the evidence of successive rows of verandah posts now incorporated within theinternal walls of an extended house and identifiable by stop-chamfering or mortices for balustrade rails, but the methods of extension were rarely so tidy as to allow the sequence of events to be reconstructed in detail.

A characteristic feature of many North Queensland houses is the provision of devices to shade and otherwise protect the verandahs. These devices have three principal functions. Some are intended to assist the principal climatic purpose of the verandah, to reduce insolation on the walls while permitting air movement. They also serve to reduce glare and in doing so increase privacy, without constituting full verandah enclosure. Their third function is to provide protection from water, as the floorboards and timber balustrades are exposed to rain and vulnerable to fungal decay.

The earliest shading device adopted was latticework: thin timber laths crossed at right angles to form a permeable screen. Usually of 25mm wide laths spaced at 50mm centres, this latticework reduced incident radiation by about 75%; similar techniques were used in many parts of the world, and the device was probably in use from soon after first settlement of North Queensland, it was certainly widespread by 1880. The Bank of New South Wales in Townsville (1869) had lattice-shaded verandahs, and descriptions of its use recur from that time, such as that of the Charters Towers hotel with a "fine wide balcony latticed at one end".[113] The lattice screen was usually inserted to

[113] *Northern Miner* 25 December 1880, and see *Ibid.* 2 September 1880 recommending "lattice shading". Use in Cairns in 1885 is documented in Queensland National Bank premises register, N.B.A.

fill all or most of the space above the balustrade rail, especially on corner bays where it shaded a verandah from light and heat from the flank. An alternative practice was to dispense with the balustrade altogether, and wall the entire verandah frontage with latticework.[114] Decorative latticework was used only rarely; one notched design was used on the verandahs of the *Carrington* hotel at Liontown (1905),[115] but no such examples are extant.

Blinds of canvas or wired laths were also in use from an early date. The two are usually indistinguishable in photographs, unless the canvas is characteristically striped, but some such blind material appears in photographs of Townsville from 1887. One form of wooden blind tradenamed "Luvalux" was very widely used; it consisted of very thin 20mm wide laths ingeniously wired to form a weather lap.[116] Suspended from the verandah beam and conventionally painted dark green, it was flexible and when new could be rolled up like a canvas blind. But as the galvanised wire became brittle with age and repeated flexing, the rolling up became less frequent, and most are seen today fixed in position, forming a light, opaque but permeable means of verandah enclosure.

At a later date, wooden louvres achieved even greater popularity. These were a clumsy but simple device consisting of horizontal wooden blades varying from 60 to 120mm in width, hinged in banks, each wired to a vertical wooden rod inside, which enabled them to be opened and closed. They were not common before the first world war, but subsequently were installed in great numbers, and between the wars became a standard form of original construction in the coastal towns, especially Cairns.

[114] Two examples were the Roman Catholic presbyteries at Croydon and Richmond, the latter illustrated in Freeland, *Architecture*, p. 208.

[115] Photograph held by Don Roderick, Brisbane. The same design is illustrated in G.E. Woodward, *Woodward's National Architect*, New York 1869, Pl. 34.

[116] Examples extant in Walker Street, Townsville, were sold under this tradename in the 1920's. Similar devices were said to be available in the 1890's.

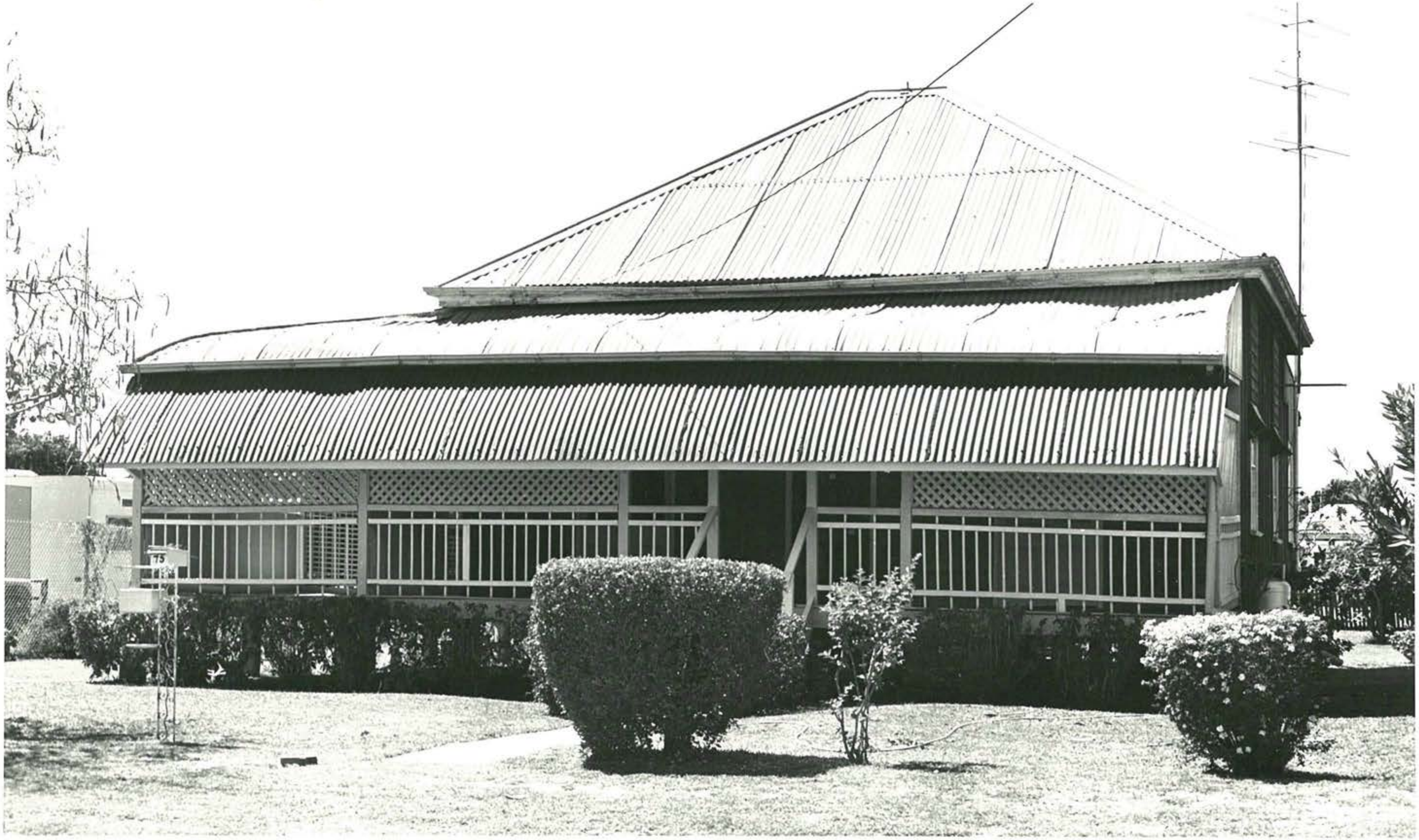
Wooden louvres and casements enclosing verandahs, Cairns.

One distinctive climatic adaption was the practice of constructing an extended iron eave outward from the verandah roof, supported by struts from the verandah posts. These are often found on enclosed verandahs where their purpose was probably to serve as a further verandah to replace the shading function of the walled-in one, but they also appear on open verandahs to protect open timber work from rain and to reduce glare. Verandah eaves are usually butted to the fascia board below the guttering, and more steeply pitched than the verandah roof, giving a blind, shrouded appearance to the house. Eaves of this kind in corrugated iron are particularly common in Charters Towers. In later years mechanically pressed sheetmetal eaves were marketed, their form simply a laterally elongated version of the post-casement window hood. The addition of such eaves often occurred quite recently, and aluminium devices of generally similar form are still marketed, and sometimes applied incongruously to early timber houses.

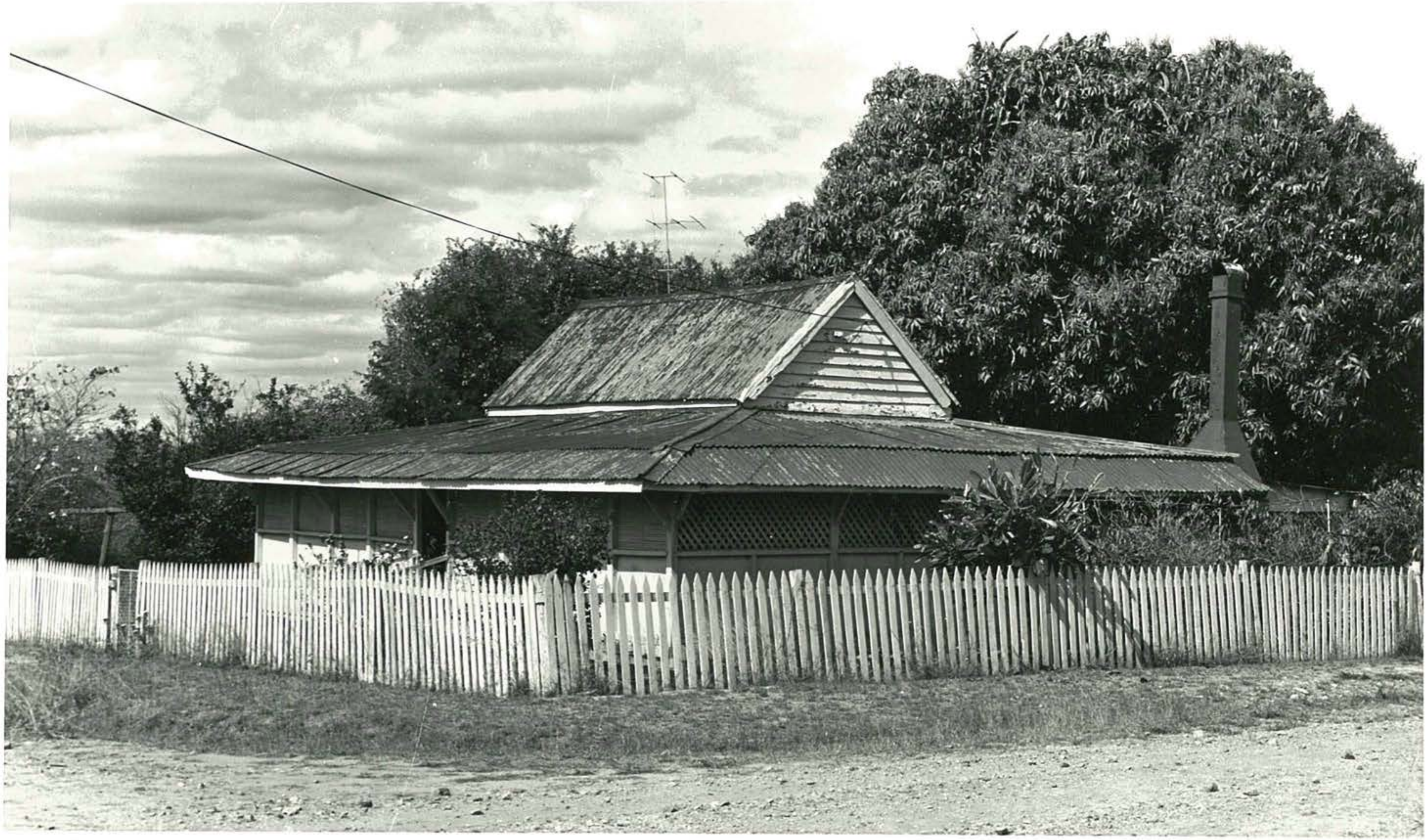
Other recent shading devices are found on large numbers of early houses, especially louvres of glass, aluminium and asbestos cement. Surprisingly, enclosure of verandahs with insect-proof gauze was rare until recent years, although this practice was adopted as early as the 1920's for company housing at Merinda, Mount Isa and Victoria. More common than large-scale enclosure, however, was screening of a section of verandah to form what was described as a "sleepout" or "mosquito room".

Quite apart from modifications involving additions to the fabric, the appearance of houses is often much altered by the removal or concealment of detail. Much of the decorative detail originally employed in North Queensland houses was of light timber, nailed into position. Such elements as verandah detailing, exposed to the weather, succumbed fairly quickly. Brackets split along the grain, dowel balusters were prone to rot at their lower end and cornice mouldings loosened and fell away. These details have been removed from the majority of houses, either in the course of, or as an influence contributing to, the enclosure of verandahs. Even such small elements as verandah brackets had a calculated role in the appearance of houses, and their removal has

Verandah eave, latticework and blinds on a four-roomed house with encircling verandahs, Charters Towers.



Verandah eave and latticework on a four-roomed house with side verandah, Charters Towers.



Verandah eave and latticework on a two-roomed cottage with encircling verandahs, Charters Towers.

profound visual impact.[117]

The influences on removal of detail from houses have not been entirely the result of decay or altered function. There is a widespread belief, especially among older residents, that such decoration is old-fashioned, and this belief is not hindered by much advertising of commercial products designed to alter the external appearance of houses. Pressure to conceal external stud framing has been accelerating late cladding for some years, usually in materials quite inappropriate to those originally used. The principal cladding used in recent years has been asbestos cement sheeting, but pressed fibre board and aluminium are now playing a part in concealing open balustrades and exposed frames. This ill-conceived modernism exists alongside a newly enhanced regard for such detail in other social circles; ironically, indifferent house-owners are selling cast iron balustrade panels for their scrap value to modernise their houses, while in the same towns nostalgic house-builders are paying exorbitant prices for aluminium replicas of that same cast iron.

In almost all pre-1914 houses extant, normal maintenance, replacement of decayed or damaged components and modification of original deficiencies in design have brought about changes in structure and details. Minor cyclone damage has accounted for much re-roofing in coastal settlements, and has led to demolition of brick fireplaces after chimneys were blown down. Stumps and floorboards are particularly vulnerable to termite infestation, and reflooring and restumping have occurred widely. Since the 1920's restumping has often been done in concrete, and advantage is often taken of the process to raise a previously lowset house with necessary reconstruction of stairs, so that the number of elevated houses today is not necessarily an indication of their prevalence at time of construction.[118]

[117]Although clear knowledge of early colour schemes is not available, changing fashions in housepaint have also undoubtedly greatly altered the appearance of houses.

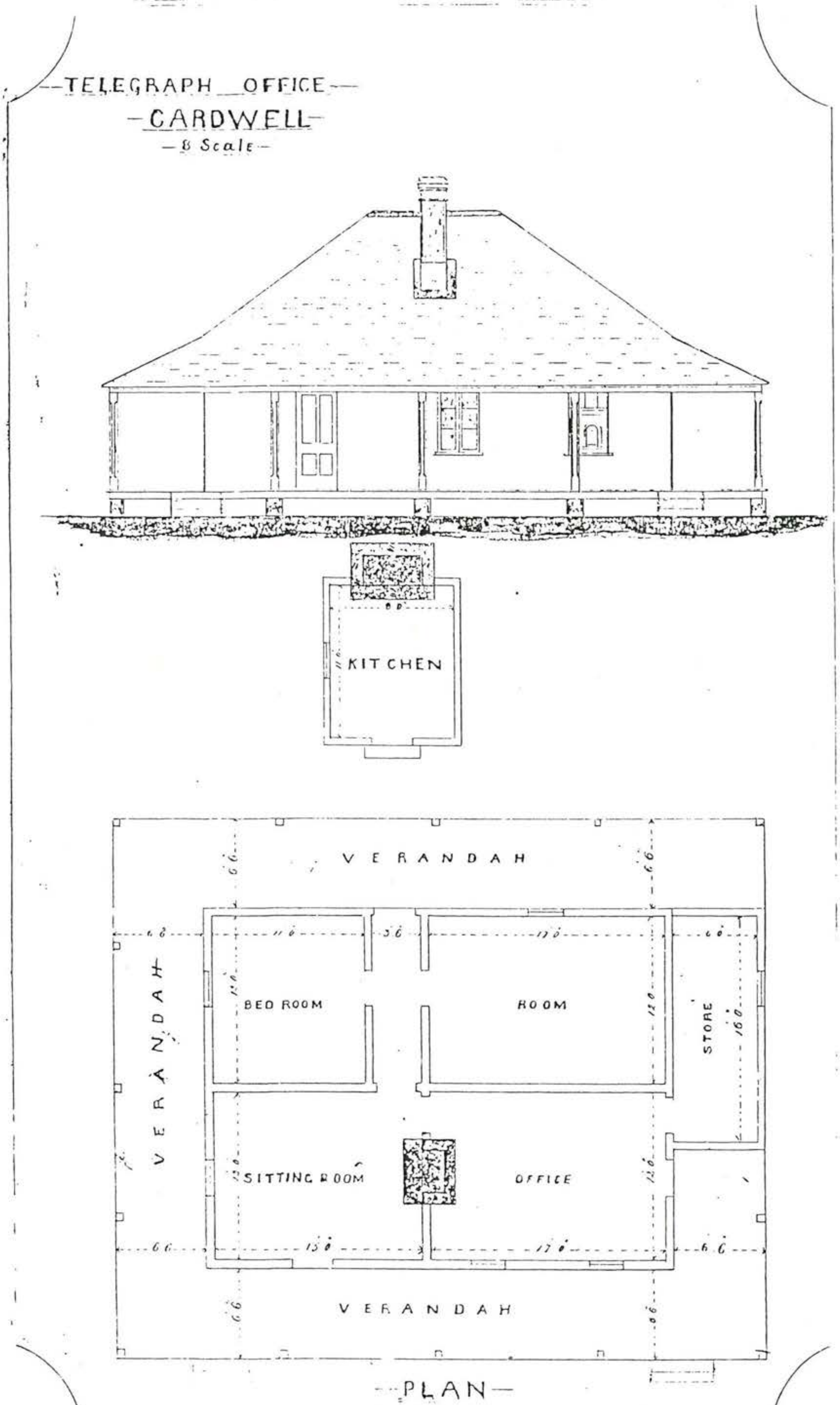
[118]No case has been encountered where an elevated house has been restumped at a lower level.

The Cardwell Post Office exhibits many of the unspectacular modifications which may occur over a long period without greatly affecting a building's external appearance. The building was constructed as the Cardwell Telegraph Office in 1870, as part of the Queensland government's drive to complete an international telegraph link through Normanton.

Entirely of timber, the telegraph office was similar in form to many houses of the time, with one front room and a store given over to post and telegraph use. A core of four rooms was constructed of stud framed walls clad externally with weatherboards, and only the two front rooms were lined internally. A rather narrow verandah surrounded the core, supported by stop chamfered square posts. The roof was hipped, with a break in pitch at the core wall, and shingled. The whole building stood on very low timber stumps without ant caps, and a detached kitchen stood some metres to the rear. The entire building seems to have been built as planned in 1869 with the exception of the fireplace, which was apparently placed not in the centre of the core as shown on the plan, but at the opposite end of the sitting room, against the verandah wall.[119] The Post Office was austere in treatment, with no decorative details beyond a minimum of beading and moulding on some planed members.

At the time of construction, the Cardwell Telegraph Office provided a fine example of the type of building designed by the Colonial Architect for construction by private contractors. The economics of colonial administration over a large thinly-populated area demanded timber construction, but of a type far removed from the primitive resources of the pastoral pioneer and the bush carpenter. The building bears evidence of mid-nineteenth century technology in its entirely mechanically-sawn components and its reliance both on solid joinery and cheaply available wire nails. It was a solidly crafted, unpretensious building, as befitted a distant outpost of government.

[119] Plan 1869 held by Australia Post Historical Section, Brisbane.



(Australia Post Historical Section, Brisbane)

Subsequent modifications to the Post Office provide an extremely interesting catalogue of adaptations to environmental problems inadequately catered for at the time of construction. The shingled roof proved unable to cope with the wet season, and was covered with corrugated galvanised iron. The iron was apparently nailed directly into the shingles, and by 1903 the roof was in a sad state:

> The building was originally covered with a shingled roof only, but owing to rain coming through an iron roof was placed on it. The shingled roof has rotted and is now falling away helping to damage wall plates, some of which are already gone at the ends. In order to remove decayed roof, the iron would have to be taken off.
>
> The dirt from the decayed shingles keep falling through cracks in ceiling. Experienced carpenters say if a gale occurred here the whole roof would go, as all the nails are loose. [120]

The shingles were removed and the iron replaced in 1904 - the interior of the roof today reveals no trace of their existence.

The post office was originally constructed on stumps only '9" to 12" ' high, with no ant caps.[121] Some termite infestation had occurred by the 1890's, and in 1897 a major renovation of the building was undertaken to alleviate theproblem. The Post Office was restumped with ant caps at its present height of about 1m, some flooring was replaced, and the chimney and fireplace were removed.[122]

The original kitchen of the building was apparently demolished and replaced by a larger one before 1896, and had been linked to the rear

[120] Line repairer to Deputy Postmaster-General 29 December 1903, 04/00141, WOR/A577 Q.S.A.

[121] See Colonial Architect's Memo 20 August 1889; and Report re Repairs 31 October 1896, both in WOR/A577 Q.S.A.

[122] Specification December 1896 in WOR/A577 Q.S.A.

verandah of the Post Office by the existing covered way by 1904. The new kitchen has wall framing identical to that of the building core, but is the only part of the building externally clad with chamferboards.

One interesting climatic adaption of the building cannot be dated, as no reference to it appears in the documentary evidence. The walls of the core are fitted with twelve 12mm cyclone bolts linking the top and bottom plates, and four 20mm sheel tie-rods, threaded for tensioning nuts, connect the top plates horizontally across the building. There seems no way to determine the age of these tension devices, as they could have been added at any time since initial construction.[123]

The Post Office's verandahs were originally entirely open except for a store room clad with weather boards on the north side. Enclosure of the verandahs to form extra rooms has proceeded in stages: a bedroom on the north side and a bathroom on the south by 1896, extension of the office onto the front verandah by 1956, and enclosure of the remaining spaces with glass louvres and asbestos-cement sheeting about 1965. In recent times the east and part of the north verandahs have been clad with corrugated asbestos-cement sheeting, but the original verandah posts appear to be intact under the cladding. Two internal openings - a window and a door - have been added to the original plan, but otherwise the core walls are unaltered.

The modifications made to this building were principally in response to deficiencies in the original design and specifications; the roof cladding was in appropriate, the floor was inadequately protected from termites, there was doubt as to the structure's wind resistance, access to the kitchen was inconvenient in wet weather, and demand for enclosed space has increased steadily since 1870. It is evident

[123]It is not unlikely these were added during major reconstruction of the roof in 1904, the year after cyclone *Leonta* in Townsville.

that this observation is generally true of modifications made to houses in North Queensland subsequent to construction. While the point may seem obvious, it brings into question the conventional belief that the forms of North Queensland houses were developed in response to environmental pressures. Every instance of widespread modification points out a common deficiency in original design, and suggests that its remedy was evolved by householders and builders only after experience of the houses' shortcomings.

These modifications worked their way into original construction methods, so that within two decades of 1861, iron roofs, ant caps and attached kitchens had all become standard practice. But the fact that householders were still experimenting with casement windows, verandah eaves, wooden louvres and window hoods several decades into the twentieth century shows that the building industry only grudgingly accepted the environmental deficiencies of its products. Response to the environment is shown much more clearly in later modifications than in the houses originally built.

Appendix to Chapter Six: fretwork bracket designs.

In an attempt to clarify some of the problems surrounding the origins and diffusion of decorative detail in the region, a thorough survey was made of the extant fretwork brackets on the houses recorded in the field survey. These are depicted in line drawings on the following pages, with the towns where they were found and the number extant in each town, together with an indication of other areas where a similar design has been reported. The illustrations are not to a common scale.

No clearcut patterns of diffusion are evident. Some designs in this region seem to be concentrated in the Townsville and Charters Towers districts, which follows logically from the presence of the largest concentration of population and sawmills in those towns. Other patterns are widely dispersed, however, and a great number are reported from outside the region.

During 1980, copies of these illustrations were sent to a number of National Trust branches, historical societies and architecture departments throughout Australia and in South Africa, with a request that any of those illustrated that were identical or similar to designs in the recipient's region be indicated and the illustrations returned. The results were very uneven; naturally many recipients did not wish, or were unable to reply, and the sophistication of the replies varied. But the replies established that similar designs are prevalent in Rockhampton, Maryborough, Ipswich, Bathurst, Perth and parts of the Republic of South Africa. Brisbane and Melbourne replies revealed a smaller number of similar designs, but Melbourne also has a separate, more elaborate tradition of fretwork ornament, which is also evident in replies from Adelaide and Perth.

The survey cast little light on the methods of diffusion of such detail. Generally similar fretwork designs are found in timber merchant's published catalogues from the USA[1] and New Zealand,[2] and texts on joinery and furniture making sometimes published small illustrations of fretwork,[3] so there was a widespread tradition which may have been maintained partly by documentary means. There were also dealers who advertised pattern books - "fret designs", "Publishers of Fret Patterns", "Extensive Assortment of Saw-Frames, Saws, Patterns, etc."[4] - none of which survive today, suggesting the available literature may have been quite extensive, and the fretwork designs of any region may simply have been copied from widely available publications. There is no direct evidence, however, that any such pattern books circulated in North Queensland.

Similarities in timber detailing extended very widely, transcending cultural boundaries. Even in Imperial Russia, although house forms and construction techniques bore no resemblance to those in North Queensland for obvious climatic reasons, the use of fretwork, applied cornices, balustrades and stop-chamfering were often very similar.[5] It is difficult to establish paths of diffusion between these examples; perhaps the two regions are best regarded as working independently at adapting to timber certain decorative devices derived from classical European masonry architecture, and arriving fortuitously at similar results.

