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HOUSES AND MINING SETTLEMENT

IN NORTH QUEENSLAND

1861 - 1920

Thesis submitted by

Peter Graham Bell BA (Hons)

March 1982

for the degree of Doctor of Philosophy in

the Department of History at

James Cook University of North Queensland

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Contents

	Abstract	iii
	Declaration	iv
	Illustrations	v
	Acknowledgements	vii
	Abbreviations	viii
	Introduction	1
Chapter 1	The Physical Environment	18
Chapter 2	Mining Settlement in North Queensland	33
Chapter 3	The Origin of the Timber Framed Wall	80
Chapter 4	House Forms	118
	(Volume Two)	
Chapter 5	Materials and Techniques	216
Chapter 6	Details and Modifications	311
Chapter 7	Case Studies	435
	Conclusion	509
	Appendixes	512
	Bibliography	528

ABSTRACT

The houses of North Queensland are widely recognised as distinctive in their forms and their use of materials. Previous research has established that this distinctiveness cannot be explained by the region's physical environment. This thesis studies the social and economic influences on the construction of houses, paying particular attention to the nature of the mining industry, which dominated settlement in the region from the late 1860's until the first world war.

It concludes that the nature of housing in the region was determined by the origins of the immigrant population and the financial circumstances created by ephemeral settlement, subject to transport difficulties and consequent high living costs. Forms, materials and techniques of house construction were determined by British-based industrial methods, diffused through commercial links of supply to the Australian colonies, with the lowest possible transport and labour costs in mind. Adaptation to the physical environment was a secondary concern, expressed more often in subsequent modification of buildings than in original construction. There was little regional evolution in house construction, simply a process of local selection from the imperial building industry's repertoire.

DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

Peter Bell
March 1982

Illustrations

v

Note: in all captions, dates
in brackets give time of con-
struction; unbracketed dates
give time of photography or
recording.

North Queensland	4
Palmer population birthplaces	44
Palmer population marriage places	45
Oaks goldfield 1908	48
Miners as proportion of population	50
English light stud framing	96
Continuous studs in two-story cottage	107
Mortice and tenon joint	116
Dovetail joint	117
Miners' bark hut	121
Standard two-roomed cottage	123
Variant cottage forms	125
Cottage, Townsville	128
Carter St., Townsville 1887	129
Two-roomed cottages	130-137
Portable police station	138
Portable railway buildings	139
Standard four-roomed house	141
Matthew Rooney's house	143
Standard four-roomed house	145
Four-roomed houses	146-157
Teacher's residence, Ravenswood	159
Pfeiffer's house	162-164
Swallow's house	166
Multiple-gabled roof. Einasleigh	168
Asymmetrical houses	170-173
<i>Thornburgh</i> , Charters Towers	177-178
<i>Warringah</i> , Townsville	180-181
Standard hipped-gabled house	183
Hipped-gabled houses	184-185
Transition in roof forms, 1915	186
Manager's residence, Collinsville	187
Transition in house form, 1915	188
Bungalow-roofed house, Merinda	189
Orientation of verandahs	195
Early highset houses	200-201
Early highset houses	206-209
Highset houses	213-215

(Volume Two)

Early buildings, Cooktown	218
Framed tents	221-222
Miners' camp, Cloncurry	226
Hut of re-used materials	227
Early buildings, Charters Towers	230

External roof frame, Ravenswood	232
Slab construction, <i>Eureka</i> hotel	235-237
Vertical slab construction	239-240
Split planking	243
Chinese thatched cottage	245
Transition from shingles to iron	248
Brick kiln, Mount Mulligan	251
Brick house, Charters Towers	253
Stone fireplace, Byerstown	257
Townsville hospital (1868)	262
Inferior construction details	268-269
Iron bank, Maytown	271
Iron cottages	274-276
Kidston, 1908	278
<i>Ay ot</i> , Charters Towers	280
Benjamin Toll's joinery	290
The Rooney partners	292
Advertisements for prefabricated houses	297-299
Workers' dwelling (1915)	301
Verandah elevations	313-316
Verandah details	318-321
Decorative verandah brackets	323-329
Timber balustrade panels	334-335
Decorative cast iron	341-342
Macfarlane ironwork	347
Diagonal timber framing	355-356
Wall stud arrangement	362
Cladding boards	364
Window shades	368-372
Fretwork ventilating panels	375-376
Roof ventilators	379-380
Roof strap	385
Croydon house removed to Cairns	387-388
Extended cottages	391-392
Exclosed verandah	393
Extended iron cottages	395-398
Modifications to Ravenswood residence	400-401
Modifications to Townsville presbytery	404
Enclosed verandahs	408
Verandah shading devices	410-412
Cardwell telegraph office	415
Russian timber details	421
Verandah bracket designs	423-434
Maytown, 1876-77	447
Maytown	452-453
Palmer population	456
Maytown, 1979	457-460
Ravenswood population	462
Ravenswood, 1870	464
Ravenswood	467
Goldfields production	476
Charters Towers population	478
Charters Towers road survey	480
Distribution of roof forms	483-486
Townsville population	492
Townsville	493-494
Distribution of roof forms	497-499
<i>Cairns population</i>	500

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<i>A.D.B.</i>	<i>Australian Dictionary of Biography</i>
<i>A.R.</i>	<i>Annual Report of the Undersecretary for Mines</i>
<i>G.S.Q.</i>	<i>Geological Survey of Queensland</i>
<i>H.R.A.</i>	<i>Historical Records of Australia</i>
<i>J.C.U.</i>	<i>James Cook University of North Queensland</i>
<i>N.B.A.</i>	<i>National Bank of Australasia archives</i>
<i>N.Q.H.</i>	<i>North Queensland Herald</i>
<i>N.Q.R.</i>	<i>North Queensland Register</i>
<i>P.O.D.</i>	<i>Post Office Directory</i>
<i>Q.G.M.J.</i>	<i>Queensland Government Mining Journal</i>
<i>Q.P.P.</i>	<i>Queensland Parliamentary Papers</i>
<i>Q.S.A.</i>	<i>Queensland State Archives</i>
<i>Q.V. & P.</i>	<i>Queensland Votes and Proceedings</i>

INTRODUCTION

"The history of architecture,
as of any other art, must not
be confined to masterpieces."

The houses of North Queensland are distinctive in appearance, an observation made both by casual tourists of past decades,

Almost the first thing that arrests the attention on going into Queensland is the style of the houses. They are nearly all of wood, and generally stand on high and rather unsightly, because exposed, studs The typical North Queensland house is seldom much to look at, even when the architect has evidently done his best. At their worst they are square wooden boxes on long legs, 1

and by scholarly observers today:

...the vernacular timber house of North Queensland is of so distinct and local a character as to deserve some explanation. This is a building with its timber framework fully exposed, and lined on the inner face only with boarding known locally as 'chamfer-board', and it may have sheet-metal window-hoods and ridge ventilators which are triumphs of the tinsmith's art. 2

The assumption is commonly made that these distinctive elements originated as deliberate responses to a tropical environment.

However, in a thesis addressing that topic, Ray Sumner concluded:

While it is true that the distinctive North Queensland house evolved at least partially in response to climatic problems, there is also abundant evidence of a general lack of attention to climatic considerations, indicating that climate was not the controlling or most significant influence on housing. 3

¹G.E. Terry. *Unknown North Queensland: a trip to Cairns*, [Cohuna 1933?], pp. 47-48.

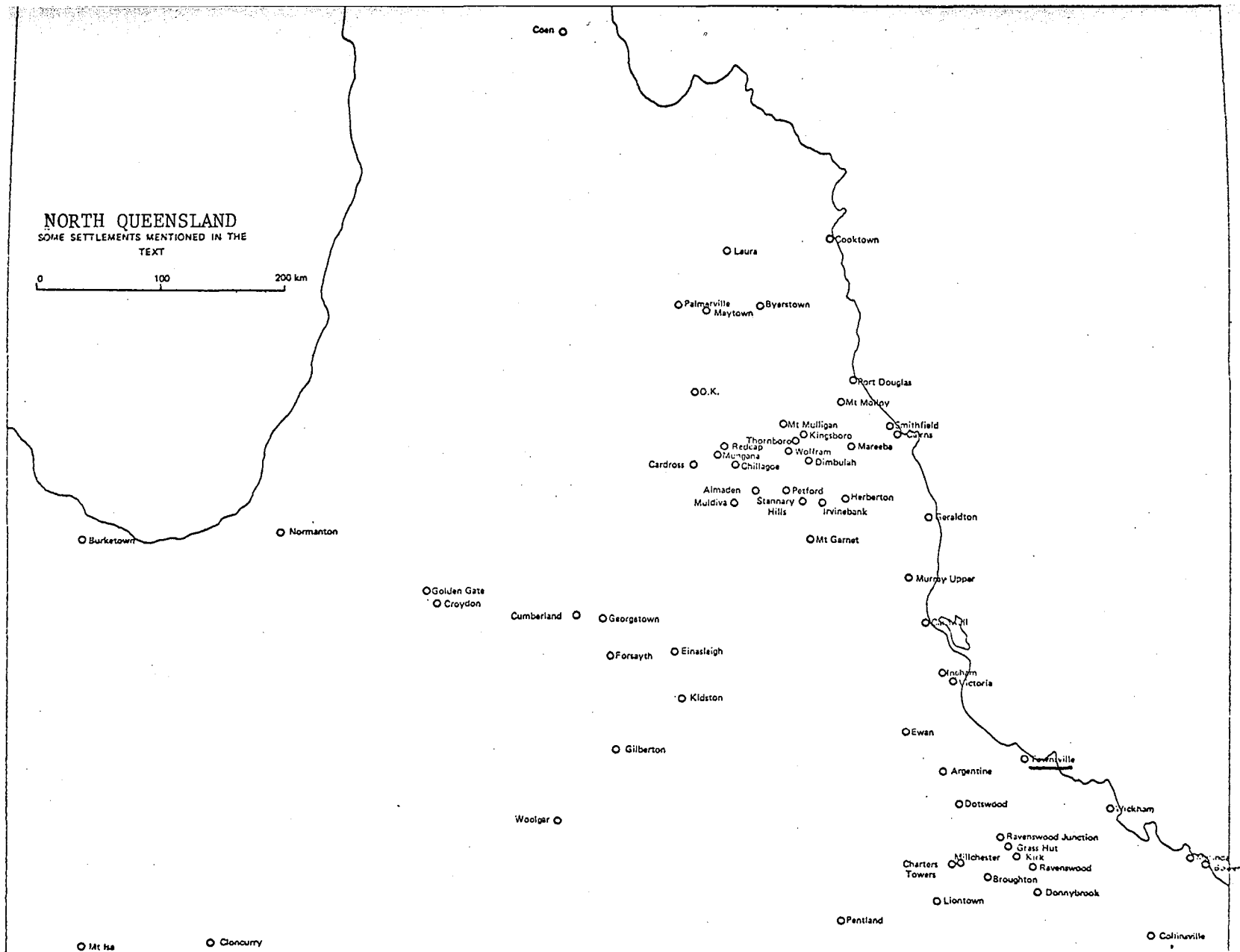
²M. Lewis, "Architecture from Colonial Origins", in *The Heritage of Australia*, Melbourne 1981, p. 82.

³C.R. Sumner, *Environmental Influences on Early Domestic Architecture in North Queensland*, M.A. Thesis, James Cook University 1975, p. 322.

That finding is the starting point of this thesis, which studies the history of house construction in North Queensland. Sumner's conclusion that climatic influences were not the most significant determinants in the evolution of the distinctive North Queensland house naturally invites enquiry into the other influences that were equally, or more, pervasive. The origins of the early settlers of the region, their previous experience, financial circumstances and way of life all suggest themselves as warranting research. Further, an examination of a large number of the extant older houses of North Queensland might be expected to yield information about the trends of local evolution in houses, to assist in identifying antecedents elsewhere. While much has been written on the history of Australian buildings in the last twenty years, few if any accounts have attempted to describe the building stock of any part of the continent in sufficient detail to acquaint the reader with what is typical, what occasionally occurs, and what is unknown. Indeed, many studies perversely preoccupy themselves with the atypical. This thesis seeks to describe the history of houses in one region, over a period of sixty years, combining the documentary evidence normally sought by historians with an examination of the extant houses, one by one.

The North Queensland region is defined here as the hinterlands of the east coast ports from Bowen north, and of Normanton and Burketown on the Gulf of Carpentaria; or broadly Queensland north of 21° latitude. Within that region, the thesis concentrates on houses in settlements - cities, towns, townships - any groups of habitations sufficiently stable to support a commercial or administrative infrastructure. Ephemeral settlements such as railway construction or alluvial mining camps are not excluded; these were at times quite sizeable urban concentrations, despite the flimsiness of their fabric.

Houses too are defined in the broadest sense, to include any form of shelter for human habitation. Naturally these varied greatly in their form and scale. However, a unifying theme is supplied by the history of North Queensland. With few exceptions the settlements of the region were established or expanded by mining industry, either adjacent to mines or ore treatment plants, or associated with ports, roads, railway junctions or telegraph stations which served mining



towns or mining-related towns.

For that reason, a time-span is logically suggested; from first European settlement of the region in 1861 to the decline of mining as the dominant industry during and after the First World War. While mining is today an important economic and social force in North Queensland, the mining industry of 1981 is largely centred on mineral deposits not discovered and exploited until after the period studied here, and the settlements occupied by miners today are of more recent origin or altered almost beyond recognition by the long hiatus in their activity.⁴ Thus this thesis seeks to study an era in building history whose physical evidence has been greatly altered by the passage of time, and will devote some space to investigating that process of change.

An attempt to isolate mining from the region's broader economic history is, of course, fraught with difficulty. The fortunes of sugar, beef and wool are so inter-linked with those of mining that the thesis is in many places forced to consider the region as a whole. Townsville, for example, rose to its position as Queensland's major provincial city as a result of its role as port for the Charters Towers goldfield, but it would be absurd to ignore the contribution of pastoral, maritime and agricultural industry to that rise. There is a further practical difficulty in a study of miners' building in a restricted region. Sometimes the earliest, most revealing or best-documented buildings are not in a mining settlement. These must simply be accepted as the best available evidence from the region, and thus the thesis draws on sugar plantations, telegraph offices and pastoral homesteads without apology when they have information to provide.

The thesis commences with a brief description of the region, investigates whether any climatic or other environmental features of North Queensland can be considered sufficiently distinctive to have been likely to influence the design of buildings, and draws on evidence

⁴Distinguished exceptions are Herberton and Irvinebank, where mining has never ceased entirely, but even there the physical change has been considerable.

of how the region's climate was perceived by its early European settlers. The second chapter is a study of the mining settlements of North Queensland, and the social and economic conditions that constituted the background to house construction. The third chapter is devoted to a critical examination of the origins of one construction technique - the sawn timber stud-framed wall - which dominated all building construction in North Queensland, and whose origins have hitherto been supposed to be American.

Three chapters then examine the houses themselves; the forms they took, the materials and construction techniques employed, items of detail and ways in which subsequent modification has affected them. The principal evidence for this section comes from field studies of the surviving early houses of the region.⁵ A final chapter examines five settlements, and relates their history of growth and construction to their surviving building evidence; and a conclusion summarises the thesis' findings on the nature of house construction in the region and the forces which have influenced it. The absence of similar detailed studies in other parts of Australia makes it impossible to undertake the comparisons which would increase the value of this regional study. The adoption and evolution in Australasia of timber wall construction methods is a subject which cries out for investigation; clearly there is much to be learned from a study of wall framing in New Zealand, southeastern Australia and southern Queensland in the first half of the nineteenth century.

* * * * *

Any research on North Queensland's past necessarily commences with Geoffrey Bolton's work.⁶ Since its publication, more detailed study of the region has produced a number of historical works, some

⁵ Appendix A describes the methodology employed in field studies.

⁶ G.C. Bolton, *A Thousand Miles Away: a history of North Queensland to 1920*, Brisbane 1963.

particularly relevant to mining regions such as L.J. Colwell's and Sharon Hayston's on Charters Towers,⁷ Dorothy Jones' on Cairns,⁸ and Janice Wegner's on the Etheridge district.⁹ The economic, political and social background of European settlement in North Queensland is becoming well understood.¹⁰ Although gaps remain, the historian can proceed with greater confidence than was possible twenty years ago.

The history of mining itself has also attracted attention: Geoffrey Blainey has provided a broad view of the Australian context,¹¹ and further detail on the Cloncurry district.¹² Other North Queensland fields have been studied in Robin Brown's work on the Gilbert,¹³ and Ruth Kerr's on the Cairns hinterland.¹⁴ Further research is in progress, and a synthesis is emerging.¹⁵

Freeland's *Architecture in Australia* remains the best general text on the history of Australian buildings,¹⁶ supplemented in the case

⁷L.J. Colwell, *Some Aspects of Social Life in Charters Towers from 1872 to 1900 with Some Emphasis on the Nineties*, BA Hons thesis, James Cook University 1969; S.A. Hayston, *Interaction of Religion and Society in Charters Towers 1872-1900*, BA Hons thesis, James Cook University 1976. PhD research on Charters Towers by Diane Menghetti is in progress.

⁸D. Jones, *Trinity Phoenix: a History of Cairns*, Cairns 1976.

⁹J. Wegner, *The Etheridge: a Study of the History of the Etheridge Shire and Goldfield 1845-1960*, BEd-BA Hons thesis, James Cook University 1980.

¹⁰For a review of other work in progress see *Lectures on North Queensland History*, James Cook University 1974, Second Series 1975, Third Series 1979.

¹¹G. Blainey, *The Rush That Never Ended: a history of Australian Mining*, Melbourne 1963.

¹²G. Blainey, *Mines in the Spinifex: the story of Mount Isa Mines*, Sydney 1960, chapters 1 - 6.

¹³R.B. Brown, *A History of the Gilbert River Goldfield 1869-1874*, BA Hons thesis, James Cook University 1974.

¹⁴R.S. Kerr, *John Moffat's Empire*, St. Lucia 1979.

¹⁵K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, Vol. 1, James Cook University 1980.

¹⁶J.M. Freeland, *Architecture in Australia: a history*, Melbourne 1968.

of houses by Boyd's less scholarly but perceptive *Australia's Home*.¹⁷ Much has been written on Australian buildings since, one useful work on the timber tradition being Cox and Freeland's *Rude Timber Buildings*,¹⁸ and besides published work, the various National Trust branches and individuals working under the Commonwealth National Estate program have in recent years produced a wealth of regional, local and individual studies of buildings, although few of these are readily accessible and even fewer exhibit sound historical research.

North Queensland has been the subject of Ray Sumner's enquiry into environmental influences on domestic buildings,¹⁹ which gave rise to a number of published papers.²⁰ Sumner's work has been invaluable to this study, in providing factual background material, in reducing the area of enquiry by exhausting some of its aspects, and by raising new questions for attention.

The primary sources available for this study have decided limitations. There was never a professional journal catering for the building industry of the region. The *Australasian Builder and*

¹⁷R. Boyd, *Australia's Home: its Origins, Builders and Occupiers*, 3rd. edn. Melbourne 1968.

¹⁸P. Cox & J.M. Freeland, *Rude Timber Buildings in Australia*, London 1969.

¹⁹Sumner, Environmental Influences.

²⁰Sumner, *Settlers and Habitat in Tropical Queensland*, James Cook University 1974; "Pioneer Homesteads of North Queensland", *Lectures on North Queensland History*, 1974, pp. 47-61; "Environment and Architecture in Tropical Queensland", *Architecture in Australia* 64, 1975, pp. 82-87; "Local Materials in Early North Queensland Housing", *LINQ* 4, 1975, pp. 1-12; "Our Fathers' Tropic House", *LINQ* 5, 1976, pp. 20-31; "Influences on Domestic Architecture in Charters Towers", *Queensland Heritage* 3, 1976, pp. 39-48; "The Tropical Bungalow - the search for an indigenous Australian architecture", *Australian Journal of Art* 1, 1978, pp. 27-39; The Pastoral Homestead in Tropical Australia - a cultural use of space, unpublished paper at Institute of Australian Geographers' conference, Townsville 1978; and Sumner and J. Oliver, "Early North Queensland Housing as a Response to Environment", *Australian Geographer* 14, 1978, pp. 14-21.

Contractors' News, so useful in the study of southern buildings, rarely mentions North Queensland, and the *Architectural and Building Journal of Queensland* was founded only in 1922, although it contains occasional retrospective information in commemorative articles. The building industry has left very little evidence; no business records of any North Queensland building firm are known to exist before the 1920's. In most cases their fate is known, or can be surmised, as the majority of building firms were based at a sawmill or timber yard, and extremely vulnerable to fire. Both Townsville's and Charters Towers' largest builders, Rooney & Coy and Benjamin Toll, had their records destroyed in fires.

Indeed, the construction of private houses has left very little trace in the documentary record. Rate books and valuation registers survive for some North Queensland towns, but usually only from the twentieth century. The exceptions in the Queensland State Archives have proved very useful. Titles Office documents are accessible only at prohibitive cost, and have been used very sparingly, as their usefulness often fails to compensate for their drain on research funds.

The published accounts of travellers, general historical narratives and biographies, provide considerable information, although usually of a broad impressionistic nature. When such information can be applied to a specific building, it is almost axiomatic that the building is exceptional in some way and the broader application of the description is suspect. The historian seeking to describe the ordinary is faced with the obstinate inclination of observers to dwell on the exceptional and ignore the commonplace.

Newspapers provide much general information on the development of settlements, although they too tend to ignore the obvious. The usefulness of North Queensland newspapers in the nineteenth century is also restricted by their catering for an immigrant population, and thus perversely emphasizing cable news from Europe and southern capitals at the expense of local items. There has also been a heavy attrition in the region's press files. Many newspapers have vanished utterly; others, such as the potentially enthralling Maytown *Golden Age*, exist today only in a single issue.

Publications of the Queensland Mines Department provide the most comprehensive coverage of mining settlement in the region. The *Annual Report of the Undersecretary for Mines* after 1877, the *Queensland Government Mining Journal* after 1900 and the irregular Geological Survey of Queensland publications concern themselves principally with purely technical information, but also provide sidelights of social interest as well as a general indication of most mining settlements' economic condition.

In contrast with the paucity of documentary evidence on private houses, there is a wealth of information on government buildings. The Queensland State Archives holds ledgers, tender books, correspondence and plans from the Works Department and the Colonial Architect's office which are an invaluable source for the study of buildings, although they raise the question of the validity of this evidence in the study of the region's houses as a whole. The colonial government's buildings tended to be more solidly crafted, more conservative in accepting new developments and less parsimoniously designed than the usual, if the correspondence between outlying settlements and the Works Department is any guide. Both the Railways and the Public Instruction departments were responsible for their own buildings, and have their own records. School correspondence is usually meticulously archived, and is a particularly sensitive barometer of local building custom because of the practice of a local committee funding a provisional school and residence by subscription, and frequently engaging in earnest and historically valuable correspondence with the Undersecretary over building methods and costs.

Pictorial evidence has proved extremely valuable in this study. Much information on houseforms, development of settlements and construction techniques is entirely visual, and simply does not exist in any written documentary source. Plans of settlements and individual buildings are noted in the bibliography; like the most useful correspondence, they are almost invariably of government origin. Drawings and paintings of northern settlements are scarce: the works of Bradshaw Barker, Marian Rowan and William Allom provide more information on primitive painting in the late nineteenth century than on the

appearance of North Queensland's houses.²¹

Photographs provide the most useful source of pictorial evidence. North Queensland was settled well after the maturity of wet-plate photography, and practitioners such as Richard Daintree, Charles Bowly and Thomas Mathewson were at work in the region in its early years of settlement. A host of commercial photographers followed, as did the more versatile dry-plate in the 1880's. The value of their work is diminished by the loss of many photographs in the intervening years, the absence of documentary identification for most surviving photographs, and the cavalier attitude toward photographic evidence in many collections today. Professional librarians who would recoil at the thought of cataloguing a book without recording at least its author, title, place and date of publication and call number are happy to file a photograph solely under the subject entry "Townsville c. 1890". More distressingly, these images have a limited life, and conservation is a neglected study. Nevertheless, when a photograph giving a general view of a settlement can be dated by documentary or internal evidence, its value is enormous in giving an objective account of the physical extent, the form, materials and number of houses in the image. No extant written sources can provide more than a small part of that information. Photographic collections of some historical significance are held by local authorities, historical societies and individuals throughout the state. Those of the James Cook University and the John Oxley Library have proved most useful in this study.

* * * * *

²¹Bradshaw Barker is known for a pencil sketch of Townsville, held by James Cook University library, and a watercolour of Bowen, held by the Bowen Historical Society, both from the late 1880's. Marian Rowan is noted in the bibliography, and referred to throughout this thesis. William Allom painted at least seven oils of Charters Towers and Townsville between 1876 and c. 1890, one of which is held at the John Oxley Library. Allom was also a commercial photographer.

This is a historical study of buildings, not an architectural history. The word "architecture" raises in many minds images of pedigreed *Beaux Arts* monumentalism quite out of keeping with the scale, functions and materials of most buildings in North Queensland mining towns. Very few of the buildings described here were designed by architects, in the sense that title has today. Indeed, there was frequently overt resistance to the intrusion of architects who, it was feared, brought unnecessary elaboration and expense in their wake.

I understand that the Committee consider the plan elaborate, but the small amount of ornamentation used is barely enough to redeem the structure from ugliness, a quality which should never pertain to the home of an educational institution. 22

In time the planners themselves abandoned aesthetics in despair at the financial implications of supplying substantial buildings to towns like Stannary Hills:

These mining schools are beoming a complex problem. We want to educate the children, but we do not want to spend large sums on buildings which may cease to be necessary in two or three years' time and then fall into decay. 23

Thus the circumstances of mining settlement encouraged the construction of the very types of building that architectural history has been criticized for ignoring:

Architectural history, as written and taught in the Western World, has never been concerned with more than a few select cultures. In terms of space it comprises

²² Undersecretary for Public Instruction to Secretary, Charters Towers Girls' School Committee 20 January 1882, EDU Z 560 Q.S.A.

²³ Office memo 11 October 1905, 05/16169, EDU Z 2539 Q.S.A.

... little more than was known in the second century A.D. architectural history as we know it is equally biased on the social plane. It amounts to little more than a who's who of architects who commemorated power and wealth; an anthology of buildings of, by and for the privileged ... with never a word about the houses of lesser people. 24

The reasons for such criticism are clear: architectural history has for centuries been the province of architects, because until recent decades its thorough understanding was a necessary part of competence in that discipline.²⁵ The decline of historicism as an architectural force has brought change, since architectural history need no longer be guarded as a guild secret; and the broadening of interest within other disciplines has led others such as geographers and anthropologists to the study of buildings, a process approved by Maass, who held that architectural history "must maintain ties to other relevant disciplines; otherwise it could not claim a higher rank than pursuits like philately and the collecting of antique buttons",²⁶ and by Allsopp:

The history of architecture, as of any other art, must not be confined to masterpieces.... It cannot be properly understood without knowing the forces - social, political, economic, ideological - which have influenced building. 27

²⁴B. Rudofsky, *Architecture without Architects: a short introduction to non-pedigreed architecture*, London 1964, p. 1; and see comments in J. Maass, "Where Architectural Historians Fear to Tread", *Journal of the Society of Architectural Historians* 28, 1969, pp. 3-8.

²⁵A state of affairs colourfully described as "aesthetic thralldom to the corrupt and ineffectual past": see J.M. Fitch, "New Uses for the Artistic Patrimony", *Journal of the Society of Architectural Historians* 30, 1971.

²⁶Maass, "Architectural Historians", p. 8.

²⁷H.B. Allsopp, *The Study of Architectural History*, London 1970, pp. 118-119.

However, this broadening of the study of buildings has been attended in Australia by a curious lack of interest on the part of historians. With rare exceptions such as Miles Lewis' research in Victoria,²⁸ work in architectural history is largely done by people whose training is outside the field of historical methodology. In compiling a directory of current research in the field in the 1970's, David Saunders was struck by this phenomenon, musing that "it can be assumed that the methodology for history studies is best understood in History Schools, yet this branch of history is being practised most outside them."²⁹

In an introduction to a study of buildings by a historian who is not an architect, a warning by Allsopp is pertinent:

... one of the conspicuous areas of error in current architectural history is where scholars with no practical architectural knowledge make architectural judgments based upon that lack of knowledge. 30

The author of this thesis claims only the architectural knowledge of a reasonably alert layman, and attempts to make no "architectural judgments", only historical judgments.

* * * * *

It has become commonplace in accounts of buildings such as those described in this thesis to make use of the word "vernacular". The term has been avoided here because its meaning is at present in a state of flux, and because the most commonly adopted meaning has very little relevance in North Queensland. In Britain, where the word does have

²⁸ M.B. Lewis, *Tradition and Innovation in Victorian Building 1801-1865*, PhD thesis, University of Melbourne 1972.

²⁹ D.A. Saunders, *A Manual of Architectural History Research*, Sydney 1977, Vol. 1, p. 2.

³⁰ Allsopp, *Architectural History*, p. 105.

relevance, most writers now rely on R.W. Brunskill's definition;

... designed by an amateur, probably the occupier of the intended building, and one without any training in design; he will have been guided by a series of conventions built up in his locality, paying little attention to what may be fashionable on an international scale. The function of his building would be the dominant factor, aesthetic considerations, though present to some small degree, being quite minimal; tradition would guide constructional as well as aesthetic choice, and local materials would be used as a matter of course, other materials being chosen and imported quite exceptionally. 31

A judgment on whether this appropriately describes the houses of North Queensland must await the conclusion of this thesis, but there is sufficient confusion in its usage in Australia to warrant its avoidance meanwhile. Both Boyd and Freeland used the word in passing, but more recent writers have attempted to come to terms with the idea, arriving at little consensus. Philip Cox, in attempting to define the term for Australian usage, commenced by loosely opposing it to "high style" architecture - presumably something akin to Brunskill's "polite" tradition - but proceeded to apply it to "buildings and art forms directly related to a European-based culture influenced by Asia",³² a notion seemingly at odds with Brunskill's insistence on regional tradition. One study of the vernacular in Queensland proceeded without a definition, beyond a loose discussion of the word suggesting nothing more than a set of characteristics found in combination.³³

³¹R.W. Brunskill, *Illustrated Handbook of Vernacular Architecture*, 2nd. edn. London 1978, p. 26.

³²P. Cox, "The Growth and Decay of an Australian Vernacular Architecture" in G. Seddon & M. Davies, *Man and Landscape in Australia: towards an ecological vision*, Canberra 1976, pp. 216-230.

³³P. Hyndman & M. Baker, *An Approach to Queensland Vernacular Architecture*, Brisbane 1975, p. 14.

Another recent work devoting two of its sections to "vernacular" and "high-style" architecture, contains many vernacular examples which seem indistinguishable from high-style examples in later pages.³⁴ Despite adopting the definition "constructional technique traditional to a region", as well as a variation of Brunskill's definition, the work devotes a good deal of space to establishing the British and other foreign origins of what it presents as the Australian vernacular.³⁵ Probably the most useful application of the word to Australian conditions is that adopted by Lewis, who wrote in terms of a diverse immigrant population experimenting in their *own* vernacular traditions in a new environment.³⁶ But even a cursory glance at a North Queensland town demonstrates a uniformity of building practice suggesting little such diversity in experimentation in this region.

* * * * *

Throughout this thesis the contemporary building jargon of the North Queensland region is used, and where this might lead to confusion an explanatory footnote is appended. Some of the terms used locally differ from usage elsewhere, usually in acquiring a more limited and specific sense. Thus *weatherboards* in North Queensland are always feather-edged, *chamferboards* are a form of rebated lapped board nailed flush to the wall framing, *sashes* always slide vertically and *stumps* are round wooden posts used as foundations; although the term lingers to describe square concrete posts today. *Galvanised iron* in North Queensland as elsewhere is in fact zinc-dipped steel, neither galvanised nor iron. A *two-roomed cottage* and a *four-roomed house* often had more rooms than their titles acknowledged: the names refer to core rooms, ignoring skillion extensions. The word *bungalow* in this region does not describe a house, but a form of roof. Probably the greatest difficulty comes from the fundamental word *house*. It is used broadly here, but in late nineteenth century parlance it

³⁴ P. Cox & C. Lucas, *Australian Colonial Architecture*, Melbourne 1978.

³⁵ *Ibid.*, see definitions pp. 2-3 & 270; and see especially pp. 53-119.

³⁶ M.B. Lewis, *Victorian Primitive*, Melbourne 1977, p. 2.

usually meant a family home with four core rooms, or anything larger; a *cottage* was a smaller habitation with two core rooms. A shelter of bark or calico was a *humpy*, *hut* or *tent*; a *residence* denoted an official home such as that of a company staff member or public servant, and was usually a four-roomed house. The terms *villa* and *bungalow* were not in common use to describe houses.

The thesis also capitalises "North" when describing the region. In 1889, Gilbert Parker commented: "Pick up the card of a merchant in the north, and you will find on it not "Queensland", but "North Queensland".³⁷ The tradition seems too long established to require explanation.

³⁷ G. Parker, *Round the Compass in Australia*, London 1889, p. 275.

ADDENDUM

An examiner of this thesis has pointed out the desirability of broader comparative statement testing the conclusions drawn about the houses of mining settlements against those which could be formed from a study of other houses in the same region built in response to the circumstance of settlement in other industries.

No such comparison is attempted here on any systematic basis, although reference is made in places to obvious differences between houses in mining settlements and those of, for example, pastoral homesteads, in such matters as the diversity of materials employed. Nor is such a comparison possible, for the scattered rural houses of pastoral and agricultural industry were not the subject of either physical or documentary research in the course of this survey.

Research was restricted to urban settlements in the expectation that they would reveal more coherent patterns of supply, construction form and evolution than rural houses, which, more isolated in both space and time, and possibly more responsive to the owners idiosyncratic preferences, might be subject to more complex influences. A further practical limitation was the intention to undertake a comprehensive physical survey of the houses under study. While the majority of the region's urban houses were included, no such coverage of pastoral houses could be attempted without enormously greater expenditure of time and money.

Finally, Sumner's earlier research in this region paid particular attention to pastoral homesteads, and given the impracticability of a comprehensive survey, there seemed little point in repeating a selective study along similar lines. From the examples described in Sumner's published work, it seems that greater diversity in both forms and materials did emerge in rural areas, the pattern that might intuitively be expected. However, a more thorough comparison of the two economic environments is quite beyond the scope and resources of this study.

Peter Bell
1 July 1982.

CHAPTER ONE

"cut down every native tree"

The Physical Environment

The topography of North Queensland contains a fair sampling of most types of terrain found elsewhere in the continent. Six broad physical regions can be identified: in the east from Bowen to Cairns runs a narrow coastal plain, mostly fertile and well-suited to tropical agriculture. The principal settlements of the region today are the port cities of this plain. Immediately to its west is a chain of coastal ranges presenting a barrier to transport which varies in height from a mere 300m at a convenient gap south of Townsville to 1500m in the Bellenden Ker range west of Innisfail. The ranges decline into insignificance north of Cooktown. To their west is an irregular chain of tablelands, around Atherton sufficiently fertile to support intensive agriculture, but elsewhere sparsely populated. On this wide ridge the major rivers originate, flowing east to the Pacific like the Burdekin and Herbert, or northwest to the Gulf of Carpentaria; the Flinders, Gilbert and Mitchell. A second row of towns stands in the uplands west of the ranges, in most cases conceived by mining but supported now by grazing or agriculture. Among them is Herberton, at 900m altitude Queensland's highest town.

These two regions, the coast and the plateaux, separated by ranges, support the bulk of North Queensland's population. To the north is Cape York Peninsula, largely flat and empty of settlement. Apart from some small mineral fields and a sparse beef cattle industry, the peninsula held little attraction for Europeans until bauxite mining commenced at Weipa in the 1950's. To the west are the great plains of grassland and open forest with occasional ranges of low hills. The sixth region, in the northwest, is the entirely flat floodplain of the gulf rivers.

The geology and mineralisation of the region subdivide almost as precisely. There are three large expanses of Precambrian rock; the Coen inlier of the eastern peninsula, barren of minerals except for the Coen and a few smaller goldfields, the Mount Isa inlier in the extreme northwest which hosts the Mount Isa and Cloncurry mineral fields; and the Georgetown inlier, site of the Etheridge, Croydon, Gilbert and Oaks goldfields. On the east coast is the Tasman geosyncline, setting of the uplands and ranges, with complex mineralisation. Its

Hodgkinson basin in the north held two major goldfields, the Palmer and the Hodgkinson. In the south the Bowen basin is underlain by Queensland's largest coal deposits, whose exploitation commenced only at the end of the period studied here. Between the two is the Lolworth - Ravenswood block, site of the Charters Towers field, which produced most of North Queensland's gold. Over the rest of the region to the north and west lies the great artesian basin, devoid of mineralisation.¹

Of more interest to most writers than the topography is North Queensland's climate, for this is a distinctive feature which has affected the process of settlement in a number of ways. Bolton described the region as "undoubtedly the most successful example in the British Commonwealth of settlement in the tropics by Europeans",² drawing attention to the fact that the aspect of North Queensland most unfamiliar to Europeans was its climate rather than its landscape.

The climate of the eastern coastal fringe of North Queensland is hot and wet in summer, cool and dry in winter. Mean daily summer temperatures range between a minimum of 24°C and a maximum of 31°C in January in most areas between Townsville and Cooktown, and winter mean temperatures in July generally fall between a minimum of 15°C and a maximum of 25°C.³ Even at the coldest town in the coastal ranges, Herberton, the winter minimum temperature falls below freezing on only a few days each year, but rare frosts have been recorded even on the coast.⁴ The rainfall along most of the east coast is high, ranging up to an impressive 3644mm mean at Innisfail, although where the ranges are lower, as at Townsville, the mean is little over 1000mm. However, the rainfall is concentrated in the period

¹ See K.R. Levingston, "A Survey of the Geology and Mineralisation of North Queensland Mining Fields" in Kennedy (ed.) *Readings* vol. 1, pp. 1-38.

² Bolton, *Thousand Miles*, p. vii.

³ Unless otherwise noted, climatic data are from *Climatic Averages: Queensland*, Canberra 1975.

⁴ At Mackay in 1909, for example: J.W. Gregory, "White Labour in Tropical Agriculture", *Nineteenth Century* 67, 1910, p. 371.

from December to April in all parts of the east coast - other months are relatively dry. Special concentrations of rain are experienced in conjunction with tropical cyclones and rain depressions in the summer months; one intense short-term rainfall recorded in the region was 660mm in 21 hours, including 305mm in 2 hours, southwest of Townsville on 3 March 1946.⁵

The interior of the region experiences a drier form of the coastal climatic pattern, with greater temperature ranges. At places such as Palmerville, Georgetown and Cloncurry, mean winter temperatures range from 10°C to 30°C, and mean summer temperatures from 20°C to 40°C. Mean annual rainfall recedes in rough inverse proportion to distance from the Pacific coast: at Georgetown it is 829mm, at Cloncurry 470mm, although the same pattern of summer rain and winter drought prevails.

The region's climate is not dramatically different from that of many other parts of Australia. Townsville's mean temperatures are 3-4°C higher than Brisbane's in every month of the year, and Townsville's rainfall is actually slightly less than Brisbane's. What is most striking to an observer from a temperate region is the evenness of the climate. The annual and diurnal temperature range on the coast is not great: the most distressing aspect of the summer is not that the maximum temperatures are unbearably high, but that the nightly minima are often not much cooler. The change of the seasons is much less marked than in cooler regions: the most pronounced event is the wet season. Throughout tropical Australia the year has always in popular speech been divided into "the wet" and "the dry", terms which have far more significance than the culturally familiar "spring" and "autumn", which have little visible effect. The daylight hours vary relatively little throughout the year; sunrise and sunset at Townsville are at about 5.30am and 6.30pm in midsummer, and 6.30am and 5.30pm in midwinter.

⁵J. Oliver, "The Climatic Environment of the Townsville Area", in D. Hopley (ed.), *Geographical Studies of the Townsville Area*, James Cook University 1978, p. 8.

Tropical cyclones are a pervasive influence on the coasts of the region. In the months from December to March, the entire North Queensland coastline is vulnerable, and in the east coast sector from Cooktown to Townsville a cyclone bringing gale force winds and torrential rain can be expected in any area with a frequency slightly exceeding one every two years.⁶ A cyclone is a large tropical storm in which winds of high velocity rotate around a low pressure centre, accompanied by heavy rain. Generated at sea, they are capable of great destruction in coastal settlements.⁷ The threat of cyclonic winds in tropical Australia was known before North Queensland was first settled. The first European experience of Australian cyclonic conditions was at Victoria, Port Essington, on 25 November 1839, when the settlement was severely damaged and 8 sailors drowned.⁸ The new inhabitants of North Queensland quickly gained first-hand experience: both Bowen and Townsville suffered severely in 1867, just 6 and 3 years after their respective settlements.

In addition there are more local sources of destructive winds. All of the region west of the coastal ranges experiences violent local storms, with a minimum average of 30 thunder days each year.⁹ Ravenswood has a particularly bad reputation for violent thunderstorms. And although they have not been the subject of published research, tornadoes are known infrequently. Bowen has suffered devastation on at least two occasions:

⁶ *Climatic Survey, Northern: Region 16 - Queensland*, Canberra 1971, p. 62; and see R.S. Lourensz, *Tropical Cyclones in the Australian Region July 1909 to June 1975*, Canberra 1977, pp. 96-99.

⁷ R.L. Southern, "The Nature of Tropical Cyclones", in *Design for Tropical Cyclones*, vol. 1, James Cook University 1978, pp. B1-B26.

⁸ P.G. Spillett, *Forsaken Settlement: an illustrated history of Victoria, Port Essington, North Australia 1838-49*, Melbourne 1972, pp. 56-62.

⁹ *Resources and Industry of Far North Queensland*, Canberra 1971, p. 23 and map 10: a thunder day is defined as a day on which thunder is heard.

On Wednesday night a violent hurricane from the north, accompanied by a great discharge of electricity, visited this town, lasting for half a minute, and creating great destruction of property. 10

These destructive events have two implications for the study of buildings: first in the extent to which they influenced design and methods of construction; and second as a means of causing demolition or modification of building stock. Both points are taken up in later chapters.

There are essentially four climatic characteristics distinguishing North Queensland which might be expected to have influenced the design and construction of houses. There is first the hot summer, and its equally important corollary, the lack of a cold winter, making this region one of the few parts of the European-occupied world where insulation to conserve warmth can be largely disregarded. There is also the marked concentration of heavy rainfall into a few months, with the remainder of the year fairly dry. This has several implications; for the supply and cost of materials, for the design of methods of preventing water penetration, and for the decay of buildings after construction. Third is the angle of the sun during the hottest months of the year, from the south. Only in the tropics can the sun shine on *every* wall of a building. And fourth is the likelihood in many parts of the region of experiencing potentially destructive winds on a number of occasions during the anticipated life of a building.

Much of the eastern part of North Queensland is covered by open forest, and dense rainforest grows on the coastal ranges from near Townsville to Cooktown. A large proportion of the rainforest timber has commercial potential, and some species were exploited as building material from the first years of settlement.¹¹ However, the convenient

¹⁰ *Queenslander*, 26 February 1876, and also see *Ibid* 21 April 1894.

¹¹ *Resources and Industry*, pp. 89-91.

proximity of the timber in the ranges was to a great extent negated by its inaccessibility and by the small scale of the regional logging industry, so that building timber imported by sea was always competitive with locally produced timber. Kauri pine (*Agathis palmerstonii*) and red cedar (*Cedrela toona* var. *australis*) were the principal softwoods available from local sources, and both were extensively used in light timber construction. A great variety of hardwoods were available within almost every North Queensland district, but outside the coastal ranges these rarely approach the log sizes necessary to support commercial exploitation on any scale.

There was far greater consumption of timber for domestic and industrial firewood than for building material. But opinion was quite divided on the desirability of trees in proximity to habitation. One school of thought held that trees were highly desirable:

In barren localities every effort should be made to encourage their growth. The beautiful evergreen shady mango flourishes in North Queensland, requiring no care, but only protection in its tender months from the straying goat and cow. Apart from improving the landscape, trees modify and regulate the heat; they cool the air by evaporation in daytime, and interfere with the absorption of heat by the ground. 12

But elsewhere, settlers were advised to cut them down for fear of a tree falling on a house:

Before you begin to put up your house,
cut down every native tree that can by any possibility fall on to the house. Do not be tempted by the handsome appearance of any tree, or by the idea of shade from it in the summer time, to build under its area of reach in case it fell down. This danger may not seem of much importance to you as you gaze on a fine big gum-tree in calm weather, but in windy weather, on

¹²J. Ahearne, "Effect of the Queensland Government Educational Regulations on the Physique of the Present and Future North Queenslander" *Australasian Association for the Advancement of Science Sixth Report*, 1895, p. 793.

stormy nights, its removal will save your
 wife, if not yourself, from many a sleepless
 anxious night! 13

The policy generally adopted reflects both these views. Native trees were cut down, though probably for aesthetic reasons and use as firewood rather than from fear of them falling; and exotic trees and shrubs were planted in their place. Photographs of mining towns and even their abandoned sites today often show mangoes, figs, tamarinds, date palms and bougainvillea entirely replacing the native species.

The human environment of early European settlement, the existing Aboriginal population, had little influence on European building practices. There is no evidence that techniques were borrowed from Aborigines in this region, although quite substantial shelters were built by Aborigines in many parts of North Queensland.¹⁴ If the use of bark as a building material is a borrowed practice, it is unlikely to have been a local initiative, for bark was a well-established material long before North Queensland was settled, and its use here was undoubtedly transmitted by Europeans arriving from other parts of Australia.

One restricted influence of Aborigines on European building practices was in the provision of facilities for defence. Local traditions exist in many areas, especially pastoral districts, about the intended defensive function of buildings with especially strong walls and small openings. Much of the tradition is questionable, and in any case had no discernible influence beyond

¹³P. Fletcher, *Hints to Immigrants: a practical essay upon bush-life in Queensland*, London 1887, p. 11.

¹⁴See for example "Native Huts on the Sachs River, North Queensland", *Illustrated Sydney News*, 26 May 1877, pp. 8 & 10; and H.C. Brayshaw, *Aboriginal Material Culture in the Herbert/Burdekin District North Queensland*, PhD thesis, James Cook University, 1977, pp. 60-61.

the immediate time and place of construction. No evidence suggests that any dwelling in a mining area was designed for defence against violent attack.

There were however, a chain of telegraph stations built between Laura and Cape York in 1886 and 1887, six of which were designed as fortresses; entirely enclosed in corrugated iron, with internal water tanks and stairways, and loopholed iron turrets projecting at corners to permit fire along all four walls.¹⁵

The ground floor has one opening only, and that situated at the rear of the building. Here a large heavy gate swings on massive hinges to receive the visitor who finds himself within a high palisade of galvanised sheet-iron. Herein you find all the conveniences imaginable - the wood-heap in one corner, the butcher's shop in another, three spacious iron tanks with an abundant supply of cool water. Inside this palisade is a flight of steps that leads to the second story. Here, all round an oblong [sic] opening are eight separate rooms or compartments, their size plainly manifesting the spaciousness of the structure. The oblong opening just mentioned allows free access to the air, being in fact, a sort of elevated court-yard. In the right hand front room is located the key to the wire that extends north and south on either side of the building. In the left hand corner, blocking up the angle of a spacious balcony, is a small turret, with two openings large enough to accommodate the muzzle of a Snider. At the rear, in the opposite angle is another turret with like conveniences. 16

But these were never more than isolated curiosities. It appears the defensive features were never used for their intended purpose, and the turrets were subsequently converted to bathrooms¹⁷, and in one case, dismantled to build a fowl house.¹⁸

¹⁵ Plans of these buildings are held at the Australia Post Historical Section and the Commonwealth Department of Housing and Construction, Brisbane.

¹⁶ *Queenslander*, 31 October 1896.

¹⁷ Note on Housing and Construction plan.

¹⁸ *Queenslander*, 28 November 1896. The Musgrave telegraph office still stands, much modified, and without its turrets.

Europeans' perception of the North Queensland environment was coloured by whatever their economic and political motivations were in settling, promoting or discouraging settlement in the region. First reports on the inland of northern Australia came from the explorers' journals, which were widely circulated but contradictory in their effect. From the 1840's, long before European settlement commenced, came Leichhardt's account which emphasized open grassland and permanent watercourses, with hints of mineral wealth¹⁹; and almost simultaneously Carron's report on the Kennedy expedition, a litany of defeat at the hands of a harsh environment.²⁰

There is a tendency in much recent writing to emphasize these harsher aspects of the climate of North Queensland, and a widespread assumption that the environment was perceived by early European settlers as threatening: a tendency which reflects the debate about "the white man in the tropics". In fact there is very little evidence that the first generation of Europeans entertained any doubts about their ability to occupy the area, nor that they considered themselves unduly oppressed by the climate. Indeed, according to one observer: "If you have pleasant companions and the weather is fine, as it mostly is in Queensland, you lead a thoroughly pic-nic life."²¹

Most of the questioning of European ability to settle North Queensland successfully arose in the later nineteenth century, when the issue of imported labour in the sugar industry was a motivating force behind arguments against white immigration. The debate continued into the twentieth century, frequently in transparently tendentious terms, of more interest to the study of ethnic attitudes than of

¹⁹F.W.L. Leichhardt, *Journal of an Overland Expedition* ..., London 1847.

²⁰W. Carron, *Narrative of an Expedition* ..., Sydney 1849.

²¹C.H. Allen, *A Visit to Queensland and her Goldfields*, London 1870, p. 250.

either climate or health.²² If there was ever a genuine question about European settlement in the tropics, it was satisfactorily answered by the miners and others who engaged in strenuous labour, as Samuel Griffith pointed out in 1886:

... it is a fact that for many years white men have been engaged in the lumber business in these same jungles - a work much more arduous and quite as injurious to health as the cultivation of sugar - and these men almost unanimously ridicule the notion that white men cannot do any kind of outdoor work in North Queensland. Their own health, when they have not injured it by excesses, is the best proof of the correctness of this view. 23

In 1910 the point was made more succinctly: "It seems ridiculous to doubt that if men can endure the heat and dusty gas-charged atmosphere of some metallurgical works in Queensland, they cannot survive in the sugar fields of Mackay."²⁴ However, it was pointed out that there were undeniably high mortality rates in parts of tropical Queensland, which were blamed at times on the climate, although inadequate sanitation and water supply seem equally likely causes. The literature on this subject usually dwells particularly on the health of women. Ahearne wrote of "tropical residence fairly taking away the girl's womanhood".²⁵ Bishop White claimed:

... every man who is able to do so sends his wife and family down south every other year if possible, while many keep them permanently there, only visiting home at intervals. The cost of maintaining two homes is so great that men would never do this without real need. It

²²For a summary, see Gregory, "White Labour", pp. 368-380; R. W. Cilento, *The White Man in the Tropics*, Melbourne 1925; A.G. Price, *White Settlers in the Tropics*, New York 1939, pp. 52-76.

²³S.W. Griffith, "Proposed Separation of the Northern Portion of Queensland: Correspondence on the Subject", *Journals and Printed Papers of the Federal Council of Australasia*, vol. 1, Hobart 1886, p. 7.

²⁴Gregory, "White Labour", p. 378.

²⁵Ahearne, "Physique of the...North Queenslander", pp. 796-7. "Women's complaints" in a tropical climate were also alluded to in a great number of newspaper advertisements for patent medicine.

is not the discomfort of life in the north
that takes women to the south, it is their
continual, though not always serious, ill-health. 26

This practice was much less usual than White claimed, except perhaps among a small wealthy stratum for whom the attractions of the south were as much social as climatic. It was common for a mining field to be predominantly masculine in its early life, but the reasons were to do with the unwillingness to commit finance to an uncertain enterprise. On a proven field the sex ratio was balanced rapidly.

A self-consciousness in the matter of climate and health pervades much writing from North Queensland. When in 1881 the Australian Mutual Provident Society removed an extra premium it had levied on life assurance policies for tropical residents, Thadeus O'Kane of the *Northern Miner* delightedly reported the passing of another slur on the region.²⁷ By the early twentieth century it was usual for illustrated newspapers such as the *North Queensland Register* to publish weekly photographs of chubby babies, as evidence of the healthfulness of the climate.

It is agreed by a multitude of observers that the conservatism of settlers prevented their accommodating fully to the requirements of the climate.

The time-honoured hot mid-day meal is
faithfully eaten under the burning sun
of the tropics, and the clothing worn in
the hottest time of the year differs but
little from that worn in the coolest. A
black silk hat and a black cloth coat are
considered indispensable at all society
functions of an exalted nature, no matter
how hot the day may be ... 28

²⁶G. White, *Thirty Years in Tropical Australia*, London 1918, p. 102.

²⁷*Northern Miner* 29 November 1881.

²⁸W.F. Taylor, "Influence of the Climate of Queensland in its Inhabitants of European Origin", *Proceedings of the Royal Society of Queensland II*, 1896, p. xxiv.

And the influence of this conservatism on the design and choice of materials for buildings was consistently lamented:

...the English colonist is too ready to carry with him the manners and customs of his own country, and too slow to adapt himself to the necessities of a climate so entirely different from that of England. He ought to learn a lesson from the Anglo-Indian, who would be able to show him how to build houses that would more effectually exclude the heat than the thin weather-board constructions which are hastily put together and which, with their very slight low roofs and ridiculously small rooms, become heated like ovens under the fiery glare of a tropical sun. Even worse are those houses which are built of galvanised iron and the same may be said of the iron churches in which, still following the customs of the old country you are expected to attend divine worship, at eleven in the morning, under the full blaze of a vertical sun. 29

Ivimey in 1888 pointed out with heavy irony the gulf between popular taste and suitable design: "Some of the houses built in Cairns are actually adapted to a tropic climate"³⁰, and Gregory over twenty years later found "many of the smaller houses...are as ill adapted for the tropics as houses well could be".³¹ But such criticism is mixed with occasional contradictory expressions of praise for the successful adaptation of buildings to the climate:

With good drainage and plenty of trees Townsville would be enduring; it might be pleasant, for the citizens know how to build, and how to dress for the climate; fine wide verandahs, houses set high on piles; plenty of windows, broad-brimmed white hats, and white clothing - these things mark the sense of the people of Townsville and of Queensland. It would please some architects

²⁹ Allen, *Visit to Queensland*, pp. 159-60.

³⁰ A.J. Ivimey, *Mining and Separation in North Queensland*, Brisbane 1888, p. 123.

³¹ Gregory, "White Labour", p. 378.

one knows, to see the banks and public buildings of Townsville, built in refreshing white, with colonnades and arcades, and looking like places for human beings in a hot climate, and not like gaols for lost spirits. 32

By the 1880's there was undoubtedly a body of expertise in the design of buildings for a hot climate, but that knowledge was not always considered important by residents of North Queensland.

...the principles upon which State Schools are designed in this Colony are as follows.... By reference to the plan submitted by the Committee it will be seen that although the climate is eminently tropical this great principle has been abandoned ... 33

It is interesting that the need for special design considerations in tropical conditions was being pressed by administrators in a temperate climate against the wishes of local residents, who saw economy as the principal determinant of the building's design.

While much popular writing and theorizing has emphasized ways in which climate may have influenced buildings, there has been a tendency to overlook the benign aspects of the region's environment. While the summers are hot, they are not much more so than in many other parts of the continent, and as Ray Sumner pointed out:

The climatic conditions in north Queensland are well within the limits of tolerance for a healthy person, so a dwelling is not strictly necessary for survival from the elements; nor is there any threat from predatory wild animals. Thus most explorers, pastoralists and miners found it convenient, and even preferable, to sleep in the open air. 34

³²Parker, *Round the Compass*, pp. 276-77.

³³Superintendent of School Buildings to Undersecretary for Public Instruction, memo 18 September 1882, commenting on a plan submitted by a local committee for a school in Charters Towers, EDU Z 560 Q.S.A.

³⁴Sumner, *Settlers and Habitat*, p. 1.

Once the North Queensland climate is reconsidered as essentially benign, it is pointless to seek its influence on buildings in specific innovations with the positive intention of combatting some external force; it is instead negative, in freeing the builder from the restraints imposed by climate elsewhere. Whereas a major function of buildings in most parts of the world is insulation to conserve warmth, that function can not only be neglected in this region, but is distinctly undesirable. The protective functions of the building in a warm climate are thus reduced to providing privacy, security for possessions and keeping out rain. The latter problem had been solved most satisfactorily before the European settlement of North Queensland by the development of corrugated galvanised iron: for the other two the builder was able to provide a much lighter and cheaper solution than would have been possible in most other parts of the world.

CHAPTER TWO

"... willing to live like pigs
if they can only make money."

Mining Settlement in North Queensland

The first Australian gold rush occurred in 1788. Early in that year a convict named Daly announced the discovery of gold a few miles from Sydney Cove, and for a day or two the settlement was agog as a party of marines sought to relocate his find. When the "discovery" was revealed as a deception, Australia's first prospector received 300 lashes as his reward.¹ While no more than an act of duplicity by a man with an obscure motive, the affair foreshadowed on a small scale some of the elements which were to characterise later mining settlement: the excitement, the credulity, the ephemerality; and the difficulty experienced by colonial administration in coping with population movements founded on these elements.

It is unnecessary to provide a chronological account of mining in North Queensland,² but a broad view of the major discoveries will assist in distinguishing the principal types of mining settlement. Pastoral settlement commenced in 1861, and the ports of Bowen, Wickham, Townsville, Cardwell, Somerset and Burketown were established by 1865. Gold discoveries occurred from 1865 onward, the first major find at Cape River in 1866; the resulting influx of prospectors had established a broad crescent of alluvial fields from Bowen to the Gilbert River by 1870. The pattern of expanding alluvial discovery spread steadily north. Small rushes were still occurring in Cape York Peninsula as late as the 1930s, but the last significant alluvial discovery was the Oaks at Kidston in 1907. Alluvial fields and their ephemeral settlements were a constant feature of North Queensland life; there was a discovery of some significance in almost every year between 1866 and 1907. But one field stands alone: the Palmer produced nearly a million ounces of alluvial gold in five years from 1873, sparking a monumental population movement into an area far beyond previous European settlement. It will be referred to repeatedly in this chapter, as the archetype of alluvial goldfields.

¹*Historical Records of New South Wales* 2, p.746.

²Bolton, *Thousand Miles*, especially chapters 3, 6, 12 and 13, provides the best general account of mining in the region.

In the wake of the alluvial discoveries, a few goldfields developed into more stable underground mining settlements. Charters Towers, by far the most important, produced 250 tonnes of gold between 1872 and 1920; Croydon, Ravenswood and the Etheridge between them made up the bulk of other underground gold production. Other small towns such as Coen, Limestone, Kingsborough, Cumberland and Lione town were sustained largely by a single mine.

Other metals produced small underground mining towns. Silver was discovered at Totley in 1879, and later at Silver Valley, Montalbion and Muldiva. Tin, first found on the Wild River in 1875, created alluvial and reefing settlements throughout the Herberton-Irvinebank-Mount Garnet district and the Cooktown hinterland from 1880 to 1914, and is one of the few mining industries to survive in North Queensland until the present. Copper created the Chillagoe and Cloncurry districts and scattered towns like Cardross, Mount Molloy and O.K. These boomed at the beginning of the century, only to crash with the copper price after 1907—Cloncurry rose again with wartime copper prices in 1916. The struggles of the base metal companies after 1907 brought to life North Queensland's two coal-mining towns, Mount Mulligan and Collinsville, although neither was significant until the arrival of railways in 1914 and 1922 respectively.

The mining fields, without exception, were abandoned or struggling to survive at the beginning of the First World War, through depletion of ore-bodies or rising costs, or both. The exodus of labour after 1914 crippled the surviving ones, except the few copper mines which prospered briefly during the war. The last of these were closed by 1923. In that year not one significant metal mine was operating north of Mount Morgan, although the State had attempted to sustain small producers at Chillagoe, Irvinebank, Charters Towers and the Oaks by purchasing or building milling and smelting plants.

A study of the habitations of miners in this region must be informed by knowledge of the miners, their industry and the society which developed around that industry. A dwelling place is for most people throughout history the largest, most expensive, durable and

demanding artefact in their possession; its location, scale, form, materials and details are determined by the occupant's and builder's way of life in the broadest sense. The physical environment, the miner's cultural background and previous experience, and his income, attitudes and aspirations all help to determine the nature of the structure he inhabits.

Although mining settlements in North Queensland were extremely diverse, all can be divided into two categories, alluvial or underground; distinct in their implications for settlement and habitation, and in the quality of the historical evidence they provide. At one extreme is Charters Towers, with a peak population of nearly 30,000 and virtually every amenity European culture could provide, which has survived for over a century. At the other are the ephemeral camps—Cornish Jim's Rush, Mulligan's Camp, Swiper's Flat—about which almost nothing is known except their names. This chapter seeks simply to illustrate some features of that diversity.