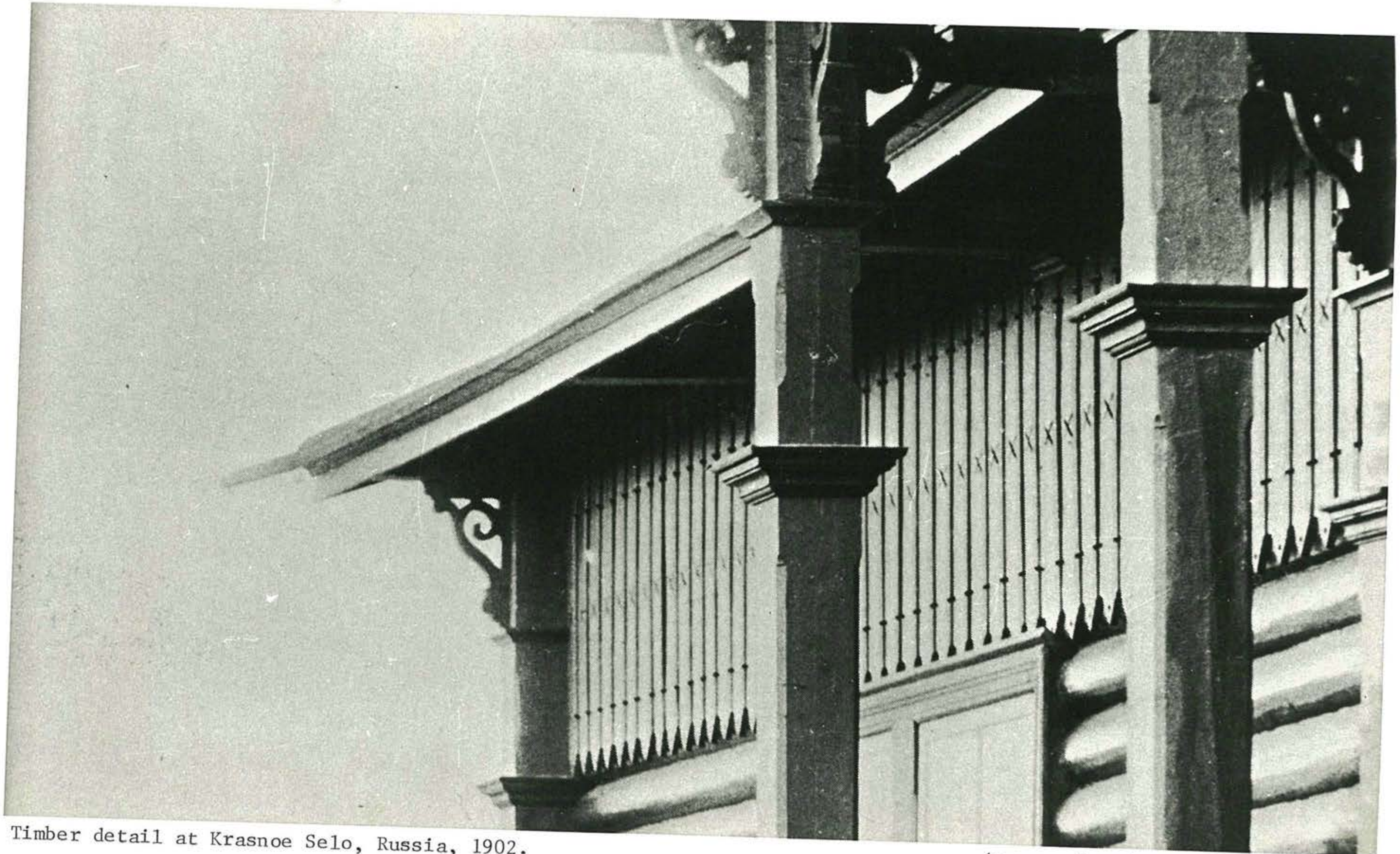
[1]See for example George O. Stevens' Illustrated Price List, Baltimore, pp. 52-56 (1879) in D.S. Waite (ed.) *Architectural Elements: the technological revolution*, New York n.d.

[2]Prouse Brothers' Catalogue, Wellington (1904) in Cochran, *Restoring*, p. 34. Several Prouse designs closely resemble North Queensland ones.

[3]P.D. Otter, *Furniture for the Craftsman*, New York 1914, p. 64; P.N. Hasluck, *Cabinetwork and Joinery*, London 1907, pp. 288-89.

[4]Advertisements of Charles Churchill & Co., Harger Brothers, Rd. Melhuish & Sons, *Amateur Work Illustrated 1 & 2*, 1882-3, endpapers.

[5]See illustrations in M. Lyons, *Russia in Original Photographs 1860-1920*, London 1977.



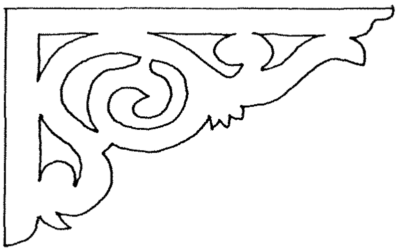
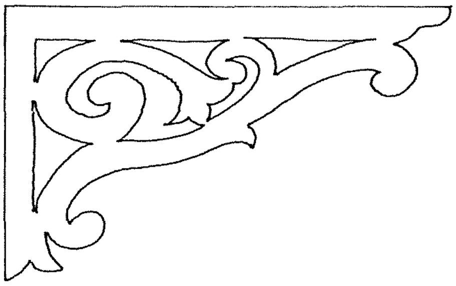
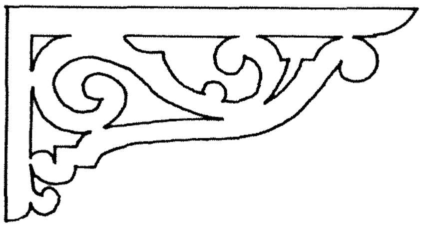
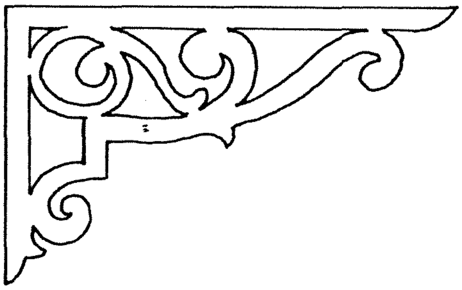
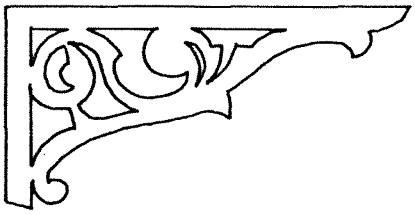
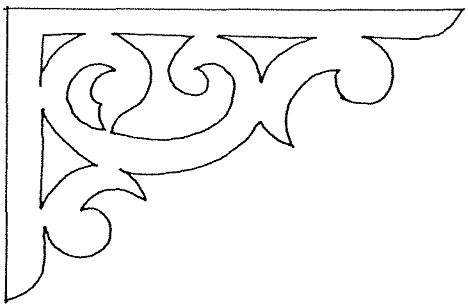
Timber detail at Krasnoe Selo, Russia, 1902.

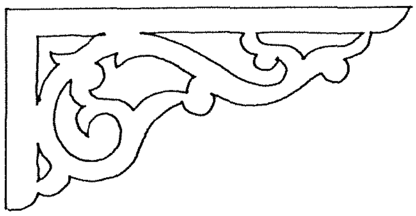
(Lyons, *Russia*, p. 19)

There are some instances in which designs appear to have undergone evolution even within this region. The first five brackets reproduced have affinities which suggest they may be derived from a common ancestor. All are characteristic of the Townsville hinterland, and designs 3-5 have a clumsiness which may betray insensitive copying. Evolution of designs in this way through either conscious or unconscious variation during the copying process is well known in other fields of decoration.[6]

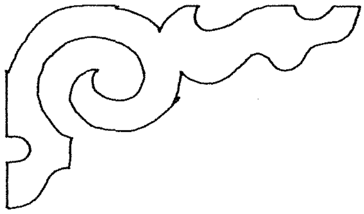
The designs are arranged loosely by type, commencing with the elaborate foliated work of the period c. 1880-1915, then moving to the simpler designs which became popular in the twentieth century. Thus there is a very broad chronological order in the arrangement of the illustrations, but this cannot be taken as a judgment on the relative ages of any two designs shown; most bracket designs were probably in use for a matter of decades, and overlapped with the use of many others.

[6] P. Steadman, *The Evolution of Designs: biological analogy in architecture and the applied arts,* Cambridge 1979, pp. 103-123.

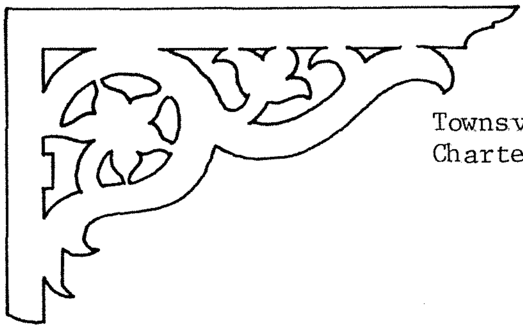
	DISTRIBUTION OF EXTANT EXAMPLES	SIMILAR DESIGN REPORTED FROM:
	Townsville 14 Ravenswood 2 Charters Towers 1	Rockhampton Ipswich Melbourne South Africa
	Townsville 8 Charters Towers 3	Rockhampton Ipswich Western Australia South Africa
	Ravenswood 2	Rockhampton Ipswich Western Australia South Africa
	Townsville 5 Charters Towers 1	Maryborough Ipswich South Africa
	Townsville 1	Rockhampton Ipswich Western Australia South Africa
	Townsville 3 Charters Towers 1 Cairns 1	Rockhampton Ipswich South Africa



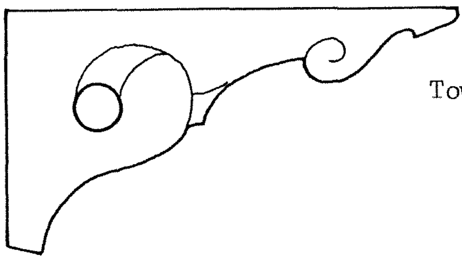
Charters Towers	2	Rockhampton Ipswich Brisbane South Africa



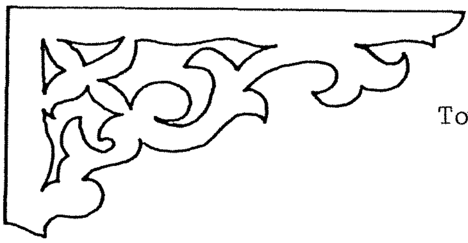
Charters Towers Townsville Cairns Bowen Cooktown Georgetown	9 3 3 2 2 1	Rockhampton Maryborough Ipswich Brisbane



Townsville Charters Towers	2 1	Rockhampton Ipswich South Africa



Townsville	1	Bathurst



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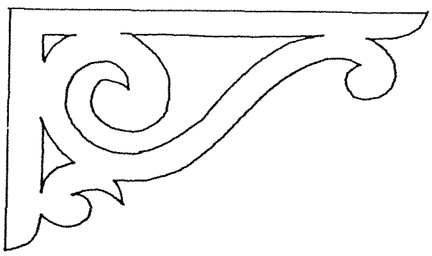
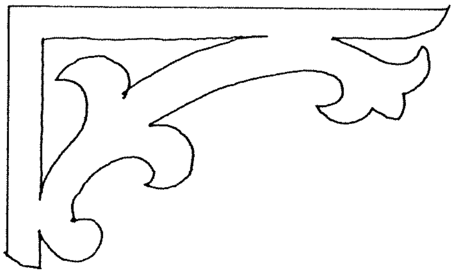


Townsville Charters Towers Cairns	17 3 2	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa

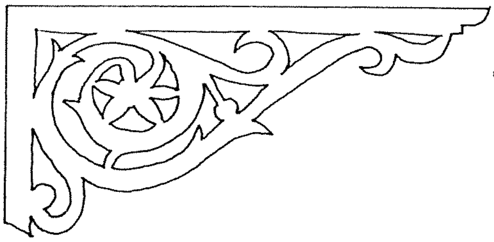


Townsville 3

Rockhampton
Ipswich
Bathurst

Townsville 1

Maryborough
Ipswich
Bathurst



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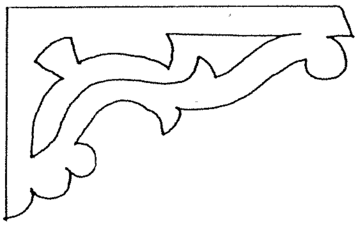
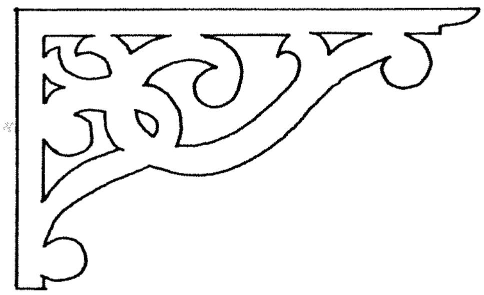
Ipswich
South Africa



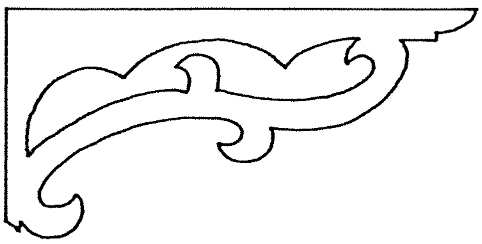
Charters Towers 2
Townsville 1

Rockhampton
Maryborough
Brisbane



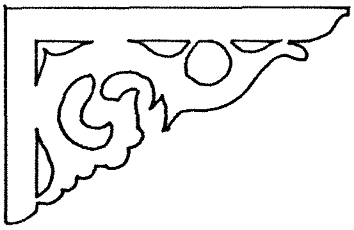
Townsville 3

Rockhampton
Western Australia
South Africa



Charters Towers 1

Rockhampton
Maryborough
Bathurst

	Charters Towers	1	Rockhampton Ipswich South Africa
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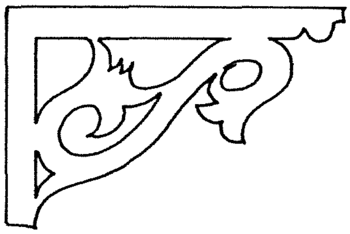
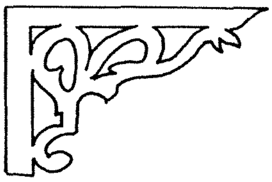
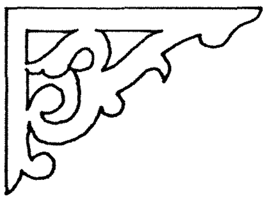
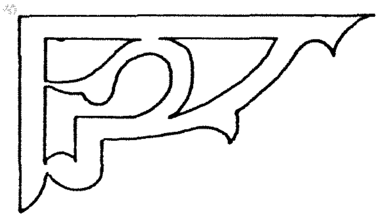
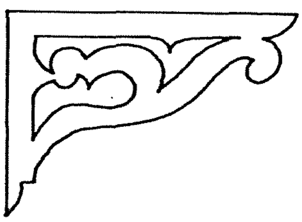
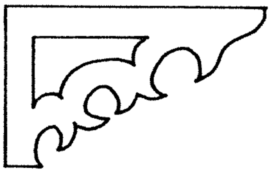
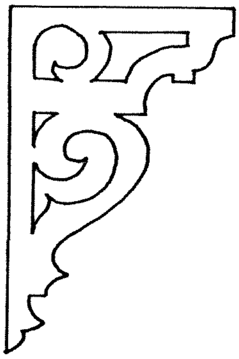
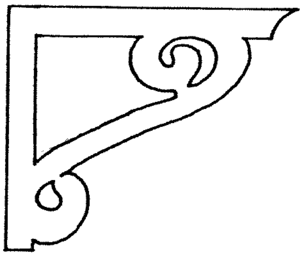
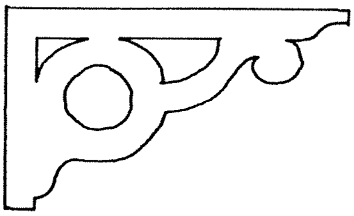
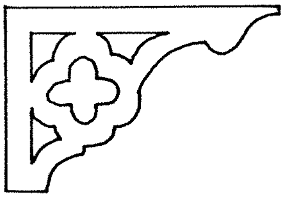
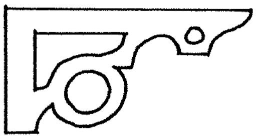
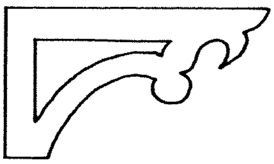
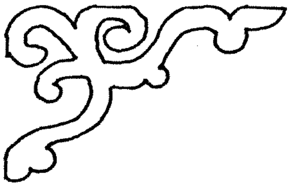
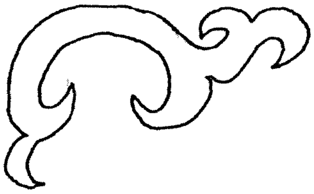
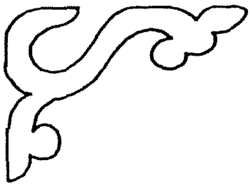
	Ravenswood Cairns	1 1	Rockhampton Ipswich Brisbane South Africa
	Townsville	5	Rockhampton Melbourne
	Townsville	1	Rockhampton Maryborough Western Australia South Africa
	Townsville	2	
	Herberton	1	Rockhampton Bathurst

	Cooktown	1	Rockhampton Ipswich
	Herberton	1	Rockhampton Maryborough Ipswich South Africa
	Herberton	1	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa
	Townsville Irvinebank	1 1	Maryborough Ipswich Bathurst Western Australia
	Townsville	1	Rockhampton Ipswich Bathurst Western Australia South Africa
	Charters Towers	1	Rockhampton Maryborough Ipswich Brisbane Bathurst Western Australia
	Bowen	2	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa

	Charters Towers	1	Rockhampton
	Charters Towers	1	Ipswich Brisbane
	Townsville	2	Ipswich
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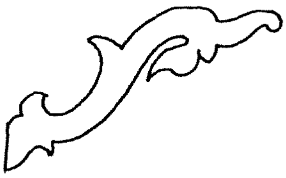
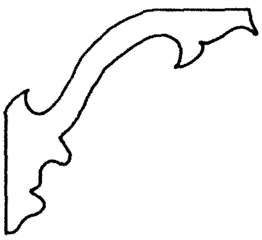
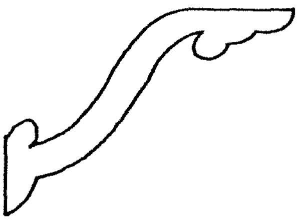
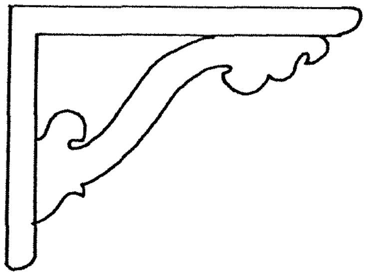
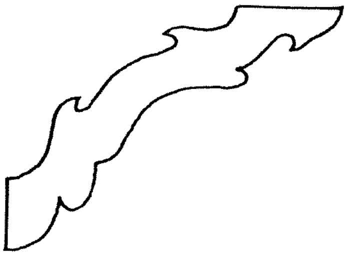
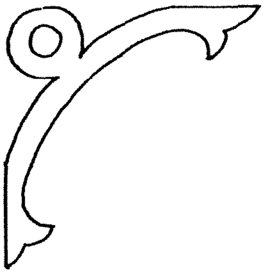
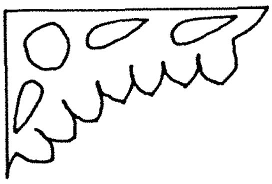
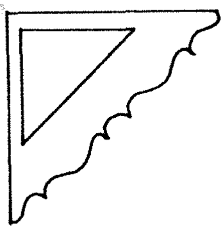
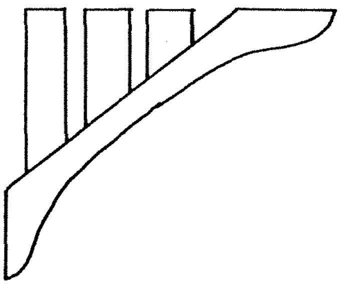
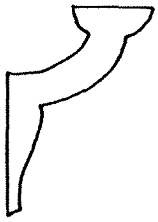
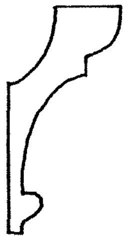
	Bowen	7	Maryborough Bathurst South Africa
	Cairns Cardwell	1 1	Rockhampton Brisbane Bathurst
	Bowen	1	Rockhampton Bathurst South Africa

	Bowen	1	Rockhampton Ipswich Bathurst South Africa
	Bowen	1	Maryborough Brisbane Bathurst South Africa
	Bowen	3	Maryborough Ipswich Brisbane Bathurst
	Townsville	1	Maryborough Ipswich Bathurst Melbourne South Africa
	Charters Towers	1	Bathurst South Africa
	Herberton	1	Rockhampton South Africa
	Townsville	1	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa

	Townsville	1	Rockhampton Ipswich Bathurst Melbourne
	Bowen	1	Rockhampton Ipswich Bathurst Western Australia South Africa
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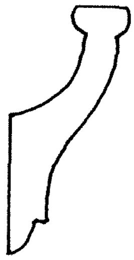	Townsville Bowen Charters Towers	9 2 1	Rockhampton Brisbane Bathurst Melbourne
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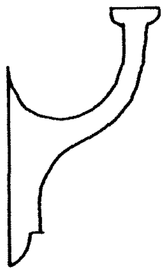
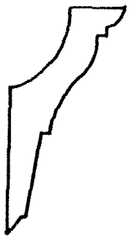
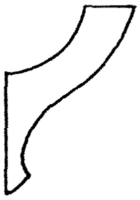
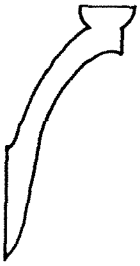
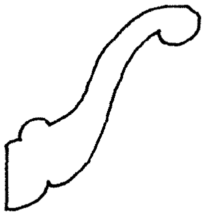
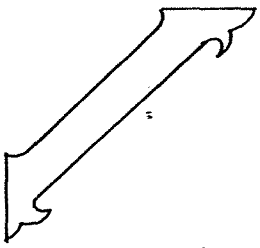
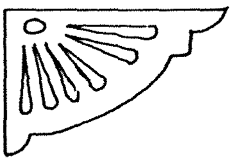
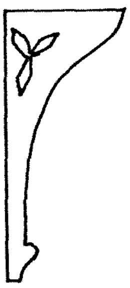
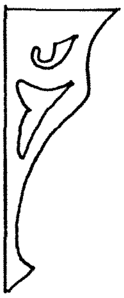
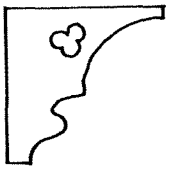
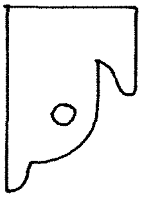
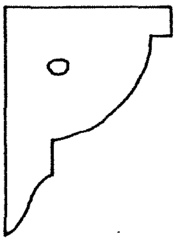
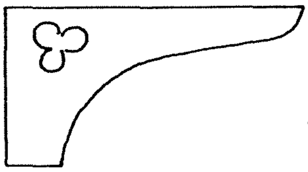
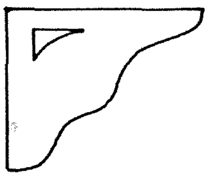
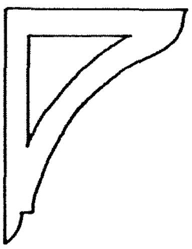
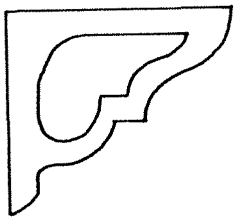
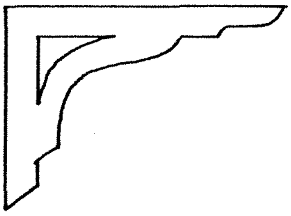
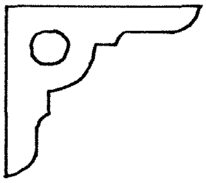
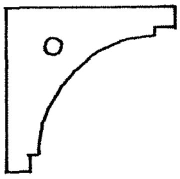
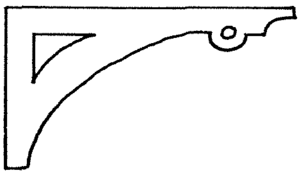
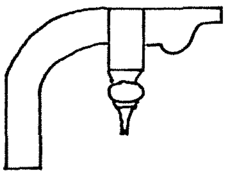
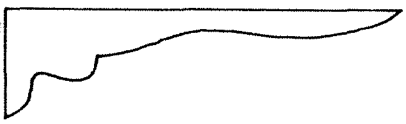
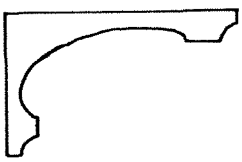
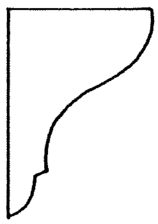
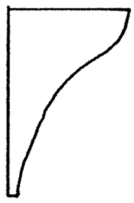
	Townsville	1	Rockhampton Maryborough Brisbane
	Bowen	1	Ipswich Bathurst

	Bowen	1	Rockhampton Ipswich Bathurst Western Australia
	Townsville	1	Rockhampton Maryborough Bathurst Western Australia
	Townsville	1	Rockhampton Maryborough Ipswich Bathurst South Africa
	Charters Towers Bowen	1 1	Rockhampton Maryborough Ipswich South Africa
	Bowen	1	Ipswich Bathurst South Africa
	Townsville	1	Rockhampton Maryborough Ipswich Brisbane Bathurst Melbourne Western Australia South Africa
	Townsville	2	Rockhampton Ipswich Bathurst Western Australia South Africa

	Townsville	1	Rockhampton Ipswich Bathurst Western Australia
	Bowen	1	Rockhampton Ipswich Bathurst South Africa
	Herberton	1	
	Charters Towers	1	Bathurst Western Australia South Africa
	Cooktown	1	Rockhampton Ipswich Bathurst Western Australia South AFrica
	Charters Towers	1	Rockhampton Ipswich Bathurst Melbourne Western Australia South Africa
	Bowen	1	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa

	Townsville	1	Rockhampton Ipswich
	Bowen	1	Rockhampton Maryborough Ipswich Brisbane Bathurst Western Australia South Africa
	Charters Towers	1	Rockhampton Maryborough Ipswich Bathurst Western Australia South Africa
	Bowen	1	Rockhampton Ipswich Bathurst Western Australia South Africa
	Charters Towers	1	Rockhampton Ipswich Bathurst Western Australia South Africa
	Charters Towers	1	Rockhampton Maryborough Ipswich Melbourne Western Australia South Africa
	Townsville	1	Ipswich Bathurst
	Townsville	1	Ipswich Bathurst Melbourne Western Australia South Africa

	Bowen	1	Maryborough Ipswich Bathurst Melbourne Western Australia South Africa
	Charters Towers Townsville	1 1	Ipswich Bathurst Melbourne Western Australia South Africa
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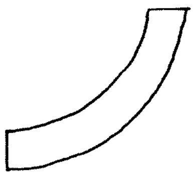	Townsville	1	Ipswich Bathurst Western Australia

CHAPTER SEVEN

CASE STUDIES

"Cairns is the nastiest place I know".

This thesis draws on evidence of two quite different forms: the documents and photographs of the period 1861-1920 and the physical evidence of northern settlements today. The sites of mining towns now present a great diversity. Many are utterly abandoned and have reverted to weed-grown clearings; others are prosperous and retain a significant proportion of thehouses built in their mining years. This chapter seeks to infer links between activity in the settlement while mining was carried on, and the condition of the site today, by selecting a small number of settlements, setting out briefly what is known of their early development, and relating that knowledge to a description of the settlement now.

Three mining settlements have been chosen for the contrasts they now present, which can be shown to derive from the nature of the town's mining industry. Maytown was the principal settlement of the Palmer goldfield, but its heyday was short. It lingered as an administrative centre for decades after mining ceased, and was finally abandoned in the 1940's. Ravenswood was one of the earliest major gold discoveries in the north, experiencing a brief alluvial phase, then settling into a long malaise as a minor reefing town. At the turn of the century the field was transformed into a major producer by innovative management, and the town boomed, surviving today as one of the most evocative former mining settlements in Australia. Charters Towers was the great reefing field of the north, for twenty years the second city of Queensland, and even today is a substantial country town with about a thousand buildings dating from the mining years.

For comparison, two non-mining settlements in the region are examined in the same way. Townsville and Cairns are now the major North Queensland cities, and both achieved their positions by virtue of their economic importance as ports commanding major railways. However their relationships to mining industry are quite different; Cairns has a claim to styling itself a mining port, as it was founded in direct response to mineral discoveries in its hinterland. Townsville only became a mining port almost by accident after several years of serving pastoral industry. Ironically, however, it was Townsville which benefited quickly from mining, while Cairns endured a long wait for railway construction.

Neither port ever depended entirely on mining, and thus their development cannot be explained solely in terms of the mining industry. But each achieved a substantial economic stimulus as a transport terminus for mineral fields, and much of their physical growth reflected that stimulus. The importance of their railways is shown in the timing of their growth, and in their physical evidence today, for the benefit of Cairns' railway was only felt nearly twenty years after Townsville's, and the nature of the two cities' buildings clearly reflect that interval.

The treatment of each of the five settlements varies according to its present scale and the documentary evidence available. Maytown illustrates the problem of sources, with no reliable estimate of its population available in any year, no copy of the town survey plan known to survive, and only two intact issues of its local newspapers extant, ten years apart. Charters Towers and Townsville are by comparison copiously documented, although their very scale limits the usefulness of that information. While it is possible to describe Maytown and even Ravenswood almost building by building when the evidence allows, Charters Towers and Townsville had by 1900 grown to a population of tens of thousands and can be dealt with only in anonymous terms of numbers of dwellings and the extent of the surveyed area.

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Every mining settlement evolved through a number of phases, each with distinct implications for building construction. Almost every goldfield commenced as an alluvial discovery, and there followed a period of caution while the prospects of the field were assessed. Any one of several conclusions was possible. The field might prove to be a major alluvial discovery, promising sustained low-capital working for a large number of miners; this happened only rarely in North Queensland, notably at the Palmer, although even there alluvial deposits were so widely dispersed that they never supported the concentrated population necessary to generate a major urban centre. Even the most successful alluvial discoveries were very short-lived, and unless further economic development occurred at the site, did not generate towns. No urban settlement existing in North Queensland today was founded on the site on an entirely alluvial discovery.

Alternatively, the alluvial find might prove of little value, but lead almost immediately to significant ore discoveries and the prospect of sustained high-capital underground working. This was the case at Charters Towers, the Hodgkinson and Croydon, and is a better explanation for the rise of Ravenswood than its earlier alluvial period.

Most commonly of course, the discovery proved disappointing, capable of sustaining only a small population, typically by a mixture of alluvial and shallow reef mining. Such fields were very numerous; many persisted in wardens' reports for decades, supporting a population of a few dozen, at times completely abandoned only to be re-opened some years later. These were the "poor man's fields", capable of being worked and reworked for years with little capital for a modest return. The Etheridge was characterised by a number of such small shows, and supported a reservoir of population alert to news of mineral discoveries elsewhere, but able to fall back on the district in time of need.[1]

The economy of a mining settlement was sometimes complicated by a non-mining development which altered its prospects for viability. The establishment of transport, administrative and commercial facilities gave towns an advantage over others nearby, and sometimes led to their survival for many years after the decline of mining in the district, particularly if their services could be adapted to the requirements of other industries.

Sometimes a development within the mining industry itself changed the fortunes of a settlement - a new mineral discovery, for example, such as the Golden Gate reef which reversed the decline of the Croydon goldfield in 1895, or the accidental discovery of the Brilliant reef in 1889 which transformed Charters Towers from a large goldfield to an enormous one. Technological change was sometimes as dramatic in its effects.

[1]Wegner, Etheridge.

Methods of treating gold ore until the 1890's had undergone little substantial change since the beginning of the gold rush era forty years earlier. In the decade from 1890 to 1900 there came first the McArthur-Forrest cyanide process and then the Wilfley table, each of which greatly increased the recovery of gold from ore.[2] These were truly revolutionary developments, for the gold output of a mine could be raised without increasing production of ore or changing mining practice: simply by the relatively cheap installation of plant in the milling works to extract gold which had previously been unwinnable, discarded with the treated tailings. Both improvements in ore treatment demonstrably extended the lives of a number of North Queensland mining settlements.

The first phase of every settlement's existence was that of *establishment*, during which the future of the field was assessed, and attempts were made to provide the facilities required by the population. Accommodation was normally in tents or makeshift shelters of primitive materials; commercial acitivity was limited by difficulty of access and consequent high cost. A settlement in establishment was predominantly masculine, possessed few if any service industries, and was administered only by the authority of the goldfield warden or mineral commissioner.

Once this development process had provided the means for orderly and comfortable living conditions, anticipating long-term occupation, the settlement had reached *stability*. This phase was characterised by a fairly constant population, the majority earning a secure living from a stable mineral output. In these circumstances a more complex economy evolved, with commercial competition, service industries and professional services offered. The sex ratio would move toward a balance, with children present in increasing numbers. A community of this kind usually demanded government services such as schools, improved roads and water supply, was likely to have its own local government, and usually formed social organizations such as churches, lodges and special interest societies. The stability phase was normally accompanied by

[2]The McArthur-Forrest process was patented in 1887, but was adopted in North Queensland about 1893. The Wilfley table, developed in 1896, was first used in Queensland at Ravenswood about 1900. (Maclaren, *Mining & Milling*, pp. 24 & 27).

the construction of buildings of good quality by qualified tradesmen from industrially manufactured components: in North queensland the standardized building methods in timber and iron.

In some cases the success of the local mining industry brought a further phase of *prosperity* to the settlement, manifesting itself in even greater comfort for at least a small element of the population, conspicuous expenditure and the growth of luxury and non-essential commercial activity and service industry. In North Queensland the presence of any great number of masonry buildings suggests a prosperity phase. The size and degree of ornamentation of timber buildings may also be expected to increase. However, the effects of prosperity were not uniformly distributed across the community, and such a period was likely to see an influx of population, increased demand for habitation, and the construction of a large number of small cheap houses, similar or even inferior to those of the stability phase.

All mining settlements necessarily entered a period of *decline*, leading ultimately to abandonment or to a new period of stability at a reduced population level, if other economic activity was present to sustain them. Decline could be induced by exhaustion or deterioration of the ore body, or by an external cause such as increased labour or fuel cost. In the deep underground mines of the early twentieth century, almost everything militated slowly against economical operation; as the mine deepened, so costs of labour, haulage and pumping increased, and frequently ore quality declined. As wage levels and fuel costs rose, mines were forced into liquidation, and the closure of a mine increased the pumping and ventilation expenses of its neighbours.

Thus far the discussion in this chapter has dealt only with gold mining settlements, whose profitability equations were simplified by the fixed price of the product. Other metals whose prices fluctuated on the trading market were subject to more complex pressures. Falling prices caused the extinction of the silver industry in the early 1890's and the premature abandonment of a number of settlements. A boom in copper prices at the turn of the century brought a new wave of settlements whose fortunes fluctuated with metal prices: all were in decline by 1920. Further afield were non-mining settlements which were dependent on these developments, the ports and railway towns which rose and declined in response to mining, but which were to some extent cushioned by their more diverse economies. While failure of a mine complex might close a mining settlement, it was unlikely to close the settlement's coastal entrepot.

It would be desirable to select a number of settlements as case studies, and examine the growth of each, the construction of individual buildings incident to that growth, their subsequent demolition and replacement; and relate all this to a study of the settlement's physical form today. This is not easy, for much of the necessary information does not exist. A number of studies emanating from various disciplines have attempted parts of this task in other places, and give an indication of what can realistically be expected from a historical study of a particular mining or other settlement.

There are a great many studies of settlements which attempt to account for their physical forms in the course of a narrative account; probably the most comprehensive in Australia is Weston Bate's history of Ballarat.[3] Others take a broad national view,[4] treat a region,[5] or district.[6] Related studies consider a particular aspect of the settlement's development: its broad planning,[7] its sociology[8] or its location

[3] W. Bate, *Lucky City: the first generation at Ballarat 1851-1901,* Melbourne 1978.

[4] H.A. Inniss, *Settlement and the Mining Frontier,* Toronto 1936, gives a comprehensive account of the industry's impact on settlement in Canada.

[5] E.W. Kersten, "The Early Settlement of Aurora, Nevada, and Nearby Mining Camps". *Annals of the Association of American Geographers 54,* 1964, pp. 490-507.

[6] K.R. Bolton, "Urban Beginnings - Development of the Colliery Villages of Northern Illawarra, 1858-1905", and R.V. Cardew, "The Formative Years: Urban Settlement in Illawarra, 1890-1940", in R. Robinson (ed.), *Urban Illawarra,* Melbourne 1977, pp. 69-88 & 89-101.

[7] Reps, *Cities of the American West.*

[8] E. McEwen, "Family, Kin and Neighbours: the Newcastle coalmining district, 1860-1900", *Australia 1888 Bulletin* 4, 1980, pp. 66-92.

relative to natural features or other settlements.[9] Studies of buildings rather than settlements may take the form of a detailed study of construction and demolition of a small, selected class of houses,[10] or use gross statistical data to identify broad trends without attempting to apply these to individual cases.[11] Other published works move from a broad study of planning considerations to individual case studies of buildings,[12] take a descriptive "slice" approach[13] or work backwards from the physical evidence to the forces influencing settlement.[14]

Suggestive as many of these studies are of methods which might prove fruitful in a North Queensland context, none proves applicable directly, or even in a modified form. All were framed to deal with documentary evidence much more complete, and physical evidence much more enduring than exist in North Queensland. Documentary evidence on individual houses in this region is scant, often non-existent; the few houses for which fairly complete documentation exists are without exception atypical. For entire stages in the development of many settlements the only documentary evidence surviving may comprise a few panoramic photographs and one or two impressionistic sentences by a brief visitor. From such evidence, it is true, a great deal of reliable information can be derived, but it is not to be compared with the

[9] P.N. Jones, *Colliery Settlement in the South Wales Coalfield 1850-1926*, Hull 1969; T.A. Morrison, "The Initiation of Mining Settlement on the Cardiganshire Orefield", *Industrial Archaeology 10*, 1973, pp. 161-200.

[10] L. & J.C.F. Stone, "Country Houses and Their Owners in Hertfordshire, 1540-1879", in W.O. Aydelotte *et.al.*, *The Dimensions of Quantitative Research in History*, Princeton 1972, pp. 56-123.

[11] M. Lewis & A. Blake, *Estimating the Old Building Stock in Australia*, Melbourne 1978; B.S. Marsden, "A Century of Building Materials in Queensland and Brisbane 1861-1961", *Australian Geographer 10*, 1966, pp. 115-131.

[12] D.A. Saunders, "Three Factors Behind the Form of Melbourne's Nineteenth Century Suburbs", in P. Troy (ed.), *Urban Re-Development in Australia*, Canberra 1967, pp. 1-18.

[13] J.G. Steele, "Brisbane Town in 1829", *Queensland Heritage 2*, 5, 1971, pp. 15-23.

[14] R.J. Solomon & W.E. Goodhand, "Past Influences in Present Townscapes: some Tasmanian examples" *New Zealand Geographer 21*, 1965, pp. 113-132.

documentary records of buildings in some mining company towns in the American West, or of colliery villages in South Wales. Even within Australia, the contrast between the 100km of pastoral country which linked Ballarat to metropolitan Melbourne and the 150km of tropical wilderness which separated Maytown from the embryonic port of Cooktown, gives a fair indication of the differences in quality and quantity of evidence likely to survive about the two mining centres.

Inevitably in North Queensland much more stress has to be placed upon conclusions that can be drawn from examination of the surviving physical evidence - the buildings themselves - while attempting to make allowance for their unsuitability and mobility, for the facts that a building which has occupied the same site for up to a century may have undergone substantial changes in form and appearance during that period, and that even a building of that age which has undergone very little change may have been placed on its present site much more recently.

Maytown

The Palmer goldfield was discovered in late 1873, and rushed in ensuing months by several thousand miners who travelled overland either from the newly-established Etheridge goldfield 250km south or from the even newer port of Cooktown 150km northeast. The problems of settlement on the Palmer were formidable. Alluvial deposits were very widely distributed along the river and its tributaries, so that while the field as a whole supported a large population - 19,500 in May 1877[15] - in few places was there a sufficiently large concentration of miners to justify forming a township.

To further complicate matters, the goldfield was established in a part of the colony well beyond the frontier of previous settlement; all roads and towns had to be formed from nothing. The Palmer river was separated from Cooktown by the continental divide, which in that district is a low sandstone tableland dissected into a tangle of ridges and gorges,

[15] Kirkman, "Palmer River", p. 119. It is worth noting that Ravenswood never reached a quarter of this population, and that Charters Towers first reached it only in 1893.

presenting dreadful transport problems. And the initial discovery of 1873 was made at the furthest point of the field from the coast, so that as discoveries spread eastward along the river, repeated attempts were made to establish shorter roads crossing or bypassing the worst of the ranges, contributing further to the dispersal of the field's transport, commercial and administrative facilities.

Maytown was established in early 1874 as one of a number of ephemeral settlements on the bank of the Palmer itself. Its location is not easily explained, but it probably represented a source of permanent water close to a concentration of alluvial diggings away from the main river, and was close to the site of a butchery.[16] Maytown was singled out for greater stability by a series of inter-related events. It was the terminus of a new packtrack discovered in January 1874 which, while rough and used for only that year, greatly shortened the journey to the coast, and it was chosen as the site of the Commissioner's office after Palmerville downstream was abandoned by the miners.[17] (The colonial government, however, ponderously in motion, proceeded to build a court house and warden's office at Palmerville six months *after* the settlement was deserted.)[18]

There is no record of the fabric and appearance of Maytown in its first two years, but it may be supposed to have resembled the other settlements on the field during their establishment phase. Palmerville in its early weeks was described as "two long lines of tents and buildings of the most temporary character, facing one another",[19] and when the first expedition from the coast arrived,

[16] The significance of John Edwards' butcher's shop as a determinant of location is expressed in the alternative name Edwardstown which persisted in local use for some years.

[17] Another early name for Maytown was the Commissioner's Upper Camp.

[18] Public Works Department Loan Expenditure Ledger 1865-1876, pp. 428-29, A/13141 Q.S.A.

[19] Grant, Early Station Life, p. 124.

> Palmerston they found upon arrival literally a canvas town; there was but one building with any pretension to stability, and that was the lock-up. This is built of saplings, but slab stores were in course of erection, and there was the inevitable shanty....There is, of course, no deference as yet paid to street alignment, each tent being fixed where and how its proprietor pleased. 20

Buildings of greater substance began to appear at Maytown in 1876, with the construction of a court house, telegraph office and police barracks,[21] probably the first sawn timber buildings in the town. In that same year underground mining commenced in earnest on the reefs near the town after the installation of crushing machinery,[22] and a shorter vehicle road was constructed through a gap in the dividing range to the north.[23] Encouraged by these developments, three banks opened branches in Maytown that year.[24]

1876 may be regarded as the commencement of Maytown's stability phase, and a fair picture of the town in that year can be assembled from various sources. A newspaper commenced publication in July 1876, and its first issue described the town:

> Altogether, there is a marked improvement in the general appearance of the town. We can now boast of having three banks, a lawyer, telegraph and Post Offices; a new Court house and Warden's and C.P.S.'s offices; three medical

[20] *Queenslander* 27 December 1873.

[21] Public Works Ledgers A/13141 pp. 471 & 515; A/13142 p. 89, Q.S.A.

[22] Kirkman, "Palmer River", p. 131.

[23] Public Works ledger A/13142 p. 142, Q.S.A.

[24] Minutes of Directors' Meeting 16 March 1876, A/QNB/301, N.B.A. These were the New South Wales, Australian Joint Stock and Queensland National Banks. There was at the time a formal agreement among the banks to give mutual notice of intention to open a new branch: see ibid. 19 March 1874.

> men, two chemists, twelve hotels, eight large stores, and a number of Chinese and European small stores, three bakery establishments, the largest butchering establishment in the north, one wholesale wine and spirits merchant, two first class billiard saloons, two circulating libraries, two first class blacksmith and wheelwright firms, a first class hairdressing establishment; and though last, not least, our noble selves. [25]

The population of the settlement is given as 1,086, including 68 women, in the 1876 census,[26] but the figure seems high, and undoubtedly included the surrounding alluvial district.[27] The first known illustration of Maytown depicts it in 1876 or 1877 as two rows of buildings facing Leslie street. The courthouse is the only building that can confidently be identified, for major reconstruction of the town lay ahead. Relatively few of the town's houses were of industrialised components, although Bowly, late in 1876, commented on "some pretty good wooden houses" at Edwardstown.[28]

The development of Maytown in the following decade was uneven. The stability phase opened with mixed augurs; 1876 saw the European population drained by the Hodgkinson rush, but replaced in far greater numbers by Chinese alluvial miners.[29] And although reef mining survived into the 1890's and was sporadically revived in later decades, it proved never to be of great significance. Successive companies were bank-

[25] *Golden Age* 29 July 1876: this is the only issue of the paper known to survive.

[26] *Fifth Census of Queensland*, p. 50. Separate entries are given for "Maytown" and "Edwardstown" (totalled here): the warden was apparently pandering to local sentiments, for the two townships, if not the same place, were so close they soon coalesced into one.

[27] The entire goldfield population is enumerated under locality names, clearly identifying districts rather than the urban centre named.

[28] Bowly letters 1 December 1876, p. 156.

[29] Kirkman, "Minority to Majority", p. 246.

Maytown in 1876-77.

(*Town & Country Journal* 2 June 1877, p.868) rupted by the isolation and cost of mining, leaving most of the mines in the hands of the Queensland National Bank, worked by tributers. The other banks withdrew: the A.J.S. in 1878, the N.S.W. in 1884, and the Queensland National purchased the A.J.S.' office in 1878 for £650.[30]

That bank building sums up very well the effects of isolation, cost and impermanence on the construction of buildings in Maytown. The district was not impoverished; it produced about 1.1 million ounces of gold, worth over £4.5 million, most of it in the five years from 1873. Throughout the colony the premises of the Queensland National Bank were among the largest and most imposing in many towns. Those in Brisbane (1881–83), Rockhampton and Cooktown (1890) and Charters Towers (1891) were thoroughly urbane classical masonry buildings. Yet in Maytown the directors opted for an austere iron-clad oblong building with a longitudinal gabled roof and encircling verandahs, which in any coastal town would have been unthinkably primitive as a banking office.

Even so, the bank was the most elaborate non-government building ever erected in Maytown, constituting a conspicuous landmark in Leslie Street until the early twentieth century.[31] It was also probably the most expensive private building in the town, built entirely of corrugated iron, which could be sold in Maytown for nearly £1 a sheet.[32] That was nearly four times the price of iron in Brisbane,[33] and twice what was being paid in more accessible North Queensland mining towns such as Ravenswood.[34]

[30]Minutes of Directors' Meeting 11 July 1878, A/QNB/301, N.B.A.

[31]The Q.N. branch closed in 1893, but the building is visible in a photograph of Maytown in *Q.G.M.J.* special edition 1901, p. 21.

[32]In 1877 the Q N. Bank sold 60 sheets of leftover iron at various prices, totalling £51,14.0 : Premises Register, N.B.A.

[33]Account of Alfred Shaw 25 November 1880, EDU/Z 1472 Q.S.A.

[34]Cecil Becke to Secretary for Education 28 May 1872, 72/829, EDU/Z 2309 Q.S.A.

Although the population of the Palmer goldfield was in decline from 1877 onward, Maytown remained a viable settlement for many years, and indeed underwent considerable physical development in its period of stability. There was a steady move away from primitive materials to iron despite its cost. In 1880 the warden reported the construction of two new Chinese stores in the town:

> ... both being large and substantial buildings of sawn timber and iron, all the material coming from Cooktown; and the other Chinese storekeepers, not to be beaten, have renovated their old buildings by putting new fronts in and substituting iron for bark wherever the latter material was used. 35

The domestic buildings of Maytown were still predominantly of primitive materials, but the rate books over the following four years demonstrate that although the town was shrinking in size, its buildings were increasingly being built in industrial materials. Whereas in 1880 the largest single category of builings were of "bark", by 1884 the majority were of "iron and wood":

Rateable Buildings in Maytown

Material	1880	1884
Iron and wood	20	41
Iron	7	-
Slab and iron	2	-
Iron and bark	4	-
Wood	4	-
Slab and bark	4	-
Wood and bark	1	15
Bark	24	-
Total	66	56

36.

[35] *A.R.* 1880, p. 17.

[36] Hann Divisional Board Rate Books 1880-1884, A/23412 Q.S.A. Obviously a change in nomenclature occurred in this period, but the tendency away from primitive materials is nevertheless clear. It can be summarised as:

	1880	1884
Buildings incorporating iron	33	41
Buildings incorporating bark	33	15

Some terms such as "wood" are too vague to provide useful information, but there were, as Bowly had observed, "some pretty good wooden houses". One of these in 1882 was described by its owner:

> ...it is built of the best material throughout it stands on blocks well poisoned from white ants floored throughout T. & G. 6x1 flooring bords pertitions lined with T. & G. Bords verandahs back and front Iron G.O. anchor brand of the best Quality well nailed to 3x2 battens and double lap throughout a garden at back well and securely fenced in with Galvanised Iron wire netting with gates &c. also a large Stable 30x12ft divided into stalls...it is built of the best Hardwood sawn timber & Iron everything is in first class order...26x34 verandah back and front ... [37]

While this description is not entirely comprehensible, it certainly refers to an elevated house of standard commercial components, apparently four-roomed with iron external walls nailed to a 50x75mm stud frame. The owner was asking £500 for the house - a price unthinkable in any coastal town - which he described as "Cheep" in Maytown.

Civic improvement also ensued, with inauguration of a regular coach service in 1880,[38] formation of the Hann Divisional Board, which put in hand the channelling and stone kerbing of Leslie Street, and the construction of a new Post and Telegraph Office in 1885: heralded by the *Palmer Chronicle* as "a great improvement on the present abortion."[39] But there were probably never many private houses in the town area; it functioned principally as an administrative and commercial node.[40] The mining population which supported Maytown lived outside the town. Maytown probably had passed its maximum physical extent by

[37]W. Mason Smith to Secretary for Public Instruction 20 February 1882, 82/1103, EDU Z 1729 Q.S.A.

[38]*Towers Herald* 19 May 1880.

[39]*Palmer Chronicle* 1 August 1885; plan of building held by Australia Post Historical Section, Brisbane.

[40]The paradox of increased government expenditure during the decline of mining settlements is pointed out by Blainey, *Rush That Never Ended*. p. 288.

the early 1880's: its plan in 1888 shows buildings in areas vacant in photographs taken about 1900.[41]

By the early 1890's, underground mining had ended and the warden's office closed in 1893. Visitors to the Palmer were already indulging in nostalgic descriptions:

> A visitor to the Palmer cannot fail to be struck by the manifold traces of the multitudes that once swept over this extensive field in ardent pursuit of gold. On all sides are vestiges of former vigorous life contrasting with present desolation. Here in some rich river bend are the remains of an abandoned garden; there the wrecks of a mining camp, once the resort of hundreds of eager searchers, now only to be distinguished from the surrounding bush by the two weather-beaten posts that mark the site of an old slaughtering yard. This, of course, is what one may naturally expect to find in what was once a greatly active, and is now an almost completely exhausted alluvial field. Even in the reefing districts, dismantled machinery and crumbling buildings serve to maintain the pervading aspect of decay... 42

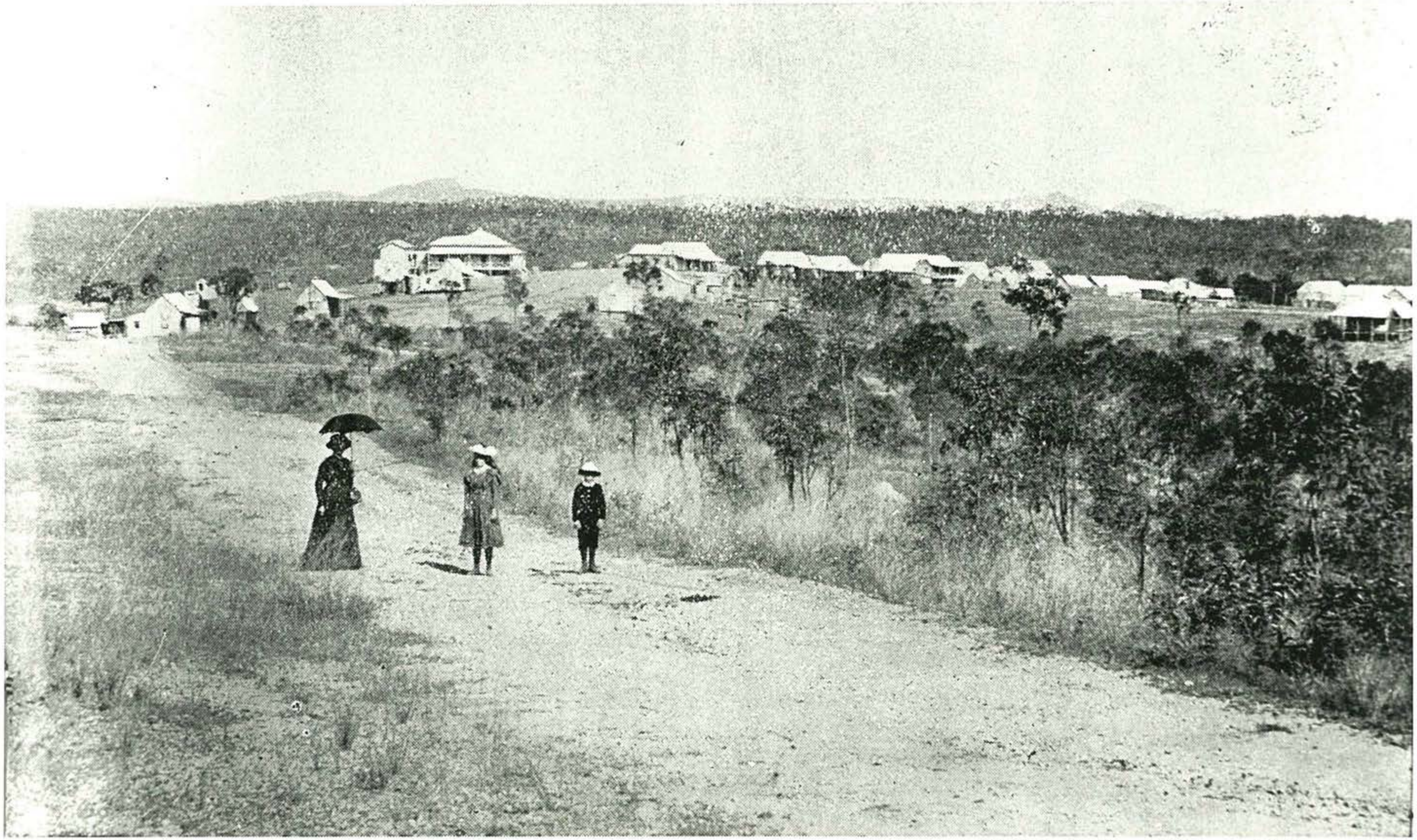
However, Maytown proved surprisingly tenacious. It remained the administrative, police and postal centre for a large pastoral district, and the base for sporadic attempts at reworking the mines until as late as the 1940's. But as the field's gold output sank to an abject level the population declined: the school closed in 1925. The next pictorial record of Maytown, an aerial photograph taken in 1934, shows it reduced to nine buildings, five administrative and four commercial. No entirely domestic structure survived.[43] Maytown was entirely deserted in the following decade, although two buildings were still standing in 1951.[44]

[41]The Cairns Historical Society holds a sketch plan of Maytown in 1888 drawn from childhood memory by a son of the government surveyor, J.J. Davies. While on the face of it the plan's credentials seem doubtful, it accords very well with the few photographs of Maytown and the physical evidence of the site, and can be regarded as highly authoritative. No survey plan of Maytown is known to exist.