Typically, four phases can be identified in the life of a mining settlement. An influx of miners into a new locality and their demand for a social and commercial infrastructure brought a period of *establishment*. If the mineral discovery proved to be a "duffer," this first phase was curtailed and the field declined. A more successful discovery enabled development to proceed to the stage of *stability*, characterised by a fairly constant population level, a secure income for the majority, the appearance of service industries and a reasonably comfortable way of life. Alluvial settlements almost never reached this stage. Some fields achieved a more dramatic though relatively brief boom period: the *prosperity* phase, in which surplus income was manifested in a very comfortable way of life, conspicuous expenditure, and service industries providing non-essential goods and services. All eventually entered a period of *decline* culminating in abandonment or adaptation to a new staple industry. In some cases a new mineral discovery or technological development revitalised a declining settlement into a further period of stability or even prosperity; Ravenswood's resurgence between 1900 and 1912 provides the most dramatic example.

The North Queensland gold and mineral fields were part of a wave of discoveries, first involving alluvial gold, which had occurred in California, New South Wales, Victoria and New Zealand; and which subsequently moved on to New Guinea, South Africa, Western Australia and the Klondike.³ North Queensland inherited the participants, personal habits, technology and jargon of the earlier fields; there was little innovation in mining methods or way of life except what was enforced by geology, climate or isolation.

An entirely separate tradition affecting mining and all other communities in the north arose from the succession of failed attempts at exploration and settlement in northern Australia in the second quarter of the nineteenth century: six separate attempts at coastal settlement were defeated between 1824 and 1864.⁴ But these were an ill-assorted collection of failures—four attempts at a trading entrepot, one pastoral settlement and a penal colony. All were poorly-sited, all were based on inadequate knowledge and lacked support after establishment. But each also had a legacy of alternative explanations which carried more weight in folklore: distance, lack of water, Aboriginal hostility and disease.

Early settlers were told vague tales of horrors awaiting them:

. . .before we left Brisbane we were told that we should most likely be killed and eaten by the Blacks, or else by the Crocodiles, & if not we should die of the fever; . . .⁵

³The best account of this phenomenon is W.P. Morrell, *The Gold Rushes*, London 1940. A superficial description is R. May, *The Gold Rushes: from California to the Klondyke*, Melbourne 1977.

⁴1824 Port Essington (short-lived); 1824-29 Fort Dundas, Melville Island; 1827-29 Fort Wellington, Raffles Bay; 1838-49 Victoria, Port Essington; 1847 Gladstone, Port Curtis; 1864-67 Palmerston, Adelaide River. (See P.G. Spillett, *Forsaken Settlement*, Melbourne 1972; D. Lockwood, *The Front Door*, Adelaide 1968, pp.2-29; J.F. Hogan, *The Gladstone Colony*, London 1898, pp.5-70.)

⁵Arthur Neame, diary. Typescript held by Hinchinbrook Shire Council, p.20. Hereafter Neame diary.

As settlement proceeded, the mythic north receded ahead of it, but retained its reputation:

The "far north" here is like the far west
in America, and strange wild stories are
brought down about it.⁶

The extent to which these tales influenced settlement is debatable. It is difficult to establish that any person was deterred from coming to North Queensland by its reputation. Indeed, Ray Sumner has pointed out the strength of optimistic illusions even after practical experience had disclosed adverse conditions in real forms.⁷

The mining industry had its own legacy of debacle. Gold mining in Queensland commenced in 1858 with the Canoona rush—an instance of mass hysteria which brought thousands⁸ of miners into the Port Curtis district on the strength of lurid exaggeration of a modest gold discovery.⁹ The resulting distress and civil disturbance had its impact in two directions. On one hand it left an ingrained suspicion to temper the credulousness of alluvial miners. As late as 1901 a government geologist recorded, ". . .the name 'Canoona' is even now, after the lapse of forty years, execrated in mining camps from Coolgardie to Croydon."¹⁰

⁶D. Adams (ed.), *The Letters of Rachel Henning*, Sydney 1963, p.161. Hereafter Henning, *Letters*.

⁷R. Sumner, "Some Early Illusions Concerning North Queensland," *LiNQ* 3 (1974), 74-87.

⁸Hogan, *Gladstone Colony*, p.125 quotes a contemporary estimate of 40,000. This round figure sound suspiciously like the later gross over-estimates of the populations of several other goldfields. The number was probably nearer 10,000. J.M. Maclaren, *Queensland Mining and Milling Practice*, G.S.Q. publication 156, 1901, p.2 has 16,000.

⁹See Hogan, *Gladstone Colony*, pp.93-134; J.T.S. Bird, *The Early History of Rockhampton*, Rockhampton 1904, pp.9-18; W.R. Golding, *The Birth of Central Queensland*, Brisbane 1966, pp.27-40. None of these accounts is reliable.

¹⁰Maclaren, *Mining and Milling*, p.2.

And the impact of Canoona immediately preceding Separation had a lasting effect on the administration of goldfields in Queensland. When the rush to Gympie after 1867 threatened a repetition, the legislature debated the Gold Fields Bill of 1869, and the implications of such horrors as "disputed claims," "illegal traffic in spirits" and "a large number of persons, . . . without sufficient capital to enable them to carry on their operations, if the alluvial diggings did not prove successful."¹¹ The bill, concerned largely with the powers of goldfield commissioners, failed, and it was 1874 before the *Gold Fields Act* established the administrative forms which persisted throughout the mining years. The 1874 act gave the goldfield warden sweeping authority, amplified in later years by his frequent adoption of the additional offices of Police Magistrate and Mineral Lands Commissioner.

Another event which achieved notoriety, quite out of proportion to its true significance, was the abandonment of Gilberton in late 1873. Established in 1869 as an alluvial and shallow reefing gold town, Gilberton had been in decline for a year or more through a combination of isolation, climate, failure to attract crushing machinery and the rise of Georgetown as a rival commercial and administrative centre; but its abandonment was accelerated by a sudden increase in Aboriginal resistance.¹² This alone was remembered among the many and complex causes of Gilberton's fall. As Janice Wegner summed it up:

. . . the causes of the event are perhaps not as important as the effects; Gilberton's desertion became part of frontier folklore, a spectre to haunt anxious miners in isolated camps. . . .¹³

Folklore and notoriety aside, the realities of mining in North Queensland presented many features novel even to miners experienced

¹¹ Q.P.D. 9, 1869, p.326.

¹² R.B. Brown, "The Desertion of Gilberton," *Lectures on North Queensland History*, James Cook University 1974, pp.83-100.

¹³ Wegner, Etheridge, p.41.

on southern goldfields: all tended to make mining more difficult and life less pleasant.

The first of these was distance. Whereas the principal Victorian goldfields were situated 100-130km from Melbourne, and those of New South Wales 160km (Bathurst) to 300km (Forbes) from Sydney, the isolation of some of the northern fields beggars comparison. Their distance from Brisbane is in every case quite irrelevant, and the distances from the nearest seaport were often huge. Georgetown and Gilberton were 350km from Townsville; Cloncurry 660km from Townsville and 320km from the Gulf ports of Burketown and Normanton.

These distances must be considered in terms of the nature of prior European settlement in the region. Some of the North Queensland mineral discoveries—Cape River, Ravenswood, Charters Towers—were made within settled pastoral districts, but settlement was so new and economically precarious that little commercial or administrative infrastructure was in existence. Most were on the fringe of the settled area—Cloncurry, the Etheridge, Croydon, Chillagoe. A few—Herberton, Coen, the Palmer and the Hodgkinson—were in utterly virgin country, presenting problems of administration and supply never previously encountered on mineral fields in the Australian colonies. The cost burden imposed by the overland distances and lack of previous settlement was crippling. Nor was this problem confined to the early years. Even decades after settlement, new mineral discoveries in areas remote from transport routes—Esmeralda, Woolgar, Batavia, O.K.—could succumb to precisely the supply problems which beset all fields in the earlier years.

Even the geology of the northern fields proved alien to diggers from the south. Many of the Victorian goldfields were characterised by "leads," old alluvial channels buried under later deposits. As discovery and exploitation of these leads was ideally suited to small labour-intensive mining operations, the Victorian fields provided

employment and sustenance over long periods.¹⁴

With the single exception of the Cape River Deep Lead,¹⁵ the goldfields of North Queensland lacked this feature: alluvial gold was found only in surface alluvium, normally in creek and river beds. As early as 1869, Richard Daintree recognised the implications of the shallowness of the northern alluvial fields: they would be short-lived; either a succession of new discoveries must follow rapidly, or the colony would face chronic unemployment.¹⁶

The population structure of mining settlements varied greatly. Poor documentation leaves the structure of most of the alluvial fields in doubt, but fortunately the greatest of the North Queensland alluvial rushes, the Palmer, was recorded by the 1876 census while it was still growing towards its peak population.¹⁷ The Palmer was atypical in the proportion of Chinese in its population (73% in May 1876):

The whole district is crowded with Chinese who keep stores, butcher shops, gambling houses and also grow vegetables at every different settlement. You might almost fancy yourself in China there are so few whites to be seen,¹⁸

¹⁴R.B. Smyth, *The Gold Fields and Mineral Districts of Victoria*, Melbourne 1869. It must be kept in mind that the technology of what was often referred to in Victoria as "alluvial" mining would have been regarded as shallow underground sinking in North Queensland.

¹⁵W.H. Rands, *Deep Lead, Pentland, Cape River Gold Field*, G.S.Q. publication 96, 1894. The term was occasionally used in connection with the gold-bearing conglomerate stratum on the Palmer, but this was never successfully exploited, and its geology is quite distinct from that of the Victorian goldfields. There was also a deep tin lead near Herberton.

¹⁶Daintree in *Q.V.&P.* 1869 vol.2, p.171. See E.B. Kennedy, *Four Years in Queensland*, London 1870, p.208 for mention of Victorian miners' failure to recognise conditions at Gympie where leads existed.

¹⁷*Fifth Census of Queensland 1876*, Brisbane 1877, provides the basis on which the following statements about population in that year are made.

¹⁸C.W. Bowly, letter 29 November 1876. Typescript in James Cook University Library, p.153. Hereafter Bowly letters.

but otherwise probably reflects the population found in the early years of other mining settlements. Of 9,215 inhabitants, only 119 were women—1.3% of the population, compared with 39.4% women in the colony as a whole. Few of the goldfield population were very old or very young: 59.3% were aged between 25 and 40.

By contrast, Charters Towers in the 1901 census represented a reefing town at maturity. Here the population was balanced: of a white population of 21,071, 49.2% were female.¹⁹ Age distribution is not given for the goldfield, and the surrounding census district of Kennedy takes in a much more diverse population, but for some years past the warden had been estimating the field's population at about 70% "women and children."²⁰

The origins and previous experience of the alluvial miners can be shown in part from census figures and from registers of births and deaths. Problems arise however in interpreting these figures. On some fields, particularly the Palmer 1876-78, a substantial proportion of the population was Chinese born. Yet Chinese names almost never appear in the birth and marriage registers, and surprisingly rarely in the death register.²¹ Some reasons for this are obvious, but others can only be conjectured. Thus in considering information drawn from the registers, it must be kept in mind that the community represented was at times a minority group in a much larger population which has left very little documentary evidence.

With the exception of the Palmer and to a lesser extent the Hodgkinson and Etheridge, the greatest single proportion of the mining fields' population was until the 1890s born in the British Isles. There were few Queensland born, although up to 25% in the early years were born in the southern colonies. A significant minority was born elsewhere in Europe, principally Germany and Scandinavia.

¹⁹The goldfield census table does not enumerate non-whites by sex.

²⁰A.R. 1896, p.37; 1897, p.35; *et seq.*

²¹Registers of births, deaths and marriages for the Palmer district are held at Cooktown courthouse. However, these figures are strikingly incomplete: probably the most useful information in the Palmer death register comes from its very paucity of detailed entries, demonstrating either a casualness toward death or more probably, the anonymity which surrounded many of the mining population even in their own time.

The 1876 Palmer census, excluding Chinese, shows 69.5% born in Britain, 13.9% born elsewhere in Europe, 10% in Australia outside Queensland, and 3% in Queensland. Here there is a substantial divergence from the population of the colony as a whole, 34% of whom were born in Queensland and only 40.6% in the British Isles. This tendency to include a higher proportion of British born is confirmed in the register of births for the Palmer district, 1874-78, where 60% of parents of both sexes give their place of birth in the British Isles, and only 3% of the mothers and *none* of the fathers were Queensland born.

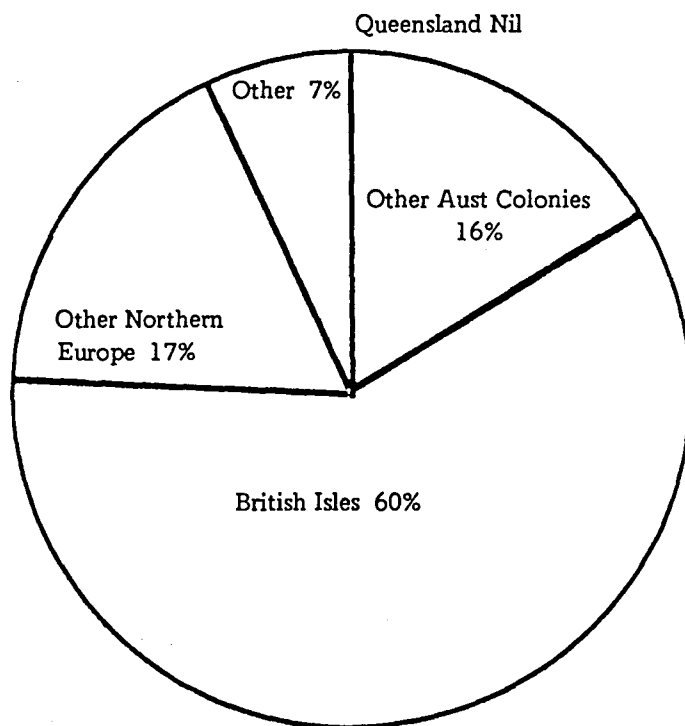
There is evidence, however, that the British majority of the white population of the goldfields had typically spent some years in the Australian colonies before arriving in North Queensland. Of the deaths registered in the Palmer district in the first 21 months of the rush, more than half of those for whom the information was known had been more than ten years in the Australian colonies. For obvious reasons the entries in the register of births give fuller information. Although very few were Australian born, 78% of parents registered on the Palmer 1874-78 had been married in Queensland, and a further 17% elsewhere in Australia. It appears that most of them had emigrated to Australia when single, and married in the Australian colonies, most of them in Queensland.

Some aspects of origins and previous experience are not illuminated by published or archival sources. There is for example a traditional belief in an influx of miners from the Californian goldfields to North Queensland. The point is worth following up, for the cultural impact of these Californians could have had great significance if such an influx did in fact occur, but no reliable figures exist. The number of American-born was small—no census ever recorded more than 1% of the population of any North Queensland goldfield as born in North America. However there is no satisfactory way of estimating the number of returned Australians who may have had some experience in California,²² nor the number of those born

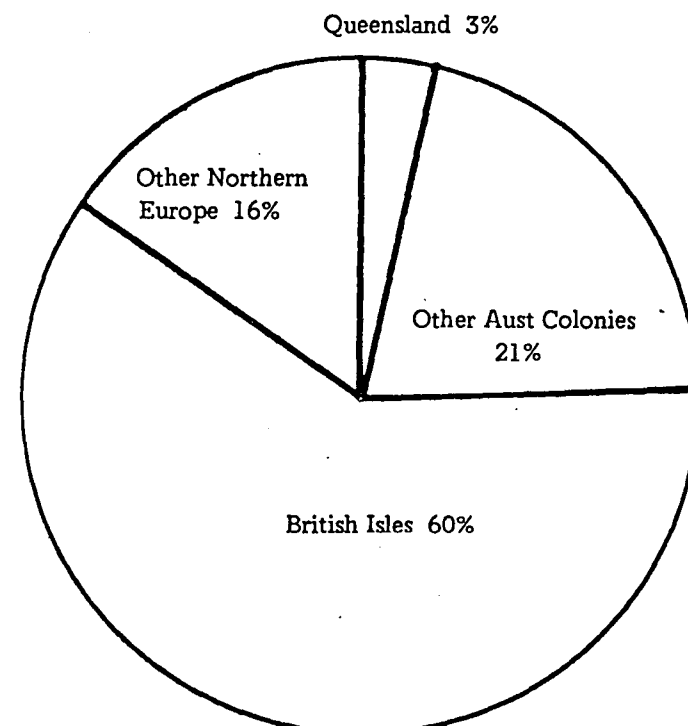
²²See C. Bateson, *Gold Fleet for California*, Sydney 1963, for contact between Australia and California in the early gold rush period.

BIRTHPLACES OF PARENTS OF CHILDREN BORN IN
THE FIRST FIVE YEARS OF THE PALMER GOLDFIELD

(Source: Register of Births, Palmer, 1874-78)



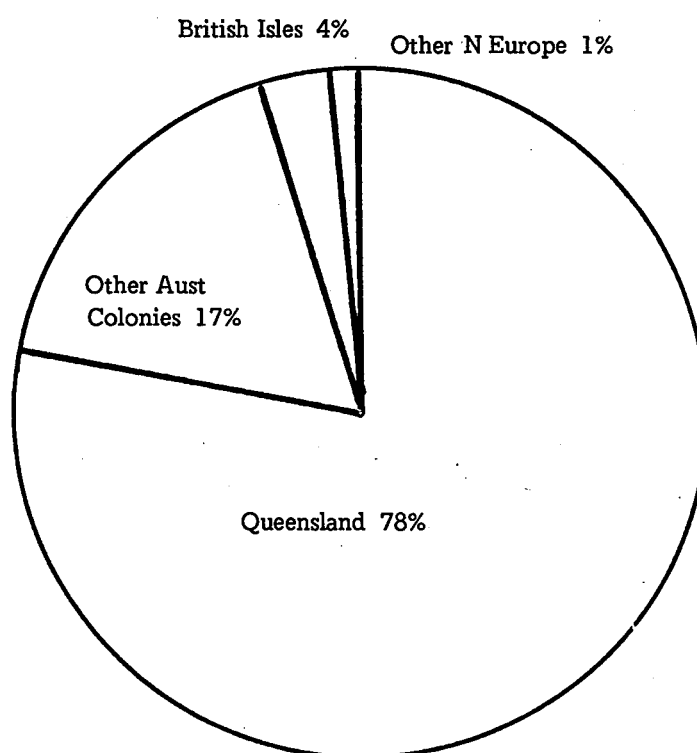
FATHERS



MOTHERS

PLACES OF MARRIAGE OF PARENTS OF CHILDREN
BORN IN THE FIRST FIVE YEARS OF THE PALMER
GOLDFIELD

(Source: Register of Births, Palmer, 1874-78)



in Britain and elsewhere who came via the Californian and other American fields to Australia.

This was probably not an unusual course: to take two examples, the manager of the Australian Gold Recovery Company's cyanide works at Croydon from 1895 until its closure was G.E. Jewell, who held a BSc degree from the School of Mines at Golden, Colorado, but was born in Northampton.²³ For many years Ravenswood boasted a flamboyant character styled "California Fred," who was the last survivor of the influx of miners which gave its name to American Camp on the Ravenswood goldfield about 1870.²⁴ But Frederick Knight was born in Hanam, Surrey in 1849, and if the information on his certificate of death is correct, his stay in California must have been brief, for he arrived in Australia at the age of nine.²⁵

The movements of individual miners cannot be determined from population statistics, but from the wardens' constant references to rushes from one field to another it is apparent that a large mobile population existed, responsive to news of discoveries elsewhere. This situation has also been described in the mining regions of the American west as "a community without a locus. . . diffused over a vast geographical region and crystallised in the form of a camp for brief periods of time around this or that discovery."²⁶ For how long individuals typically remained in this fluid community is uncertain, but it was frequently a matter of years, and sometimes decades. The diary of E.G. Chapman shows him as semi-itinerant for a period of four years, working part of the time at alluvial mining, and sometimes carting on contract or for

²³Information from Jewell sisters, Cairns.

²⁴Fred was renowned in later years for growing his own tobacco, drinking an evil-smelling chilli liquor of his own manufacture and carrying a Derringer pistol.

²⁵Information from his granddaughter, Mrs Crow of Townsville; and Register of Deaths, Brisbane.

²⁶W.A. Douglass, *The Mining Camp: A Unique Social Phenomenon*, unpublished paper, University of Nevada, 1979, p.13.

wages.²⁷ There are hints in the diary suggesting he had been on North Queensland goldfields for many years earlier.²⁸

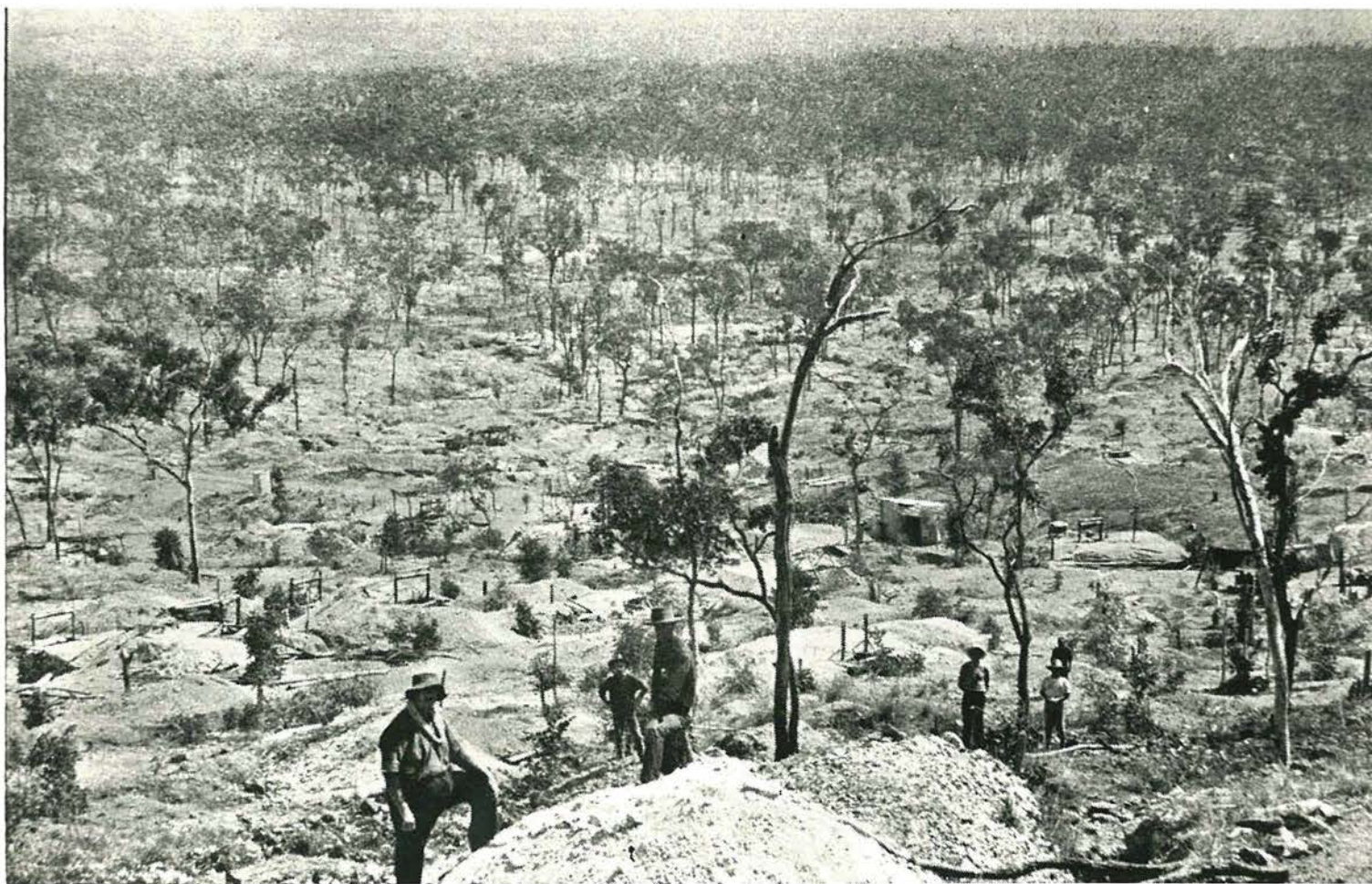
The case of James Mulligan, well documented but probably atypical, is worth examination. Mulligan arrived in Melbourne in 1860, and was on the New England, Gympie, Kroombit, Charters Towers, Gilbert and Etheridge fields before achieving celebrity as the discoverer of the Palmer in 1873. For three years he travelled constantly, discovering tin on the Wild River in 1875 and gold on the Hodgkinson in 1876. He was a storekeeper in Thornborough from 1877 to 1879, discovered Silver Valley in 1880 or 1881, and was at the establishment of Irvinebank in 1883, probably spending some time as a prospector in the employ of John Moffat. Apparently joining in the early Croydon rush of 1886 where he gave his name to Mulligan's Camp, he stayed on that field until 1889, when the government retained him to report on the Palmer in 1890. Involved in mining on the Mitchell River in the early 1890s, his activities are uncertain until he became associated with a mine at Mount Madden in 1896 and another at Mount Molloy in 1899. He was then on the Alice River in 1902-3, and involved in mines at California Creek in 1904 and Mount Spurgeon in 1906. He died at Mount Molloy in 1907, aged 70.²⁹

The industry and social structure of a mining town was determined to a great extent by the geology of its ore deposits. Gold created the largest and most durable mining settlements, for its value was higher than that of any other mineral, justifying a higher sustained effort in extraction. Most gold fields were initially alluvial discoveries, requiring simply manual labour and a degree of skill for mining and separating. It was feasible for

²⁷ E.G. Chapman, diary 1895-99, held by Mr V. Butcher, Charters Towers. Hereafter Chapman diary.

²⁸ See entry 22 May 1897, which suggests Chapman was in the first Gilbert rush of 1869.

²⁹ A.D.B. 5, pp.310-11; Bolton, *Thousand Miles*, pp.52, 259, 287-88; R.S. Kerr, *John Moffat's Empire*, Brisbane 1979, pp.16, 33, 80; *North Queensland Mining Annual*, 1891, map after p.24; P.O.D. 1888-1890.



The Oaks goldfield, 1908.

(A/9218 Q.S.A.)

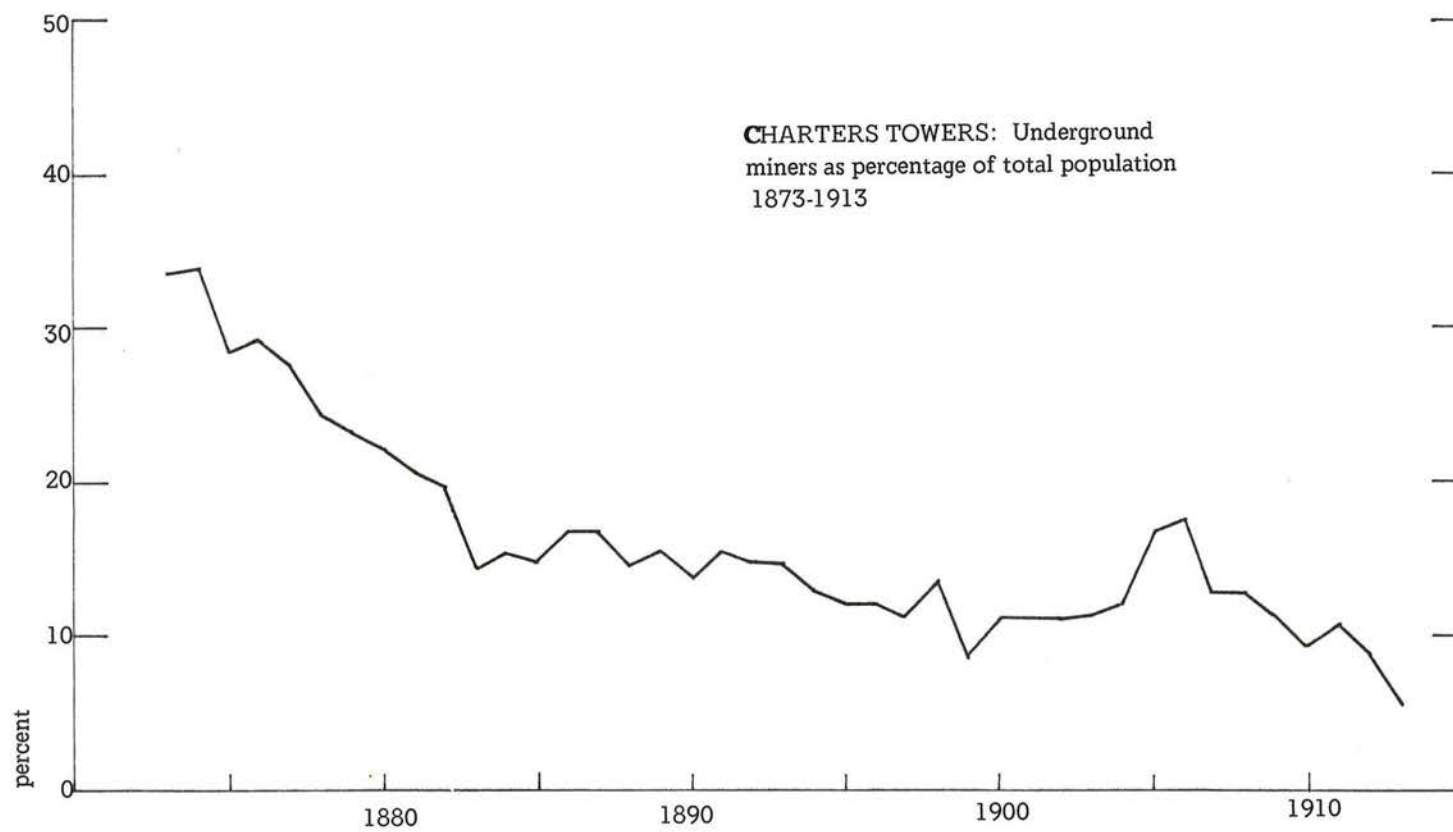
an alluvial miner to work alone, although a small group made for greater efficiency. Thus the greater proportion of the population of an alluvial goldfield—80 to 90%—consisted of miners.³⁰ Aware that the life of the field was probably short, few brought dependants, and their needs were met by a relatively small number of carriers, shopkeepers, butchers, hoteliers and administrators. More complex social institutions rarely developed on an alluvial field; demand for service industry was slight.

As underground mining developed on a goldfield, however, the greater complexity of the mining and ore treatment processes and consequent demands on service industries encouraged a diversity of activity in the community. The relatively stable economy of a reefing town also encouraged dependants who themselves created further demand. Miners represented a progressively smaller element of the population as the trend toward underground mining continued. In Charters Towers, where the alluvial gold was insignificant, the underground miners diminished from about a third of the goldfield's population in the early 1870s to little more than a tenth by 1900.³¹ The miners were not decreasing in numbers, on the contrary; but the town was growing at a faster rate than the mining workforce throughout that period.

Many others were employed by the mining industry, although not as miners. Treatment of gold ore involved crushing mills and, in later years, cyanide plants: a major industry existed simply to transport ore and tailings between mines, mills and cyanide works. This transport industry itself created subsidiary demands for facilities for breeding horses, stabling, grazing, growing and carrying feed; and for tradesmen such as farriers, smiths, saddlers, harness makers, wagon builders, wheelwrights, veterinary surgeons and knackers. Many of the major mining companies had their own

³⁰Warden Sellheim put the alluvial miners at 8,000 in a total population of 9,000 on the Palmer in 1875, before significant underground mining began. From 1874 to 1878 his estimate of the proportion of miners varied from 79% to 91%. (A.R. 1878, p.23).

³¹See accompanying figure, based on *Statistics of Queensland*, 1873-1913.



railways, and the network of lines throughout the town employed further labour. Supplying firewood to mines, mills and locomotives was a major industry in itself. The fabric of all these works demanded the services of engineering plants, smiths, bricklayers, plumbers and tinsmiths, carpenters, timber cutters and merchants, glaziers, ironmongers: by 1890, Charters Towers had two foundries, four sawmills and a brickworks.³² From the population sustained by these industries, many services flowed:

There is a school of arts with a circulating library of 2,500 volumes, and reading-room supplied with the principal papers and periodicals of the day. There is a first-class and well-kept hospital, and a number of halls belonging to Masons, Oddfellows, and other lodges; a jockey club which holds four race meetings in the year; and a Mining, Pastoral and Agricultural Association that holds a show annually. Cricket, football, lawn-tennis, and rifle clubs also exist. The town possesses an efficient fire brigade—which has done good service in checking the spread of fires—and a corps of the Defence Force and Mounted Infantry. There are 3 newspapers—the *Northern Miner*, a morning daily, first established in 1872; the *Charters Towers Herald*, established in 1878; and the *Times*, established in 1887—both evening dailies. Two brass bands dispense their melody, one generally playing on Saturday evening in the main street, where everybody seems to make a point of congregating, the street being crowded from side to side, and presenting a very lively appearance.³³

No other North Queensland mining town ever approached this level of complexity and prosperity. Ravenswood and Croydon came nearest to it, but were on a much more modest scale.

The general atmosphere of the alluvial settlements is open to some question. Despite a romantic notion in much recent popular writing that the mining fields were characterised by violence and debauchery,³⁴ the diggings are more frequently described in

³² *A.R.* 1890, p.24.

³³ *Ibid.*, p.23.

³⁴ Much of this tradition originated in secondary works of recent decades such as I.L. Idriess, *The Tin Scratchers*, Sydney 1959.

contemporary accounts as exceptionally orderly. The same restrained behaviour and absence of crime that impressed visitors to southern fields such as Gympie³⁵ was normally taken for granted in North Queensland mining areas. However, the principal evidence for such a judgment comes from the reports of wardens, who it must be kept in mind had an interest in representing a calm and orderly state of affairs. When violence did occur, an amusing degree of understatement is apparent in the warden's report:

Beyond the Lukinville riots, this gold field has been very orderly all along. Offences against property have been perhaps, more numerous than usual, but in most cases they have been of a trivial nature. A dispute about a claim led to the shooting of a Chinese by an European, who, however, has since been acquitted by a jury.³⁶

But independent observers' comments on disorderly behaviour also frequently contain the inference that such a state of affairs was an exception to the norm:

This upper township [on the North Palmer] seems to be a thriving place, the storekeepers, butchers, shantyites are evidently driving a good trade, this was the only place that I saw any drinking or even a fight, and I fancy these exhibitions are generally signs of prosperity to somebody.³⁷

The consumption of alcohol on mining fields which received comment from some visitors was unremarked by others, suggesting their own background played an important part in their observations. Even those disapproving seemed not to detect an undesirable social climate:

³⁵ Gympie is much more frequently described in documentary sources than any northern field: see Kennedy, *Four Years*, p.212; C.H. Eden, *My Wife and I in Queensland*, London 1872, p.265; A. Trollope, *Australia and New Zealand*, Leipzig 1873, pp.83-84; and also C.B. Newling, "The Gold-Diggers," *R.A.H.S.J.* 11 (1925), 262-280.

³⁶ *A.R.* 1878, p.22. The Lukinville riots were a series of affrays principally involving Chinese miners after a rush to the lower Palmer in July 1878.

³⁷ *Cooktown Herald*, 13 May 1874.

Edwardstown is very prosperous. . . .I should think about 30 public houses and of course an awful amount of drinking, etc. I meet with some rough characters in places but all seem kindly disposed and afford the best hospitality they can.³⁸

W.R.O. Hill's reminiscences contain a number of accounts of unruly and violent behaviour on the goldfields. "The Cape in 1868 was a decidedly rough locality. . .," its population including ". . .the scum of all the Southern Gold Fields": but Hill wrote forty years afterwards, and his book is unquestionably sensationalised to show up his own sterling qualities.³⁹

The earlier experiences of the colonial government ensured that administrators arrived promptly on most significant mining fields in North Queensland, and their presence usually served effectively in maintaining order. Business, mining and the sale of alcohol were all regulated by licence, a police camp was established near each major settlement, and North Queensland mining centres were connected by telegraph in a surprisingly short time.⁴⁰ There was no trace in North Queensland of the vigilance committees which appeared on some American mining fields.⁴¹

³⁸Bowly letters 1 December 1876, p.156. Estimates of living costs and average earnings later in this chapter render questionable the legends of monumental drinking on alluvial fields.

³⁹W.R.O. Hill, *Forty-Five Years' Experience in North Queensland, 1861 to 1905*, Brisbane 1907, p.47. See e.g. pp.73-74 for 4 violent deaths and 2 assaults in four paragraphs of text!

⁴⁰The Colony's unsuccessful ambition to be the landfall of the intercontinental telegraph led to the construction of a line linking Brisbane to Normanton in 1871. (*Report of the Postmaster-General*, 1870-72.) Branch lines were quickly constructed to the major mineral fields.

⁴¹J. Nicholson, "Procedures and Perceptions of Authority: the Gold Rush Camps of Australia, Canada and the United States," *Public Administration* 32 (1973), 392-403 contrasts the USA and the British colonies in this regard, attributing the absence of civilian vigilance initiatives to different ideological attitudes to legitimate authority in British regions. I prefer the explanation implied in P.R. May, "Gold Rushes of the Pacific Borderlands: a comparative survey" in L. Richardson and W.D. McIntyre (eds), *Provincial Perspectives*, Christchurch 1980; that the Australian and Canadian fields differed principally through their administrators being forewarned by the American experience.

There is some evidence that orderly behaviour was directly related to productive mining on the part of the majority of the goldfield population, and that lapses occurred when a large unsuccessful population gathered at a rush. Commissioner Jardine, sent to investigate unrest at Millchester in 1872, reported that the disorder was not the doing of working miners, but of "a set of roughs" attracted to the field.⁴² It is significant that Jardine referred elsewhere to excess labour in the district—"many hundreds" of unsuccessful miners had returned to Townsville, and would need public assistance to return south.⁴³ Weitemeyer commented on the large number of unemployed in Cooktown in 1874, who included an element of "loafers, pickpockets and cardsharps."⁴⁴ Describing Croydon in 1887, Ivimey noted:

Socially, the Croydon miner is like a great many others of his class, with his worst fault limited to taking more alcohol, or what they get for alcohol, than is good for him. There are rowdies everywhere, however, and they have come to the field in great numbers; such are not miners, however, but the ordinary tagrail who come for any unconsidered trifles on hand.⁴⁵

These accounts describe conditions in the declines which followed the initial rushes to three major fields, when the population greatly exceeded the workable ground available, giving rise to rowdiness and sometimes more extensive social unrest.

The decline of a field forced its surplus workers to disperse, affecting the labour market initially in the local district but eventually over a much wider area. Neame gleefully recorded in early 1873 that labour was plentiful on the lower Herbert because of the

⁴²Q.V.&P. 1873, p.1074.

⁴³*Ibid.*, p.1071.

⁴⁴[T.P.L. Weitemeyer], *Missing Friends, being the Adventures of a Danish Emigrant in Queensland 1871-1880*, London 1892, pp.219-220.

⁴⁵A.J. Ivimey, *Mining and Separation in North Queensland*, Brisbane 1888, p.60.

exodus of unsuccessful Victorians from Charters Towers;⁴⁶ the same exodus Jardine had encountered in Townsville. Rachel Henning was likewise pleased in 1865 by an influx of disappointed miners from the Peak Downs rush:

Now . . . the masters have their turn. Biddulph never gives more than 20s. a week, and dismisses every man who does not please him.⁴⁷

Violence involved Aborigines much more commonly than Europeans only or Chinese; it was especially frequent in the unsettled areas of the Etheridge and the Palmer. Noel Loos has identified 147 European deaths from Aboriginal attacks in North Queensland mining areas between 1861 and 1897.⁴⁸ Noreen Kirkman, in a closer study of the Palmer between 1873 and 1883 regards 20 deaths as established beyond doubt and a further 31 as probable.⁴⁹ Deaths caused by Aboriginal attacks in this one area, therefore, occurred at a rate equal to at least one every six months and probably equal to one every ten weeks. Aboriginal violence was far from the major cause of death—only one of the first 200 entries in the Palmer death register from October 1873 to July 1875 is so attributed (although two other deaths are attributed to "murder" with no explanation)—but it was clearly a major cause of concern.

After initial penetration of the North Queensland region and the consequent skirmishes,⁵⁰ no Aboriginal attacks occurred on

⁴⁶ Neame diary, pp.54-55.

⁴⁷ Henning, *Letters*, p.208.

⁴⁸ N.A. Loos, *Aboriginal-White Relations in North Queensland 1861-1897*, PhD thesis, James Cook University 1976, vol. 2, pp.794-95.

⁴⁹ N.S. Kirkman, *Aboriginal-European Contact*, unpublished paper, James Cook University 1977, p.51. A further 41 contemporary reports were regarded by Kirkman as inconclusive or doubtful. These make a total of 92 deaths in ten years.

⁵⁰ There was determined resistance to several early parties in Cape York Peninsula; Leichhardt, Kennedy, the Jardines, Mulligan and the first Palmer expedition. See R.L. Jack, *Northmost Australia*, vol. 1, London 1921, pp.194-95, 216, 307-8; vol. 2, Melbourne 1922, pp.415, 421-22.

parties of armed Europeans, and it became usual for packers and miners moving between isolated settlements to travel armed and in company. Thus most Aboriginal attacks involved single unarmed travellers, and there was little sympathy for such people. When Charles Desailly was speared to death on the Hodgkinson goldfield in 1883, a police report dismissed him as "himself entirely to blame for his untimely end."⁵¹

The prevalence of firearms is well attested, particularly in accounts of the more isolated mining fields. Military carbines were cheap and popular—"Snider" became almost synonymous with "firearm."⁵² It is surprising that firearms rarely played a part in violence among Europeans or between Europeans and Chinese.⁵³ Bushranging never occurred in North Queensland on any significant scale—banks and gold escorts were unmolested in even the most desolate areas, probably because the absence of close agricultural or pastoral settlement in most mining areas denied potential North Queensland bandits their logistic base.⁵⁴

Although the alluvial settlements in their phase of stable production and optimum population were orderly places, and the

⁵¹Sub-Inspector E.H. Carr to Colonial Secretary 16 July 1883. 83/3847, COL/A366 Q.S.A.

⁵²The Snider patent breech-loading device of 1866 was a stop-gap adaptation to many Enfield Pattern 1853 .577 muzzle-loading rifles and carbines in British military service. The Snider-Enfields were made obsolescent by Martini-Henry breechloaders in 1871, and large numbers of them were in civilian hands in the Australian colonies in the 1870s. See I.D. Skennerton, *Australian Service Longarms*, Margate 1976, pp.19-22, 94-99.

⁵³There were isolated instances, notably the legendary murder and suicide of Craig and Smith in the street of Smithfield in 1877: Jones, *Trinity Phoenix*, p.123. See Wegner, Etheridge, p.46 for two reports of armed robbery during the early Etheridge rush. A shot was fired during a strike at Ravenswood in 1912, wounding a miner: A.L. Wilson to Directors, 9 January 1913, New Ravenswood Limited letterbook 5, held by Mr P. Kean, Ravenswood.

⁵⁴I have in mind McQuilton's theory of Australian bushranging as "social banditry" reflecting frustrated settlement ambitions in contested rural areas. See J. McQuilton, *The Kelly Outbreak: The Geographical Dimension of Social Banditry*, Melbourne 1979.

large deep reefing towns developed social structures and institutions comparable with those of stable towns elsewhere, there was a third category of settlements—the smaller underground base metal mining towns—where miners worked for wages as in the larger towns, but the structure of the community more closely resembled that of the alluvial camps. It is difficult to demarcate these towns. Bolton recognised the distinction when he contrasted the "settled welcoming look" of Herberton and Irvinebank, twenty years old, with the "raw edge of impermanency" about the new towns of Chillagoe, O.K., Stannary Hills and Almaden in the first decade of this century.⁵⁵

Marian Rowan, visiting Muldiva in the 1890s, left a convincing account of the noise, heat, disease, cost and impermanence of life in such a town.⁵⁶ In 1905 a state school teacher faced with a transfer to Redcap, near Mungana, recoiled from the prospect:

Redcap I have seen twice, and I put the case mildly when I say it is perhaps the roughest camp in North Queensland. . . . Since I cannot resign without borrowed money, I must accept Redcap.⁵⁷

The physical form of mining settlements was normally determined largely by expediency. The ethos of impermanence precluded any attempt at planning in the early stages of occupation; buildings were simply erected in the location most convenient to the owner. Sometimes a straggling alignment was induced by some natural feature—Irvinebank and Stannary Hills were forced into tortuous plans by their sites in steep valleys—but usually geometric arrangement was conferred only by a surveyor some years after settlement, and the plans of many mining towns show the surveyor's

⁵⁵Bolton, *Thousand Miles*, pp.291-92.

⁵⁶M.E. Rowan, *A Flower Hunter in Queensland and New Zealand*, Sydney 1898, pp.55-57. Her description of Muldiva appears as an appendix to this chapter.

⁵⁷J. Adam to Undersecretary for Public Instruction, 28 April 1905, 05/0847, EDU Z 460 Q.S.A. Adam was at the time teaching in Calcifer, near Chillagoe, and no stranger to mining towns.

attempt to draw a coherent plan around buildings already constructed.⁵⁸ In towns free to extend unimpeded, such as Georgetown and Croydon, the surveyors adopted the square grid plan familiar throughout the nineteenth century European world.⁵⁹ An attempt was made to impose order in advance on the Etheridge goldfield. There the mining surveyor marked off town plans "at any likely permanent camp" in 1892, to facilitate householders' selection of allotments in the event of a major discovery at the site.⁶⁰ It is uncertain whether these opportunities were ever exploited.

When a substantial town developed, urban planning could be further hindered by extension of mining into the town site. Croydon was fortunate; within a few years deep mining was concentrated at Golden Gate, several kilometres from the town. But in both Ravenswood and Charters Towers the march of progressively deeper mines down the underlying reefs led to cheek-by-jowl development of mining and social institutions: many of the largest mines of the Towers were in suburban streets.⁶¹

The location of a mining settlement was usually determined by proximity to some feature of economic importance such as a mine, mill or railway station. Butchers' shops frequently became the focus of settlement, since they provided the one staple item which for most of the year could not be carried or stored for more than a few hours. A permanent water supply was of course a major consideration, sometimes created artificially by pondage as an adjunct to ore milling. Croydon relied on underground water.⁶² When these desirable focal points were some distance apart, the

⁵⁸I am grateful for Don Roderick's insights into the evolution of the Charters Towers street plan, and the use of his unpublished typescript on the subject.

⁵⁹See "The Expanding Mining Frontier" in J.W. Reps, *Cities of the American West*, Princeton 1979, pp.490-522.

⁶⁰A.R. 1892, p.65.

⁶¹See R.L. Jack *et al.*, *Geological Map of Charters Towers Goldfield*, G.S.Q. publication 95, 1892 and 2nd edn 142, 1898; which superimposes the mine workings on the street plan.

⁶²Ivimey, *Mining and Separation*, p.60.

result was either a compromise settlement between them, or a number of small clusters of buildings around each. Thus within an area of a few square kilometres at the centre of the Palmer reefing district there arose Maytown, where the banks, post office and coach terminus were, Idatown at the principal mine and mill and Edwardstown at the abattoir.⁶³

When railway communication was established, the station usually became the dominant focus of settlement. There was bitter competition among mining centres for construction of railways, although the benefits were often disappointing. Unquestionably a few settlements prospered after the railway arrived: Charters Towers and its coastal terminus, Townsville, after 1882, Mareeba and Cairns after 1893. But it was quite possible for a town to collapse on arrival of the railway—Mount Garnet in 1902, Mount Mulligan in 1914—for reasons entirely separate from transport.⁶⁴ Often the railway made no difference to the settlement's fortunes. Ravenswood in 1884, Laura in 1888, Herberton in 1910 and Thornborough in 1914 were in slow decline; and their long-awaited railways induced no perceptible resurgence.⁶⁵ The arrival of a railway could in fact contribute to the ephemerality of a mining settlement, since the existing town was not necessarily the best site for a terminus. Thus after 1910, the mining town of Charleston moved across the river and became the railway town of Forsayth. In 1901 Girofla was duplicated a mile northwest at Mungana.⁶⁶

⁶³There is confusion in documentary sources about these three places. They seem to be distinct settlements, but it is possible Edwardstown and Maytown were the same place.

⁶⁴See R. Kerr, *Moffat*, pp.100-101; P. Bell, "The Origins of the North Queensland Coal Industry" in Kennedy (ed.), *Readings*, p.260.

⁶⁵See J. Kerr, "North Queensland Mining Railways" in Kennedy (ed.), *Readings*, pp.273-298.

⁶⁶Charleston-Forsayth was another complex area of several small settlements in close proximity, but it appears the principal mining township from 1887 was Charleston, and the focus of settlement moved to Forsayth, the railway terminus, about 1910-11. A similar shift occurred at Mungana, although that name had already replaced Girofla at the old site in 1897, four years before the railway arrived.

Location and form of mining towns was not always haphazard, many of them—especially the base metal towns—being conceived and directed by mining companies. Irvinebank and others of Moffat's empire, Chillagoe, Mungana, O.K., Cardross, Mount Mulligan, Stannary Hills, Ravenswood for a decade and most of the towns on the Cloncurry field were dominated by a single company. There never developed in North Queensland the phenomenon of the "company town" with monopolistic control over social and commercial activities, in the sense familiar in the U.S.A.⁶⁷ There were however retail trading companies which established chains of stores in North Queensland towns: Jack and Newell, Brodziak and Rodgers, Burns Philp, Samuel Allen, whose principals were in most cases heavily involved in mining investment. But these economic links were loose and informal; conditions never permitted the formation of trading monopolies.⁶⁸

The physical appearance of the town was rarely considered of importance in the early stage of mining settlement. Substantial buildings were reserved for commercial and administrative premises, and on alluvial fields the majority of the population lived in tents. Cooktown was described in early 1874 as resembling "a fair in the Old Country, leaving out the monkeys and merry-go-rounds."⁶⁹ On many fields, boarding houses catered to a transient population unwilling to provide its own shelter:

Nearly all the people boarded in two boarding-houses kept by Chinamen, one on each side of the street. I think there must have been two or three hundred boarders in each. They were both alike, two large bark-houses, no floor, only two immense tables with forms on each side. . . .The charge was one pound per week, payment beforehand, and those of their customers who wanted sleeping accommodation might, without extra charge, fix themselves up as they liked in some sheds behind.⁷⁰

⁶⁷See J.B. Allen, *The Company Town in the American West*, Norman Oklahoma 1966.

⁶⁸The economic and personal links among mining, politics, banking, shipping and retail trading in North Queensland provide a fertile field for research.

⁶⁹Weitemeyer, *Missing Friends*, p.219.

⁷⁰*Ibid.*, p.173, describing Ravenswood.

On fields attaining stability, civic pride began to demand greater care in construction of buildings. A hierarchy of prestige was associated with the selection of materials. Noting in 1880 that Ravenswood had become almost entirely a reefing field, the warden commented on change in the preferred fabric of buildings:

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.⁷¹

And in the same year Maytown saw competition between storekeepers after the construction of two more prestigious stores:

. . . 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.⁷²

The desirable transition was to masonry construction. Stone was almost never used in North Queensland towns because of the labour cost involved, but brick was seen as the ultimate end of an inevitable evolutionary sequence:

The town is changing its aspect day by day. Bark has given way to weatherboards, and now the latter has to make room for brick and mortar.⁷³

J.S. Reid, proprietor of the *Hodgkinson Mining News*, attempted to accelerate this process in Thornborough in 1877, and his newspaper published almost weekly accounts of the desirability of brick construction, even claiming it to be cheaper than timber on the basis of two dubious tenders for construction of the local

⁷¹A.R. 1880, p.23.

⁷²*Ibid.*, p.17.

⁷³Sellheim describing Charters Towers, A.R. 1890, p.23.

hospital.⁷⁴ Few such campaigns had noticeable success, partly because of the poor quality of the bricks produced by many of the local works;⁷⁵ and brick construction only became prevalent in Charters Towers and Ravenswood in their years of prosperity. Even there, brick was rarely used for house construction.

The causes of ephemerality lay partly in geology, for many mineral deposits were small and patchy, and quickly worked out. But this problem was compounded by economic and environmental circumstances, and by the temperament of many of those involved in mining industry. Frequently alluvial workings were abandoned *before* they were exhausted, on the rumour of a better find elsewhere. In 1876, this tendency on the part of Europeans abandoned almost the entire Palmer goldfield to Chinese miners who worked it successfully for several years more.⁷⁶

Chapman's diary, 1895-99, reveals that even at that late period when the impetus of alluvial mining was all but spent, his life was a seemingly aimless journey between alluvial and shallow reefing shows on the Charters Towers, Cape and Etheridge goldfields, with frequent entries such as: "intend to clear out if I don't get something soon"; "I think I'll make for Gilberton"; "heard about a rush to the Cape."⁷⁷ Nor was this ephemeral quality confined to the alluvial camps: even the reefing towns could fall victim almost overnight to loss of confidence. In 1891, the failure of two mines at Grass Hut caused "a stampede away from the new township, leaving a couple of streets of nearly new houses and two hotels, a store, and

⁷⁴*Hodgkinson Mining News*, 9 June 1877.

⁷⁵*Ibid.*, 16 March 1878: letter, "Something about Bricklaying," describes how the brick kitchen of the Royal hotel at Thornborough "was levelled as flat as the walls of Jericho" in a storm.

⁷⁶N.S. Kirkman, "From Minority to Majority: An Account of the Chinese Influx to the Palmer River Goldfield, 1873-1876," in H. Reynolds (ed.), *Race Relations in North Queensland*, James Cook University 1978, pp.248-49.

⁷⁷Chapman diary, entries 14 July 1896, 8 and 21 May 1897. Chapman was en route from the Etheridge to Gilberton in 1897 when a rumour diverted him to the Cape.

butcher's shop to follow at their leisure."⁷⁸ Such failures were often the result of inexperience or reckless investment. A company at Argentine failed in 1883 after building elaborate smelters, and the new town was deserted. The warden reported: "the miners have been working in the dark to a great extent, and from inexperience may possibly have exported the wrong ores."⁷⁹

Incompetent and sometimes greedy management caused the premature failure of some mines, and the abandonment or decline of settlements. The paradox of underground mine management was that successful long term production depended on procedures which tended to reduce the mine's profitability in the crucial early stages when management was anxious to impress investors. Prospecting an ore body and blending ore grades for a steady return were essential to long term viability, but both decreased short term earnings. Too many managers aimed at quick returns by crushing the best ore to pay early dividends, leaving the mine doomed by a legacy of low-grade ore and inadequate prospecting and development. Sellheim noted this similarity between underground and alluvial miners, dismissing over-impatient reefing syndicates as "only the analogue of the alluvial fossicker":

'What can be the possible cause that reefs that have yielded all throughout an average of $2\frac{1}{2}$ ounces of gold, of the value of £4. 2s. 6d. per ounce for the ton of quartz. . .are not worked more vigorously, and do not give remunerative employment to ten times the number of men engaged on them now?' I think the principal reason may be sought for in the inadequacy of the capital invested in mining here, and generally speaking, in the absence of that systematic work that, as a rule, can make quartz reefing a payable industry in the long run. It must be conceded that the latter mode of work cannot be well carried out without the aid of the former; but at the same time it would also be futile to expect its co-existence with a tendency in the minds of the miner to become unsettled every time he may hear of some new rush that may be on the tapis. If the Northern miner has one besetting

⁷⁸A.R. 1891, p.59.

⁷⁹A.R. 1883, p.31.

sin, and, if such a thing is possible, even in a larger degree than his Southern brother—and it certainly proves the existence of, at any rate, a remnant of energy that even the severity of a Northern climate has not been able to deprive him of—it is his readiness at a moment's notice to sacrifice his all, if required, to enable him to hurry off to the scene of some new discovery—good or bad, authenticated or not. He most probably leaves a claim that means good wages, if nothing better, and tramps, suffering all kinds of danger and hardships, on his way to some locality where, on calm reflection, his own common sense and long experience would have told him that payable gold at the best could be but a very remote contingency; but his remembrance of having once missed a rush where his mate made a rise is too powerful an argument for him to overcome, and hence his determination at all hazards not again to lose another chance attached to some new Eldorado. Now, to this desire of looking forward to rich finds in unknown places—a feeling which no doubt is partly engendered by a longing for a change from probably the most monotonous life on the globe, and the consequent frequent shifting of the digger from one gold field to another, the absence of any great amount of local capital on this goldfield may, to a certain extent be ascribed.⁸⁰

In response to these conditions there was a reluctance to invest in buildings and public utilities in a mining town, which came into sharp conflict with the urge for civic improvement. The Queensland National Bank rejected plans for a £900 building at Maytown in 1878, the directors resolving to construct "a galvanised iron building which could be removed at any time."⁸¹ In 1914 the district inspector of schools, in commenting on an application for a school at Cardross, enunciated what had been doctrine within most government departments for many years.

⁸⁰A.R. 1878, pp.21-22. The word "fossicker" was still rather perjorative when Sellheim wrote.

⁸¹Minutes of directors' meeting 6 June 1878, A/QNB/301, N.B.A. In the event, the bank bought the AJS bank's premises for £650. (*Ibid.*, 11 July 1878).

. . .I would not recommend a substantial building on any of the North Qnsld mining fields. Cardross has fairly good prospects & its directors evidently have confidence in it, otherwise they would not have put £3000 into a new concentrating plant. I would recommend, therefore, the establishment of a school to accommodate about 20 pupils, the building to be of a temporary nature, until the character of the field is clearly established.⁸²

The nutrition and health of the miners on isolated fields can be described with some accuracy from fragmentary sources. Their diet was largely a monotonous round of copious fresh beef and variations on flour and water. Meat was plentiful and usually cheap on the mining fields: the great alluvial rushes of the 1870s answered northern pastoralists' need for a local market, and there was active competition to establish butchering outlets in the mining towns.⁸³ Beef usually sold at 3d or 4d a pound,⁸⁴ and was consumed at such a predictable rate that the goldfield wardens fell into the habit of estimating the field's population by summing the butchers' sales and dividing by the established rate of consumption.⁸⁵ The Chinese relied to some extent on imported rice as a staple food, but established their own butcheries, and were renowned for their competence at growing vegetables. Probably the Chinese enjoyed a higher standard of nutrition than most Europeans, who rarely established gardens, but relied on a Chinese-grown market surplus for their vegetables. In 1901 Maclaren reported that on the remote peninsular fields:

⁸²B. McKenna to Undersecretary for Public Instruction 29 March 1914, 14/10335, EDU Z 522 Q.S.A.

⁸³See Bowly letters, a large part of which describes his droving trips from Lammermoor and Mt Cornish stations to the Palmer and Etheridge fields.

⁸⁴A.R. 1890, p.27 has beef 4d, mutton 5d, in Charters Towers. J.H. Binnie, *My Life on a Tropic Goldfield*, Melbourne 1944, p.28 says: "Beef was our cheapest commodity; fat cattle were very cheap. Any cut of beef was often sold at threepence per lb. without the bone." Chapman's accounts show that in 1897 he was paying an average 3.1 pence per pound for beef, of which he bought about 8 lbs each week.

⁸⁵See for example Hodgkinson's report on the Palmer in 1881, where he bases his population estimate on sales of 39,000 lbs of beef weekly at 10 lbs per European and 8 lbs per Chinese. A.R. 1881, p.12.

. . .eye affections and malarial fevers are prevalent; water is scarce and bad, and vegetables and fruit are costly or unobtainable.⁸⁶

Chapman's diary records what seems to be a fairly complete account of his weekly purchases over a period of four years. His diet apparently consisted largely of fresh and salted beef, flour, rice, oatmeal and tea; enlivened by jam, syrup, sugar, pickles, curry powder, tinned sardines and beef extract.⁸⁷ This accords with Binnie's recollection of his childhood on the Palmer 20 years earlier:

. . .there were no luxuries in the way of fruit and vegetables and no bread or cakes—only damper. Tinned fruit was a real luxury and seldom obtainable in any town.⁸⁸

There was some awareness of the deficiency of this diet. In 1864 Rachel Henning had seemed confident that scurvy was not a possibility at Exmoor, and wrote rather disparagingly of an immigrant family who cooked pigweed as a vegetable.⁸⁹ Chapman occasionally purchased fresh fruit or lime juice, and once mentioned a special journey into Charleston because his ankles were "swelled with scurvy":

. . .when I got to the township I was very weak after I had some supper with vegetables I felt better, bought a bottle of Sarsaparilla from Candlish's shop at Finnigan's out of 5½ weights of gold. . . .⁹⁰

⁸⁶Maclaren, *Mining and Milling*, p.2.