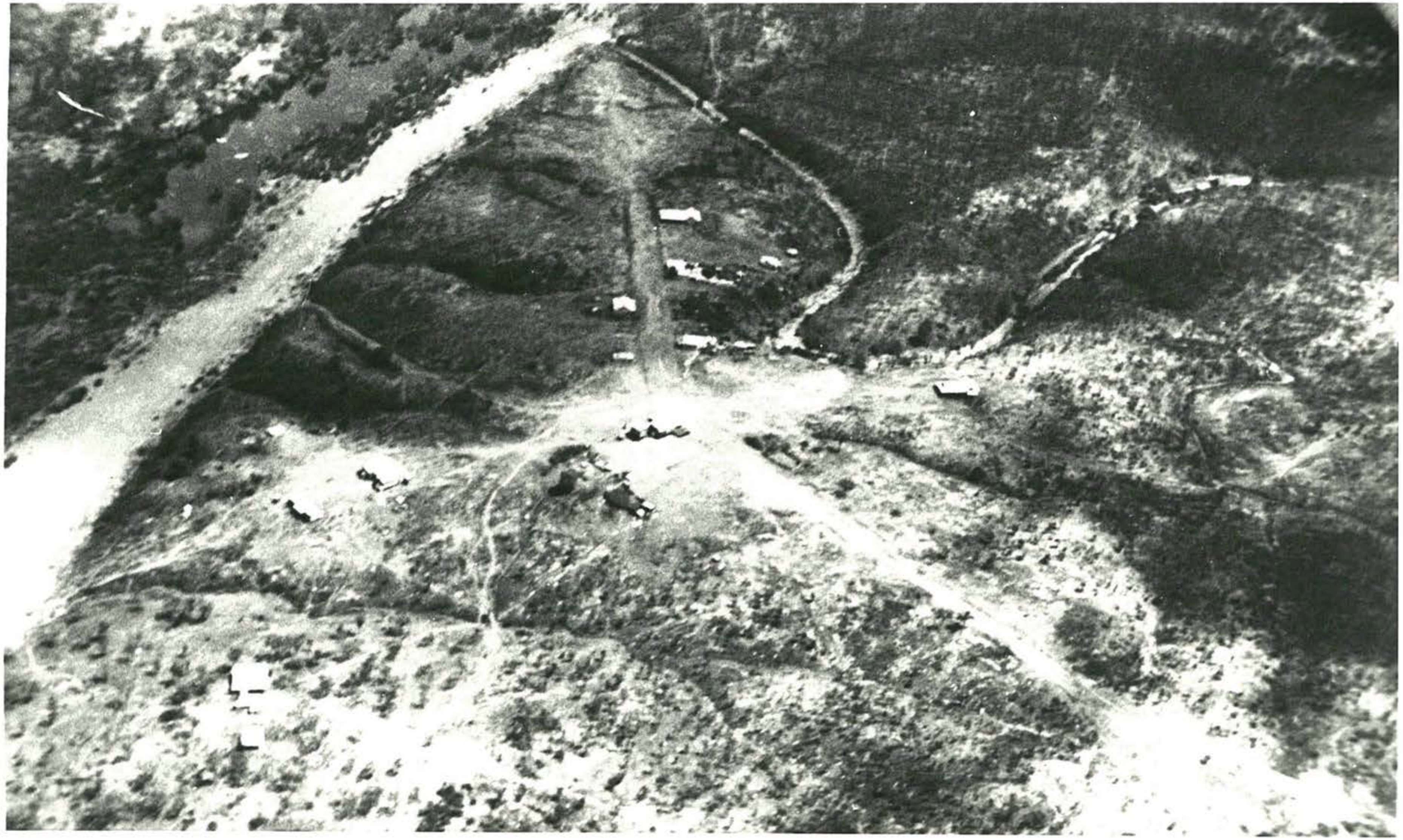
[42]*A.R.* 1892, p. 74.

[43]Photograph of Maytown by L.C. Ball, 25 September 1934, held by John Oxley Library.

[44]Aerial Photograph Q 146, Maytown Run 2, No. 124, 24.6.51.



Maytown about 1900. (*Q.G.M.J.* May 1902, p. 232)



Maytown, 1934. (John Oxley Library)

No buildings survive in Maytown today, but there is sufficient physical evidence to enable a number of their sites to be identified, and to provide some information about their construction. The town area is now an irregular elliptical clearing about 700m in length on either side of Leslie street, the central axis of the town. The street runs down the crest of a ridge separating Butcher's creek from the Palmer river, and at their confluence crossed the creek to become the coach road to Laura. Stone kerbing is still in good order for a distance of about 200m along Leslie street.

At the court house, post and telegraph office and divisional board hall, low round timber stumps survive, enabling the buildings' plans to be reconstructed, These were among the last buildings of the town, all intact in 1934, but there is very little building material on their sites, suggesting systematic removal. The police station appears to have been destroyed by fire while still standing, for a large quantity of burned timber and iron is on the site. Galvanised iron sheets are scattered throughout the town clearing, individual examples still bearing the brandnames "Gospel Oak" and "Stork", and a large concentration of iron lies on the steep bank of Butcher's creek, apparently blown there by a thunderstorm.

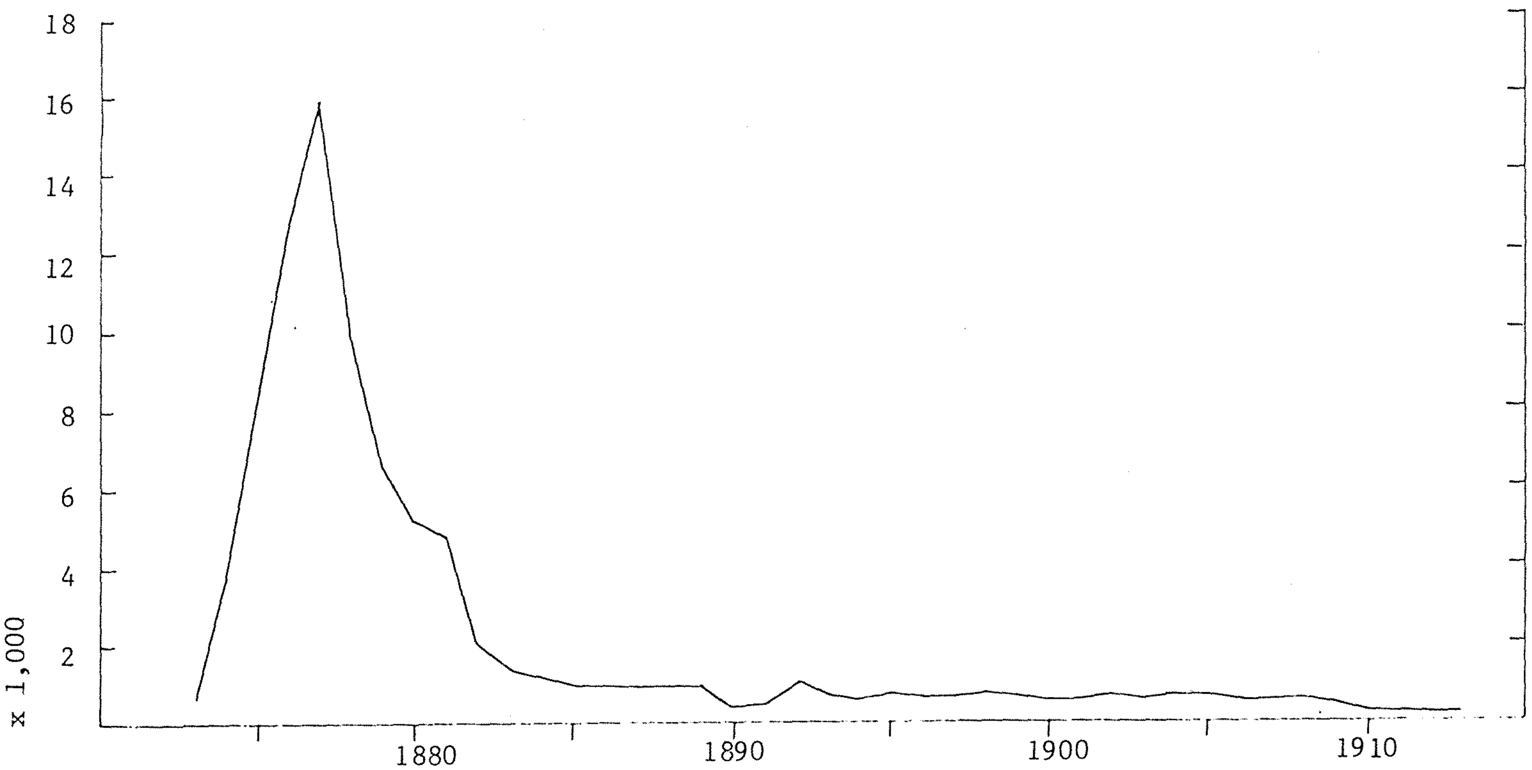
Where no standing remains of a building survive, other elements on the site provide clues to its location. A bakery is marked by a dry-laid brick oven on a natural stone base. Several stores have partial perimeters laid in stone, and the site of one is identifiable by a length of stone-flagged footpath, visible in a photograph of its shopfront in the 1880's. A carriage driveway laid in the street kerbing identifies the site of the *Prince of Wales* hotel, which was the Cobb depot. The site of the blacksmith's shop is marked by broken horseshoes and scraps of iron, the *Palmer Chronicle* office by scattered printer's type; no trace of either building is distinguishable.

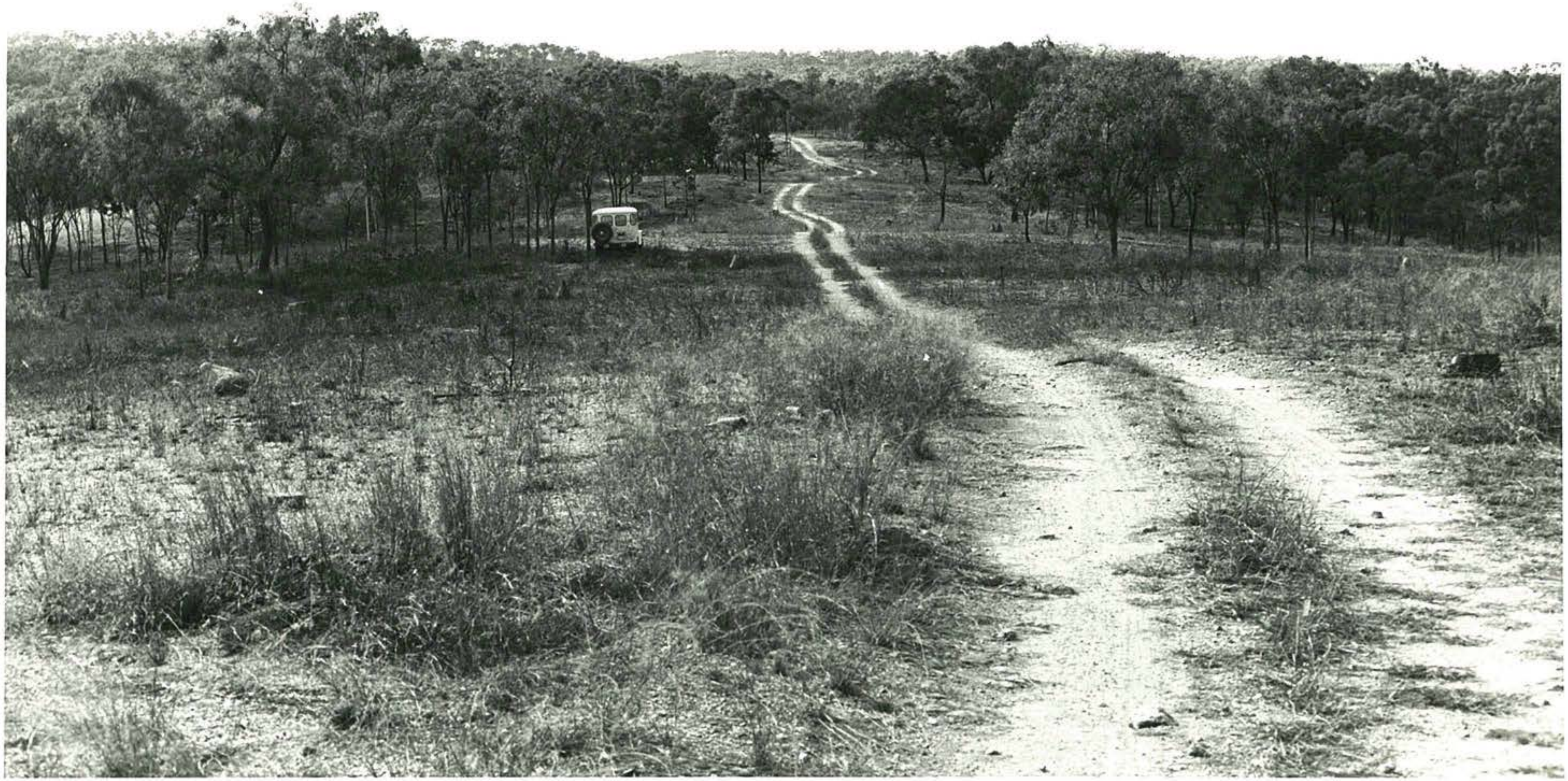
The houses of the town present little evidence, as they were all abandoned or demolished well before the commercial and public buildings. Stonework foundations, floors and fireplaces are evident along both sides of Leslie street, one of the clearest examples having a flagged floor about 6m square, with a fireplace adjoining at the rear, a flagged verandah 2.5m in width at a slightly lower level along the street side, and an edged space - presumably a garden - extending another 6m to the street alignment. Almost no timber components exist on the house sites. Termite activity accounts for part of this absence; in one case a low perimeter wall of corrugated iron showed that the house on the site had been elevated and the below floor space edged with iron to keep out goats. On investigation, the soil immediately inside the corner angles of the iron perimeter - the obvious location for a timber stump - was found to contain the galleries of abandoned termites' nests, showing no trace above the surface. However, loose timber on the surface is more likely to have been removed by human agency, for re-use or firewood.

The entire cleared space of Maytown is littered with household debris: fragments of kitchen stoves, bedsteads, barrel hoops, cutlery, nails, broken glass and crockery sherds of both European and Chinese manufacture. Recognizable building elements are few. One, a length of flat sheetmetal with one edge trimmed by hand into a rounded zig-zag, was probably a section of verandah edging or part of a window shade: the only decorative building element identifiable in the town.

Maytown's development is effectively illustrated by the goldfield's population graph, which shows a rapid rise, an equally rapid fall, and then a lingering decline to nothing. While briefly the commercial and administrative centre for the greatest human gathering of its time in the northern half of Australia, Maytown gained very little from the initial alluvial influx. It achieved stability only as a small reefing centre, hampered by isolation and transport costs. Its physical decline reflected its changed function after the end of mining; the houses were abandoned first, until only public servants and shopkeepers remained in the settlement, living on their premises. The cleared area and drainage works probably define the form and structure of the settlement quite accurately as a community of never more than a few hundred, housed in two irregular rows along one principal street. Little can be deduced about the houses themselves from the physical evidence. They were small - two-roomed

PALMER POPULATION





Leslie Street, Maytown, 1979.

Stone kerbing, Maytown.

Stone building foundation, Maytown.

Termite infestation at location of foundation stump, Maytown.

cottages were probably the most common form - they used stone to an unusual degree, and iron was prevalent for roofs and probably for walls. A visit to Maytown is perhaps most salutory in correcting the assumption that a productive mining field will produce a substantial settlement; nothing in the physical evidence suggests that four million pounds worth of gold was won there in five years.

Ravenswood

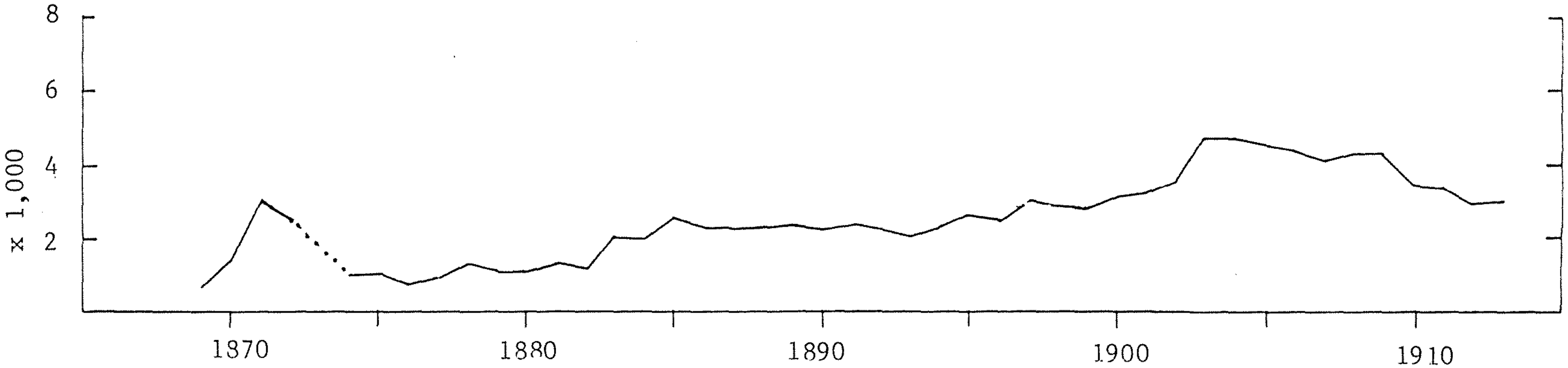
Maytown and Ravenswood provide some reasonably close points of comparison; the two towns were founded within a period of about four years and each was the chief urban settlement of a field producing about one million ounces of gold. But Ravenswood was a far more substantial settlement than Maytown, and of much greater durability, surviving today as the oldest continuously occupied inland town of North Queensland although much reduced in population. The Ravenswood goldfield was discovered in 1868, and the townsite was occupied at some time in 1869.[45] Unlike Maytown's, Ravenswood's location was directly determined by mineral deposits; the town developed on the site of rich alluvial deposits in Jessop's and Buchanan's gullies, and of the outcrops of a number of reefs. Both alluvial and underground mining developed simultaneously in the town.

The historian is fortunate in that the early development of Ravenswood was both documented and illustrated quite comprehensively. Ravenswood's location could not have been better calculated to incite regional jealousy; it was situated nearly midway between the young ports of Bowen and Townsville, and North Queensland's only surviving newspaper of the period, the *Port Denison Times* of Bowen, reported eagerly on every development at the goldfield. And in August 1870, Richard Daintree visited the town and took a series of photographs, several of which are extant.[46] The initial settlement was predominantly

[45] D.C. Roderick, "Ravenswood: surveying the physical evidence", in Kennedy (ed.), *Readings*, p. 40.

[46] *Q.V. & P.* 1871, p. 663. Several of Daintree's Ravenswood photographs are held by the Queensland Museum.

RAVENSWOOD POPULATION



of bark; Daintree's photographs and Weitemeyer's description are entirely in accord. Indeed, Weitemeyer's description of "two large bark-houses" capable of seating "two or three hundred boarders in each"[47] closely fits two buildings visible in one of Daintree's photographs, near the later intersection of Macrossan and Deighton Streets.

By 1870, imported timber and iron were in use. The settlement's future was assured by the completion in August of that year of a crushing mill,[48] and while it was under construction the local correspondent was celebrating the transition expressed in the town's building stock:

> Our town is gradually changing its appearance, and buildings of greater pretension to architectural beauty are fast springing up. We have already arrived at the stage of weatherboards, and in a very short time shall no doubt sport plate glass and all that kind of thing. [49]

These first industrialised buildings were apparently non-residential, for the earliest sawn timber house was separately recorded: "Mr. Dippel has the honour and glory of having erected the first comfortable weatherboard cottage with real glass windows."[50] Hill, the warden's clerk, illustrated in his memoirs a timber and iron two-roomed cottage said to have been his residence in Ravenswood in 1870.[51]

However, these public claims of architectural transition must be regarded as expressions of hope for the future rather than descriptions

[47] Weitemeyer, *Missing Friends*, p. 173.

[48] *Port Denison Times* 10 September 1870.

[49] *Ibid.*, 16 July 1870.

[50] *Ibid.*, supplement dated 21 August in issue 3 September 1870.

[51] Hill, *Forty-five Years*, p. 56.

Ravenswood, August 1870. (Queensland Museum) of contemporary events, for the same claims are found repeated over many years. A report of 1871 implies that Ravenswood had already been converted almost completely to industrialised materials:

> The disreputable shanties composed of sapling walls and calico roofs have almost totally disappeared, and are only to be found in the outskirts of the town. Substantial weatherboard buildings with iron roofs have taken their places, and are now packed as close as possible all along the main street. [52]

But nine years later, the warden was to make almost exactly the same observation: "The town has much improved in appearance and the miners seem more inclined to settle permanently, and one sees very few eyesores in the shape of tumble-down humpies and calico domiciles",[53] and even this is seen to be an over-sanguine view when the valuation registers of the 1880's are inspected. As comments of this kind provide much of the evidence for the broad subjective appearance of mining settlements, and are shown in these instances to be quite misleading, it is important to consider *why* they are consistently over-optimistic, and what information they really convey. Both a local newspaper correspondent and a goldfield warden can be expected to give a rosy view of their settlement's progress, including its building fabric, for both were expected by their employers to be overtly propagandist in their statements. Observers living in a small settlement would also be subject to unconscious bias in being alert to the smallest changes in the town's appearance, and tending to overstate their significance.

On closer reading, the 1871 description refers to the commercial buildings of Macrossan street, and implies that primitive materials had recently been superseded in that quarter of the town. This is borne out by photographs of Ravenswood later in the decade which show a landscape of bark houses around a small central concentration of

[52] *Port Denison Times* 10 June 1871.

[53] *A.R.* 1880, p. 23.

government and commercial buildings in sawn timber and iron.[54] Fairly substantial government buildings had been built in the intervening years: a court house in 1871, police quarters in 1872, a school, its residence and a telegraph office in 1873.[55] The warden's comment of 1880, remarking on the tendency of miners to settle permanently, may be taken to mean that very few *newly-built* houses were "tumble-down humpies and calico domiciles", not that the older buildings had been replaced. It is probably significant that he also commented on the exhaustion of Ravenswood's alluvial gold: "'Fossicking' here is almost out of date, and those who do pursue it find it difficult to make a living,[56] so that those settling in the town in 1880 were likely to be wage employees of underground mining companies. The cost of imported building materials should also have been reduced by the Townsville-Charters Towers railway which was opened to the Reid river, 40km from Ravenswood, late in that year.[57]

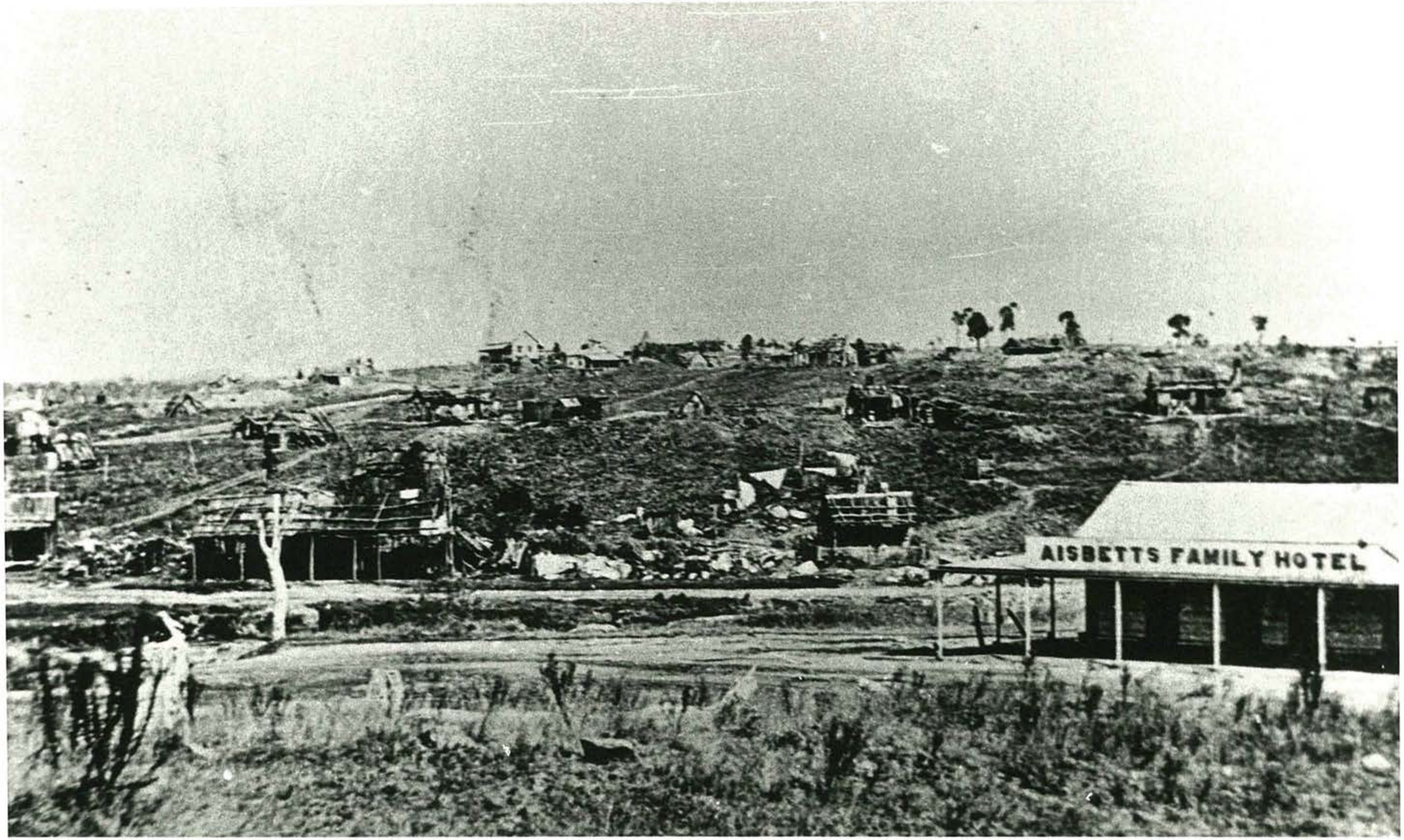
From its establishment phase, Ravenswood entered a period not of stability, but of decline. This was the result of a combination of mining problems in Ravenswood and of attractive new finds elsewhere in North Queensland. Such an abrupt transition to decline was not unusual on northern fields; what makes Ravenswood's case notable is its subsequent recovery from decline to prosperity. The alluvial rush was short-lived, and after a brief period of high production from the oxidised surface ore the reef miners faced serious technical difficulties: below the water table the reefs continued with a high gold content, but the sulphide ores of Ravenswood proved extremely

[54]The photograph reproduced here was taken after early 1876 when Aisbett's hotel at right was established: *Northern Advocate* 15 April 1876.

[55]Works Department Ledger 1865-1876, pp. 322, 356, 380, A/13141 & Contract Ledger, Schools 1870-1878, p. 68, A/13115, Q.S.A.

[56]*A.R.* 1880, p. 23.

[57]*Northern Miner* 11 December 1880.



Ravenswood in the late 1870's. (John Oxley Library) refractory. As one early account of the field put it: "the metallic ore was then known by the name of mundic, the presence of which struck terror into the hearts of the miners".[58] As confidence in the goldfield declined, other discoveries attracted the nervous - Charters Towers in 1872, the Palmer in 1873, the Hodgkinson in 1876 - and Ravenswood's population fell from 3,120 in 1871 to 800 in 1876.[59]

However, while production was disappointing, it was possible to extract some gold from Ravenswood ores, and the field's output and population rose gradually from the 1876 nadir. It was assisted by the growth of an alternative industry, silver mining at Totley nearby[60] after 1880, and by the construction of a branch railway from the Charters Towers line in 1884. During this period of equivocal development, housing remained relatively primitive. As late as 1882, nearly 50% of the rateable buildings were partly of slab, grass or bark:

Summary of materials mentioned, 1882

Material	% of mentions
Bark	45
Iron	26
Weatherboard	19
Tent	6
Slab	3
Grass	1

[61]

Miners rarely held freehold title to their land, and paid rates according to the value of their improvements, which on an uncertain field were minimal. Under the Gold Fields Homestead Act Amendment Act 1880, miners were entitled to hold a Residence Area of 1x2½ chains (20x50m),[62]

[58] *Charters Towers Mining Journal*, May 1884, p. 5.

[59] *Statistics of Queensland.* Figures given are the population of the goldfield, not the town, but after 1871 the bulk of that number were probably in Ravenswood itself, where 4 of the field's 6 crushing mills were located: *Port Denison Times* 10 June 1871.

[60] Kennedy, *et. al., Totley.*

[61] Ravenswood Divisional Board valuation register 1882, COL/0 63 Q.S.A. What is meant by "mentions" of material is explained in an appendix to chapter five. Inexplicable terms and materials totalling under 1% of mentions are excluded from this table.

[62] C.A. Bernays, *Queensland Politics during Sixty Years 1859-1919,* Brisbane 1919, p. 363.

and non-miners could qualify simply by taking out a Miner's Right, obtaining cheap land but not security. In 1880, when the goldfield was over ten years old, there was no freehold land in the Ravenswood division,[63] and those willing to invest in substantial housing in such circumstances were exceptional: "I have spent more on a Residence area than anyone else in this town. My house has cost over £400, and my only title is from my miner's right."[64]

This in turn led to problems for the new divisional board, which had to levy rates on makeshift buildings. The chairman lamented in 1880 that "a Bark hut (of which there are great numbers) could not be rated or valued at more than £5,[65] yet even this modest valuation outraged some of the miners. One complained that even tents were not spared in the board's revenue gathering, for as humble an improvement as a goat barrier transformed the dwelling in the valuer's eyes to a wooden structure:

> There is men camped in tents they have to fence them in or else they would be destroyed by the goats and the valuator calls it a Hut and values 5£ a tent which cost when new 21 shillings. 66

Slow improvement in housing was accompanied by more general civic development. Encouraged by the rise of Ravenswood's population in the early 1880's, the colonial government replaced its earlier

[63] H.H. Barton to Colonial Secretary 29 May 1880, 80/3313, WOR N15 Q.S.A. makes the statement that *all* property in the division is on Crown land.

[64] Hunter Finlay M.D. to Minister for Works & Mines 23 May 1884, 84/3115 COL/063 Q.S.A.

[65] Barton to Colonial Secretary 29 May 1880, *loc. cit.* Such disputes over valuation of improvements were by mo means confined to Ravenswood.

[66] J.H. Howe to Colonial Secretary 15 April 1881, 81/1571, WOR N15 Q.S.A. This is an extension of the writer's own complaint that his hut-"15 sheets of Bark" - had been valued at £5, which in terms of its labour cost does seem excessive. Such complaints led to the Valuation Act of 1887, which based rates on unimproved land value.

generation of buildings with a new court house in 1883[67] and new post and telegraph office in 1885.[68] The School of Arts built a concert hall beside their earlier library (1875), and the Roman Catholic community spent £1000 on a weatherboard church to replace an earlier chapel (1871) destroyed in a storm.[69] The Ravenswood Divisional Board was engaged in channelling and kerbing by 1883, and found its attempts to regularize the streets frustrated by buildings constructed before survey.[70] With the opening of the railway in 1884 came universal access to imported materials. It is unlikely that any significant structures were built in primitive materials after that year: in which Dr. Finlay boasted of spending £400 on his house.

The efficiency of gold extraction methods improved steadily. Ravenswood seems to have been little affected by the failure of the Totley silver mines in 1891, and the population increased steadily through the 1890's. But the turning point, transforming the mining industry and bringing belated prosperity to the town, came with the establishment of the New Ravenswood Company in 1899. A local mine manager and hotelier, A.L. Wilson, formed the company with London capital, took over a group of the town's most promising mines, and built a new mill equipped with Wilfley tables. Wilson radically transformed local methods by relying on a large production, not necessarily of high grade. Suitable ore was treated chemically, but the bulk of the output was simply concentrated by mechanical means, bagged, and exported for treatment elsewhere.[71]

[67] *Q.V. & P.* 1891, *4*, p. 567; *Northern Miner* 23 January 1884 reports opening.

[68] *Q.V. & P. loc. cit.;* Works Department Tender Book 1884-1891, A/13068 Q.S.A.; Australia Post plan dated 24 August 1885.

[69] *Northern Miner* 31 January and 25 October 1884; *Charters Towers Mining Journal* July 1884, p. 36.

[70] Barton to Minister for Works & Mines 11 May 1883, 83/1290, COL/0 63 Q.S.A.

[71] Maclaren, *Mining & Milling*, p. 27; W.E. Cameron, *Recent Mining Developments on the Ravenswood Gold Field*, G.S.Q. publication 183, 1903, pp. 3-5.

Gold production soared to nearly 54,000 oz in 1905. In 1900 the field passed its peak population of the alluvial rush, and reached a new peak of 4,700 in 1903.[72] Few mining towns in the region ever experienced so dramatic a revival; indeed Ravenswood's prosperity phase came very late in the mining era, when Charters Towers had passed its peak, Croydon and the Etheridge were in decline, the Palmer and Hodgkinson all but abandoned. The effects on building construction were quite marked. The town expanded to its greatest area, with an entire new generation of houses:

> It is stated that Mr. Hans Thomsen, building contractor at Ravenswood has eighty cottages booked for erection at that town on residence areas taken up by miners and others... [73]

Ravenswood's population increased by over 1,000 during 1903. At the rate of occupancy prevailing in Charters Towers that year - 4 persons per dwelling - this would have necessitated the construction of 250 houses in Ravenswood, so Thomsen's roaring business was probably only a small part of the whole.[74] Probably the majority of the new houses were two-roomed cottages, evident in photographs of Ravenswood, 18 of which survive today, and it is likely that in many cases they replaced older dwellings. Certainly no private house in the town today can confidently be dated earlier than the New Ravenswood period. A few larger houses were also built, elaborated four-roomed timber houses with encircling verandahs; among them was Wilson's, on a commanding site in the centre of town.

All the new houses were of timber and iron, but the accompanying replacement of commercial buildings saw a number of substantial brick premises erected, architect-designed and sometimes highly elaborate for the region: the nearest North Queensland came to producing a goldfield boom style. Six brick buildings appeared in the centre of town

[72] *A.R.'s* 1900-1910.

[73] *Queenslander* 3 September 1903.

[74] *Statistics of Queensland*. Numbers of dwellings are not given for goldfields, so the nearest available comparison is for the *municipality* of Charters Towers.

between 1902 and 1905,[75] and a greater number of new timber buildings, to form a continuous street frontage of commercial premises 600m in length. In 1905 the Roman Catholic church was enlarged, and the extension demonstrated an intervening stylistic development in North Queensland timber buildings; whereas the 1884 nave was externally weatherboarded, presumably because the exposed frame was not by that time accepted locally as appropriate for better buildings, the new extension had an exposed stud frame.[76]

The New Ravenswood boom lasted a decade. Local tradition attributes Ravenswood's decline to a prolonged and bitter industrial dispute that began in 1911, but the reasons are undoubtedly more complex. Gold production and population were falling from 1909 onward, and while the strike may have hastened the decline, New Ravenswood's collapse was irreversibly underway before it began. The exodus from Ravenswood accelerated after 1917 when Wilson's company was wound up, and the removal of buildings began, continuing until the 1960's.

Ravenswood today has 35 houses, four private stores, two hotels, the School of Arts library and hall, one church, the school, post office and ambulance building surviving from its period of mining activity. The site is remarkably evocative, for the physical evidence of mining in the form of mullock and tailings heaps, timber headframes, brick stacks, crushing machinery and explosives magazines, is abundantly evident around and among these buildings. In no other place in the region are the relics of mining industry interspersed so intimately with a living township.

An analysis of the extant buildings gives some impression of their rate of survival from the distinct phases of the settlement's existence.

[75] The *Railway* and *Imperial* hotels and Browne's building (c. 1902); and Thorp's building, the adjoining store and the Ambulance (c. 1904). All but Browne's are extant.

[76] A photograph in *Queenslander* 14 January 1905 shows the church before extension; another in *A.R.* 1905 p. 88 shows extension and belfry built.

The oldest building is the school residence (1873), almost certainly the earliest extant house in a North Queensland town. The school building beside it is not the original wing of the school, which later expanded, but dates from late in the nineteenth century. The only other building in the town known to predate the 1876 decline is the School of Arts library (1875).[77]

At least three timber buildings, the early part of St. Patrick's church, the post office and the concert hall, date from the mid-1880's revival, and it is likely the two timber stores are from about the same time. All five brick buildings in Macrossan and Deighton streets were built in the New Ravenswood period, as was the extension to St. Patrick's. The most extensive milling ruins in the town area are those of Wilson's Mabel Mill, and almost all of the extant mining evidence inthe town can be dated to the New Ravenswood decade.

None of the private houses in Ravenswood can be dated from documentary sources. On inspection, there are 13 four-roomed houses and 18 two-roomed cottages in the town, in addition to the school residence, one hipped-gable and one bungalow-roofed house, and one iron cottage of indeterminate form. The 31 houses of standard form exhibit no features which would suggest a date before the 1880's, and it is possible that no private house is of earlier date than 1900, since it is clear from photographic evidence that houses of these general types were built in great numbers during the New Ravenswood era.

However, comparison with aerial photographs shows that several of those houses are of much more recent date. A series of oblique aerial photographs taken in 1934,[78] and a vertical photograph of 1962[79] provide a check on changes in building stock in recent decades.

[77] *Northern Advocate* 1 January 1876, reports that the Ravenswood School of Arts is flourishing: "we have a grand hall now". Later documents to do with constuction of the concert hall establish that the library was the 1875 building.

[78] Photographs of Ravenswood by L.C. Ball 23 September 1934, held by John Oxley Library.

[79] Aerial photograph Q 1276 Ravenswood Run 4, No. 111, 11.8.62.

Naturally they show steady demolition of buildings. After 1934, a number of mine structures, the Roman Catholic school, Browne's building, the Anglican church, Methodist presbytery, two four-roomed houses (including Wilson's) and four two-roomed cottages were demolished. After 1962 the convent, courthouse, police station, Methodist church and one two-roomed cottage disappeared. An elevated two-roomed house with encircling verandahs near the General Grant mine has been demolished in recent years.

It is much more surprising to find irrefutable evidence that a significant proportion of the houses, indistinguishable in form and appearance from the remainder, have occupied their present site for a relatively short time. Of the 35 houses recorded in the 1979 survey of Ravenswood, three two-roomed cottages and a bungalow-roofed house were not on their present sites in 1934; one further two-roomed cottage arrived after 1962. From external evidence, these houses are of forms and materials entirely consistent with a pre-1914 date of construction, and have either been transported bodily to their present sites from elsewhere, a process of which there is abundant evidence elsewhere in North Queensland, or have been built on their present sites along archaic lines from second-hand materials, although this seems less likely.

Some light is cast on this by local information. One early twentieth century four-roomed house was in course of removal *to* Ravenswood during the survey. The owner explained it was being brought in from an outlying site, and also pointed out another four-roomed house nearby which had been built at the Burdekin meatworks, and removed to Ravenswood after its closure in 1919. Thus seven (20%) of Ravenswood's 35 "early" houses have been placed on their present sites since 1919: six of these since 1934, two since 1962, and one only two years ago. These figures may understate the actual movement; Ball's 1934 photographs do not show the whole urban area, and even within the area covered, it is not possible in every case to be certain that the house on a site in 1934 is the same as that on it in 1979.

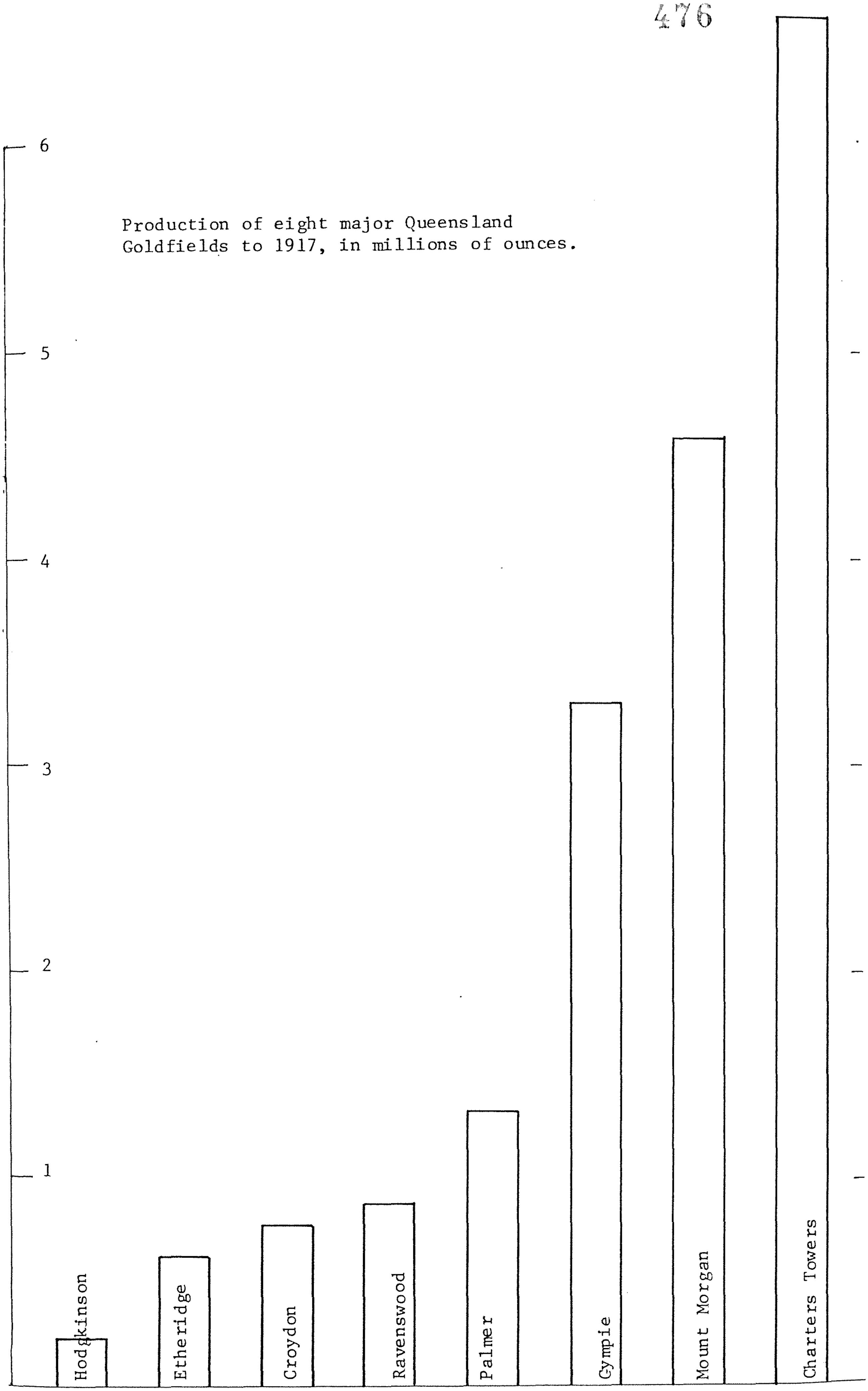
The movement of houses and other timber framed buildings from a mining centre in decline to an expanding settlement is familiar enough in all parts of North Queensland, although the number of existing houses that can be positively identified as having undergone that process is smaller than is commonly believed. The movement of houses *into* a decayed mining settlement, at intervals up to sixty years after its decline had become unmistakeable, however, was a totally unexpected discovery.

While the explanation is by no means clear, three influences can be suggested. First, the aerial photographs of 1934 and 1962 show a net decrease in the buildings of the town since, and it is possible some of the seven houses have simply been moved within the town. Second, Ravenswood, like many other goldfields, experienced a slight revival of mining in the 1930's, which may have encouraged construction or relocation of houses. Third, Ravenswood was the largest town on a goldfield with many smaller settlements, and even when in decline Ravenswood may have appeared relatively attractive to residents of outlying townships such as Donnybrook, Evlinton and Kirk River, in faster decline. The experience of Ravenswood is unlikely to be unique; it underlines the danger of applying over-simple assumptions based on the known history of the settlement to any of its individual buildings.

Charters Towers.

Because its scale dwarfed all other mineral settlements in the region, Charters Towers presents great difficulties in a comparitive study of North Queensland mining towns. The field was by far the greatest gold producer of Queensland until the end of the first world war; in 1917 it had produced almost a third of the state's total gold yield.[80] As a result it was the largest settlement of the region, indeed for the two decades 1891-1911 the largest urban centre in

[80] It has since been surpassed by Mount Morgan, which has remained in production almost continuously to the present.


6
5
4
3
2
1
Production of eight major Queensland
Goldfields to 1917, in millions of ounces.
Hodgkinson
Etheridge
Croydon
Ravenswood
Palmer
Gympie
Mount Morgan
Charters Towers

Queensland, excepting Brisbane.[81] Throughout its period of prosperity, the only settlement in the region which came near to Charters Towers' size was its port, Townsville, which had a much more diverse economy.

Gold was discovered on the site of Charters Towers in late 1871, and settlement commenced the following year. The district was quite accessible, having been settled by pastoralists a decade earlier,[82] and was surrounded by a number of smaller goldfields in the process of establishment. Charters Towers was unusual in that there was almost no surface alluvial gold. An influx of miners in 1872 and 1873 was largely disappointed, for it was evident from the outset that Charters Towers was to be a high-capital underground field.

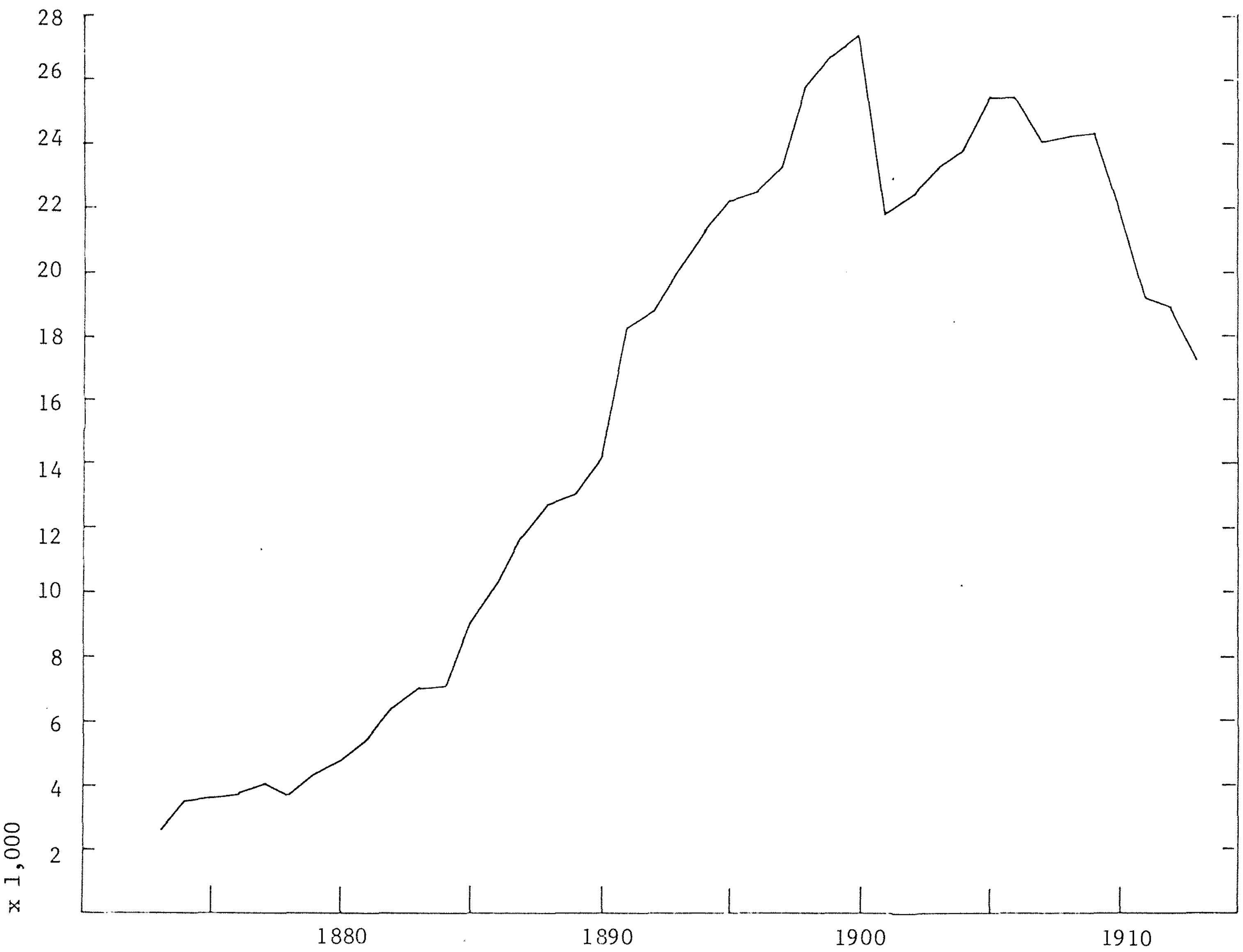
The settlement's location and physical structure reflected the requirements of its industry. There were two local points for settlement, Charters Towers proper at the concentration of reefs first discovered, and Millchester 4km east, where several crushing mills were established on the more reliable water of Gladstone creek. Like Ravenswood, the twin settlements were at first constructed largely in bark, but there was probably a more rapid transition to timber and iron construction, which had already dominated the commercial centre of Charters Towers by late 1873, and became more widespread, as the 1870's progressed.[83] The period of establishment in Charters Towers was quite short, long term production being assured rapidly by underground development; certainly with the success of the Day Dawn PC in 1878 there was sufficient confidence to justify a long term commitment in building construction.

[81] The population of the Charters Towers urban area is not given in *Statistics of Queensland*. Recorded there are the municipality, which was only a small part of the built up area, and the goldfield, which took in a much larger area. The years given are those in which the goldfield population substantially exceeded that of Charters Towers' nearest municipal rival, Rockhampton (including North Rockhampton).

[82] Allingham, *Taming the Wilderness*.

[83] Photographs of Charters Towers and Millchester, some by Mathewson, in James Cook University and John Oxley libraries; North Queensland Newspaper Company. Charters Towers' location did not incite the same regional jealousy as had Ravenswood, because it was plainly Townsville's from the outset. Thus, although it was to become a far more productive field, it was less well recorded in the Bowen paper.

CHARTERS TOWERS POPULATION



Surveyed in 1872, the town had the advantage of reasonably enlightened planning at an early date. The grid plan was extended in 1878 and again in 1887,[84] but by that time urban settlement had already outrun the survey, and the original grid was proving deficient. At the time of the early survey, the future size and importance of Charters Towers were not foreseen, and the surveyor can hardly be blamed for allowing street widths and an absence of public open space more appropriate to a village of a few hundred than a city of over 20,000 residents. But the local authority in later years failed to expand the survey fast enough to accommodate the expanding settlement, with the result that the street plan became increasingly untidy as lines were drawn around mines and buildings originally established well outside the urban area.

The result is an orderly geometric grid in the city centre, fraying into a chaotic tangle of roads and allotments at its edges. Ironically, much of the urban bustle which former Charters Towers inhabitants love to recall was a direct consequence of shortcomings in the original plan: the streets crowded from side to side on Saturday nights, the brass bands playing in the main street. The reason the bands did so, as the *Northern Miner* pointed out, was that there was nowhere else they could perform.[85] As late as the 1890's, as the city expanded, new streets were still being extended through previously occupied areas, testifying to the inadequacy of earlier plans.[86]

Charters Towers had reached stability early in the 1870's, and by 1880 the population had commenced a steady upward movement. The *Miner* observed early in 1881 that the carpenters of the town were fully occupied and had stopped taking new tenders: "the town is

[84] Survey plans held by Warden's office, Charters Towers, and Q.S.A.

[85] *Northern Miner* 10 May 1881. The survey plan was a preoccupation of O'Kane's: "The Government duffers who laid out this town did not leave room to swing a cat". *Ibid.*, 9 October 1880.

[86] Street survey plans 1878-1896, Warden's office, Charters Towers.