⁸⁷The items mentioned in Chapman's accounts are listed in an appendix to this chapter. See also Henning, *Letters*, p.173 for a very similar list.

⁸⁸Binnie, *Tropic Goldfield*, p.12.

⁸⁹Henning, *Letters*, p.157. The Hennings attempted to grow vegetables, and themselves ate wild plants. See p.189.

⁹⁰Chapman diary, 13 December 1896. Sarsaparilla was used as a specific for scurvy.

Scurvy must have been common on the alluvial fields and the smaller mining towns, but it is probably disguised in the paucity of individual accounts, and the unwillingness of official reports to dwell at any length on disease. Scurvy is mentioned only once in the Palmer death register 1873-75, but was unlikely to be a primary cause of death. The register reveals that the principal causes of death were "dysentery" and "fever."⁹¹ Dysentery was in many cases typhoid—there were no statutory sanitary provisions whatever on the Palmer during that period, and one need hardly describe in detail the opportunities for disease transmission in a community of thousands of men living in tents. Fever was a generic term, but is in some contemporary sources specifically identified as malaria. It is noticeable that fever increased in frequency in the register in the wet season, when mosquito breeding conditions improved; and dysentery in the dry season, when water supplies were limited and stagnant, and more liable to pollution.⁹²

All aspects of life in mining settlements were pervaded by the high cost of living, inflated by overland carriage rates and high wages. William Lees, describing the early years of the Hodgkinson said:

. . .the expense of everything was excessive. There was no railway from the coast, and the carriage of machinery and the necessities of life was almost prohibitive. Crushing, in consequence, was three times as costly as it would be now. Carting to the nearest mill was too costly, except for rich stone. The carting of firewood and mine timber was very expensive. Food for men and horses was sold at prices suggesting a city in a state of siege. Finally, the cost of labour was necessarily ruled by the expense of living.⁹³

⁹¹A summary of the causes of death listed in the Palmer Register of Deaths 26 October 1873-4 July 1875 appears as an appendix to this chapter.

⁹²There seems to be increased mention of deaths from typhoid or unspecified sickness in unusually dry seasons: e.g. Palmer, *A.R.* 1878, pp.20 and 22; Charters Towers, *A.R.* 1890, p.24; Ravenswood, *A.R.* 1902, p.102.

⁹³W. Lees, *The Goldfields of Queensland* (Chillagoe-Hodgkinson volume), Brisbane 1899, p.31.

Sea freight was relatively cheap, for most of the major gold discoveries were made during a period of intense competition between eastern Australian shipping companies.⁹⁴ In 1874 the Australian Steam Navigation Company reduced its freight from £4 to £3.10.0 a ton deadweight from Sydney to Cooktown,⁹⁵ and the standard rate to northern ports remained at about this level.⁹⁶ But overland transport was often horrendously expensive. Lack of formed roads, flooding for weeks at a time and scarcity of feed in dry seasons all raised the carriers' prices. £30-£40 per ton was not an unusual rate on the inland fields,⁹⁷ but the cost could be much higher, depending on the season and the number of teams operating—£200 per ton was recorded for the journey from Cooktown to Palmerville in the wet season of 1874.⁹⁸ Profiteering undoubtedly accounted for some of these charges, but teamsters defended themselves by pointing out the time taken for overland journeys and the cost of drays and draught animals ruined.⁹⁹

Wage miners earned approximately the same income as skilled workmen such as carpenters in northern areas, £3 to £4 per week in more settled areas, rising as high as £5 in remote districts or times of particular labour shortage. The figure of £4 is very widely

⁹⁴J. Bach, *A Maritime History of Australia*, Sydney 1976, pp.194-196.

⁹⁵*Cooktown Herald*, 12 September 1874.

⁹⁶£3.10.0 had previously been the rate per ton from Brisbane to Cooktown. See F.D.G. Stanley to Undersecretary for Public Works, 9 April 1874, 74/1586, WOR/A81 Q.S.A.

⁹⁷Rates of £30-40 per ton from the coast to Maytown (1876), Croydon (1887) and Georgetown (1884) are mentioned in WOR/A140, EDU Z 701 and EDU Z 1020, Q.S.A.: and BR/QNB/032 and Premises Register, N.B.A.

⁹⁸*Queenslander*, 28 February 1874. Other rates mentioned for the Palmer road demonstrate the fluctuations possible: £50, £56, £70, £100, £112, £120, £125, £130 per ton. See W.H. Corfield, *Reminiscences of Queensland*, Brisbane 1921, pp.51 and 53; R.S. Browne, *A Journalist's Memories*, Brisbane 1927, p.43; BR/QNB/032 and Maytown Premises Register, N.B.A.; *Queenslander*, 5 June 1875; *Cooktown Courier*, 8 August 1874; *Cooktown Herald*, 24 November 1875.

⁹⁹Letter from carriers G. Kootoofa and J. Healy, justifying their charge of £80 per ton from Cooktown to the Palmer: *Cooktown Herald*, 3 June 1874.

recorded.¹⁰⁰ These rates reflected the inflation which mining settlement brought to the region, for they were three to four times as high as the wages of a North Queensland pastoral worker in the 1860s,¹⁰¹ wages which were themselves higher than those of rural workers in the south.¹⁰²

The earnings of alluvial miners cannot be estimated as easily. There were undoubtedly cases of sudden wealth, but many of the stories about alluvial miners' riches must be regarded with some scepticism, especially when they purport to apply to large numbers of diggers.¹⁰³ The distribution of wealth was obviously very uneven, so average earnings do little to clarify individual income levels; but those from the Palmer suggest that even at its peak the alluvial miners averaged only between £4 and £5 per week, and this declined to £1 within three years.¹⁰⁴

¹⁰⁰ See T.C. Davey to General Manager, 18 November 1878, BR/QNB/032, N.B.A. (£4/week Maytown miners); A.R. 1883, p.37 (£4/week Etheridge miners, £1/day mechanics); Letter from "Contractor," *Brisbane Courier*, 2 February 1884 (£1/day Georgetown carpenters); *Queenslander*, 6 February 1886 (£4-£4.10.0/week Cairns carpenters); and Maclaren, *Mining and Milling*, p.12.

¹⁰¹ A. Allingham, *Taming the Wilderness*, James Cook University 1977, pp.86-88; and see R. Gray, *Reminiscences of India and North Queensland 1857-1912*, London 1913, p.77; 30/- per week; *Port Denison Times*, 1 November 1865: shepherds 25-30/- per week, general servants £1; Henning, *Letters*, p.163: £60-£70 per year.

¹⁰² Kennedy, *Four Years*, pp.200-202 puts agricultural wages at £25-£40 per year; R. Daintree, *Queensland Australia*, London [1874], p.105 at £40-£50.

¹⁰³ Kennedy, *Four Years*, p.213 claimed that Gympie miners were clearing £30-£40 per week—roughly the gross salary of a Supreme Court Judge.

¹⁰⁴ Table based on figures in A.R. 1878, p.23, calculated at £4.2.6/oz.

Year	Alluvial Gold Won (oz)	Alluvial Miners	Average Gold Won (oz)	Average Total Value	Average Weekly Value
1874	150,000	2,500	60	£247.10.0	£4.15.0
1875	250,000	8,000	31	£127.17.6	£2. 9.0
1876	185,000	9,300	20	£ 82.10.0	£1.12.0
1877	167,760	13,070	13	£ 53.12.6	£1. 1.0
1878	112,000	8,730	13	£ 53.12.6	£1. 1.0

Two points must be made about these figures—first, that they average total production for the year over the population on one day, whereas due to the constant flow of people to and from the field, the number of miners involved in earning that gold was actually much greater, and their average earnings much less; and that the wardens regularly allude to an unknown but substantial quantity of gold leaving the field unreported. Sources of error thus exist in two directions, and the true average earnings might be higher or lower than those estimated. But if even a few of the miners averaged became fabulously wealthy, the mathematical corollary meant destitution for a great number.

At the last significant alluvial rush, the Oaks in 1907, the warden's reports provide a clearer indication of the level of miners' earnings at a time when most of the field's population was still actively engaged in mining. Individual impressive finds were reported as worthy of note: groups of men earning £7.10.0 each in a week, £20.12.6 each in five days, £10.12.6 each in two days,¹⁰⁵ earnings which seem modest enough when the time, costs and risks of travelling to and living on the field are considered. But the overall product of 450 miners in the first two months was 2,200oz, or 4.9oz per miner, worth £18.6.8.¹⁰⁶ This represents an income of about £2.6.0 per week. Wage miners in Charters Towers

¹⁰⁵ A.R. 1907, p.173, calculated at £3.15.0/oz.

¹⁰⁶ *Ibid.*, p.7.

and Ravenswood were earning £3,¹⁰⁷ and did not have to live in tents or pay inflated freights for their food.

Such averaged production figures make even less sense in deep mining towns, where relatively few of the population were employed in the mines, and surface workers and service industries created multiplier effects which generated income not measured in Mines Department reports. But as an example, Ravenswood in 1902 with a population of 3,623, produced 52,916oz of gold, or 14.6oz annual production per head; worth £51.2.0, less than £1 per week.¹⁰⁸ The economic inter-relationship of gold mining and other industry is a topic worth careful research, for Ravenswood in 1902 was an ambitious, booming, prosperous town, where money obviously flowed in greater quantity than the meagre £51 per person actually extracted from the mines.¹⁰⁹

Many of the daunting features of the North Queensland mining settlements were shared by all settlers in the region—the costs, heat, floods, isolation and disease were environmentally rather than economically determined. Ephemerality, induced by the constant fear of mines closing, with all that would mean to the settlement, was probably the single most characteristic feature of mining towns. But there were other features of the industry, perhaps best described as nuisances, which profoundly affected the quality of life in mining settlements.

First was the noise. Almost every mill in North Queensland crushed its ore with gravity stamps, a process involving between five and sixty steel cylinders each weighing nearly half a ton, falling about seventy times a minute onto rocks in a steel mortar,

¹⁰⁷Maclaren, *Mining and Milling*, p.12.

¹⁰⁸A.R. 1902, p.100, calculated at £3.10.0/oz. The year is chosen as Ravenswood's peak production per head.

¹⁰⁹See "The Profits of Gold Mining," *North Queensland Herald*, 22 March 1902, reprinted from the *Australian Mining Standard*, for a rather defensive comment on miners' earnings.

twenty-four hours a day.¹¹⁰ Charters Towers in 1899 was ringed by seventeen mills with a total of 290 stamps.¹¹¹ Outsiders visiting mining towns frequently recorded the noise of the mills as their principal impression. A visitor approaching Coen in 1896 first noted "the distant thunder of the stampers becomes louder";¹¹² Rowan, who described Muldiva so superbly, dismissed Charters Towers in one sentence referring to "the ceaseless din of many hundreds of stampers, pounding away day and night."¹¹³ Perhaps the noise of ore crushing became a constant accompaniment, unheard by residents of such towns, for the juxtaposition of industrial installations and residences is quite remarkable. The Mabel Mill, which had thirty head of stamps, still stands in Ravenswood a hundred metres from the bedroom windows of the Railway Hotel. Several of the wealthier men of Charters Towers lived on what would today seem undesirable sites: E.H.T. Plant beside his Bonnie Dundee mill, Thomas Mills beside the Day Dawn foundry, E.D. Miles two houses from Toll's steam sawmill, all in residential areas.¹¹⁴

Bicknell spent a night in Charters Towers, and described this juxtaposition of habitation and industry, even in the heart of the city:

We put up at one of the hotels in the main street; the place was full of miners, and the pit-head gears could be seen above the house-tops in every direction, and the ring of the battery stamps could be plainly heard.¹¹⁵

¹¹⁰Maclaren, *Mining and Milling*, p.21.

¹¹¹Lees, *Goldfields* (Charters Towers volume), table: "Ore Reduction Plants on Charters Towers," no p.

¹¹²*Queenslander*, 21 November 1896.

¹¹³Rowan, *Flower Hunter*, p.23.

¹¹⁴P.O.D. 1900, and subsequent Charters Towers street listings.

¹¹⁵A.C. Bicknell, *Travels and Adventures in North Queensland*, London 1895, p.205.

and Bishop White thought Charters Towers "could not be described as a beautiful place, the view consisting chiefly of poppet-legs and engine-houses."¹¹⁶

The landscape around the more permanent mining towns was quickly altered as timber was cut down for firewood, which was consumed in huge quantities for raising steam and smelting. Until the very end of the mining decades, when coal and coke came into use to reduce mounting costs, timber was the only fuel used, and the effect on the landscape was dramatic:

The well wooded and comparatively flat basin surrounding the small ridges below the Gap, through which the pioneers came, has long since been denuded of its trees.¹¹⁷

Other aspects of mining impinged on the quality of life. The abandonment of a mine was rarely supervised, and vertical shafts were left open and unmarked. Commenting on the death of a child by falling into a mine, the warden described Ravenswood in 1902 as "one mass of old shafts from end to end."¹¹⁸ And in places where sulphide ores were smelted, those living down-wind could rarely forget the nature of the town's industry. Not for nothing was Smeltertown at Mount Molloy unofficially renamed "Smelltown" by its residents.¹¹⁹

* * * * *

In summary, the North Queensland mining settlements saw the influx of many thousands of immigrants, the greatest number of them born in the British Isles, except in the few areas where the Chinese predominated for a time. Their principal concern was the mining of

¹¹⁶G. White, *Thirty Years in Tropical Australia*, London 1918, p.10.

¹¹⁷*The North Queensland Register's Mining History of Charters Towers 1872-1897*, Charters Towers 1897, p.1. The context makes it clear the writer approves this denudation as a sign of "up-to-date civilisation."

¹¹⁸A.R. 1902, p.100; and see comments by mines inspector, pp.129-130.

¹¹⁹*Trinity Times*, 10 May 1905.

gold and later other minerals, with little thought for establishing a way of life in the long term. They were thus extremely careless of their environment, their comfort and their health: the settlements they established and which still exist are incidental by-products of their industry, nurtured by other economic forces in the years since the decline of mining.

The quality of life in North Queensland mining settlements varied enormously: from utterly squalid in the alluvial rushes, to comfortable and for a few genteel in a few deep reefing towns, with a great number of harsh ephemeral shallow reefing towns striking an ugly mean. Lumholtz was not impressed by what he found in North Queensland in the 1880s:

The inhabitants of Northern Queensland are willing to live like pigs if they can only make money.¹²⁰

But probably few areas in the British empire would have met with more approval from a fastidious Norwegian scholar at that time. There is evidence that people who initially recoiled from living conditions in the region became inured to them. Bowly, a few weeks after his arrival in North Queensland, described his accommodation at Dotswood:

This place is rougher than any building I have yet seen, being built entirely of rough hewn laps roofed with bark. . . .

Three years later he was to write from the Palmer:

I am writing this in a large comfortable tent. . . and it is quite pleasant to sit down to write to you in comfort.¹²¹

¹²⁰C. Lumholtz, *Among Cannibals*, London 1889, p.86.

¹²¹Bowly letters, 24 January 1874, p.41 and 29 November 1876, p.154.

It is easy for a modern observer to be appalled by the round of typhoid, scurvy, inflated prices, disappointment and destitution that was the lot of many alluvial miners. It is much harder to gain any insight into their own views, particularly into the enthusiasm which seems to have impelled them. We have little more authentic evidence than the testimony of George Clark, one of the discoverers of Charters Towers, twenty-five years after the event:

It was a pleasant life, and, although disappointments were numerous, yet the possibilities, if somewhat uncertain, were great.¹²²

¹²²Quoted in *Mining History of Charters Towers*, p.1.

APPENDIX TO CHAPTER THREE

Marian Rowan's description of Muldiva

...here I am, sitting now, as I write, in a corrugated iron house in the principal street of this newly-found mining town of Muldiva. I am only too glad to have been lent this retreat to come to for the day, away from the noise of the hotel, which is only a few doors off. Opposite me is the police station, which fact is painted in red letters on a piece of canvas. This place consists of two diggers' tents and a sort of verandah made out of branches of gum-trees. The general store is a tent on forked sticks with a wall of branches on all sides, the proprietor's name is written in huge letters upon it, and a counter with glasses and array of tins proclaim his calling. The thermometer is 120° in the shade.

Next comes a real bush bark hut, of which many are studded about in every direction, then another tent, a bakehouse, one or two more stores, and two shelters that call themselves hotels. A man sits under an awning in the principal street (which is still full of felled trees and stumps) with the air of an Indian potentate, guarding a keg of beer, tumblers, matches, tobacco, pipes, etc. Here and there a native goes by, more or less in a state of intoxication. The butcher's shop is a green arbour of boughs. Stores just now are "out," and a pound of flour for the time costs a shilling.

Everything is full of life and activity. The new chum that you meet is reticent, the old hand communicative. Above, below, and around, are miners with thews and sinews, wresting the precious metal from beds of rock, burrows in hill-sides, and along the beds of an apology for a stream, whose waters are so full of lime that everything becomes encrusted with it, and even your clothes from the wash are powdered. John Chinaman goes by with his pack-horse, for already he is pioneering with his garden stuff; where his garden is I do not know: everything seems baked and parched up, and the poor miserable gum-trees do not look as if they could cast a yard of shade. All around are the bare rocky hills, and just behind the town is the great Muldiva mine which at present shows every sign of a prosperous

future. A bullock-team goes by, and more natives' gins carrying water, about the only thing they are good for.

It is Sunday, and the day seems as if it would never come to an end, not a breath of cool air anywhere, not a book to read; bottling up my self-imprisoned thoughts, I sat on the doorstep, I sat on the table, then under it, but still I could not get away from that fierce heat; then I went back to the hotel and into a little hut next door, where I sat and fanned a child dying of fever; there it was slightly cooler, and I had something besides my own worries to think of. Evening came at last, and I went for a walk with the housemaid from the hotel up to a hill overlooking the town. She gave me a most ghastly description of life in a mining town, and already I long for the night to be over, though the thought of that journey back hangs over me like a hideous nightmare.

(Rowan, *Flower Hunter*, pp.55-57)

APPENDIX TO CHAPTER THREE

Summary of items mentioned
in accounts of E.G. Chapman
1 January 1895-30 July 1899

<u>Mentioned Regularly</u>		<u>Mentioned Once or Rarely</u>	
<u>Meat</u>		<u>Meat</u>	
Fresh Beef	Mutton	Steak	Suet
Salt Beef	Roast	Chops	Corned Beef
		Bacon	Pork
<u>Other Food</u>		<u>Other Food</u>	
Flour	Oatmeal	Vinegar	Bread
Sugar	Jam	Currants	Potatoes
Tea	Rice	Pepper	Tinned Salmon
Syrup	Curry Powder	Plums	Sauce
Baking Soda	Extract [of beef]	Spice	Apricots
Cream of Tartar	Sardines	Butter	Mustard
Pickles		Ginger	Milk
		Coffee	Apples
		Sago	Salt
<u>Medicinal</u>		<u>Medicinal</u>	
Painkiller*		Lime Juice	
Epsom Salts		Sulphur	
Castor Oil		[Sarsaparilla]	
<u>Other</u>		<u>Other</u>	
Corn		Tent	Reel Cotton
Chaff		Blanket	Clothes Line
Bran		Mug	Blue
Tobacco		Plate	Candles
Soap		Knife	Pipe
Kerosene Soap		Fork	Dog Chain
Washing Soda		Shirt	Nails
Matches		Flannel	Tacks
Kerosene		Saddle Straps	Fuze
		Axe Handle	Acid [for
		Saw	assaying?]

* Not a euphemism for alcohol—probably laudunum.

APPENDIX TO CHAPTER THREE

SUMMARY OF CAUSES OF DEATH FROM ENTRIES 1-200 IN REGISTER OF
DEATHS, PALMER DISTRICT, 26 OCTOBER 1873 – 4 JULY 1875.

DISEASE AND NATURAL CAUSES:

Dysentery, enteric fever	74
Other diseases of digestive system; or of urinary tract (inflammation of bowels, [illegible] of bladder, peritonitis, renal disease, mesenteritis, inflammation of stomach, perforation of intestines)	7
Fever (high fever, low fever, intermittent fever, fever and scurvy)	47
Diseases of respiratory system (consumption, pneumonia, haemorrhage from lungs, tuberculosis, lung disease, inflammation of lungs)	11
Exhaustion, prostration, debility, sunstroke	11
Other (heart disease, cancer, apoplexy, erysipelas)	8
Subtotal:	158

ACCIDENT AND VIOLENCE:

Drowning	7
Drowning (suicide)	2
Murder [means unspecified]	2
Suicide [means unspecified]	1
Speared by Aboriginal Blacks	1
Rupture	1
Snakebite	1
Subtotal:	15

Not known or no entry	4
Entry missing, damaged or illegible	23
Total:	200

(I gratefully acknowledge the assistance of Dr. Laura Ward of the Student Health Service, James Cook University, in preparing this summary. However, I take complete responsibility for its interpretation in the text of this chapter.)

CHAPTER THREE

"Half Balloon" or "Studd Work Cottage"?

The Origin of the Timber Framed
Wall used in North Queensland

From the beginning of European settlement, timber has been the principal material used in the construction of houses and most other buildings in North Queensland. The choice of this material, however, does not presuppose any particular method of construction, for timber has been employed as a building material in many parts of the world in a variety of ways. Timber wall construction was known in Europe in prehistoric times, and has evolved into several distinct techniques in European-influenced regions.

The simplest form of timber wall in concept, although wasteful of both material and labour, is a screen of adjacent, parallel straight logs. These may be arranged vertically as a palisade, or horizontally in "log cabin" fashion; although horizontal arrangement presupposes a degree of sophistication in shaping the interlocked corners. Horizontal log construction has been common in historical times throughout Scandinavia.¹

More complex forms of timber construction arise when the two functions of the wall—supporting the roof, and providing a screen for insulation and privacy—are differentiated. The vertical members of the timber frame, or posts, carry the roof load and the intervening spaces may be filled with any material which is appropriate to the climate, the purpose of the building and its economic circumstances. Post-and-infill walls may take a great variety of forms: the timber framing may vary greatly in complexity, and the infill may consist of clay, brick, light timber, stone, or some combination of these materials. Walls of this type, known loosely as "half-timbered," have been known in Europe since Roman times,² and in recent centuries were widely used in Britain, France, Germany and parts of Scandinavia.³

¹M. Suzuki and Y. Futugawa, *Wooden Houses*, New York 1979, pp.179-240.

²*Ibid.*, p.11.

³*Ibid.*, pp.111-178; C.F. Innocent, *The Development of English Building Construction*, Cambridge 1916, pp.107-124; J.T. Smith, "Timber-framed Building in England," *Archaeological Journal* 122 (1965), 133-158.

One variant of post-and-infill can be constructed entirely of timber, with short lengths of split or half-round timber laid horizontally on edge between the posts, which may be slotted vertically to receive the ends of the horizontal panels. This technique is extremely ancient, examples having been excavated at the iron age settlement of Biskupin in Poland.⁴ Probably known in medieval times throughout northern Europe, the technique was also used in French Canada,⁵ and in many parts of Australia.⁶

Industrialisation opens up further possibilities in timber wall construction. The greater regularity of mechanically sawn posts and boards enables continuous lengths of boarding to be attached to the inner and outer surfaces of the posts, and also allows the posts themselves to be diminished in size so that a reduced number of light closely-spaced posts or studs does the same work as a large number of widely-spaced heavy posts, with greater economy. In such a light homogeneous structure the differentiation between structure and screen apparent in the post-and-infill wall again becomes blurred, and the wall functions as a diaphragm bearing the roof load more or less evenly along its length.⁷ Alternatively, the posts may be dispensed with except to frame corners and openings, and the wall may be formed of vertical boards, secured by one or more horizontal rails. This technique has seen some centuries of use for internal partitions in Britain.⁸

⁴See illustrations in J. Kostrzewski, *Kultura Prapolska*, Poznan 1949, p.124; and Z. Rajewski, "Biskupin v Polsku," *Archeologiske Rozhledy* 5 (1953), 497: copies supplied by Moravske Muzeum, Anthropos Institute, Brno.

⁵T. Ritchie, "Plankwall Framing, a Modern Wall Construction with an Ancient History," *Journal of the Society of Architectural Historians* 30 (1971), 66-70.

⁶Boyd, *Australia's Home*, p.125; Cox and Freeland, *Rude Timber Buildings*, pp.21-22; Freeland, *Architecture*, p.12.

⁷The historical process of lightening the framed wall is described briefly in this chapter; the term "diaphragm" is used to describe such a wall in Sir Banister Fletcher, *A History of Architecture on the Comparative Method*, 17th edn, London 1961, p.1127.

⁸Innocent, *English Building*, pp.114-115.

At the time of European settlement in North Queensland, all these techniques were in use in parts of the European-occupied world and were thus potentially available for adoption by North Queensland builders.

The buildings of North Queensland in the period 1861-1914 were distinguished by widespread adoption of a building technique which was applied indiscriminately to structures of almost any size and function, throughout the entire region and for the whole period; with very little variation or perceptible evolution. This was the sawn timber stud frame wall; normally with 100x50mm studs⁹ spaced at about 45cm centres, tenoned into top and bottom plates and secured by nails through the tenons. This frame was usually braced by 75x25mm braces let into the inner face of the studs. The cladding nailed to this frame was not standard, and does show variation according to the function of the building and its place and time of construction, but the most typical covering for private houses was a single layer of planed lapped boards about 180mm in width nailed flush to the inner face of the studs,¹⁰ with the framing left exposed on the exterior.

Other methods of wall construction are found in the region: small numbers of slab structures survive as representatives of more extensive primitive construction in early decades of settlement,¹¹ and a very large number of houses utilise a heavier widely spaced timber frame clad on one side only by corrugated galvanised iron; a form of construction originating for utilitarian purposes in Britain, and adopted throughout the colonies.¹² A small number of

⁹Sometimes but less commonly 75x50mm.

¹⁰These boards have been referred to as "chamferboards" or "champherboards" in North Queensland since the 1870s, but the word does not have so specific a meaning elsewhere.

¹¹I have adopted the term "primitive" to describe construction in locally available materials prepared by hand, principally bark, round timber and split slabs; the term is used in this sense in M.B. Lewis, *Victorian Primitive*, Melbourne 1978.

¹²A. Herbert, *Pioneers of Prefabrication: The British Contribution in the Nineteenth Century*, Baltimore 1978, pp.32-74.

houses employ vertical tongue-and-groove boards nailed to rails as a walling technique: although employed for internal partitions from the 1860s,¹³ this form appeared on external walls in significant numbers only after about 1910, and was even then rare on walls unprotected by a verandah. Heavy board-and-batten walling is almost unknown in North Queensland, although a small pocket of this technique occurs in central western Queensland.¹⁴ Small numbers of houses were built in materials other than timber, principally brick. Stone and earth were extremely rare.

The light stud frame was used in timber buildings throughout Australia, and is known with slight variations in many parts of the world. For this reason there seems little point in seeking a regional or even an Australian origin for the technique, but some investigation must be made of its origin because of its near-total ascendancy in this region in the period under study: its regional significance lies in the frequency of its occurrence, rather than in any unique regional attribute.

Several works on the history of Australian building have commented briefly on the existence of a distinctive use of the light timber frame in Queensland, without attempting to examine its antecedents or diffusion. Boyd's *Australia's Home*, the best general study of the subject, concentrates on masonry houses; whether consciously or not, frequently contains a slightly perjorative tone toward timber in phrases such as "weatherboard shanties";¹⁵ and deals with the development of the northern timber frame in one brief paragraph:

¹³The earliest extant example is probably the Cardwell Post Office, 1870.

¹⁴Notably in the town of Tambo, where about 10 cottages are walled with a single layer of 25x250mm vertical boards, with beaded cover strips, framed as is a corrugated iron wall. Sumner (*Settlers*, p.31) identified only one board and batten house—Inkerman homestead—in North Queensland. I have seen no others.

¹⁵Boyd, *Australia's Home*, p.22.

From Brisbane, a new standard of timber construction developed through the north, replacing the southern practice of a concealed frame covered on each side. To reduce the bulk of building for rapid cooling at night, all internal partitions and some external walls were made of vertical boards only, one inch thick, secured at the floor and ceiling and at intermediate 'belt' and picture rails.¹⁶

This description has several deficiencies. The phrase "From Brisbane" is probably only a diffusionist assumption, but in view of the prevalence of precut and prefabricated buildings from Brisbane suppliers in northern coastal settlements, it may have some literal truth. In referring only to the use of vertical boards secured by rails, Boyd is describing a walling technique quite distinct from the stud frame. Vertical boarding was common in Brisbane, but was used only occasionally even for partitions in the north, and rarely appeared on an external wall before 1914. Elsewhere Boyd suggested the stud frame developed from the horizontal slab wall of rough split timber:

The original solid plank wall gradually dissolved into a lighter framework. At first, 'studs' spaced 18 in. apart were each 4 in. by 3 in., later 4 in. by 2 in., and finally standardised and officially regulated at 4 in. by 1½ in. This appeared to be the practical minimum.¹⁷

In view of the differences in structure and joinery, and the entirely different economic infrastructures the slab wall and the stud frame reflect, such an evolution is improbable. Certainly the slab wall may have tended to lighter components, and did become partly dependent on sawn battens and nails—this is particularly evident in the slab buildings of North Queensland—and certainly slabs later gave way to the stud frame. But the stud frame was developed quite independently of local primitive techniques.

¹⁶*Ibid.*, p.41.

¹⁷*Ibid.*, p.128.

Unlike Boyd, whose use of the word "developed" implies that the Queensland stud frame was an indigenous creation, Freeland sought some overseas origin, and described more fully the process of its evolution in the second half of the nineteenth century:

In the northern part of New South Wales and the country areas of Queensland a distinctive type of building was evolved. By the nineties it was fully developed and had become the standard building of a vast inland area. In that area by the late sixties the practice had developed of fixing the weatherboards to the inner face of the stud frame and leaving the outer face of the frame uncovered. Timber rot was no problem in country which was normally parched. By making the one lot of boarding serve for both external sheeting and internal lining, a great saving in material and time was achieved. By the seventies refinements had been made to give a more attractive finish. Advantage was taken of the exposed framework to make an attractive pattern. The timbers were dressed. The vertical, widely-spaced studs and horizontal noggings were uniformly arranged around the perimeter. The bracing timbers were equally carefully placed to form a diamond pattern of diagonals. The whole arrangement was both functional and decorative.¹⁸

This is a more accurate description of practice throughout the colony, although in referring to widely-spaced studs and diamond patterns it fails to recognise a pronounced regional variation in the stud arrangement and bracing of the timber wall—the exposed frame Freeland describes is typical of only the southern half of Queensland.