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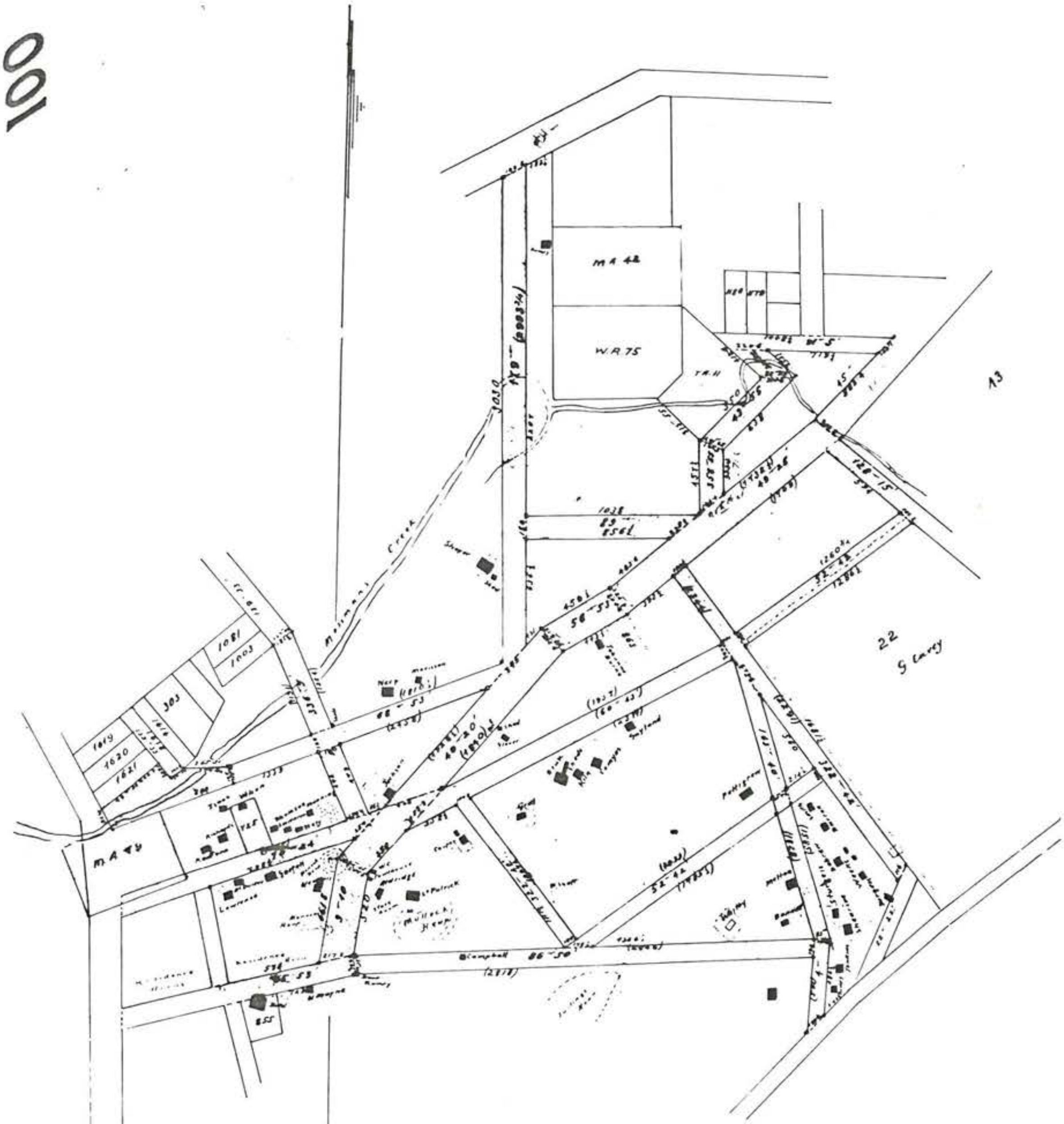


Plan
of
Road Survey near the St Patrick under instructions from the Chairman of the DALRYMPLE DIVISIONAL BOARD

1890

becomming more solid every day".[87] The following twenty years saw virtually uninterrupted growth in gold output, population and building construction. Assisted by railway construction in 1882, large financial investment after 1885,[88] the discovery of an entirely new reef system, the Brilliant, in 1889, and the introduction of cyaniding about 1893, Charters Towers entered a sustained period of prosperity.

> ... there is not an empty habitable house on Charters Towers, despite the fact that cottages are being run up like magic. One builder alone has fifty carpenters working for him. 89

The distinct settlements of Charters Towers, Queenton and Millchester coalesced into one city, with a population probably over 25,000, housed in over 6,000 dwellings.[90] This sustained building boom appears to have largely swept away buildings from the early period of construction. Charters Towers had by the early 1890's become too large for comprehensive photography, and the distance settlement extended beyond the surveyed area is unknown in detail, but several pieces of evidence suggest that few older private houses survived the renewal of the 1890's. One is the set of street survey and lease plans dating from 1878 onward, which show building locations and outlines in fair detail. Only one house shown on these plans can be identified today in the parts of the town covered.[91] The second is the uniformity of houseforms and construction techniques in the majority of surviving houses; very few deviate from the standard forms of the 1890's.

[87] *Northern Miner* 24 February 1881.

[88] *A.R.* 1886, p. 17.

[89] *Queenslander* 21 November 1891.

[90] *Statistics of Queensland* gives the goldfield's population as 27,375, and the municipality's as 5,000 in 1,370 dwellings. If it is assumed the rate of occupancy, 4:1 is sustained for the urban area as a whole, 6,000 dwellings is a reasonable estimate.

[91] Pfeiffer's house, on a plan dated 1882.

An experiment was conducted to determine whether the distribution of house and roof forms in Charters Towers followed any pattern which might reflect chronological evolution in areas developed in different periods. It might be reasonable to suppose a change in distribution outwards from the centre of town, or alternatively from south to north across the city centre, from the Day Dawn ridge, an area settled in the 1870's, to Richmond Hill, a new suburb of the 1890's. However, when four externally distinct houseforms were plotted on a survey plan, they exhibited no particular tendence to group. Even the hipped gable roof of the early twentieth century is fairly evenly distributed throughout the settled area.

It is likely that the range of houses being built at any time in the town's development remained equally diverse. It certainly cannot be assumed that the growth in prosperity of the town was reflected in an overall move toward greater size and sophistication in housing; on the contrary, times of greatest growth and demand for labour were arguably those of fastest population increase, when the need for housing could be expected to lead to large-scale construction of small, cheap cottages. Houses "run up like magic" were not likely to be luxurious. Several photographs of Charters Towers streets about the turn of the century show rows of identical two-roomed timber cottages, probably built en masse for rental or speculative sale. Removal of building stock since, however, has obscured these pockets of low income housing.

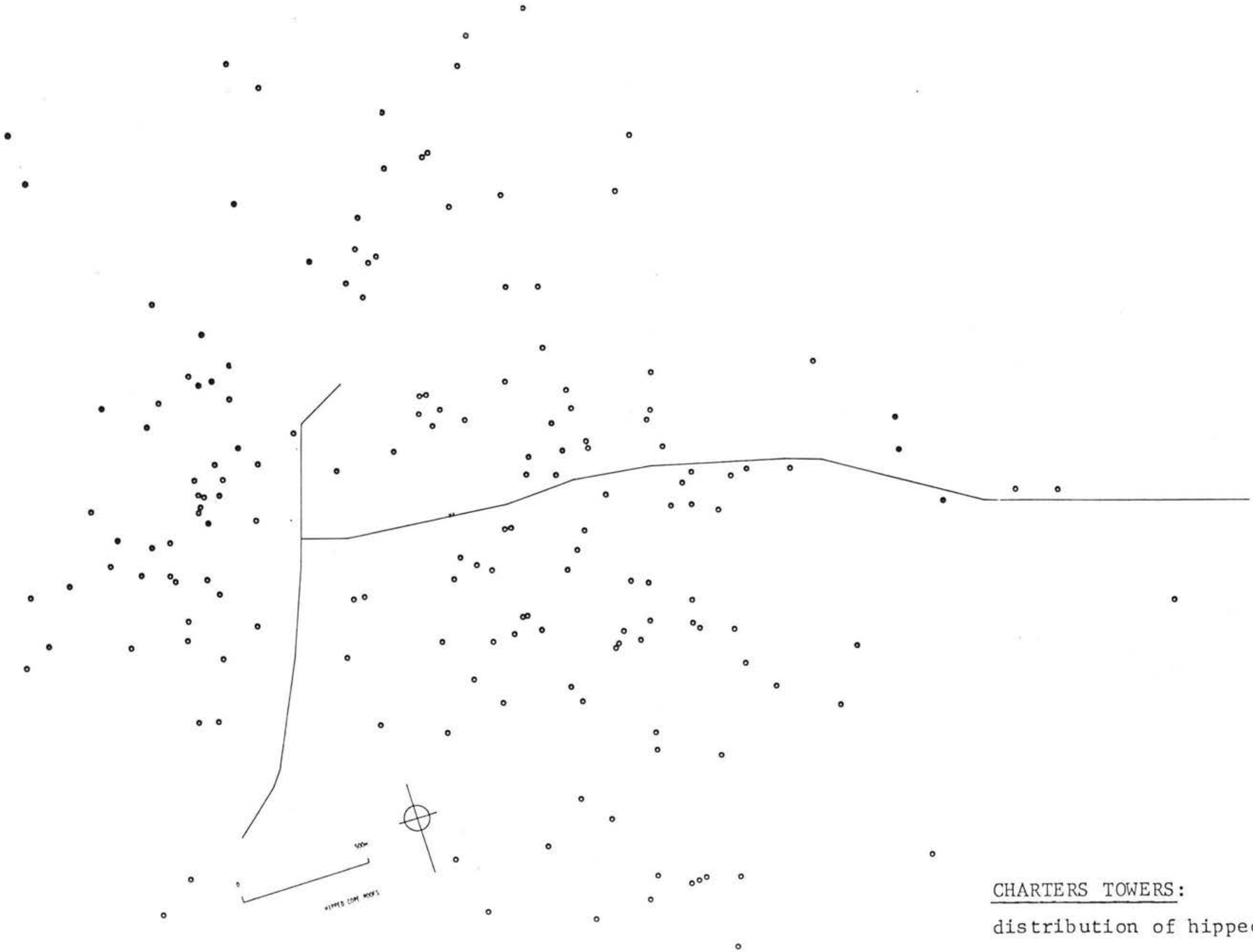
Charters Towers declined steadily from 1901 onward. The deeper mines reached depths of about 900m, and working costs became disproportionately high. The field wound down slowly until 1910, when there came a sudden downturn in population. The last major mine closed in 1919. Since that period of decline there has been a substantial reduction in the building stock of the town, and there is reason to suppose that a small proportion of Charters Towers houses are still extant in other towns. However. the decline of Charters Towers was only partial, for the economy of the city was sufficiently complex to withstand the loss of mining, and the settlement continued to function as a service centre for pastoral industry and railways. The extension of the railway westward, reaching Cloncurry in 1909, and Mount Isa in

CHARTERS TOWERS:

distribution of pyramid roofs

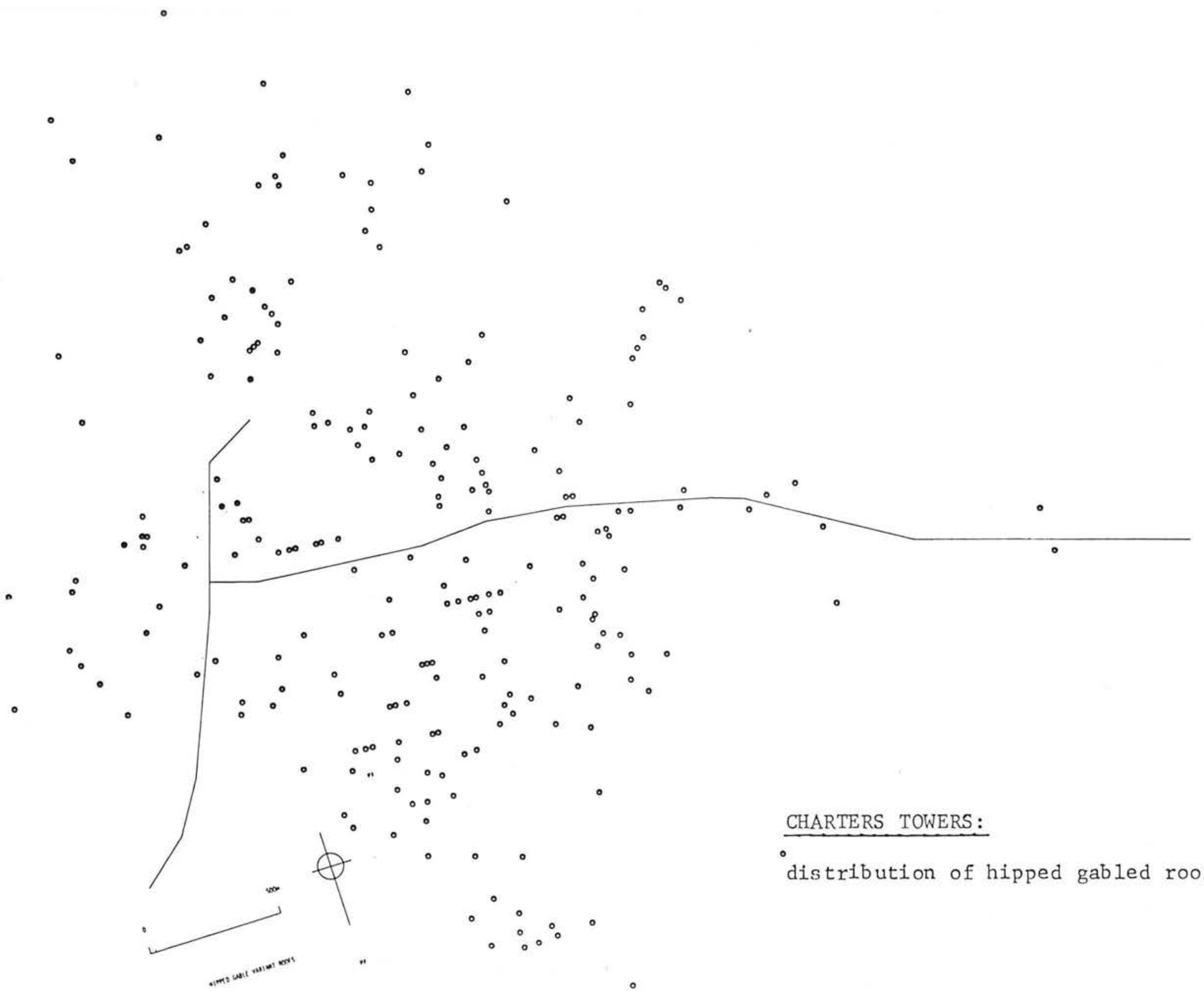
CHARTERS TOWERS:

distribution of gabled roofs



CHARTERS TOWERS:

distribution of hipped roofs



CHARTERS TOWERS:

distribution of hipped gabled roofs

1929, has contributed to Charters Towers' survival.

Perhaps the most remarkable aspect of Charters Towers' survival is its successful adaption to a new major industry, education. From 1919 onward a number of boarding schools were established, making the city a significant centre for secondary education in Queensland, and contributing substantially to the local economy until the present. This transformation of the staple industry was apparently a calculated local initiative as the mining industry wound down, and its success can be attributed to a growing demand for secondary education on the part of a scattered rural population, good railway communication with large areas of the state, the availability of large houses and other buildings at low cost, and Charters Towers' reputation for having a healthy upland climate.

Charters Towers remains the most impressive built environment of the North Queensland mining era, although, unlike Ravenswood's, the evidence of mining in the town has been almost entirely eradicated. Mine stacks and headframes were apparently demolished as hazards to aerial navigation during the second world war, when American forces were based in the area, and machinery was collected as scrap. The mullock dumps were used for fill and railway ballast as recently as the 1960's. Only the mill tailings remain as conspicious relics of mining industry. The two principal streets of the business area, Mosman and Gill, are lined for a distance of several hundred metres with substantial masonry buildings built in the prosperity phase between 1885 and the early twentieth century, and have only recently begun to suffer the inroads of demolition and replacement. Three banking chambers, the Post Office, Ross' building, the Royal Arcade housing the stock exchange, and the *Northern Miner* office are two-storied, and these and the majority of other commercial premises are styled on late Victorian classical lines in brick with concrete rendering and detail. Daking Smith's emporium (1909) is a most distinctive late building in exposed brick.

Around this core, the urban area, with a population of about 8,000, spreads in an irregular mass 5km from east to west and 3km from north to south. The central grid section of the city is completely built up, but in outlying areas the houses are more widely spaced, with evidence of previous occupation between them. The greatest spread of scattered houses today probably closely approximates the maximum extent of contiguous settlement at Charters Towers' peak about 1900.

About six surviving houses in Charters Towers might be described as built in the grand style, although most have been reduced or altered by renovation. *Thornburgh* and *Yelvertoft* are now boarding schools, and considerably altered in appearance. The best preserved grand house is *Ay ot*, two storied in exposed frame timber.

Field surveys in Charters Towers identified 393 pyramid-roofed four-roomed houses and 512 two-roomed cottages in 1978, in addition to 212 hipped-gabled houses, many of them probably built after the period under study. The proportion of two-roomed cottages is higher than in other substantial North Queensland towns; it approximates more closely their significance in other mining towns, but these are all so small as to make comparison meaningless.

Charters Towers' houses are slightly more elaborate in detail than those of most other mining towns. 152 houses in the town have roof ventilators, for example; while this is only 15% of the houses of the city, they nevertheless constitute 62% of all roof ventilators in the region. Complex forms of verandah iron curvature are more common in Charters Towers than elsewhere. Bullnose and ogee iron are quite rare in other towns, but there are 251 bullnose and 34 ogee verandahs in the city, 89% and 94% of the total examples in the region of those respective types. The verandah eave is also a characteristic Charters Towers device, appearing on nearly a third of the houses surveyed, and other elements such as sheetmetal acroteria on guttering and verandah brackets seem disproportionately common.

This relative elaboration of Charters Towers' houses might be a reflection of building fashions during the prosperity phase, but it is necessary also to consider the subsequent influences on modification. The principal settlements in the region whose scale invites comparison with Charters Towers in early building stock are Townsville and Cairns. Both are coastal cities with more humid climates, subject to cyclones; both have undergone steady economic growth in the twentieth century. It is quite likely that the greater prevalence of sheetmetal and fretsawn elements on Charters Towers houses may simply reflect less pressure for renovation and modification because of the absence of an economic upturn, less corrosion of metal and fungal decay of wood because of the drier climate, and less wind damage; Charters Towers is the only major urban centre of the region which has never experienced a cyclone.

As the largest and most prosperous mining town in North Queensland, Charters Towers' development is clearly reflected in the surviving houses. They are more numerous and occupy a greater area than those of any other mining settlement; they also include a few examples of relatively grand housing, absent from most other towns in the region. Charters Towers is also notable for a slightly greater elaboration of its buildings, a reflection either of greater prosperity or of less modification since construction. However, the city's high proportion of lower income houses illustrates that the prosperity of such a community was by no means evenly distributed, and suggests that a large number of such small rented houses might be expected in all successful mining towns, perhaps in direct proportion to their prosperity.

Townsville

Now the largest city of the region, Townsville has undergone steady growth with no serious setback since its establishment in 1864. In the circumstances of its early development and its subsequent diversification of economic function, it closely resembles Rockhampton, Queensland's other major regional city.[92] Townsville was radically different from other North Queensland ports in not being a government settlement from the outset; Bowen, Wickham, Cardwell, Cairns, Cooktown, Somerset, Thursday Island, Normanton and Burketown

[92] L.McDonald, *Rockhampton: a history of city and district*, St. Lucia 1981.

were all founded by official parties acting for the colonial government, but Townsville was initially conceived as a private entrepot for the firm of Towns and Company, active in grazing and agriculture in the North Kennedy district. Correspondence between the company's principals suggests that they intended to monopolise land tenure and trade, but in these objects they were frustrated by the government's refusal to grant land on the terms sought.[93]

The location of the port was hardly ideal - generations of journalists sneered at its muddy estuary - but access to the hinterland was easier than at virtually any other point on the Queensland coast, and the deficiencies of the port were soon overcome by the construction of an artificial harbour. While Black's choice of site may seem arbitrary, a process akin to natural selection has vindicated his judgment. Two other ports in the locality, Wickham and Cardwell, were established within months of Townsville. Wickham proved vulnerable to flooding and was abandoned entirely. Cardwell's access to the inland was impracticable,[94] and it never became more than a township. Townsville's site had neither of these disadvantages; it had at least a sheltered roadstead, and functioned adequately as a lighterage port in its early years.

Townsville quickly became involved as the port for mineral discoveries in its hinterland, although it was in direct competition with Bowen, 170km south, and early development was slow. The benefits of Cape River, Gilberton, Ravenswood and the Etheridge were at first shared between the two towns, but the discovery of Charters Towers saw Townsville's ascendancy, due in part to the convoluted course of the

[93] Doherty, *Townsville Book*.

[94] Kennedy's disastrous expedition of 1848 had already established this point at the cost of 10 lives. The siting of Cardwell to provide access to the Valley of Lagoons, in which the Premier, Herbert, held a financial interest, was simply jobbery.

Burdekin river, which necessitated two crossings west of Bowen, and only one from Townsville. Townsville's population, which had remained at roughly the level of Bowen's, first rose sharply in 1875. With the construction of the Charters Towers railway, harbour works, and the rise of the sugar industry, Townsville boomed. The population jumped from 4,000 in 1881 to 12,000 in 1887.[95]

Townsville was surveyed in 1865, and the earliest area occupied was a few blocks in the triangle between Melton Hill, the mouth of Ross Creek and the coast. The original township, recorded in a number of photographs, clearly reflects its function as a coastal trading centre; it consisted largely of rows of gabled timber shops, hotels and banks, with scarcely a house to be seen. By 1873 the settlement was expanding to the west and north of Melton Hill, and by 1881 had entirely occupied the basin between Melton, Stanton and Castle hills, and spread across the creek to Ross Island.

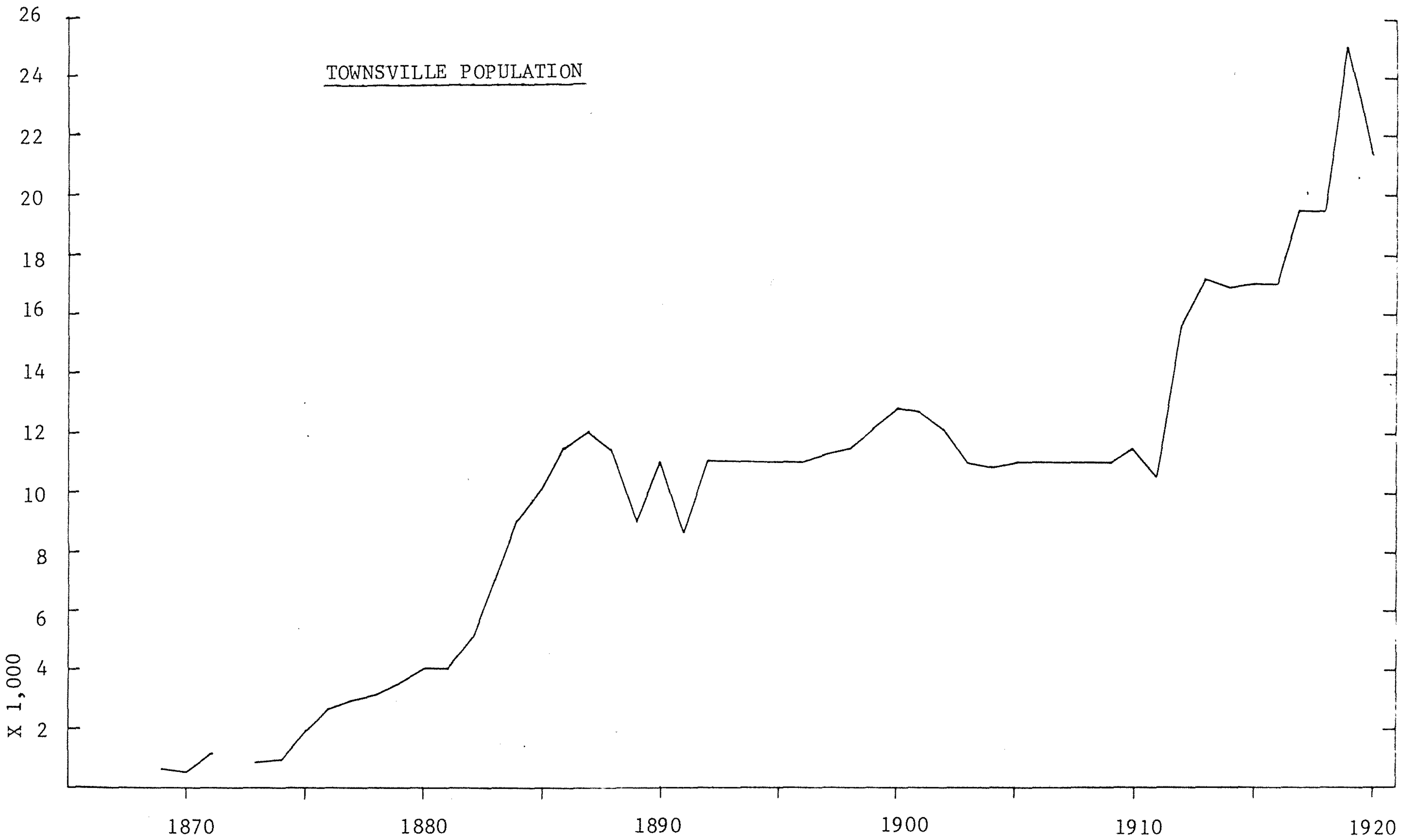
Development to that time had already involved two or even three generations of buildings. Great damage had been wrought by a cyclone in 1867, the first to affect a North Queensland urban area: "houses fell without notice and sheets of iron roofing were flying about for hours",[96] and the main business centre was devastated by fires on three occasions.[97] The surveyed area was further extended in the 1880's and early 1890's, first encircling Castle Hill, and after the construction of the Victoria Bridge in 1889, closer settlement commenced on Ross island.[98]

[95] *Statistics of Queensland.*

[96] Acting Manager, Bank of New South Wales 9 March 1867. Typescript held by Bank of New South Wales, Townsville.

[97] In September 1877, August 1881 and September 1881.

[98] Q.S.A. holds survey plans of Townsville dated 1884, 1891 and 1893, showing these extensions.