In attempting to identify the origins within Australia of the timber frame, several works have commented on the first experiments in housing at the poorly-equipped Sydney Cove settlement in 1788; the most explicit reconstruction being illustrated by Herman, who shows a gabled hut framed in sawn timber, with infill of sawn palm trunks plastered with clay.¹⁹ While this suggests a form of stud

¹⁸Freeland, *Architecture*, p.207.

¹⁹M. Herman, *The Early Australian Architects and their Work*, Sydney 1954, p.5.

framing in use from the very beginnings of European settlement,²⁰ the reconstruction is highly tenuous, apparently based largely on David Collins' description of ". . .temporary huts, the posts and plates of which being made of the pine of this country, and the sides and ends filled with lengths of the cabbage-tree, plastered over with clay, . . ." ²¹ Cox and Freeland, using sources similar to Herman's, have advanced a reconstruction including a detailed description of horizontal and vertical slab techniques, but their description owes more to observation of later buildings than to the documentary sources of 1788.²²

After the relatively intensive study of this earliest phase of European timber construction in Australia, the published historical record is largely silent until the latter half of the nineteenth century, when the process described by Boyd and Freeland, and represented by Boyd as involving a local evolutionary movement, is said to have produced the light stud frame. During the early nineteenth century, developments in timber framing in Australia are not well understood. Very few timber buildings of that age are extant, pictorial evidence reveals only the cladding material of timber walls, and written accounts almost never give dimensions of components in buildings. Lewis provides some inconclusive evidence for the use of light stud framing in Victoria in the 1830s and 1840s,²³ however, and there is sound evidence for light stud framing in New Zealand in the 1840s.²⁴ Sawn timber construction in New Zealand had been common since the 1820s,²⁵ and there is no

²⁰M.B. Lewis, *Tradition and Innovation in Victorian Building 1801-1865*, PhD thesis, University of Melbourne 1972, p.162 points out the distinction between this reconstruction and "traditional" English construction.

²¹D. Collins, *An Account of the English Colony in New South Wales*, Sydney 1975, Vol. 1, p.16.

²²Cox and Freeland, *Rude Timber Buildings*, pp.21-22.

²³Lewis, *Tradition and Innovation*, p.162.

²⁴P. Coutts, "Old Buildings tell Tales," *World Archaeology* 9 (1977), 200-219.

²⁵J. Stacpoole, *Colonial Architecture in New Zealand*, Wellington 1976, pp.10-41.

reason to believe the known light stud frames were exceptional.

References to Australian building construction in that period are tantalisingly vague. When Port Essington was settled in 1838, the expedition took from Sydney six prefabricated houses and a church, all "framed in wood and weatherboarded."²⁶

This description leaves much detail in doubt, but it can safely be inferred that the buildings were of sawn timber, weather-board cladding implies some form of vertical framing; and buildings to be transported as cheaply as possible for erection in a warm area would presumably be as light in structure as practicable. All of this suggests light stud framing, but there is no direct evidence for the construction technique of the Port Essington buildings. The pictorial evidence available, however, is not inconsistent with such a technique.²⁷ Prefabricated buildings were apparently part of the normal equipment for such settlements. While even less detail is available for the short-lived Gladstone penal settlement of 1847, the accounts for the expedition mention, *inter alia*, "purchase of building materials."²⁸

The origin proposed by Freeland for the Queensland light stud frame was the United States of America:

²⁶ Sir George Gipps to Lord Glenelg, 22 September 1838, *H.R.A.* Ser.1, Vol.XIX, p.589.

²⁷ See 1839 general view and 1847 front elevation of Government House, Victoria, in Spillett, *Forsaken Settlement*, pp.45 and 152. The historical record at one point seems about to disclose further details on the Port Essington buildings, for on 16 October 1847 Captain McArthur wrote, "I shall immediately commence and complete plans with details of scantling used in all the buildings. . . ." (*H.R.A.* Ser.1, Vol.XXVI, p.374). However, the Public Record Office holds no later documents on the subject.

²⁸ Hogan, *Gladstone Colony*, p.57.

The idea of a frame of widely spaced light timbers was brought from America by the gold seekers who crossed the Pacific when the Californian fields started to wane at the time when the strikes in Victoria became known. The system had been invented by George W. Snow and had been used first on a Chicago church in 1833. It was derided by the old craftsmen and scornfully dubbed a 'balloon frame.'²⁹

This suggestion of an American origin for the stud frame wall does not appear to have been made before 1968; it seems odd that it was not acknowledged as an innovation at the time of its introduction, and even patented, if it represented a radical departure from Australian practice.

Because the exposed frame of the Queensland timber house makes its structure evident, and because that structure does bear a visual resemblance to the "balloon frame," whose origins were debated by American architectural historians about 1940, Freeland's theory has attracted most attention in Queensland, where it has been accepted by writers on timber building, who usually cite Freeland as their source. The year after the publication of *Architecture in Australia*, Freeland's account of the introduction of the balloon frame to Australia was read in almost identical words to the Royal Historical Society of Queensland,³⁰ and given a significance and a timing quite beyond anything Freeland had suggested.

Prior to the 'eighties the 'art and mystery' of building was basically medieval. The replacement of hand-crafting by a machine technology had its origins in the last decade of the last century.³¹

²⁹Freeland, *Architecture*, p.117; a revised form of the same passage appeared in Cox and Freeland, *Rude Timber Buildings*, p.57.

³⁰P. Newell, "The Heritage Architecture of Queensland," *Royal Historical Society of Queensland Journal* 8 (1969), 746; cf. Freeland, *Architecture*, p.117.

³¹Newell, "Heritage," p.747.

The theory is sometimes presented in forms which betray total ignorance of the origins of the balloon frame:

In 1833, a timber framing system which became known as 'balloon framing' was developed along the western seaboard of America. The light timber frame, clad in sawn weatherboard, which was found so eminently suitable in the mining settlements of the U.S.A., was imported into Australia in the gold rush days.³²

Where the American origin of the balloon frame is more clearly understood, Freeland's theory has become orthodox, as in Sumner's writings on the development of North Queensland domestic building:

Structurally the bungalow was based upon the 'balloon frame,' which was a technique first used in Chicago in 1833, and later widely employed in the American frontier settlements of the west, particularly on the Californian goldfields. It was imported into Victoria in the 1850s, and spread rapidly to north Queensland where it was widely adopted in a lighter and modified form. It involved a light timber frame of braced studs or supports nailed together and covered by a single layer or skin of boards. In north Queensland the supporting frame was exposed and the wall boards were attached to the inside of the frame.³³

One work devoted to a study of American influence on Australian architecture in the nineteenth century accepts Freeland's theory without hesitation:

³²Newell, *The Origins and Development of the Single Family House in Queensland*, 1977: unpublished typescript, University of Queensland library, part 1, p.22.

³³R. Sumner and J. Oliver, "Early North Queensland Housing as a Response to Environment," *Australian Geographer* 14 (1978), 17; and see also Sumner, *Settlers and Habitat*, p.11, "Pioneer Homesteads," p.55, "Environment and Architecture," p.83, "Charters Towers," p.41, "Tropic House," p.22, "Tropical Bungalow," p.33; and also P. Hyndman and M. Baker, *An Approach to Queensland Vernacular Architecture*, Brisbane 1975, p.23.

The third import from the goldrush days . . . should be mentioned in passing—the balloon frame which was much used after 1851 and which doubtless appeared in the pre-fabricated buildings which arrived in some quantity in those days.³⁴

There are some problems raised by Freeland's balloon frame theory and its subsequent interpretations. First, there is some confusion in Freeland's own description of the technique, which he describes as employing "widely spaced light timbers," being "made even lighter" in Australia, and no longer reliant on "accurately worked mortice and tenon joints."³⁵ In fact the stud frame wall used in the northern half of Queensland employs more *closely* spaced light studs than traditional framing techniques, employs components similar in dimensions to those used in stud frame walls in the U.S.A., New Zealand and Britain in the same period, and is almost invariably extensively joined by tenons and dovetails.

No research seems to have been done in Australia to establish precisely what characterised the American balloon frame, and to what extent its details were reproduced in Australia; as a result Freeland's theory has won acceptance on the basis of a general visual resemblance, and the balloon frame is loosely understood by Australian architectural writers as synonymous with the light stud frame. In the absence of published information on pre-1851 timber building practices in Australia, it is difficult to establish whether changes in construction techniques did actually occur in New South Wales and Victoria contemporaneously with an influx of Americans and returning Australians from California in the 1850s. Nor has it been established that the balloon frame was widely known in California at that time: the balloon frame's invention

³⁴M.D. Orth, *American Influence on Australian Architecture in the Nineteenth Century*: unpublished research essay, University of Melbourne 1971, pp.31-32. Orth cites Cox and Freeland. The essay's title is misleading: it makes the statement (p.1) that American influence in Australia was slight until the 1890s, and is largely concerned with the stylistic influence of "Richardsonian Romanesque" (p.3) in that decade.

³⁵Freeland, *Architecture*, p.117.

is attributed to Chicago in 1833, and California in the 1850s was dependent not on the transcontinental route suggested by drawing a straight line on a map, but on the less arduous sea-routes via Cape Horn and the Panama Isthmus, terminating at the Atlantic coast ports.³⁶ Thus the diffusion of the balloon frame throughout the U.S.A. before its presumed impact on Australia must be investigated.

Lewis has expressed reservations about the balloon frame's influence in Australia, pointing out that a simple cheap method of construction would necessarily become popular at a time of population increase, and that granted access to sawn timber and cheap nails, the stud frame can be explained in terms of economic forces operating within Australia:

. . .it seems that the stud frame appeared automatically as skilled labour became scarce, as nails became cheap enough for general use, or when large sizes of timber were difficult to get. It was only to be expected that (even if there had been no American influence) it would come into wide use during the gold rushes.³⁷

Strangely, all published accounts of the origin of the Australian light stud frame have overlooked the most likely source for any cultural development in Australia during the nineteenth century: Great Britain. This oversight is undoubtedly due to the emphasis given to masonry buildings in almost all works on British architecture, and the overwhelming association of British timber construction with the ponderous framed structures of medieval times. There is compelling evidence, however, that there existed in some English counties in the eighteenth and nineteenth centuries a tradition of light timber stud framing which is quite sufficient to account for the practice adopted in Queensland, and which is probably ancestral to the American balloon frame as well.

³⁶O. Lewis, *Sea Routes to the Gold Fields*, New York 1949.

³⁷M. Lewis, *Tradition and Innovation*, pp.162-163.

Even quite extensive reading might leave a student with the impression that the architecture of Britain has always been of masonry, for the majority of general texts on the buildings of the British Isles deal almost entirely with stone and brick structures, and cursorily if at all with timber.³⁸ This preoccupation with masonry is understandable, for it has formed the material of most substantial buildings in Britain from Stuart times to the present; but it gives rise to an impression that the Australian stud frame is so alien to British building techniques that an alternative origin or an endogenous evolution must be postulated.

Timber has persisted as an important building material in Britain since ancient times, and indeed until the seventeenth century was regarded as the normal material for domestic structures of any scale.³⁹ Although regional variations in building technique occurred in Britain, the islands as a whole differed from most of northern Europe in never adopting log construction techniques: squared timber was the normal framing member of the British house.⁴⁰ The tendency toward masonry construction in recent centuries has been an exceptional development when seen in the longer context of British building.

³⁸ Depending on the author's emphasis, this effacement of timber construction may often be justified, but descriptive works which seem culpably to neglect the timber tradition include: S.A. Addy, *The Evolution of the English House*, London 1898 (and editions to 1933); M. Airs, *The Making of the English Country House 1500-1640*, London 1975; M.W. Barley, *The English Farmhouse and Cottage*, London 1961, and *The House and Home*, London 1963; M.S. Briggs, *The English Farmhouse*, London 1953; M. Girouard, *The Victorian Country House*, Oxford 1971; N. Lloyd, *A History of the English House: from Primitive Times to the Victorian Period*, London 1975; N. Pevsner (ed.), *The Buildings of England* (approx. 40 vols), 2nd edn, Harmondsworth 1966-1976; R. Turnor, *The Smaller English House 1500-1939*, London 1952. Some recent writings cited below are making good this deficiency.

³⁹ This statement is made for England and Ireland by Addy, *Evolution*, pp.106-107, and C.F. Innocent, *The Development of English Building Construction*, Cambridge 1916, p.107; and for Scotland by J.C. Dunbar, *The Architecture of Scotland*, rev. edn, London 1978, p.95.

⁴⁰ Innocent, *English Building*, p.109.

During the seventeenth and eighteenth centuries, changes occurred in the traditional usage of timber throughout Britain. In urban areas this change manifested itself in a rapid increase in the popularity of brick, and this period is sometimes interpreted as one of universal transition from timber to brick construction.⁴¹ This is an oversimplification, however, for there occurred simultaneously an evolution in the use of timber for small-scale construction.

These changes were induced in part by a worsening shortage of timber, apparent since Tudor times,⁴² and hastened in urban areas by legislation proscribing flammable timber walls.⁴³ The extent of overall timber scarcity is uncertain, for most accounts of dwindling timber resources are concerned with the supply of naval timbers or smelter charcoal, rather than building timber, but by the mid-eighteenth century a substantial amount of timber, principally softwood, was being imported into Britain, and this import trade had increased greatly in volume by the 1840s.⁴⁴ There were undoubtedly motives for importation of timber other than local scarcity: the quality and workability of Norwegian fir and spruce, mechanical sawing by water power at the source and cheap sea transport all influenced the market.⁴⁵

⁴¹H. Batsford and C. Fry, *The English Cottage*, London 1938, pp.25-26; R.T. Mason, *Framed Buildings of England*, Horsham 1974, p.27; S.R. Jones, *English Village Homes and Country Buildings*, London 1936, p.95.

⁴²R.G. Albion, *Forests and Sea Power*, Cambridge 1926, pp.95-138; H.C. Darby, "The Clearing of the English Woodlands," *Geography* 36 (1951), 71-83.

⁴³Brick construction was made obligatory in parts of London after the great fire of 1666 (P. Clark and P. Slack, *English Towns in Transition 1500-1700*, London 1976, p.148); and further regulations in 1774 banned the use of timber except for flooring, window frames, etc. (J. Summerson, *Georgian London*, 3rd edn, London 1978, pp.127-128).

⁴⁴The quantity of imported fir increased from about ten million cubic feet per year about 1790 to thirty million about 1840: A.K. Cairncross and B. Weber, "Fluctuations in Building in Great Britain 1785-1849," *Economic History Review* 9 (1956-57), 296-297.

⁴⁵H.S.K. Kent, "The Anglo-Norwegian Timber Trade in the Eighteenth Century," *Economic History Review* 8 (1955-56), 62.

The response to timber shortage from as early as the seventeenth century had been to reduce the size of individual timber components used in construction; an elemental response, part of the process C.F. Innocent described as "that continuous trend in the direction of economy in the use of materials" which characterises the evolution of most building techniques.⁴⁶ The frame of a timber building had until the seventeenth century been composed of massive wall-posts and bressummers commonly 30cm square in section.⁴⁷ During the seventeenth century the timber frame in many new buildings was reduced in scale from a heavy widely-spaced structure to a lighter frame utilising much smaller studs at closer intervals. This "late framing"⁴⁸ technique was particularly evident in the south-eastern counties of England—Kent, Sussex and Suffolk—where traditional building timbers such as elm and oak were particularly scarce,⁴⁹ and where supplies of Scandinavian softwoods were readily available from London, their principal entry port.⁵⁰ The south-east was especially amenable to the light stud frame, as a long tradition existed there of wall construction employing closely-spaced heavy studs left exposed on the outer wall surface, framing vertical brick or earth infill panels,⁵¹ and such a wall could be lightened simply by reducing the scale of its components, without further structural modification, for it carried the load more or less evenly on all its studs, unlike the heavier, more complex frame of the north and west. By at latest the late eighteenth century, studs had been

⁴⁶Innocent, *English Building*, p.112.

⁴⁷L.F.Salzman, *Building in England down to 1540*, London 1952, pp.237-238 lists such dimensions for posts and puncheons as 12x12, 18x18, 14x12, 12x10 and 12x9 inches.

⁴⁸"Late Framing" in E. Mercer, *English Vernacular Houses: a Study of Traditional Farmhouses and Cottages*, London 1975, pp.125-126.

⁴⁹Airs, *English Country House*, pp.109-111.

⁵⁰J. and J. Penoyre, *Houses in the Landscape: a Regional Study of Vernacular Building Styles in England and Wales*, London 1978, p.27; and Kent, "Anglo-Norwegian Timber Trade," p.70.

⁵¹J.T. Smith, "Timber-framed Building in England: its Development and Regional Differences," *Archaeological Journal* 122 (1965), 138-153; and R.W. Brunskill, *Illustrated Handbook of Vernacular Architecture*, 2nd edn, London 1978, p.192.



Early nineteenth century light stud framing in southeast England. (Mercer, *Vernacular*, after p. 122)

reduced in section to 100x50mm, or 75mm square in some light softwood buildings.⁵² Widespread adoption of light framing may have occurred a century earlier, for studs of 100x50mm had been advocated in a carpentry manual in 1677.⁵³

Thus by the time European settlement commenced in Australia there existed in the counties closest to London a building technique employing closely spaced light studs of sawn imported softwood, which represented an alternative response to the timber shortage and other causes that made heavy timber construction rare in most of Britain. The use of timber became unfashionable, but did not cease. Nathaniel Kent, in his classic manual for the landed gentry during the enclosure movement, deplored the use of timber for labourers' cottages: "In those provinces where brick and stone can be obtained they should never be constructed with timber. . .";⁵⁴ but nevertheless he published plans for "two Studd Work Cottages, of the smallest Size," which provide an excellent example of the transition to late framing.⁵⁵

The lighter forms of the ancient timber tradition dwindled into specific uses; for interior partitions in grand buildings, for the outer walls of utilitarian structures everywhere, and for the homes of the poor:

Everywhere timber was replaced by brick or stone for the homes of the wealthy, but it continued to be used by poorer men. The timbers are generally of small scantling, and their diminution in size was probably due to several causes. In the first

⁵²E. Mercer, personal communication, 28 February 1980.

⁵³J. Moxon, *Mechanick Exercises: or The Doctrine of Handy-works*, London 1677, cited in Innocent, *English Building*, p.113.

⁵⁴N. Kent, *Hints to Gentlemen of Landed Property*, London 1776, quoted in G. Gwilt, *Encyclopaedia of Architecture: Historical, Theoretical and Practical*, London 1842, p.816.

⁵⁵Kent, *Hints to Gentlemen*, pp.263-265. The spelling "Studds" was in use in Queensland as late as 1867: see Specification for Timber Buildings at Bustard Head Light House, WOR P1 Q.S.A.

place there may have been a shortage of timber due to its prodigal use for iron-smelting and ship-building. Secondly, carpenters found that they could build as substantial houses as before with smaller and fewer timbers. At the same time, imported soft wood of slight scantling came into common use in the South and East, and this was normally covered by plaster, weatherboarding or tiles.⁵⁶

Weatherboard cladding was characteristic of the south-eastern counties, and rare elsewhere in Britain.⁵⁷ Its popularity in Kent was only fully achieved in the late eighteenth century, and its most common form, feather-edged weatherboarding, may have been sawn in Norway and imported ready for use.⁵⁸ Weatherboarded light framed cottages were built in great numbers in Kent and Sussex in the decades around 1800, and numbers of them still stand.⁵⁹ But the light frame presented difficulties in insulation, and its use was more common for interior partitions in more substantial buildings, and in constructing buildings which were not continuously inhabited: stables, barns, mills, sporting pavilions, railway waiting rooms and boat sheds.⁶⁰ A similar technique seems to have been in use in the nineteenth century for the construction of ships' deckhouses.⁶¹

⁵⁶ Mercer, *English Vernacular Houses*, pp.125-126; and see Brunskill, *Illustrated Handbook*, p.53.

⁵⁷ A. Clifton-Taylor, *The Pattern of English Building*, 2nd edn, London 1965, pp.54-571 and Penoyre, *Houses in the Landscape*, pp.24 and 27.

⁵⁸ P. Nicholson, *The Builder's and Workman's New Director*, London 1834, p.XXXVII: "A species of oak is brought from Norway and denominated clapboard."

⁵⁹ See examples in J. Prizeman, *Your House: the outside view*, London 1975, pp.42-53 *inter alia*; Brunskill, *Illustrated Handbook*, pp.64-65; Penoyre, *Houses in the Landscape*, facing p.32.

⁶⁰ G. Ellis, *Modern Practical Capentry for the use of Workmen, Builders, Architects and Engineers*, 2nd edn, London 1915, p.269; Clifton-Taylor, *English Building*, p.57; Mercer, *English Vernacular Houses*, p.126.

⁶¹ H.A. Underhill, *Deep-water Sail*, 2nd edn, Glasgow 1963, pp.275-276, pl. 54.

Within the more fashionable masonry construction tradition of urban and grander buildings, timber partition walls were built on similar lines; and architectural texts of the eighteenth and nineteenth centuries, while restricting themselves almost entirely to brick and stone, frequently included a brief section on the construction of light stud-framed partitions.⁶² Even writers of carpentry texts customarily denigrated timber construction:

. . .wooden structures are only erected in this country where other building material is scarce and timber plenty, where cheapness without regard to durability is aimed at, or when expedition in construction is the object.⁶³

But far from being an exclusive apology for masonry, statements of this kind in such publications indicate that there were many situations in which light timber was used in Britain, even within the grand architectural tradition. Beyond the reach of the academic publications of the building professions were a large number of small buildings which could most efficiently be built of light timber, and which were undoubtedly within the normal competence of any carpenter and most builders in the south-east of England during the nineteenth century.

As European colonisation progressed, British methods of timber construction were adopted by immigrants in the colonies. The Atlantic seaboard of North America was settled in the seventeenth and eighteenth centuries while the timber frame in Britain was in transition toward the light stud frame. The British influence on American house construction techniques was modified in the middle colonies by influences from central and northern Europe, giving rise to forms of log construction,⁶⁴ but the principal origin of

⁶²Nicholson, *New Director*, p.116, pl. LIX and LX.

⁶³J. Newlands, *The Carpenter and Joiner's Assistant*, Glasgow 1860, p.156.

⁶⁴F. Kniffen, "Folk Housing: Key to Diffusion," *Annals of the Association of American Geographers* 55 (1965), 549-577.

construction methods in New England and the mid-west to 1800 was the British Isles.⁶⁵

The extent to which light stud framing was adopted in the American colonies in the eighteenth and early nineteenth centuries is uncertain, but isolated examples are described in published works. Morrison describes seventeenth century New England houses as framed with heavy timber, but employing a weatherboarded light stud frame for the intervening panels:

The exterior wall surface, or 'siding,' was almost invariably made of clapboards. But hidden beneath these was a core of studs and filling. The studs were vertical timbers, spaced about two feet on centers, and framed into the sill below and the girt above; clapboards were nailed onto them. Since they carried a light load they were small (about 2½ by 3 inches) and were usually sawed rather than hewn.⁶⁶

Shurtleff's exhaustive survey of framed buildings in the northeastern colonies contains several inconclusive descriptions of smaller buildings in the seventeenth century, "small framed cottages covered with sawn boards and fastened by nails" in Maine;⁶⁷ and quotes a description of Boston, "All the houses are made of thin, small cedar shingles, nailed against frames, and then filled in with

⁶⁵This is made abundantly clear in F. Kimball, *Domestic Architecture of the American Colonies and of the Early Republic*, New York 1922; H. Morrison, *Early American Architecture: from the First Colonial Settlements to the National Period*, New York 1952; and H.R. Shurtleff, *The Log Cabin Myth*, Cambridge Mass. 1939. See also V. Scully, *The Shingle Style and the Stick Style: Architectural Theory and Design from Richardson to the Origins of Wright*, rev. edn, New Haven 1971, p.1; H.D. Eberlein, *The Architecture of Colonial America*, Boston 1915, pp.38-56; F. Kniffen and H. Glassie, "Building in Wood in the Eastern United States," *Geographical Review* 56 (1966), 41; Brunskill, *Illustrated Handbook*, pp.200-205.

⁶⁶Morrison, *Early American Architecture*, p.30.

⁶⁷Shurtleff, *Log Cabin Myth*, pp.80-81.

bricks and stuff. . . ." ⁶⁸ A light form of timber framing was in use in Virginia by the early eighteenth century. ⁶⁹

Closer investigation of American framing prior to 1833 is quite beyond the scope and resources of this study, but from the published evidence it appears that the English light stud frame was known in the north-eastern colonies in the seventeenth and eighteenth centuries in the same restricted applications as in Britain, and that in some buildings an abundant use of nails was becoming acceptable well before the nineteenth century. ⁷⁰ As this process of lightening timber framed walls appears to be moving toward what subsequently became known as the "balloon frame," it is necessary to see how that form has been accepted as a distinct innovation.

The name "balloon frame" apparently first appeared in print in 1847 in an article by Solon Robinson on cheap house construction. ⁷¹ Further articles by Robinson in 1855 stressed the cheapness and superior strength of the technique, and seem to have been widely reprinted. ⁷² The timing of these publications brings Freeland's theory into serious question, for Robinson was proselytising the balloon frame as an innovation several years *after* the Victorian

⁶⁸ *Ibid.*, p.91.

⁶⁹ H. Glassie, *Folk Housing in Middle Virginia*, Knoxville 1975, p.125 and see fig. 54, p.127.

⁷⁰ Shurtleff (p.125) quotes a 1684 building estimate in which nearly 25% of the total expenditure is on "Nailes, and other things. . . ."

⁷¹ S. Robinson, "A Cheap Farm-House," *American Agriculturalist* 6 (1847), 218.

⁷² *Transactions of the American Institute of the City of New York for the Year 1854*, Albany 1855, pp.398-399 and 405-407, reports on Robinson's two addresses to the Institute: "Balloon Frames of Farm Buildings" and "How to Build Balloon Frames." These proceedings were apparently reprinted in the New York *Tribune* where Robinson was agricultural editor on 18 January 1855 (cited in J.A. Kouwenhoven, *Made in America*, Massachusetts 1948, p.63) and as far afield as the Lawrence, Kansas *Herald of Freedom* 10 March 1855 (cited in J.C. Malin, "Housing Experiments in the Lawrence Community, 1855," *Kansas Historical Quarterly* 21 (1954), 112). See also R. Jensen, "Board and Batten Siding and the Balloon Frame," *Journal of the Society of Architectural Historians* 30 (1971), 44, which cites two other 1855 references.

and New South Wales gold rushes were under way. There seems to be no evidence that the technique reached California in the 1850s, whereas a similar method of construction was known in the Australasian colonies at least a decade earlier. Much has been written on the balloon frame in the United States, but many writers have accepted uncritically that the technique was a dramatic innovation, universally adopted, and have done little to clarify the origins of the balloon frame, or even identify precisely what it was.

There is a recurring suggestion that the balloon frame appeared as an abrupt transition from the older technique of heavy timber framing imported from Britain.⁷³ This seems improbable in the face of the centuries of evolution toward a lighter, simpler timber frame in Britain, and the existence in south-eastern England and the north-eastern United States of generally similar techniques many decades before the supposed appearance of the balloon frame in the U.S.A. Acceptance of a sudden origin for the balloon frame has been assisted by accounts published by Siegfried Giedion in 1939 and Walker Field in 1942, which, while differing in detail, both identify a specific building—Saint Mary's Church, built in Chicago in 1833—as the first balloon frame structure.⁷⁴

Giedion credited a Chicago surveyor, George Washington Snow, with the invention of the balloon frame.⁷⁵ In a detailed analysis of Giedion's and other sources, Field demonstrated that Snow's claim

⁷³ This impression is given quite explicitly by D.J. Boorstin, *The Americans*, Vol. 2: *The National Experience*, Harmondsworth 1969, pp.192-193; Kouwenhoven, *Made in America*, pp.61-63; Malin, "Housing Experiments," p.112.

⁷⁴ S. Giedion, *Space, Time and Architecture*, 4th edn, Cambridge, Mass. 1962, pp.345-352: this work, whose first edition appeared in 1941, contains a revised edition of "American Development in Design," in *New Directions*, Norfolk, Va. 1939; W. Field, "A Reexamination into the Invention of the Balloon Frame," *Journal of the Society of Architectural Historians* 2 (1942), 3-29. Neither Giedion nor Field claims an abrupt, unprecedented transition to the balloon frame, but the highly specific nature of their writing has contributed to such an interpretation by others.

⁷⁵ Giedion, *Space*, pp.350-351.

was based almost wholly on one documentary source, and even that account was not first-hand: ". . .the unsupported word of a late arrival who did not set down his record until fifty years after the event and thirteen years after Snow's death."⁷⁶ This may seem effectively to demolish Giedion's flimsy case for Chicago in 1833 as the birthplace of the balloon frame, but astonishingly, Field proceeded to accept Giedion's conclusion in almost every detail, simply identifying a new "inventor," Augustine Deodat Taylor, the builder of Saint Mary's church.⁷⁷

This whole case for a sudden adoption of balloon framing in one building at an identifiable time and place is most unsatisfactory, particularly as neither Giedion nor Field produced any evidence for the construction technique employed in the church, beyond Field's inferences from statements about the flimsiness and cost of the building,⁷⁸ both of which are from sources whose reliability he himself questioned elsewhere.⁷⁹ Against these inferences is Field's own well-documented evidence that Snow was involved in the construction of another, conventionally-framed, building at the same time as Saint Mary's was under construction⁸⁰—a finding which undermines his own case as much as it does Giedion's—and the fact that the church apparently took three months to build:⁸¹ a surprisingly long time for a construction technique whereby a two story house could reputedly be "built in a week."⁸²

The significance of these events in Chicago in 1833 can be put into perspective by looking at evidence of timber framing techniques in North America before that time and at the subsequent adoption

⁷⁶Field, "Reexamination," p.17.

⁷⁷*Ibid.*, p.19.

⁷⁸*Ibid.*, p.20.

⁷⁹*Ibid.*, pp.16-17.

⁸⁰*Ibid.*, p.22.

⁸¹*Ibid.*, p.19.

⁸²Robinson, *Transactions*, p.399; and see Field, "Reexamination," p.7 for a similar claim.

of balloon framing elsewhere. But it is first necessary to establish precisely what balloon framing was. Unfortunately, there is no universally accepted definition: at least three meanings adhere to the term, sometimes in combination, and there is evidence that the meaning has altered with time. Robert Jensen, one of the few American writers to investigate the topic critically, has pointed out an 1855 use of the term to describe a totally different method of construction,⁸³ suggesting the name "balloon" may in its early decades have been applied to *any* method of light timber walling, not necessarily vertically framed.

Three characteristics are sometimes used to identify the balloon frame. It is first a light stud frame of sawn timber. This is in itself insufficient to identify the specific innovation involved, but it appears that the term is frequently used in this general way to mean any light stud frame.⁸⁴ Any usage of the term which does not define it is suspect for this reason, for the term is quite useless if given such a general sense; although this is the meaning applied to it by some American writers, and apparently the sense in which it is used in references to its adoption in Australia. Acceptance of this broad definition weakens any question of an American origin, for the light stud frame with components similar in dimensions to those of the nineteenth century balloon frame has been shown to be in use in England in the eighteenth, and probably the seventeenth, century.⁸⁵

⁸³Jensen, "Board and Batten," p.44, n.22.

⁸⁴Boorstin, for example, defined the term precisely (*Americans*, p.193), but went on to refer to timber structures more generally (pp.195-196). C.W. Condit, *American Building Art: the Nineteenth Century*, New York 1960, used the terms "balloon frame" and "light frame" interchangeably (see p.23). Giedion, *Space*, despite a precise definition (p.345) went on to relate the balloon frame to steel frame buildings and Windsor chairs, which suggests an emphasis on light structure rather than joinery. This loose interpretation: "a structure of light timbers fitted together to form the skeleton of a building," also appears in the 1972 *Supplement to the Oxford English Dictionary*, Vol. 1, p.192.

⁸⁵Previous references to Mercer and Innocent.

A second feature of the balloon frame, as the term was understood in later years, was the use of studs which ran the full height of the building; as opposed to a platform frame, in which the ground floor studs terminate at a plate, or girt, above which new studs commence for the first story. Early published descriptions of balloon framing mentioned this feature without emphasising it. Robinson in 1854 recommended that joists for an upper story rest on cleats nailed to the studs, and that the studs run uninterrupted from foundation to roof.⁸⁶ George Woodward, writing in 1865 what was to become one of the best-known descriptions of balloon framing, suggested the more secure method of letting a girt into the inner face of the studs to support the first floor joists, but he, too, clearly envisaged the balloon frame as a walling of continuous studs that could be extended indefinitely by splicing new timber to the end.⁸⁷ This feature remains an important part of modern American descriptions of the balloon frame—Field distinguished between balloon and platform frames,⁸⁸ and a recent United States government manual retains the distinction⁸⁹—but it is in Britain that this use of continuous studs in storied buildings as the essential distinguishing element of the balloon frame is most marked. Recent British glossaries of architectural terms define "balloon frame" as "Modern American timber house construction in which the studs run to the roof plate past the floor joists which are nailed to them,"⁹⁰ or "a form of timber framed construction [in which] . . . vertical members ('studs') run continuously from sill to eaves, the horizontal members being nailed to them."⁹¹

⁸⁶ Robinson, *Transactions*, p.406.

⁸⁷ G. Woodward, *Country Homes*, New York 1865, fig.114, p.162 and fig.111, p.157.

⁸⁸ Field, "Reexamination," p.6, n.18.

⁸⁹ L.O. Anderson, *How to Build a Wood-frame House*, New York 1973, pp.31-36.

⁹⁰ J.S. Scott, *A Dictionary of Building*, 2nd edn, Harmondsworth 1974, p.28.

⁹¹ M.S. Briggs, *Concise Encyclopaedia of Architecture*, London 1959, p.36. J. Fleming *et al.*, *The Penguin Dictionary of Architecture*, Harmondsworth 1966, p.23 essentially repeats Briggs.

Continuous studs in two-story buildings are not in themselves sufficient to establish balloon framing as an American development of the nineteenth century. Trudy West identified the same construction technique in use in England from Elizabethan times to replace jettied construction, and described it as "balloon frame," although it is doubtful that the term is of such great age.⁹² Nathaniel Kent's "Studd Work Cottages" of 1776 quite unequivocally used the same technique, for the studs are shown as continuous in Kent's elevation, and he found it necessary to note:

As the Studds, in these Cottages, are run quite up to the Wall Plate, it is to be observed, that a Girder, sufficient to support the flooring Joists, must be laid, where the dotted Line is drawn, and the Joists, must be fastened to the Studds.⁹³

It seems that only the third characteristic of the balloon frame can be claimed as an American innovation; its absence of joinery. For in the descriptions of the technique given by Robinson and Woodward, the feature they defended most strongly was the balloon frame's utter dependence on skew-nailed (or "toe-nailed") members:

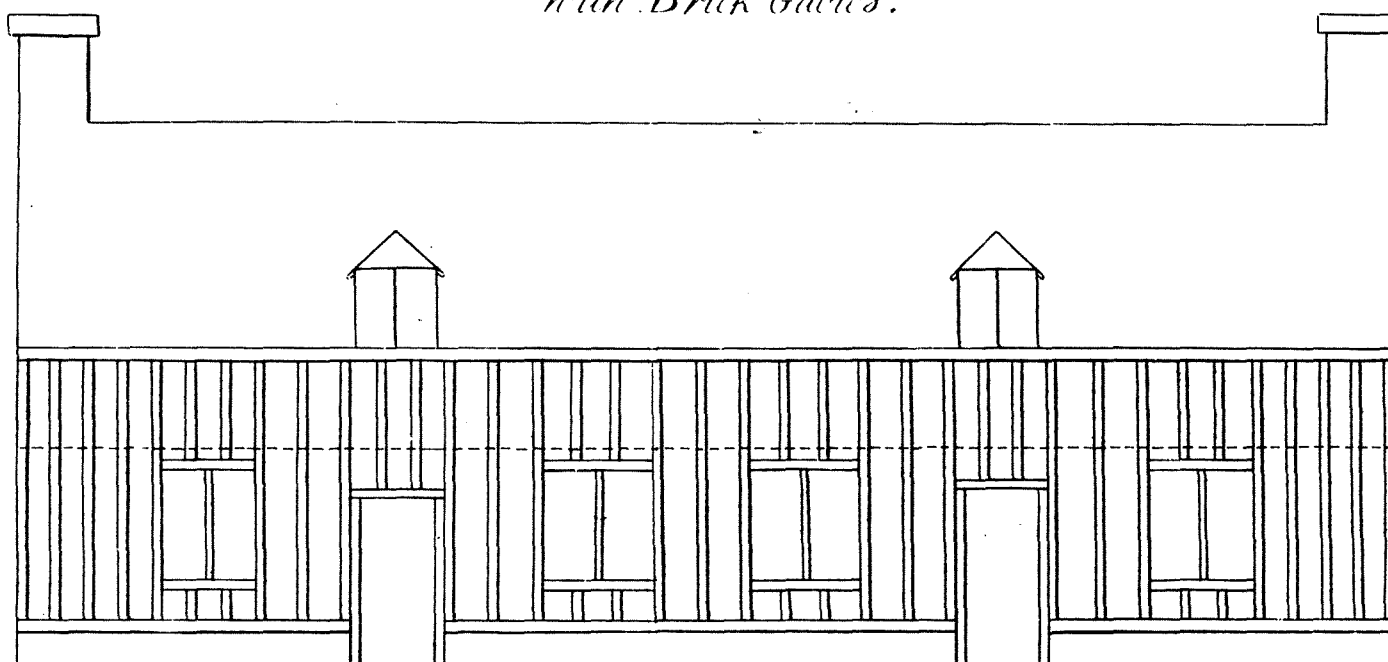
A Balloon Frame looks light, and its name was given in contempt by those old foggy mechanics who had been brought up to rob a stick of timber of all its strength and durability, by cutting it full of mortices, tenons and augur [*sic*] holes, and then supposing it to be stronger than a far lighter stick differently applied, and with all its capabilities unimpaired.⁹⁴

⁹²T. West, *The Timber-frame House in England*, Newton Abbot 1971, p.79. Although West uses the term as though it were contemporary with the technique she describes, this meaning of the word "balloon" does not appear in the *Oxford English Dictionary* 1933.

⁹³Kent, *Hints to Gentlemen*, elevation facing p.263.

⁹⁴Woodward, *Country Homes*, p.158.

*Elevation of two Studd Work Cottages, of the smallest Size,
with Brick Gables.*



Note. As the Studds, in these Cottages, are run quite up to the Wall Plate, it is to be observed, that a Girder, sufficient to support the flooring Joists, must be laid, where the dotted Line is drawn, and the Joists, must be fastened to the Studds.

(Kent, *Hints to Gentlemen*, p. 263)

Here Woodward is saying that the essential difference between the new technique of balloon framing and the older methods of constructing timber walls is that the balloon frame depends entirely on the friction between the nails holding the timber components together and the wood surfaces they contact. Robinson likewise had "denounced the plan of tenons and mortices in ordinary small houses or other necessary farm buildings, as one of the most absurd remains of old-fogyism in existence."⁹⁵ It is conspicuous that the feature of the balloon frame both Woodward and Robinson stress as innovatory is not the presence of nails, but the absence of joinery; suggesting that the abundant use of nails was familiar to their audiences, but that old joinery practices survived in combination with nailing.

Timber framing in Britain had always relied on skilfully crafted joints, which in large buildings could attain very great complexity.⁹⁶ Wooden pins were used in joints under tension to prevent withdrawal of tenons, but nails and other metal fastening devices were rare until the nineteenth century because of their cost. The construction of timber-framed cottage walls involved little more joinery than mortice and tenon and dovetail joints, which altered little during the evolution of the light stud frame. From the late eighteenth century nail-making machines were in use in the U.S.A., increasing in efficiency throughout the nineteenth century to bring nails within the reach of the house-builder by reducing their cost to about an eighth of that of hand-made nails.⁹⁷ The use of nails must have increased steadily in the U.S.A. as their cost lessened, and can not be regarded as a dramatic innovation at one time and place. Thus the single identifiably American contribution to the balloon frame was its elimination of joinery in favour of butted skew-nailed carpentry. Modern American usage of the term contrasts with that

⁹⁵ Robinson, *Transactions*, p.398.

⁹⁶ Excellent descriptions of the wide range of English joinery techniques are found in C.A. Hewett, *The Development of Carpentry 1200-1700: an Essex Study*, Newton Abbot 1969; and Hewett, *English Cathedral Carpentry*, London 1974.

⁹⁷ From 25¢ per pound to 3¢ between colonial times and 1842. Field, "Reexamination," p.10 and Giedion, *Space*, p.348: both cite the same sources.

of Britain in stressing this characteristic: "A frame for a building, constructed of small members nailed together instead of heavy timbers joined by mortises and tenons";⁹⁸ ". . .light wood uprights secured by simple nailing. . . ." ⁹⁹ No parallel development seems to have occurred in Britain.¹⁰⁰ Indeed, light stud framed buildings in New Zealand were still pinned by wooden dowels in the 1840s,¹⁰¹ demonstrating that the evolution of the technique was not necessarily dependent on industrialised nail manufacture.

Both Giedion and Field adopted a definition embracing all these characteristics:

The principle of the balloon frame involves the substitution of thin plates and studs—running the entire height of the building and held together only by nails—for the ancient and expensive method of construction with mortised and tenoned joints.¹⁰²

And both argued that once established the balloon frame became widely adopted, Giedion estimating it was "used for some 60 to 80 per cent of all the houses in the United States."¹⁰³ Jensen, on the

⁹⁸ *Webster's New International Dictionary of the English Language*, 2nd edn, Springfield, Mass. 1960, p.209.

⁹⁹ Sir William Craigie and J.R. Hulbert, *A Dictionary of American English on Historical Principles*, Chicago 1938, Vol. 1, p.125.

¹⁰⁰ British sources are entirely silent on the use of skew-nailing, suggesting it was unknown there. Mercer (pers. comm. 28 February 1980) confirmed that in late stud framed buildings in England: "the members are pegged together and not nailed. The main posts and lower ties of the studs are tenoned into a sill. . . ." Further linguistic confirmation comes from the *Oxford English Dictionary* 1933, which gives 1881 and 1877 as the earliest known occurrences of the terms "skew-nailed" and "toe-nailed" respectively.

¹⁰¹ Coutts, "Old Buildings," p.207.

¹⁰² Giedion, *Space*, p.345, quoted by Field, "Reexamination," p.6.

¹⁰³ Giedion, *Space*, p.344.

other hand, believed the balloon frame was "ignored, even derided," by the few builders who knew of it.¹⁰⁴

The extent of the balloon frame's acceptance in the United States could be determined only by an extensive field survey, but there are sufficient documented studies of particular regions to demonstrate that balloon framing was not the dominant construction technique in many parts of the United States in the nineteenth century. It was only one of a number of building techniques adopted in Kansas, where it remained in competition with the conventional light frame,¹⁰⁵ seems not to have had much influence in Utah,¹⁰⁶ and was not sufficiently conspicuous to attract the attention of observers in the early years of the California mining industry.¹⁰⁷ The balloon frame is recognised as arriving in Virginia in the late nineteenth century, but with the revealing comment that it had little impact on the appearance of houses there as it differed very little from the light stud frame in use there since the eighteenth century.¹⁰⁸

Resistance to the questionable technique of balloon framing can be seen in the pattern books of George and Charles Palliser, established as architects in New York in 1877, who gave alternative sample specifications for work of varying quality, either balloon frame:

The frame to be what is known as a balloon frame, well nailed together; second floor girts to be notched into and well spiked to studs. Do all necessary framing around stairways and chimneys, properly mortised and tenoned together;

¹⁰⁴Jensen, "Board and Batten," p.44.

¹⁰⁵Malin, "Housing Experiments," p.108.

¹⁰⁶J.E. Spencer, "House Types of Southern Utah," *Geographical Review* 35 (1945), 444-457.

¹⁰⁷e.g. R.W. Paul, *Mining Frontiers of the Far West 1848-1880*, New York 1963, p.22.

¹⁰⁸Glassie, *Folk Housing*, p.125.

or what they described as "half balloon":

The frame to be what is known as half balloon, the studs to be tenoned into sills and plates, to be braced with long angle braces cut in barefoot and well spiked. The girts to be of yellow pine, notched into and well spiked to studs. Do all necessary framing around stairways and chimneys, all properly mortised and tenoned together and all to be done in a thoroughly workmanlike and substantial manner.¹⁰⁹

It is difficult to see why the name "balloon" is retained for this braced and tenoned form of construction, for what is described is simply the light stud frame familiar in many parts of the world at the time. Perhaps by the 1870s the word's usage in the U.S.A. had again broadened to include all light stud frame walls.

The true balloon frame is well attested in two American cities, as Robinson recognised in 1855:

If it had not been for the knowledge of balloon frames, Chicago and San Francisco could never have arisen, as they did, from little villages to great cities in a single year.¹¹⁰

Field cites independent evidence for the prevalence of light framed structures in Chicago in the 1830s, although the one use of the name "Balloon" he adduces from that time gives the curious description "built of boards entirely—not a stick of timber in them except for the sills,"¹¹¹ which seems to reflect the same confusion

¹⁰⁹G. and C. Palliser, *Palliser's American Cottage Homes*, Bridgeport 1878, and *Palliser's New Cottage Homes and Details*, New York n.d. (c.1890), give identical specifications. Neither edition is page numbered.

¹¹⁰Robinson, *Transactions*, p.407.

¹¹¹Field, "Reexamination," p.24.

in nomenclature as the 1855 reference cited by Jensen.¹¹² Certainly in later decades the balloon frame was in common use in San Francisco, as the *California Architect and Building Review* reported:

. . .the 'balloon system' of construction is universal in this section of country, in the erection of frame buildings, which constitute ninety-five per cent of the buildings erected west of the Rocky Mountains.¹¹³

But this report is interesting both in making the claim only for coastal California, and for its implicit distinction between balloon and other contemporary "frame buildings." The *Review's* understanding of the term was explicitly restricted to skew-nailing:

. . . 'balloon fashion,' which term we understand as applicable to all frame edifices not framed together by morticing, tenoning, pinning etc., according to the old and established rules of architecture and carpentry.¹¹⁴

It seems that there was such a thing as a balloon frame in the United States, but its one distinguishing feature was its reliance on skew-nailing. Its use seems verified in two major cities dependent on water transport during their rapid growth. Elsewhere, the evidence available in this study seems equivocal, but there are few signs of universal or even widespread adoption in many parts of the United States. The difficulty of identification from documentary sources is compounded by the absence of a universal understanding of what is meant by balloon framing; the frequent use of the term

¹¹²Jensen, "Board and Batten," p.44. Both descriptions suggest board and batten construction, which as Jensen points out, is an unlikely cladding for a stud frame of any kind.

¹¹³*California Architect and Building Review* 2 (January 1881), p.15.

¹¹⁴*C.A.B.R.* 1 (November 1880), p.105. The same article offers the comparison, "The difference between New England built houses and those erected in San Francisco consists simply in the morticing, tenoning, and pinning together of the frames. . . ." This definition could also be applied to board and batten construction.

without definition, and a recent tendency both in the U.S.A. and Australia to describe any light stud frame as a balloon frame. The relationship between the balloon frame and other American timber construction is put into some perspective by a British builder. George Ellis' *Modern Practical Carpentry* provided a detailed description, with drawings, of a "Timber-Framed House, constructed in a manner common in the United States of America." The house depicted is platform framed and well braced, with conventional joinery throughout. In passing, Ellis referred to an inferior American alternative:

A cheaper method of constructing these houses is sometimes adopted, with thinner timbers and practically no framed joints, all the connections being made by means of nailing. This is locally known as balloon framing, in humorous reference to their lightness. . . . This work is 'jerry' of the worst description, and no further particulars of it are considered necessary.¹¹⁵

Evidence of the retention of solid joinery in Illinois—only 150 miles from the balloon frame's purported birthplace twenty-five years before—in the late 1850s is found in Abraham Lincoln's celebrated "House Divided" speech:

. . .when we see these timbers joined together, and see they exactly make the frame of a house or a mill, all the tenons and mortises exactly fitting. . . .¹¹⁶

Obviously a political debate cannot be relied upon for an exact description of building practices, but it would have been unlikely for Lincoln to have used an obscure analogy in such a context. His audience was evidently familiar with traditional joinery, and

¹¹⁵Ellis, *Modern Practical Carpentry*, p.270.

¹¹⁶Lincoln speaking to the Republican State Convention at Springfield, Illinois, 17 June 1858. J.S. Commager (ed.), *Documents of American History*, 8th edn, New York 1968, Vol. 1, pp.345-347.

balloon framing seems not to have gained ascendancy even in the state of Illinois, seven years after its supposed introduction into Australia!

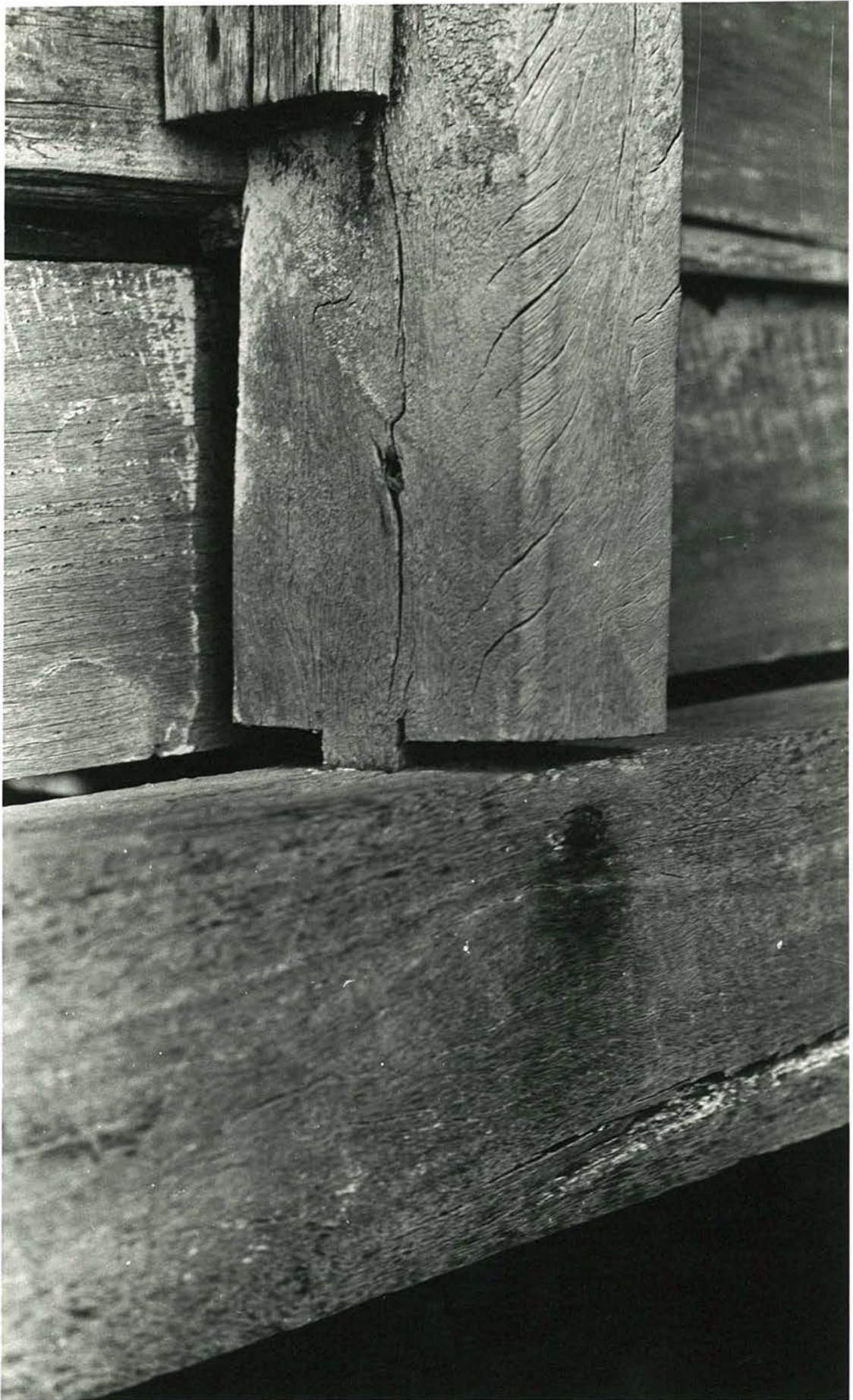
When the whole body of evidence on the evolution of the light stud frame from the seventeenth to the twentieth century is considered, there seems no reason to postulate an American origin for the form of construction most commonly adopted in North Queensland and throughout much of Australia. The process of lightening and simplifying timber framed walls began in Britain and reached its greatest level of refinement in the south-eastern counties of England, for reasons probably more complex than a shortage of building timber.

This process was continued in the British colonies and in the United States, until by the mid nineteenth century there existed in many parts of the world a remarkably similar form of construction employing timber studs approximately 100x50mm, spaced at about 45cm centres, to which were nailed forms of cladding and lining appropriate to the local climate and the social standing of the building. This light stud frame was adopted in North Queensland in the earliest years of settlement, and after a brief period of experimentation became further standardised into a building technique which persisted for well over sixty years.

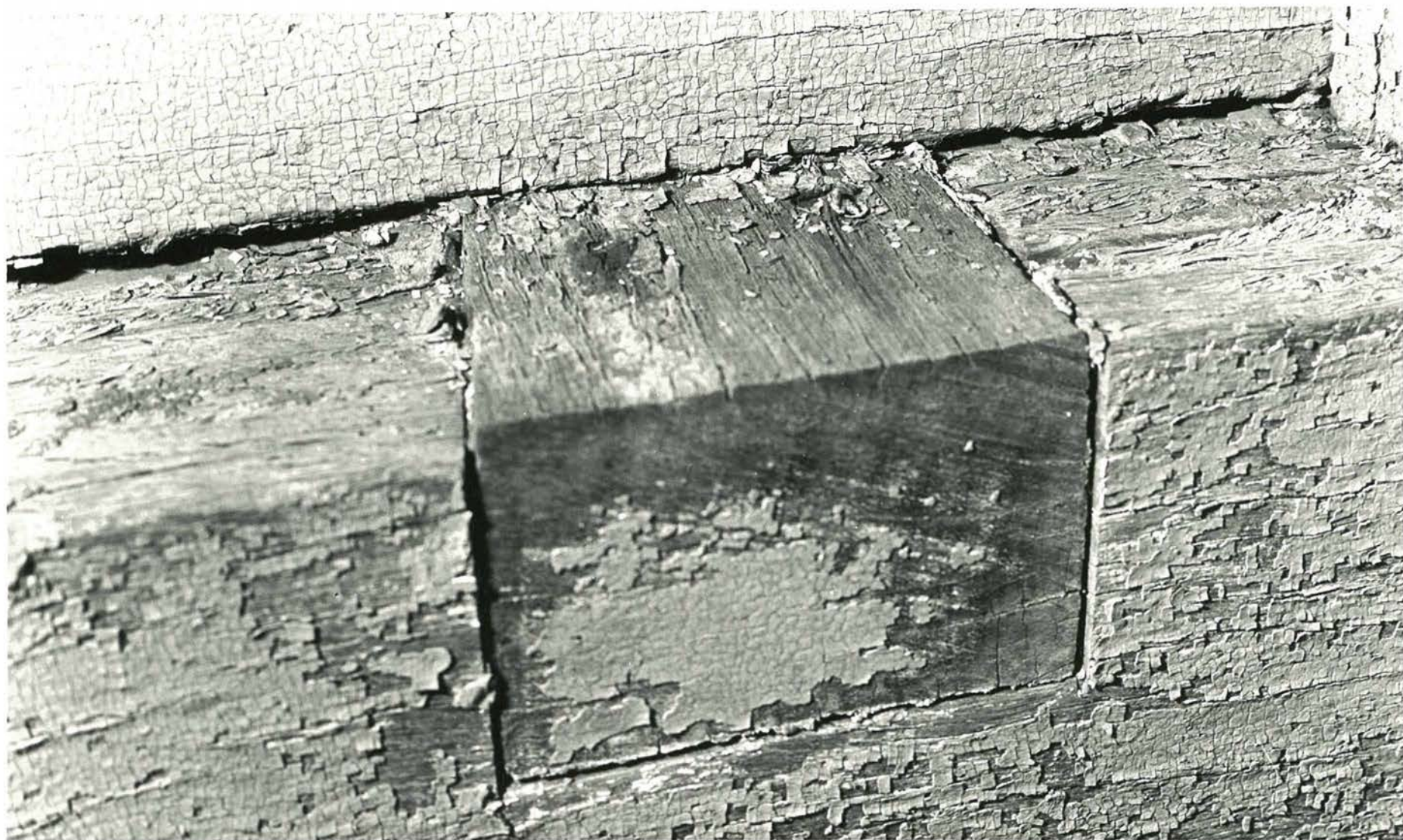
The balloon frame of the United States was a parallel line of development within the same process of evolution, but requires more careful research and definition before it can be related to developments in other parts of the world. Its significance as a causal influence on any building technique in Australia is very doubtful. If it is simply the light stud frame renamed, the balloon frame is a cousin, not an ancestor, of the Australian stud frame. If it is a frame of studs unbroken from foundation to roof, its origins lie in Britain, not the U.S.A., and it has little relevance in northern Australia. If it is simply a polite term for skew-nailing, then a massive confidence trick has been played by American architectural historians, for a shoddy device for hasty, cheap construction has successfully been passed off as a major technical

innovation. This practice was never adopted to any significant extent even in the humblest cottages of North Queensland, and the degree of its acceptance in the United States was probably very limited.

The light stud frame of North Queensland has no feature which would not have been within the normal working repertoire of a Kentish carpenter of the mid-nineteenth century, and granted the predominantly British origin of the first wave of settlers in the region, it seems unnecessary to look beyond them for its origins.



Mortice and tenon joint between stud and bearer, Ravenswood (1884).



Dovetail joint between joist and bearer, Townsville (c. 1890).

CHAPTER FOUR

House Forms

"a house of four rooms...with
9 feet verandahs all round,
and detached kitchen"

The forms taken by houses in North Queensland are few in number. The vast majority of North Queensland houses in the period under study were single storied¹ and symmetrical in form. A determined symmetry about an axis at right angles to the street frontage was a feature of houses of every degree of scale, cost and pretentiousness, with so few exceptions they could very nearly be listed individually.

Just as conspicuously, almost every house in the region is a simple combination of enclosed core rooms and verandahs. There are only a small number of core arrangements found, and a small number of ways of adding verandahs to these single-storied cores, so the total number of house plans found in the region is limited.

Third, there is usually a nexus between floor plan and roof form. Given a plan, it is usually possible to describe accurately the house's roof, and vice versa. This is especially true of the highly standardised houses of the period c.1880-1910, and the relative weakness of the nexus before and after that period is deserving of comment later.

Although external variations and differences in detail give rise to an impression of greater diversity, there are essentially only two core plans repeated in the great majority of North Queensland houses. These are the two-roomed cottage and the four-roomed house: terms not coined for this study, but in common use in newspaper real estate advertisements in the 1880's, implying the dichotomy of house forms was universally understood.

A more primitive one-roomed form, a simple rectangle with entrance and fireplace side by side in one end wall, commonly appears in illustrations of mining fields in the south of Australia. A well-known

¹It may be necessary to point out that this statement is not in conflict with later descriptions of elevated houses. The elevated house was not two-storied: it was a single story house in every respect, raised by lengthening its foundation members. Partial or complete enclosure underneath was uncommon before the twentieth century, and usually a late makeshift.

photograph by Richard Daintree of two miners and a hut of this kind has been attributed to the Cape River goldfield,² but in the context of Daintree's other goldfield photographs, it seems more likely to have been taken in the Rockhampton district.³ This one-roomed form has British rural antecedents,⁴ but it seems not to have been employed in North Queensland, presumably because of the undesirable presence of the fireplace in the body of the shelter. A one-roomed building in this region would more typically have had its doorway in the long wall and its fireplace detached from the core structure, either under a separate roof or entirely in the open. The absence of the one-roomed long cottage from North Queensland is probably explained by the structural role of its fireplace. With this feature removed in a warm region, the doorway cannot be placed in the end wall, for a solid wall is crucial for the racking strength of the structure. The doorway is necessarily placed in the long wall, and the proportions of the traditional plan then invite subdivision into the two-roomed form. If any one-roomed habitations of this form were built, none survives.