TOWNSVILLE POPULATION
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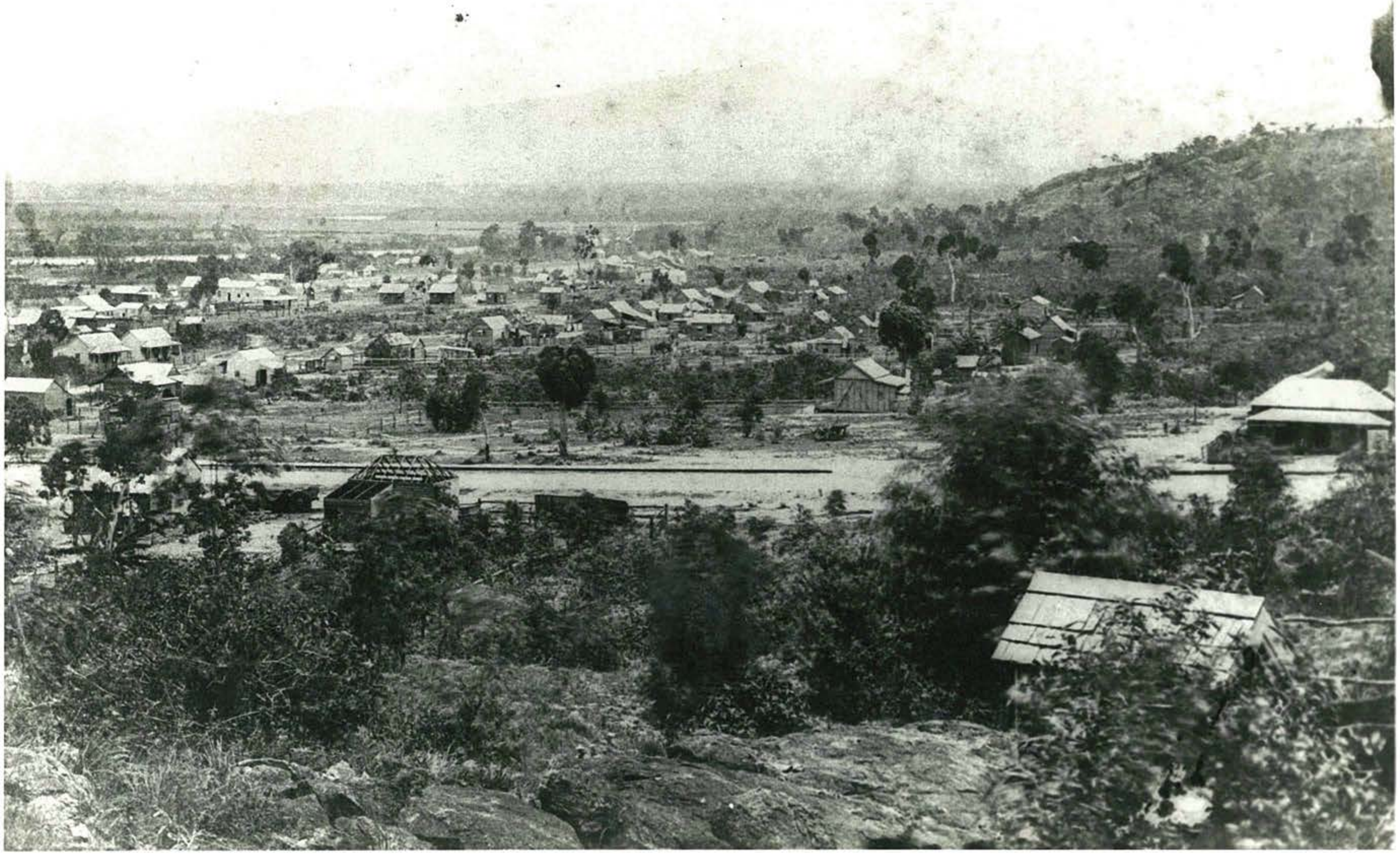


Townsville with Denham Street in foreground, December 1873. (John Oxley Library)

Sturt Street, Townsville, 1881. (John Oxley Library)

From the mid-1880's, Townsville was experiencing a sustained building boom, and construction had become a major industry. Besides the large industrial plants of the Rooney firms, one other sawmill, five timber merchants, ten building firms and five architects advertised in the *Post Office Directory* 1885-86.

> Although traces of a bye-gone time remain to remind us of the "day of small things", and to mar the symmetery of the streets, these blots are almost daily disappearing, and with them passes away too their ancient fame and all the associations which their homely fronts conjured up. So rapidly are new and handsome edifices replacing the buildings in which the "pioneers of the wilderness" laboured and lived that it will be impossible to recognise the Townsville of five or six years aso in the well-built city that will be in existence in but a short time to come. Merchants and tradespeople are quickly having the knowledge brought home to them that if a business is to thrive it must be kept abreast of the progress of the place, and consequently they are vieing with each other for excellence in their business premises. Perhaps the greatest change in appearance has been effected in Flinders street by the erection of buildings on the Ross Creek side of the street, shutting out from view the slimy mudbanks through which that by no means limpid stream "flows onward to the sea". An almost equal change, however, is traceable to the handsome substantial appearance of the numerous brick edifices on the other side of Flinders Street. Those of our readers whose residence in Townsville is not of sufficient length to allow them to remember how Flinders street looked in 1880, can perhaps form an approximate idea from such of the old buildings as still remain. Successive fires have cleared away most of the blocks of tumble-down wooden shanties that then lined the north side of Flinders street, between Wickham street and Denham street, and almost all the rest have been pulled down by their owners in order to make the most of the valuable sites for business purposes. 99

[99] *Townsville Herald* 24 December 1887.

The extension of the suburbs was facilitated by the provision of services: reticulated water and gas by 1885, and a plethora of horse-drawn omnibuses.[100] These encouraged the construction of houses in the outer suburbs of Ross Island, Hermit Park, German Gardens, West End and North Ward, beyond the municipal boundaries.[101] Parts of Townsville still show a more distinct clustering of specific house types than is apparent in Charters Towers. Evidently North Ward, Stanton Hill and part of Hermit Park were considered desirable suburbs by the moderately well-to-do, and have a higher proportion of large four-roomed houses with encircling verandahs. Those in North Ward show a marked concentration in the area bounded by Paxton, Landsborough, Stanley and Gregory streets, surveyed between 1891 and 1893.

Cyclone damage in 1896 and 1903 did little to slow Townsville's growth:

> Some idea of the briskness in the building and timber trade here may be gathered from the fact that since the beginning of the year the number of new houses erected totals 100, and the number of houses rebuilt since the cyclone [*Sigma*, 26 January 1896] number thirty-four. These figures are taken from the records of the Municipal Council, which of course, do not take in account Hermit Park or any of the suburbs. Houses are still going up in every direction, and very few have long to wait without tenants. [102]

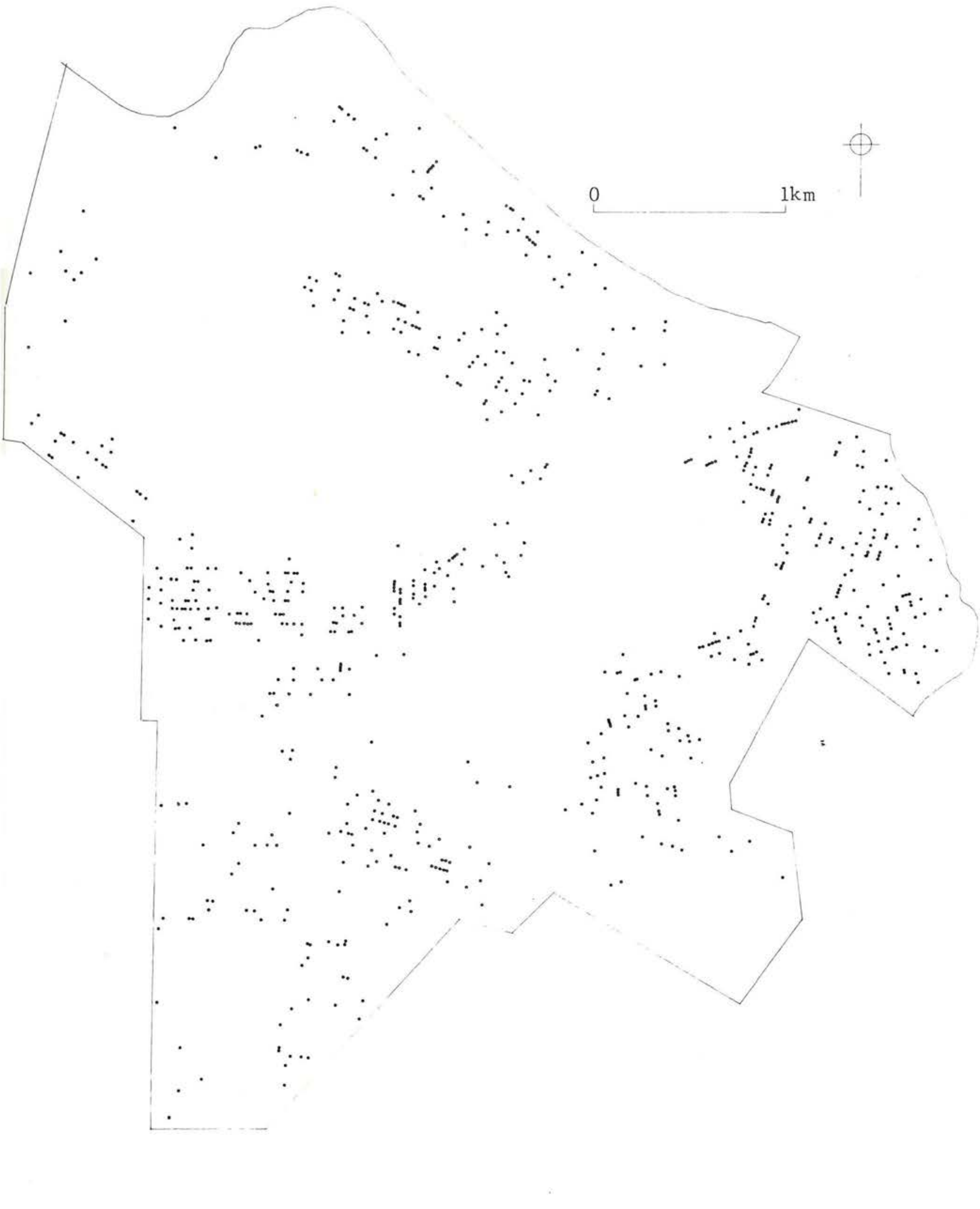
It seems generally true that a prosperous or stable settlement recovers quickly from even the most severe cyclone damage. Despite the battering of *Sigma* and *Leonta*, photographs of Townsville in the early twentieth century show little trace of the damage; buildings were quickly re-

[100] Nine "Cab and 'Bus Proprietors" are listed in the *P.O.D.* 1888.

[101] The population of Townsville remains constant in *Statistics of Queensland* from 1885 to 1910, as the contiguous urban area had exceeded the boundaries of the municipality.

[102] *Queenslander* 31 October 1896.

TOWNSVILLE:
distribution of pyramid roofs




TOWNSVILLE:
distribution of hipped and gabled roofs
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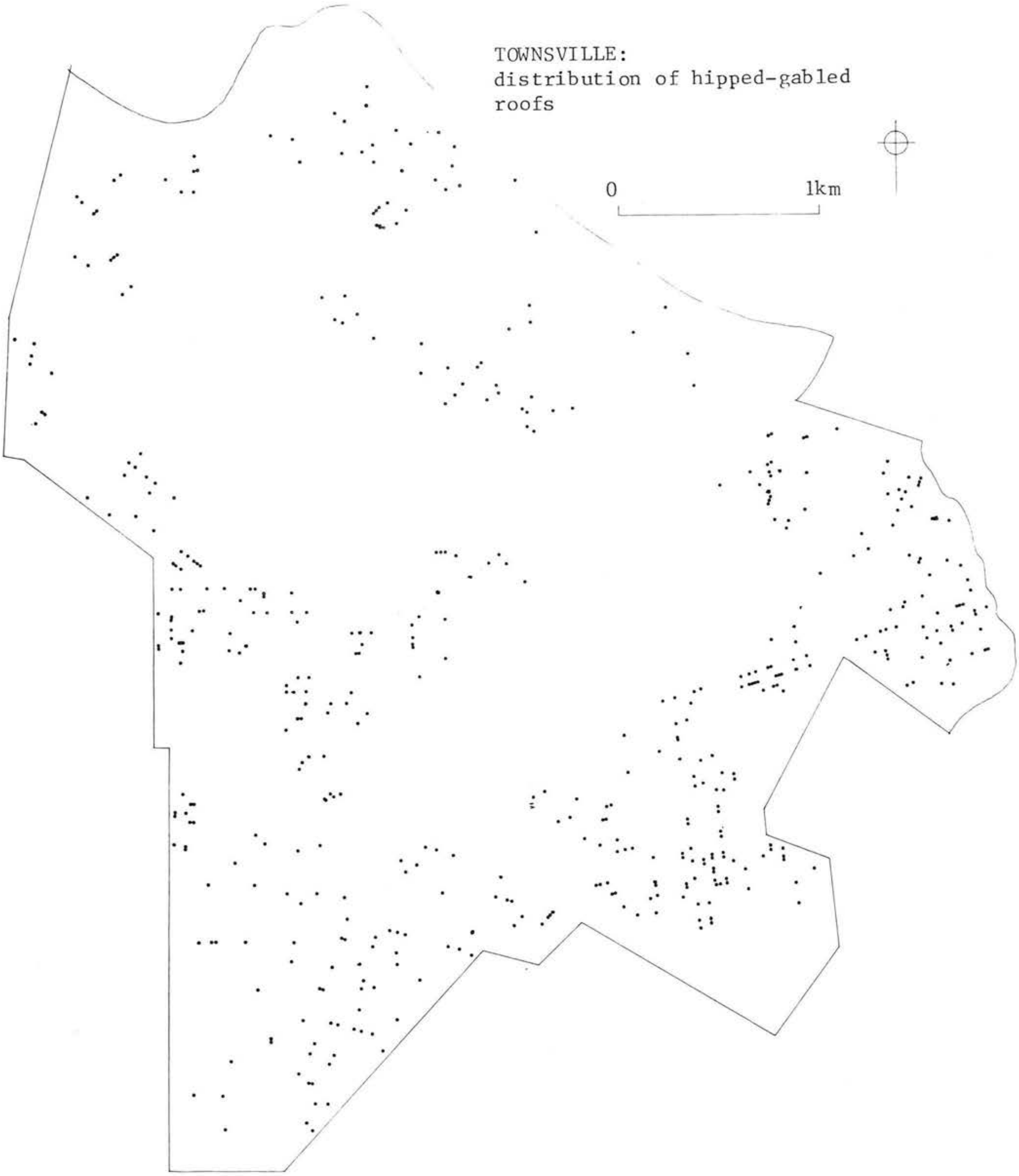
TOWNSVILLE:
distribution of hipped-gabled roofs



stored or replaced, and no setback in confidence was evident. Indeed the decade following *Leonta* was a time of increased confidence, and a number of the more impressive buildings of the business area - *Buchanan's*, the *Great Northern* and *Queen's* hotels and Samuel Allen's - date from that time. The effects of a cyclone in a declining settlement are undoubtedly more severe. The Cooktown cyclone of 1907 and that of Port Douglas in 1911 seem to have hastened the decay of those towns, as economic circumstances did not encourage the capital investment involved in repairs.

Townsville's development in the twentieth century has been uneven, but although there have been periods of stagnation, the city has never experienced decline. The older quarter has been spared to a great extent by outward growth. The suburbs have progressively expanded and the central business area has moved steadily westward since the 1860's, so that there has not been the same demand for new construction on previously occupied sites that has characterised other towns in the region. Major redevelopment is a very recent phenomenon, but now appears likely to cause considerable change to building stock in the central city within a few years.

The business area includes four buildings dating from the 1870's and a much greater number from the 1880's. The building boom the *Townsville Herald* celebrated in 1887 is evident in the eastern end of Flinders street and the commercial buildings of Sturt and Denham streets. However, only about twenty houses now survive in the basin which constituted most of the urban area in 1881; several groups of cottages are extant from larger areas of early twentieth century rental housing.

In the surrounding suburbs the survey identified 1,614 houses provisionally dated from the period under study, 707 of them pyramid-roofed four-roomed houses and 324 two-roomed cottages. A large number, 491, are hipped-gabled, and many of these are probably of later construction. Particular concentrations of two-roomed cottages occur in South Townsville and West End, within walking distance of the city centre.

A few characteristics of Townsville's houses are noteable; the city shares with Charters Towers an unusually high proportion of roof ventilators, 73 examples, 4.5% of the local houses, and 32% of the regional total.[103] The number of houses with encircling verandahs is strikingly high, nearly 50% of the region's examples of four-roomed houses with verandahs on all sides being in Townsville. Corrugated iron wall cladding is quite rare, window shades and wooden verandah louvres very common.

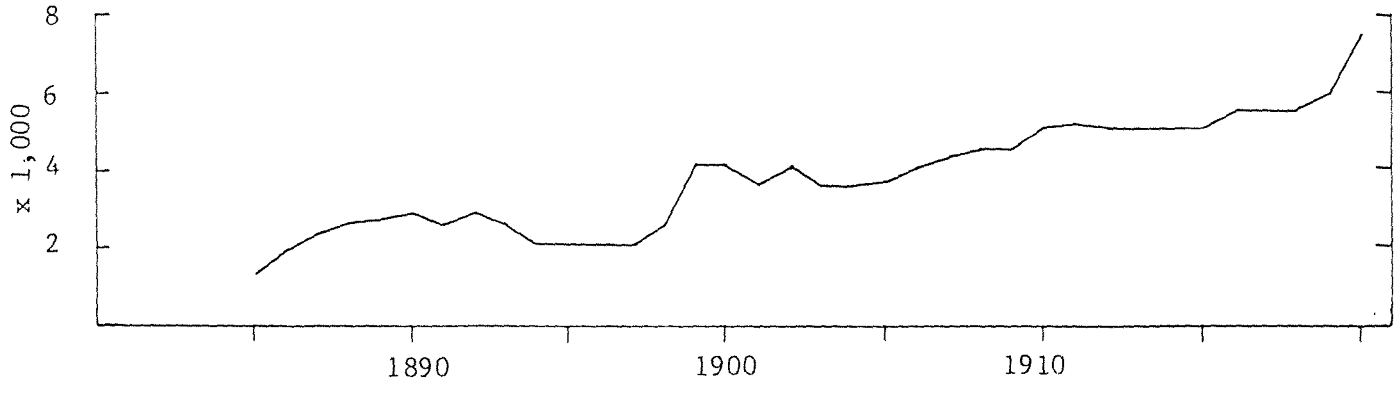
Townsville, besides being the largest urban centre of this survey, is also the best-preserved, in the sense of retaining something of its early urban structure despite considerable expansion. Unlike Charters Towers, where house-forms are evenly distributed, Townsville has identifiable pockets where housing is fairly uniform, expressing periods of rapid settlement by people with a generally similar income level in the late nineteenth and early twentieth centuries. Townsville shares with Charters Towers a few local building details such as roof ventilators, cast iron balustrading and certain fretwork designs, which are less common elsewhere, suggesting there was some tendency toward an identifiable local tradition in these two cities. However, Townsville's diverse economy throughout its history must prevent its being linked too closely with Charters Towers in seeking economic origins for building developments.

Cairns

Now the second largest urban centre in the region, Cairns contrasts strongly with Townsville in its early development and in the nature of its surviving buildings. Whereas Townsville's path was steadily upward from 1864 to 1914, Cairns' development was hesitant in the extreme. The port was established in 1876 as a direct response

[103]This statement requires explanation. Townsville has 40% of the houses surveyed, and thus 32% seems quite low, except that Charters Towers and Townsville between have almost all the roof ventilators in the region: most other towns have none.

CAIRNS POPULATION



to the discovery of the Hodgkinson goldfield, originally regarded as an offshoot of the Palmer, but too far south for convenient access from Cooktown. The location of Cairns was a simple bureacratic decision, for it was one of the potential town sites indicated by G.E. Dalrymple in his report on the northeast coast of Queensland in 1873.[104]

Despite the convenience evident to an official in Brisbane observing the neat rectangle on Dalrymple's map, Trinity Bay was obstructed by a 1000m range covered in rainforest, and the site itself was a tidal swamp in which parallel sand dunes rose from mangroves. A small community of merchants and government officials gathered in this dank, malarial setting, but the majority of those wanting access to the Hodgkinson settled at Smithfield, some miles inland on the bank of the Barron river, or at Port Douglas, 60km north, whence a dray road was built to the Hodgkinson in 1877. Smithfield, proving vulnerable to flooding, was abandoned within a few years.[105] But Port Douglas' advantages of inland communication were in the short term decisive; Cairns was not accessible by wheeled vehicle, and languished. Even the opening of the Herberton tin field in 1880 did little to advance Cairns, for the road from that field crossed the range south of the mangrove estuary that constituted Cairns' harbour and terminated at Redbank (or Edithvale).

Some trade came from the mining fields and from the nascent sugar industry, but Cairns in the 1880's was a miserable place, and visitors vied amongst themselves in penning insults:

> Cairns is a very pretty place, I mean the surroundings, not the township. The latter is miserable, all situated in the midst of loose black sand, which makes you dirty as

[104] G.E. Dalrymple, "Narrative and Reports of the Queensland North-East Coast Expedition", *Q.V. & P.* 1874, *2*, after p. 667.

[105] Contrary to folklore, the town was not washed away: see Jones, *Trinity Phoenix*, pp. 124-25.

> soon as you go into it. There are just a few good houses and all the rest mere humpies, that will soon have to come down if the town advances as it is sure to do. [106]

A visiting journalist was less restrained, advising, "get to Cairns as late as possible at night, and get out of Cairns as early as possible next morning....Cairns is the nastiest place I know".[107] And even the tolerant Garran made his feelings clear:

> The town of Cairns as yet scarcely merits a description. The streets are surveyed of ample width, and one boulevard of stores and public houses is surrounded by scattered residences of modest construction; practically, not a single yard of streetway is yet formed. All the buildings are of wood, and with the exception of some of the government structures, utility and economy alone have been considered, elegance being reserved for a later development. [108]

Cairns was rescued from insignificance by commencement of the Herberton railway, an engineering feat of some magnitude along the face of the Barron gorge, which arrived at Mareeba in 1893 and was halted by depression. But the Mareeba line intersected the road from Herberton to Port Douglas, and Cairns began to rise at Port Douglas' expense from that year. The combined impetus of the sugar industry, mining and the economic boost of railway construction itself led to a growth in population, and the establishment of a business community. Cairns had certainly entered its stability phase with the commencement of railway works in 1886.

[106] Mary Southerden to Sarah Kingsford 5 January 1884, in Collinson, *More About Cairns*, p. 80.

[107] *Queenslander* 16 January 1886.

[108] Garran, *Picturesque Atlas*, vol. 2, p. 400.

The town survey was extended in that year, and again in 1893.[109] There was no question of a grid plan in Cairns; the survey was controlled by the sand ridges paralleling the foreshore, which provided the only possible foundations for roads and houses. Construction on stumps was mandatory in Cairns, for almost every building extended backward over brown mud which was inundated in every wet season.

Major growth came only in the twentieth century; it was created largely by railway extensions and mining. The Mareeba railway of 1893 had taken a proportion of the Hodgkinson and Herberton traffic away from Port Douglas and Redbank, but the period 1900-1910 saw the rise of base metal mining. High copper prices encouraged the formation of new companies, and private railways were built outward from the government railhead to Chillagoe and Mungana in 1901, Mount Garnet and Stannary Hills in 1902, Mount Molloy in 1904 and Irvinebank in 1907. The most daring extension was completed in 1910, when the Chillagoe company extended their line south to Einasleigh and Forsayth on the Etheridge field, severing that district from Townsville, its port since 1870. Such was Townsville's prosperity and self-confidence by that time that this capture passed almost unnoticed there. This and further railway construction into the 1920's completely transformed Cairns into a major port serving a variety of industries even more diverse than those of Townsville's hinterland.

The implications of this retarded development for building construction in Cairns have left the city with a range of houses quite distinct from those of any other northern settlement. Cramped by its location, Cairns did not expand like Townsville and Charters Towers; successive generations of houses were built on the same sites. The public and commercial buildings of Cairns are mostly of twentieth century construction; the earliest house forms date from the turn of the century and railway expansion. Cairns' single most common house form is the elevated hipped-gabled four-roomed house, a twentieth

[109] Q.S.A. holds survey plans dated 1886 and 1893. The earlier of these, but dated 1885, also appears in Collinson, *Early Days*, p. 82.

century form. There are 487 of these, 57% of the 861 houses surveyed, although it is quite certain that many date from after 1920. By contrast, there are 212 pyramid-roofed four-roomed houses and only 119 two-roomed cottages. Forms and construction methods associated with the nineteenth century are relatively rare; indeed it is by no means certain that any house extant in the early Cairns urban area was built on that site before 1900. (There are older houses removed from other settlements.)

Details reflect this late date of expansion, although some are apparently influenced by simple local preference. Cairns is distinctive in having a high proportion of enclosed verandahs; about 45% of its houses have boarded balustrades and casement windows. Exposed framing is found on only 12% of its houses, and a far greater number are externally clad with boards or iron sheeting. Even in the step-roofed four-roomed houses, curved verandah iron is almost unknown; 99% of Cairns houses have straight iron. Perhaps the most conspicuous local characteristic is the prevalence of elevated houses: 82% are high-set, accounting for 48% of the region's total. The houses of Cairns are quite distinctive, and their distinctiveness can be attributed directly to the settlement's evolution. That Cairns was being stigmatised by visitors as a primitive ephemeral township at the very time that Townsville and Charters Towers were entering their periods of greatest prosperity indicates how severely its development was retarded. The extent of Cairns' transport difficulties are often overlooked; even local historians seem not to understand the implications of the complete lack of wheeled vehicle access to Cairns before the 1890's. Cairns began to grow only when Charters Towers was at its peak, and it continued to grow rapidly into the 1920's. Thus the majority of the city's houses represent only the very end of the period covered here, and they express their time of construction in their roofs and their verandahs. The marked prevalence of elevated houses in Cairns may also reflect their early twentieth century origins, but was certainly influenced by the settlement's lingering drainage problems.

* * * * * * * *

The relationship between historical events and today's physical evidence is not simple; indeed there are many instances in which the construction of buildings took a path which seems perversely opposed to the influences of the time, and others in which apparently similar causes have given rise to quite different results. It is not easy to explain why the wealth of the Palmer did not give rise to a substantial settlement. Conventional explanations such as isolation, the lack of a railway and absence of close rural settlement may be offered, but each must be tested against other cases such as Georgetown, where all these circumstances hold true, and which survives as a viable town more than 110 years after the discovery of gold. Conversely, it is difficult to understand why Ravenswood has survived, lacking an economic staple and not even serving as a wayside stop on a through road. It is sometimes suggested that the nucleus of irremovable brick business premises has been sufficient to anchor the community, but this overlooks the fact that Thornborough once had nearly as many brick buildings as Ravenswood, and they have vanished almost without trace; ironically, the two buildings standing in Thornborough today are of iron. The process of housing construction in Charters Towers during its period of greatest prosperity calls into question the widely-held notion of goldfield boom style architecture. There is good reason to believe that the years of greatest expansion were those in which the cheapest forms of workers' housing were erected in largest numbers.

Even the most careful compilation of evidence in all its forms cannot provide an entirely convincing overall image of a nineteenth century mining settlement. In Ravenswood and in parts of Charters Towers and Townsville there are streets where the visitor may easily believe he is seeing just what an earlier generation saw in 1890 or 1910. Leaving aside the intrusion of paved roads, electric transmission poles and aluminium awnings, it is still possible to find small areas where everything visible dates from that period; but the impression is very misleading, for nowhere does one see everything that was there at the time.

The landscape utterly stripped of trees, the dust constantly blown from the roads, and the sights and smells resulting from the ubiquity of horse-drawn traffic are gone, as are the plumes of smoke from wood-fired steam engines, the endless clamour of crushing machinery, and the acrid fumes from the pyrites works. Nothing is left in Charters Towers of the headframes, smokestacks and mullock heaps that for two generations formed part of nearly every vista. In Townsville the handsome masonry banks and shipping offices of lower Flinders Street are no longer interspersed with the painted timber hoardings of the 1890's, nor overlooked by the cluster of ships' masts that appear in so many photographs. In Ravenswood the buildings that remain are isolated fragments of a much larger town, and the intervening patches of dense exotic shrubs that add romance for the modern tourist were never seen by the miners. No effort of the imagination can satisfactorily reinstate these vanished elements; even the least altered of settlements provides much scope for patient reconstruction by the historian.

CONCLUSION

The North Queensland house, whose distinctiveness has long attracted comment from visitors, achieved its greatest popularity during the three decades after 1880. Its characteristic features are the use of timber construction throughout, usually in the form of conspicuous exposed stud-framed walls, elevation above ground on timber stumps, a limited range of simple geometric roof-forms which express the floorplan, the exclusive use of corrugated iron for roofing, and the addition of a small range of sheetmetal and fretwork decorative devices. No single feature of this house is peculiar to North Queensland; all are found elsewhere in Australia, some in other parts of the world. Its distinctiveness arises from the combination of a number of features into a recognizable type which is repeated with little variation. Examples are found throughout the north, but the greatest number are concentrated in Charters Towers and Townsville. It is not coincidence that the period of dominance by these houses corresponds exactly to that in which mining most strongly dominated the North Queensland economy, or that they are found most abundantly in the two cities that constituted the major axis of the region's mining industry.

Conventional explanations offered for the development of these houses have involved the adoption of the American balloon frame during the southern Australian gold rushes, and the need for special measures in housing to counter an unusually oppressive climate. Neither explanation is satisfactory. The historical treatment of the balloon frame in the USA leaves much doubt about its origins, and even its precise nature is unclear. There is no evidence of its adoption in the Californian goldrushes, nor of its subsequent transmission to Australia. The balloon frame's influence in Australia has never been more than a hypothesis put forward in the belief that no British antecedent existed. This has now been shown to be false; the light stud frame of sawn softwood was in common use in southeastern England before Australia was settled by Europeans, and had been adopted in New Zealand at least a decade before the goldrushes began.

The influence of climatic adaption, as Sumner showed, was much less than folklore would have us believe. The rigours of the North

Queensland climate have been overstated in past decades, and indeed many features of northern houses would only be practicable in a relatively benign climate. Insofar as the North Queensland house has evolved in response to the climate, it has done so, not by requiring the addition of features absent elsewhere, but rather by the omission of features essential in cooler climates. One distinctive element of the northern house, its elevation above ground, has received only the most cursory attention from earlier writers, and both its time of adoption and the motivations behind it are now shown in quite a different light.

The most convincing explanations for the combination of features in North Queensland houses are found not in the physical environment but in the economy of the region. Dominated by an industry in which uncertaintv and transience were all-pervading, and confronted by endemically high transport and labour costs, North Queensland timber merchants and builders responded by selecting forms and techniques which conformed to the relatively few climatic and social requirements of their clients, while keeping expense to a minimum. Their construction techniques involved the cheap mass-production of components, kept light to reduce transport cost and facilitate rapid construction. Houses were simplified, standardised and made to appear distinctive largely by what was discarded from practices in use elsewhere.

Once a regional method of building was established, it remained orthodox practice for as long as those economic conditions prevailed, undergoing substantial revision only as mining underwent a downturn in the early twentieth century. Indeed, there is good evidence that houses conforming to the regional pattern were built as a matter of choice by people who could well have afforded greater expense.

Whether the thirty-year ascendancy of the North Queensland house constituted a vernacular development is entirely a matter of definition. Certainly, in Brunskill's understanding of the term, it did not. It was, however, undoubtedly a period in which a set of characteristics derived from elsewhere was habitually combined into a house unlike those built in other parts of Australia, clearly an identifiable regional type, evolved by a process of selection to fulfil the needs of a particular time and place.

Appendixes

Appendix A - Field Survey Methods

At an early stage of research it was decided that a major source of evidence for this study would be the physical structure and details of the extant houses of the period. A search of the relevant literature disclosed no widely-adopted procedure for such a survey. Published accounts vary in the methodology they describe, but all were found either intrinsically unsatisfactory, insufficiently detailed or simply irrelevant to the range of houses encountered in North Queensland towns.

Sumner's detailed field observations in North Queensland were confined to 19 extant buildings, and did not attempt a broad typology of houseforms. However, she also undertook a useful more general study of 330 illustrations of houses in Fox's *History of Queensland*, classifying them according to size, elevation, wall and roof material, verandah detail, roof form, nature of kitchen, other details and gardens.[1] A study of the former mining town of Gympie included plans of the typological distribution of early houses, but the survey is seriously marred by a rather arbitrary division of houseforms into "skillion-roofed", "divided-roofed" and "other".[2]

Studies further afield offer little guidance, for many deal with a shorter or longer time scale and a greater diversity of buildings than is attempted here.[3] Lewis' survey of Yackandandah, for example, is an extremely lucid typological analysis, but almost entirely irrelevant in North Queensland before 1920.[4] Work done outside the Australian

[1] Sumner, *Settlers & Habitat*, pp. 17-23.

[2] J.L. Spencer, Relict Elements in the Townscape of Gympie, BA Hons thesis, University of Queensland 1967, pp. 42-47. The accompanying photographs suggest the division is essentially into gabled two-roomed cottages, stepped pyramid-roofed four-roomed houses and "other".

[3] See M.B. McCabe, "Brisbane House Types: a tool for geographical analysis", *Queensland Geographical Journal 3*, 1975, pp. 23-32; R.J. Solomon, "Procedures in Townscape Analysis", *Annals of the Association of American Geographers 56*, 1966, pp. 254-268, dealing chiefly with Georgian Hobart.

[4] M. Lewis, "Typological Analysis of Building Forms in Conservation Areas" in Lewis & A. Blake (eds.), *Urban Conservation*, University of Melbourne 1976, pp. 23-39.

continent offers even less assistance.[5] Not only is there no procedure in print which might usefully be applied in North Queensland towns, but there seems also to be little in common among the methods which have been reported as successful elsewhere.

Accordingly, a series of trial surveys were commenced in February 1978 to establish methods appropriate to North Queensland towns. Covering selected urban sections in older suburbs of Townsville, these sought first to record the externally visible forms of small numbers of houses, to identify recurring themes useful in typological analysis. Initially an index card was used for each house, noting its location, roof form, wall materials, foundations, window and verandah details, and the presence of rear extensions or other modifications. A sketch plan and side elevation with rough dimensions were recorded on the reverse of the card. The broad typological division employed in this thesis - into two-roomed and four-roomed core plans, with varying verandah arrangements - became evident early in the trial surveys.

However, it was subsequently decided to expand the details recorded, to include the presence of a roof ventilator, verandah brackets and window shades, and the form of balustrade. This involved repetition of the original survey work. Simultaneously, research funds became available which permitted a photographic record to be made; in each case one or more black and white photographs were taken, and the prints filed with the cards. When it became evident that not only the existence, but the details, of brackets and sheetmetal devices were of interest, a third round of the houses was avoided because the necessary information, and indeed, all the details previously collected, was contained in the photographic record. The process of note-taking in the field had proved unsatisfactory, and was abandoned in favour of a photographic survey.

[5]See for example K.E. Corey, *Urban House Types: a methodological experiment inurban settlement geography*, University of Cininnati 1966, with its useful bibliography of American typological surveys.

There are several arguments against field annotation. The process is very time-consuming, taking at *least* five minutes per house, or over three hours for two urban sections containing 40 houses, exclusive of travelling time. This is a serious problem in field work away from home, when survey time is proportional to accommodation cost. The categories adopted early in a survey inevitably prove to be too broad in some respects, and can be refined only by revisiting the area surveyed. Further, large numbers of decisions made in the field, with all the attendant possibilities of error through fatigue, boredom and distraction, can only be checked by a revisit. The highly standardized house forms of the region also lead to essentially the same information being recorded on a great numbers of cards, creating the dangerous temptation to reduce annotations to an arbitrary shorthand form. On the other hand, a photographic survey greatly reduces the time and accommodation cost of fieldwork, defers classification decisions to more congenial working conditions, permits greater refinement of the survey at a later date, and allows an independent check on the accuracy of any judgment made earlier.

The methodology eventually adopted for photographic surveys commenced with a study of the current town plan, early survey plans and recent aerial photographs to determine the likely extent of houses from the period to be surveyed. In larger towns the survey plan was cut into convenient sectors and mounted on card. Each sector was then visited by car and inspected systematically from the opposite road verge, usually by driving clockwise around every block in a logical block sequence.[6] Each house appearing to date from the period under study was photographed one or more times, and a serial number - corresponding to the order of the house on the film - entered in its position on the town plan. This process worked most efficiently

[6]Driving clockwise on the opposite verge puts the houses at the driver's right side, unobstructed by the vehicle and at a convenient range for framing with a medium lens in an average street. Obviously the majority of houses in the survey were in quiet suburban streets.

when the driver was also the photographer, and could thus position the car precisely for each photograph, and was accompanied by a second person who recorded the serial number of the house, and also used the plan to navigate, ensuring systematic coverage. In quiet areas, most houses were photographed satisfactorily from a car window, and two people working in this way were able to survey 200 houses in a day.[7] A 35mm camera and 125 ASA black and white film were used, initially with a 50mm lens, which is ideal for framing an average house from the opposite verge of a standard two-chain street. Subsequently a 35-100mm zoom lens was adopted to obviate a great deal of walking in unusually wide or narrow streets, or amongst irregularly-positioned houses.

To enable houses to be plotted spatially, it was essential that the sequence of the photographs be preserved, and that it correspond exactly to the serial numbers on the plan. The sequence of multiple rolls of film was recorded by photographing the numbered survey plan at the commencement of each new roll (the highest number shown was the last house on the previous roll), and by repeating the last house on the old roll in the second frame on the new film. A further safeguard against loss of sequence was a running note of film numbers and the house numbers on each film, kept on the margin of the sector plan. Internal sequence within films was provided by the manufacture's negative numbers, although it was found desirable also to have working proof sheets printed in serial order.

The selection of houses to be included in the survey was necessarily subjective. However, when photographic field surveys were commenced in August 1978, sufficient documentary research had been done to establish working criteria. The principal house and roof forms of the period were readily identifiable, and certain details such as sash windows, roof ventilators, window shades, dowel balustrades and exposed stud frames were known to be characteristic of the period under study. When it was uncertain whether a house belonged to the period, it was photographed if it had any two of these features.

[7]It is *not* practical to photograph from a moving car, with a team of three. If it is unavoidable, the fastest possible shutter speed must be used; no saving is made in time, as the recorder cannot keep up with the photographer. If traffic conditions prevent stopping at each house, the survey is best done on foot.

Difficulty arose in two classes of houses: those which had undergone massive external renovation, and those of the type described in this thesis as appearing in the early twentieth century with the rise of the ready-to-erect firms. The former, although sometimes utterly transformed in surface material and detail, usually retained a visibly archaic plan and roof form. The latter group, characterised by hipped gable roofs and vertical tongue-and-groove walls, presented more serious problems, for while they can be shown to have been built in North Queensland well before 1920, they continued to be built in similar forms until the 1930's. Unless there was good reason to believe a particular house or area was not built until after 1920, it was included in the survey. Thus houses of this type are undoubtedly over-represented in the survey, through inclusion of an indeterminate number dating from a later period.

The photographic record had to be converted to a listing of characteristics of each house. This was done by selecting a number of features for description: roof form, roof profile, ventilator, external wall material, verandah, balustrade, verandah roof profile, verandah eave, window shades and elevation above ground. Each feature was given a number of variables, with a corresponding letter code:

External wall material	
Exposed frame	A
Externally boarded	B
Iron	C
Asbestos cement	D
Brick	E
None [8]	F
Indeterminate	G
Other	H

The town and serial number of the house were also coded, all codes being written in spaces in a pro forma rubber-stamped on the reverse

[8] Only core weather wall material was described, thus a house with encircling verandahs was said to have none.

of the photograph. Thus an identification and descriptions of ten features of each house were reduced to a 17 - character code. For example, the sixth house photographed in Ravenswood was pyramid-roofed with verandahs on all sides, had a roof step between verandah and core, had no roof ventilator, had its verandahs enclosed by glass louvres and asbestos cement sheeting under curved roof iron, had no window shades or verandah eaves and was highset. All of this information was expressed on the reverse of the photograph as :

RWD0006CADFDGBBEC

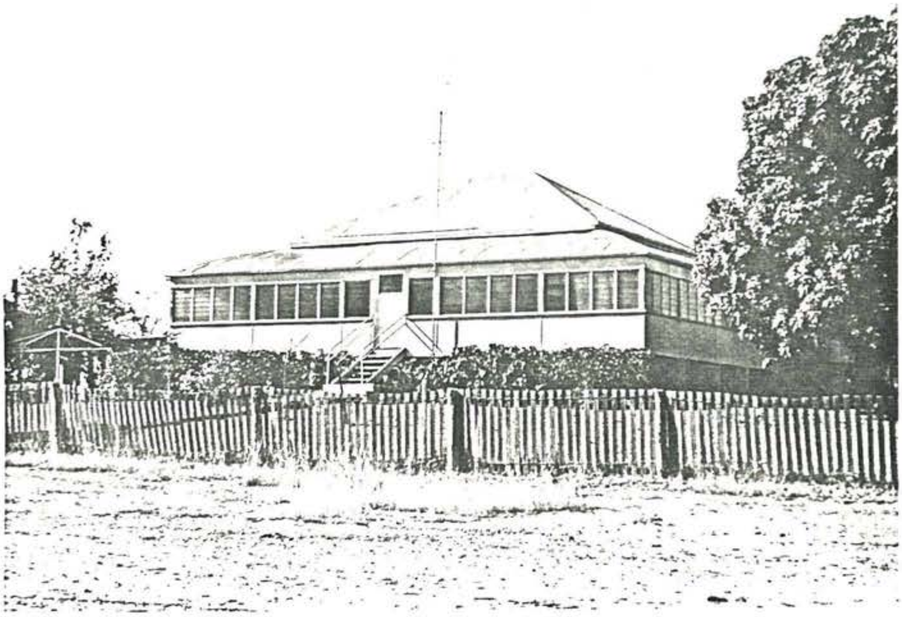
A group of research assistants was employed to assist with this coding process, and when provided with sample photographs of all variables for comparison they proved capable of very accurate discrimination. Some difficulty arose from variables that ranged along a continuum, such as highset-lowset; visually similar materials such as asbestos cement and sheet iron; and houses obstructed by vegetation. Even when photographed from several directions, some houses are entirely shrouded by closely planted trees, accounting for the majority of the "indeterminate" entries. Individual items of detail such as balustrade designs, cast iron and fretwork brackets were not coded, but recorded separately in line drawings, either from the photographs or during the field survey.

After checking for accuracy, the coded information was punched onto machine-readable cards, and cross-tabulated by an SPSS Crosstabs program at the James Cook University Computer Centre. The printed result was a series of tables comparing every set of characteristics, variable by variable: selected tables are reproduced in Appendix B. These tables allow rapid checking of numerical data, for example, the number of cases of a particular feature in the survey or in a given town, or the number of cases in which any two features coincide in the same house.

The survey plans allow the location of any house to be identified, and thus permit the spatial distribution of any feature to be plotted. Such distribution plans of major roof forms in Charters Towers and Townsville appear in Chapter 7 of this thesis.

As opportunity arose, houses and other buildings were inspected in detail. 39 houses were measured and photographed throughout, and a greater number were inspected more cursorily. The time taken for these intensive surveys varied considerably. A two-roomed cottage of standard form was usually covered in under two hours; a large and complex house such as Pfeiffer's required eight hours or more. Once the general nature of the major house forms had been established, further similar examples were inspected only for variations, items of decorative detail and evidence of modification. These were normally recorded photographically, with any necessary notes and sketches accompanying the photographs.

RWD 6



Place	RWD	
Serial	6	
Roof form	P3	C
Roof pitch	STE	A
Ventilator	NO	D
Ext. walls	NO	F
Verandah	GLV	D
Balustrade	ASB	G
Ver roof iron	CUR	B
Ver eave	NO	B
Window Shade	NO	E
	C	C

Example of information coding:

Ravenswood, house no. 6.

(The lowest proforma space was left blank, and later used to record elevation.)

The following two pages are the coding sheets used in converting information from the survey photographs to a form suitable for entry into a computer file. Two entries were made beside each characteristic, to facilitate checking the variable code. (For example, under the characteristic "Verandah", it would be difficult to check that the code "G" was correct without consulting the coding sheet. The abbreviation "CAS" serves to prompt reference from the photograph to the code, and vice versa.) Only the final single-letter code was entered in the data file.

The second sheet is simply a later version, updated to accommodate variables which became sufficiently numerous to warrant a separate code.

NORTH QUEENSLAND HOUSES SURVEY: VARIABLES

PLACE

SERIAL

ROOF FORM:	Pyramid with front verandah	P1	A
	Pyramid with front and side verandahs	P2	B
	Pyramid with three verandahs	P3	C
	Gable with front verandah	G1	D
	Gable with front & side verandahs	G2	E
	Gable with three verandahs	G3	F
	Multiple gable	GM	G
	Hip with front verandah	H1	H
	Hip with front & side verandahs	H2	I
	Hip with three verandahs	H3	J
	Multiple hip	HM	K
	Hipped gable with front verandah	HG1	L
	Hipped gable with front & side verandahs	HG2	M
	Hipped gable with three verandahs	HG3	N
	Other	OTH	O
	Indeterminate	IND	P
ROOF PROFILE:	Stepped	STE	A
	Broken	BRK	B
	Straight	STR	C
	Indeterminate	IND	D
VENTILATOR:	Type A	A	A
	Type B	B	B
	Other	OTH	C
	None	NO	D
	Indeterminate	IND	E
EXTERNAL WALLS:	Exposed frame	EXP	A
	Boarded	WBD	B
	Iron	IRO	C
	Asbestos Cement	ASB	D
	Brick	BRI	E
	None	NO	F
	Indeterminate	IND	G
VERANDAH:	Open	OPN	A
	Latticework	LAT	B
	Wooden Louvres	WLV	C
	Glass Louvres	GLV	D
	Aluminium Louvres	ALV	E
	Blinds	BLI	F
	Casements	CAS	G
	Sliding Aluminium Windows	SLA	H
	Indeterminate	IND	I

BALUSTRADE:	Vertical Dowel	VER	A
	Diagonals	DIA	B
	Composite	COM	C
	Lattice	LAT	D
	Cast Iron	IRO	E
	Boarded	WBD	F
	Asbestos Cement	ASB	G
	None	NO	H
	Indeterminate	IND	I
VERANDAH ROOF:	Straight	STR	A
	Curved	CUR	B
	Bullnose	BUL	C
	Ogee	OGE	D
	Other	OTH	E
	None	NO	F
	Indeterminate	IND	G
VERANDAH EAVE:	YES	YES	A
	NO	NO	B
	Indeterminate	IND	C
WINDOW SHADE:	Type A	A	A
	Type B	B	B
	Straight with battens	STR	C
	Other	OTH	D
	None	NO	E
	Indeterminate	IND	F
ELEVATION:	Low-set	A	A
	Medium	B	B
	High-set	C	C
	Indeterminate	D	D

PLACE

SERIAL

ROOF FORM:	PYRAMID	P1	A
		P2	B
		P3	C
	GABLED	G1	D
		G2	E
		G3	F
		GM	G
	HIPPED	H1	H
		H2	I
		H3	J
		HM	K
	HIPPED GABLE	HG1	L
		HG2	M
		HG3	N ("BUNGALOW")
	OTHER	OTH	O
	INDETERMINATE	IND	P
	*GABLED H/G	HGG	Q
ROOF PROFILE:	STEPPED	STE	A
	BROKEN	BRK	B
	STRAIGHT	STR	C
	INDETERMINATE	IND	D
VENTILATOR:	TYPE A	A	A
	TYPE B	B	B
	OTHER	OTH	C
	NONE	NO	D
	INDETERMINATE	IND	E
EXTERNAL WALLS:	EXPOSED FRAME	EXP	A
	BOARDED	WBD	B
	IRON	IRO	C
	ASB/CEMENT	ASB	D
	BRICK	BRI	E
	NONE	NO	F
	INDETERMINATE	IND	G
	*OTHER	OTH	H
VERANDAH:	OPEN	OPN	A
	LATTICEWORK	LAT	B
	WOODEN LVRES	WLV	C
	GLASS *	GLV	D
	ALUMINIUM *	ALV	E
	BLINDS	BLI	F
	CASEMENTS	CAS	G
	AL/WINDOWS	SLA	H
	INDETERMINATE	IND	I
	*GAUZE	GAU	J
BALUSTRADE:	VERT DOWEL	VER	A
	DIAGONAL	DIA	B
	COMPOSITE	COM	C
	LATTICE	LAT	D
	CAST IRON	IRO	E
	BOARDED	WBD	F
	ASB/CEMENT	ASB	G
	NONE	NO	H
	INDETERMINATE	IND	I
	*OTHER	OTH	J
	*WIRE NETTING	WIR	K
	*FRET BATTEN	CAR	L
	*CORRUG IRON	CGI	M
	*FLAT BATTEN	FLB	N
	*WOODEN LVRES	WLV	O
	*GLASS *	GLV	P
	*ALUMINIUM *	ALV	Q
VERANDAH IRON:	STRAIGHT	STR	A
	CURVED	CUR	B
	BULLNOSE	BUL	C
	OGEE	OGE	D
	OTHER	OTH	E
	NONE	NO	F
	INDETERMINATE	IND	G
VERANDAH EAVE:	YES	YES	A
	NO	NO	B
	INDETERMINATE	IND	C
WINDOW SHADE:	TYPE A	A	A
	TYPE B	B	B
	STR/BATTENS	STR	C
	OTHER	OTH	D
	NONE	NO	E
	*INDETERMINATE	IND	F
ELEVATION:	LOW-SET	A	A
	MEDIUM	B	B
	HIGH-SET	C	C
	INDETERMINATE	IND	D

* = ENTRY NOT ON ORIGINAL CODING SHEET

Appendix B : Summary of Survey Results

Houses represented in the crosstabulation results are from twenty-one settlements:

Almaden	12	Bakerville	2
Cairns	861	Charters Towers	1160
Chillagoe	9	Cooktown	44
Croydon	13	Einasleigh	6
Forsayth	11	Georgetown	22
Herberton	109	Irvinebank	31
Kidston	10	Mingela	1
Mount Garnet	28	Mount Surprise	5
Petford	2	Ravenswood	35
Thornborough	2	Townsville	1613
Watsonville	2		
Total	3978		

In addition, 221 houses in Bowen and 15 houses in Cardwell were surveyed, but coding and crosstabulation were not completed in time for their inclusion in this summary.

Houses at Merinda, Mareeba, Innisfail, Pentland, Hughenden, Kuranda, Palmerville and Ravenshoe were inspected, but not formally surveyed. The towns of Emuford, Port Douglas, Burketown, Normanton and the Cloncurry district were not visited.

The crosstabulation tables are not reproduced in full here, partly because of their sheer bulk (149 pages of computer printout), and also because many of the individual cells provide no useful information; only an overall enumeration of characteristics is given.

ROOF FORM	NUMBER	%
Pyramid with front verandah only	668	16.8
" with one side verandah	320	8.0
" with encircling verandahs	393	9.9
Total Pyramid	1381	34.7
Gabled with front verandah only	572	14.4
" with one side verandah	117	2.9
" with encircling verandahs	40	1.0
Multiple Gabled	27	0.7
Total Gabled	756	19.0

Hipped with front verandah only	234	5.9
" with one side verandah	88	2.2
" with encircling verandahs	91	2.3
Multiple Hipped	9	0.2
Total Hipped	422	10.6
Hipped-gabled with front verandah only	668	16.8
" with one side verandah	330	8.3
" with encircling verandahs	158	4.0
" with front-projecting gable	69	1.7
Total Hipped-Gabled	1225	30.8
Other roof forms	159	4.0
Indeterminate	35	0.9

ROOF PROFILE	NUMBER	%
Stepped	1543	38.8
Broken pitch	864	21.7
Straight	1533	38.5
Indeterminate	38	1.0

ROOF VENTILATOR	NUMBER	%
Type A (Elaborate)	229	5.8
Type B (Cylindro-conical)	14	0.4
Other form	38	1.0
None	3534	88.8
Indeterminate	163	4.1

EXTERNAL WALL MATERIAL	NUMBER	%
Exposed stud frame	471	11.8
Asbestos cement *	1341	33.7
External boarding	728	18.3
Iron	388	9.8
Brick	13	0.3
Other	12	0.3
None (i.e. with no weather walls)	565	14.2
Indeterminate	460	11.6

* the majority of these were built with exposed frames.

VERANDAH (space above handrail)	NUMBER	%
Open	306	7.7
Latticework	167	4.2
Wooden Louvres	1021	25.7
Glass louvres	921	23.2
Aluminium louvres *	167	4.2
Blinds	152	3.8
Casements	911	22.9
Recent aluminium windows	183	4.6
Gauze	6	0.2
Iron	3	0.1
Indeterminate	141	3.5

(Where materials are used in combination, that predominating in area is given.)

* includes some asbestos cement louvres.

BALUSTRADE	NUMBER	%
Vertical dowel	268	6.7
Diagonal timber	34	0.9
Composite (third rail)	53	1.3
Lattice work	18	0.5
Cast iron	19	0.5
Boarded	785	19.7
Asbestos cement	2215	55.7
Corrugated iron	131	3.3
Flat Batten	63	1.6
Wire netting	4	0.1
Wooden louvres	84	2.1
Glass louvres	3	0.1
Aluminium louvres	19	0.5
Other	106	2.7
None	49	1.2
Indeterminate	113	2.8

VERANDAH ROOF IRON	NUMBER	%
Straight	3235	81.3
Curved (constant radius)	380	9.6
Bullnose	281	7.1
Ogee	36	0.9
None	5	0.1
Indeterminate	41	1.0

VERANDAH EAVE	NUMBER	%
Present	803	20.2
Absent	3147	79.1
Indeterminate	28	0.7

WINDOW SHADE	NUMBER	%
Type A (sash window)	1239	31.1
Type B (casement)	388	9.8
With Battened sides	334	8.4
Other	430	10.8
None	1270	31.9
Indeterminate	317	8.0

ELEVATION	NUMBER	%
Lowset	2170	54.6
Medium (c. 1.6m)	294	7.4
Highset	1478	37.2
Indeterminate	36	0.9

Bibliography

Queensland State Archives

Large holdings consulted extensively:

EDU Z series:	School files (correspondence)
LAN AB series:	Public Lands Department, sale lists (Crown Land)
N series:	Plans of Railway buildings
P series:	Maps and survey plans
PRE A series:	Premiers' Department In-letters
WOR A series:	Works Department general correspondence records. [Contains irregular plans, specifications, estimates, etc. Buildings are indexed at WOR B40.]

Individual bundles and smaller series:

A/6803:	Works Department, photographs of government buildings.
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