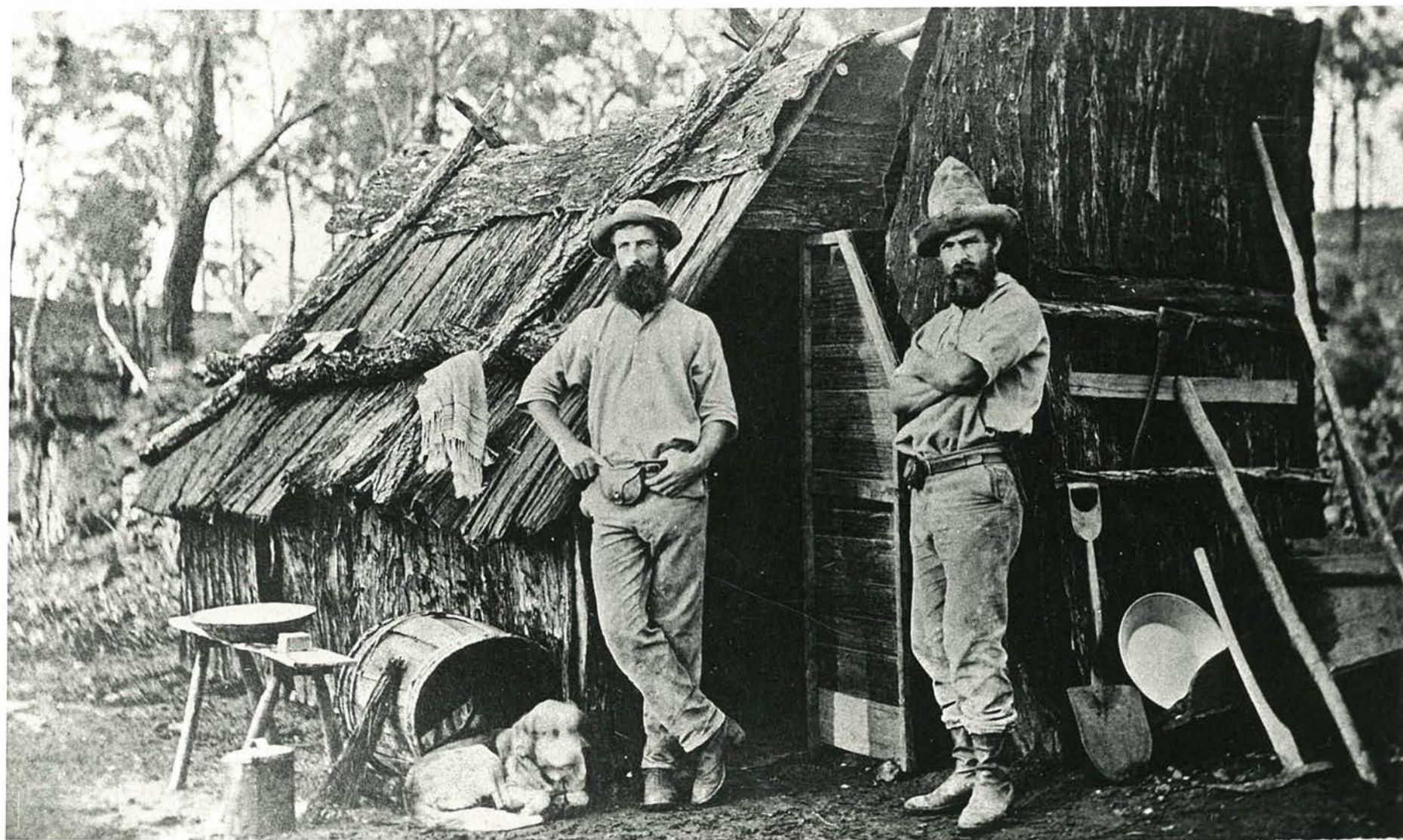
The two-roomed cottage, known today widely and misleadingly as the "miners' cottage", was a very common house form in many Australian urban areas in the second half of the nineteenth century. It consisted in plan of two rooms side by side, one being slightly larger and entered by a central doorway from the street frontage, facing another doorway at the rear, on the central axis. The dimensions of this core were typically about 3m x 6m, although by no means standardised.

It must be assumed that the origins of this form were also in rural Britain, where a similar plan was used for detached single-family

²Bolton, *Thousand Miles*, facing p. 145.

³The same men appear in another Daintree photograph, whose setting is similar to the field identified as New Zealand Gully in Daintree, *Queensland*, p. 52.

⁴See illustration in J. Burnett, *A Social History of Housing 1815-1970*, London 1980, p. 120.



Miners' bark hut, probably near Rockhampton, 1870.

(Queensland Museum)

dwellings for some centuries.⁵ Sherer made precisely this judgment in commenting on the existence of the same form in Melbourne:

In general, the settled citizens of Melbourne live in small cottages, mostly consisting of two rooms, and constructed either of wood, brick concrete, or stone. The roof is covered in with shingles of the stringy-bark split into the size and appearance of slate.... In short, they are just two-roomed cottages of a very humble description, when compared with many of the same character in this country,... 6

but attempts at identifying specific British regional antecedents for the type founder in North Queensland because of the absence of a fireplace from the core; an essential structural element of British cottages.⁷

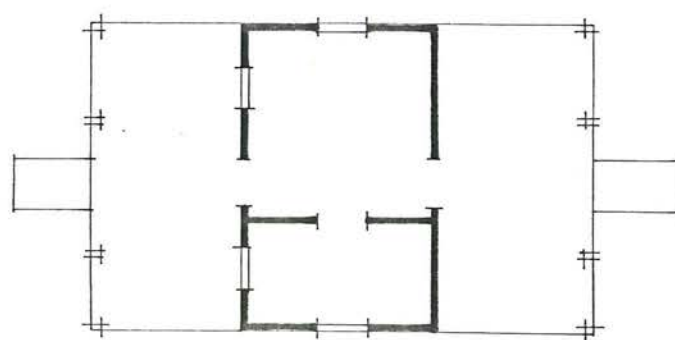
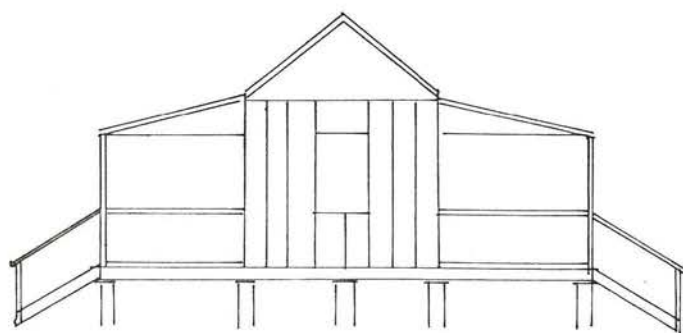
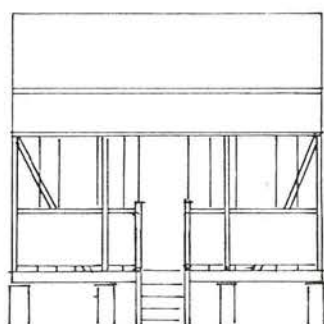
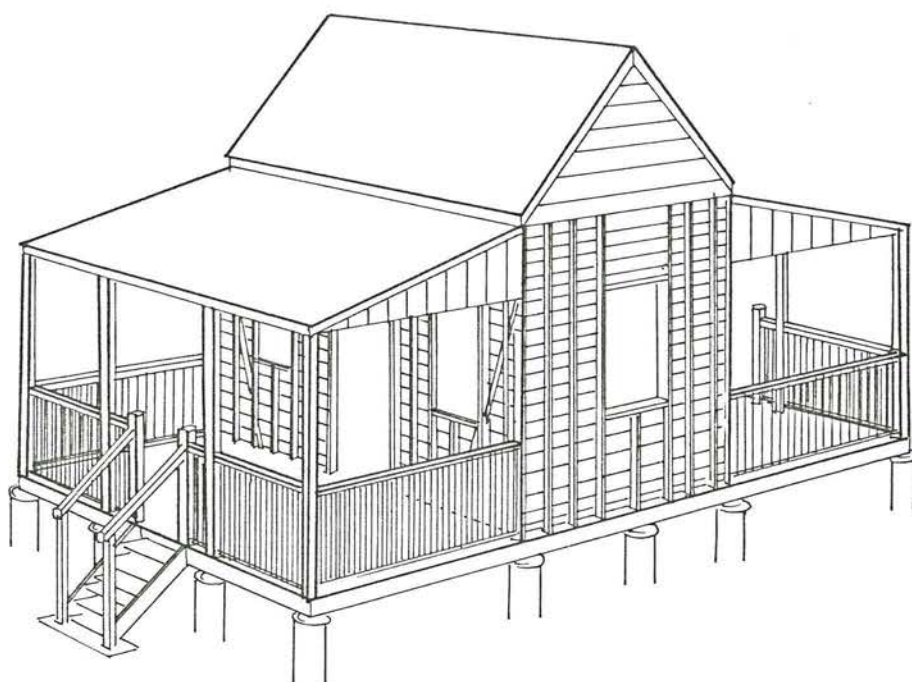
In North Queensland the cottage core was normally given symmetrically-placed windows in the front and side walls, although not usually in the rear wall. This core cottage, with either a hipped or gabled roof, appears in the earliest extant photographs of Townsville, with and without verandahs, and subsequently became the basis of a very common house form throughout the region.⁸ However, the practice was rapidly adopted of building a verandah along at least the front, and usually the front and rear walls. By the 1890's two verandahs had become standard. The function of this cottage was simply to provide sleeping space. There was no provision for cooking or washing in the core of the house: it is almost unknown

⁵Barley, "Farmhouses & Cottages, 1550-1725", *Economic History Review* 7, 1954-55, p. 295; *English Farmhouse*, pp. 49-50; and see illustration in Prizeman, *Your House*, p. 46.

⁶J. Sherer, *The Goldfinder of Australia*, 1853, facsimile Harmondsworth 1973, p. 339.

⁷Brunskill, *Handbook*, pp. 99-113: P. Eden, *Small houses in England 1520-1820: towards a classification*, London 1969.

⁸Two-roomed cottages and their variants constituted 1178 of 3978 houses surveyed, or 29.6%.



0 5m

THE STANDARD TWO-ROOMED COTTAGE

for the North Queensland two-roomed cottage to have a fireplace or stove recess in its core.⁹

The kitchen and washing areas were housed in separate detached structures to the rear of the house, sometimes linked to the rear verandah by a covered walkway. As late as 1924 a high proportion of North Queensland houses had outside bathrooms, or none at all.¹⁰ Not infrequently the cottage has no kitchen, for a proportion of the population of most towns regularly ate at a hotel or boarding house. John Moffat described the living area of his Irvinebank house as "entirely reserved for sleeping and sitting rooms. We board at the hotel which saves any trouble with the housekeeping."¹¹ The Ravenswood school teacher, faced with only a living room fireplace in his residence, also ate with his wife at a hotel from 1873 to 1876.¹² The availability of such institutions must be taken into consideration when evidence of originally inadequate or non-existent cooking facilities is encountered in nineteenth century houses.

This core with front and rear verandahs provides the central element for extensions, giving rise to about six common variant forms of the two-roomed cottage. The first variant in roof form was in the core itself, whose roof could be either gabled or hipped. Both forms occur in most North Queensland towns, although gables are much more common, suggesting that hipped roofs gradually declined in popularity with time.¹³ This may be the result of changed cost structure

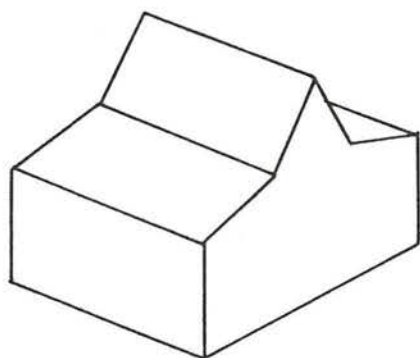
⁹The Ravenswood school residence (1873) was originally built with a core fireplace and no rear verandah, suggesting that standardisation of these features only occurred after that date: the house was planned by a local committee, not the colonial architect.

¹⁰Cilento, *White Man*, pp. 75-92.

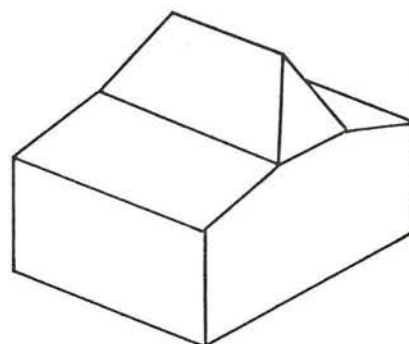
¹¹Moffat to parents 24 March 1884, letterbook held by Cairns Historical Society.

¹²William Samwell to Secretary for Public Instruction 19 January 1877, 77/291, EDU Z 2309 Q.S.A.

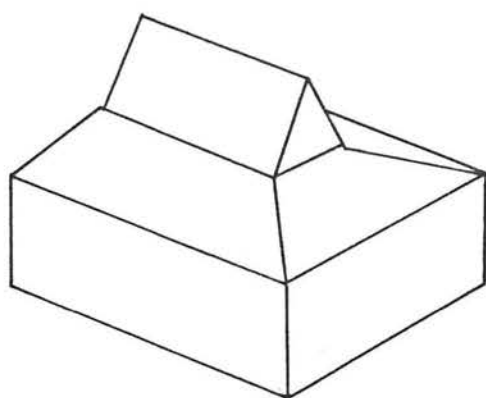
¹³756 gabled, 422 hipped in a sample of 1178.



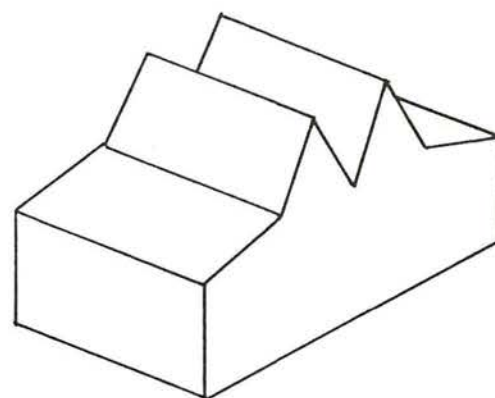
gabled



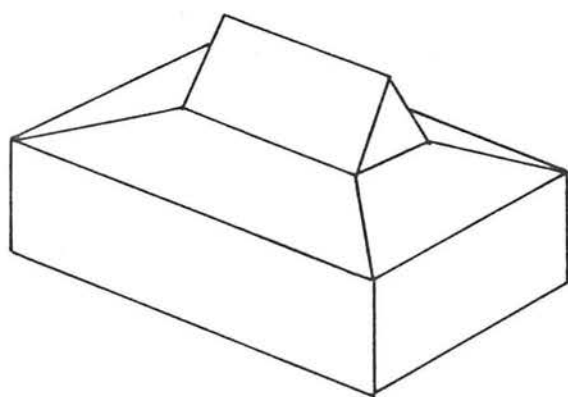
hipped



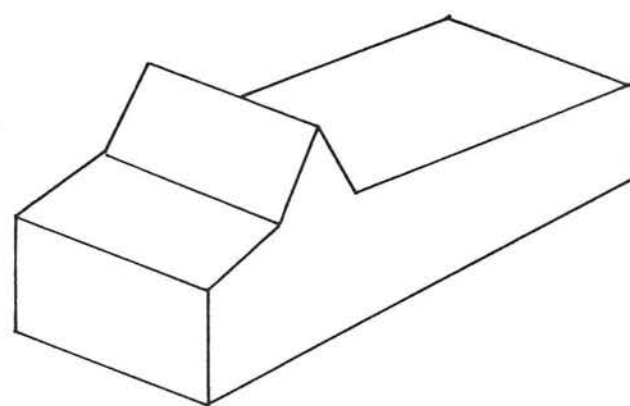
with side verandah



multiple gabled



with encircling verandahs



rearward extension

Variant forms of the two-roomed cottage

in the building industry. Detailed figures do not exist, but if it is supposed that gabled and hipped roofs were at first approximately equal in cost - for they seem at first to have been used interchangeably - the added labour cost of a hipped roof roughly offsetting the slight saving in material; then gables would become increasingly popular as labour cost rose relative to cost of materials. However, the present physical distribution of the two roof types in Charters Towers and Townsville shows little conformity to a chronological model: demolition, relocation and re-roofing in the decades since would in any case have blurred any pattern that once existed.¹⁴

Verandahs on two-roomed cottages were normally roofed with a simple iron skillion. Occasionally this was incorporated into the gabled core roof so that a single pitch ran from ridge to verandah edge, but usually there was a break in pitch at the core wall, to a lower pitched verandah roof. Sometimes a vertical step separated the two roofs: the verandah roof joined the core wall a short distance below the core roof, but in cottages that was unusual. Curved iron roofs are also infrequent,¹⁵ and hipped ends on verandahs are found only occasionally in photographs; none is extant.

The plan variants of the basic two-roomed cottage involve the addition of verandahs, enclosure of verandahs to form rooms and rearward extension of the core. One common form involves the addition of a side verandah; another, less frequent, surrounds the core on all sides by verandahs. Inspection often reveals that side verandahs on two-roomed cottages are later additions, but the structure of core and verandah may be no longer immediately apparent if the verandahs have been enclosed to form skillion rooms.

This enclosure began usually with the rear verandah. It was common for this area to be enclosed soon after construction, and a variant quickly evolved with the rear section enclosed initially, to make a

¹⁴ Distribution of house types is treated in chapter seven.

¹⁵ 175 curved examples in a sample of 1178.

three or four roomed dwelling. The early surviving cottage in Carter Street, Townsville, built between 1881 and 1885, had an enclosed rear verandah added by 1887.¹⁶

Modifications are found in the core arrangement of the two-roomed cottage. One is the provision of two front doors. Twelve buildings of this type were constructed at Mount Mulligan in 1919 to house miners;¹⁷ presumably the core of the house was a single open space and in that case the building's function ought more properly be described as barracks than house, as the miners ate at a dining hall. However, the same plan was built in Townsville. A cottage in Warburton Street, inspected during demolition in March 1980, had a single-room core with a later partition, and two front doors. The original living and sleeping arrangements in such a house can only be conjectured: there was presumably some form of subdividing screen or partition from the time of construction.

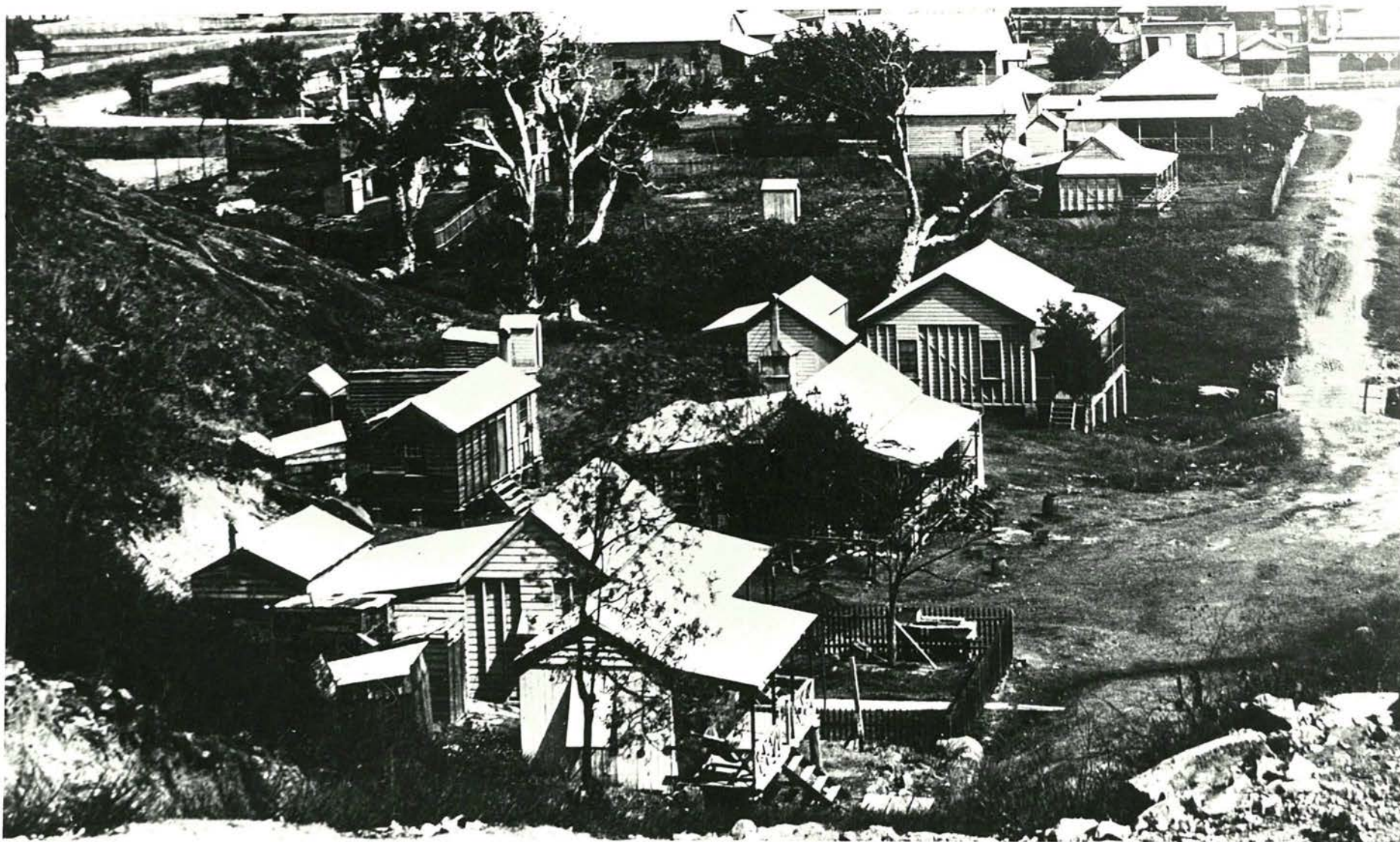
Occasionally, very small versions of the gabled cottage are found, which from their external dimensions must be assumed to have contained only one core room. Numbers of these were built in Irvinebank, presumably as company housing. Despite their scale, the cottages appear to have been well-built and detailed in their finish. One very small cottage is extant in Irvinebank, although even it is larger than demolished examples in older photographs of the town.

¹⁶ The rear extension of the cottage differs in joinery detail and materials from the core. Confirmation is found in two photographs in James Cook University Library, dateable by internal evidence: in 1881 the site was empty, by 1885 the cottage was built without a rear verandah; and it appears in its modern form in an engraving published in *Townsville Herald* 24 December 1887.

¹⁷ Memorandum of mortgage 15 July 1919, JUS 54 Q.S.A.; and see illustration in P. Bell, *The Mount Mulligan Disaster*, James Cook University 1978, p. 67.



Two-roomed cottage, Townsville (c. 1884 - rear verandah enclosed c. 1886).

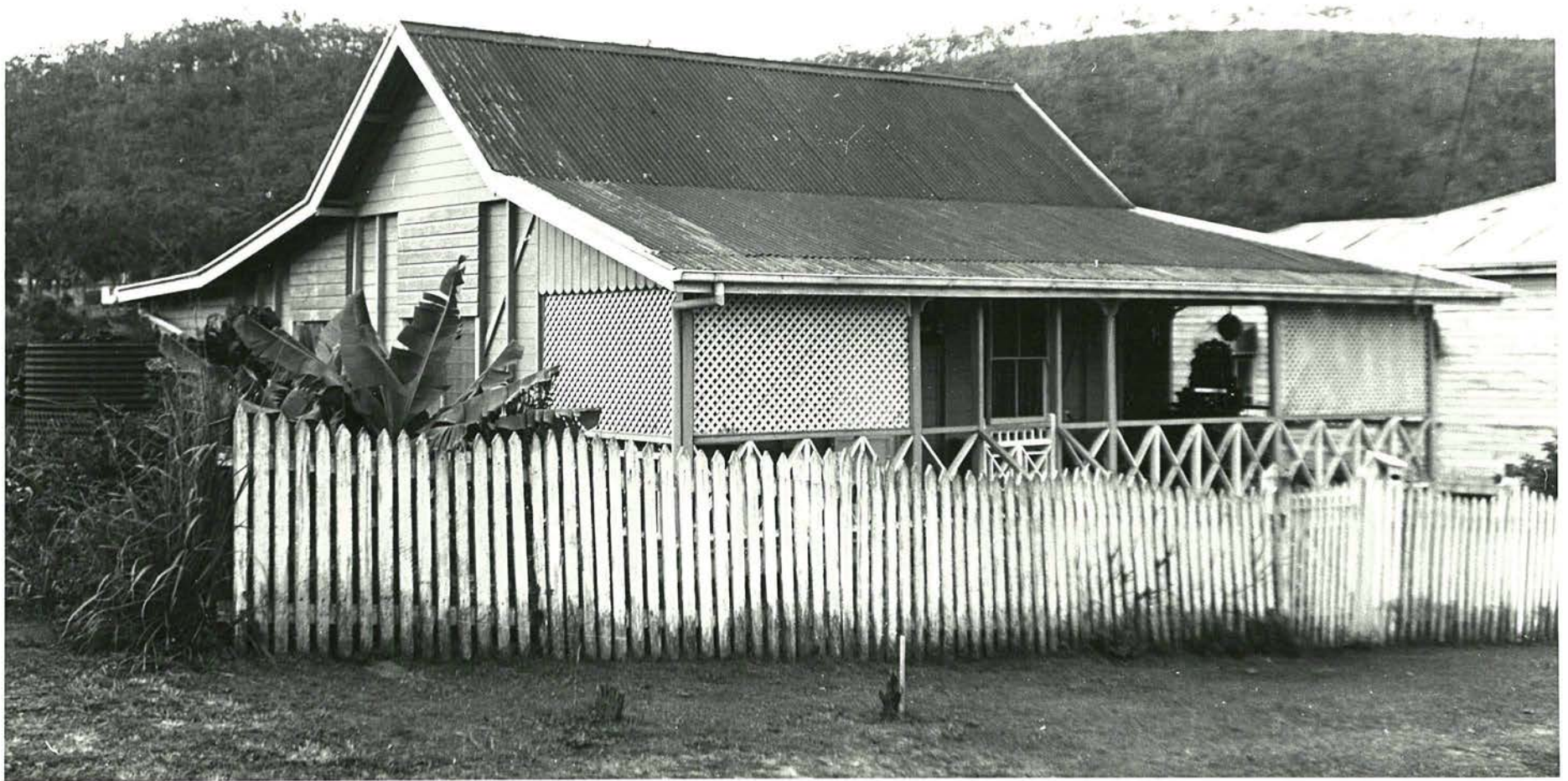


Cottages in Carter Street, Townsville, 1887.

(JCU History Dept.)



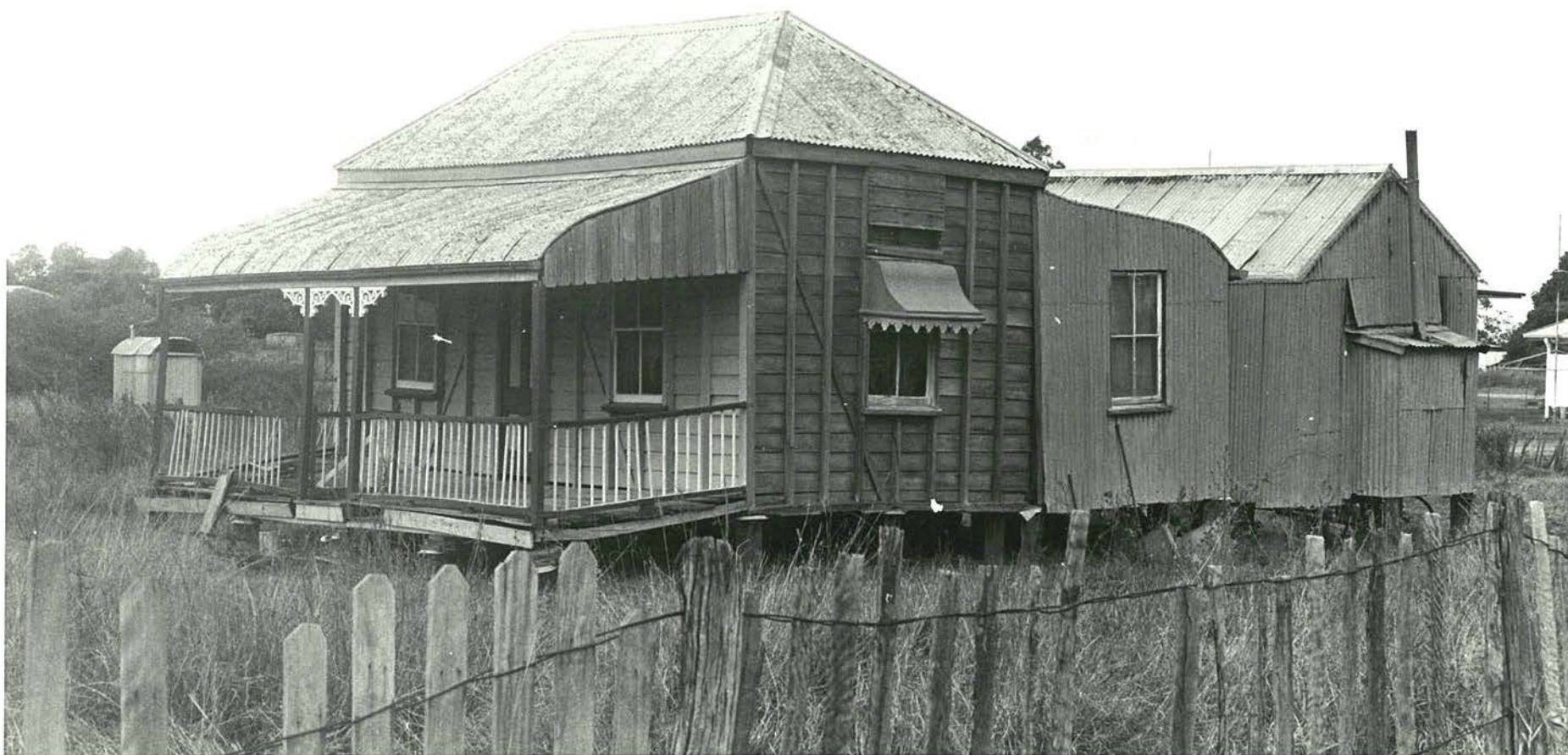
Two-roomed cottage, Irvinebank. The absence of a side window is unusual.



Two-roomed cottage with one side verandah, Herberton.



Two-roomed cottage with encircling verandahs, Mingela (1892-97).

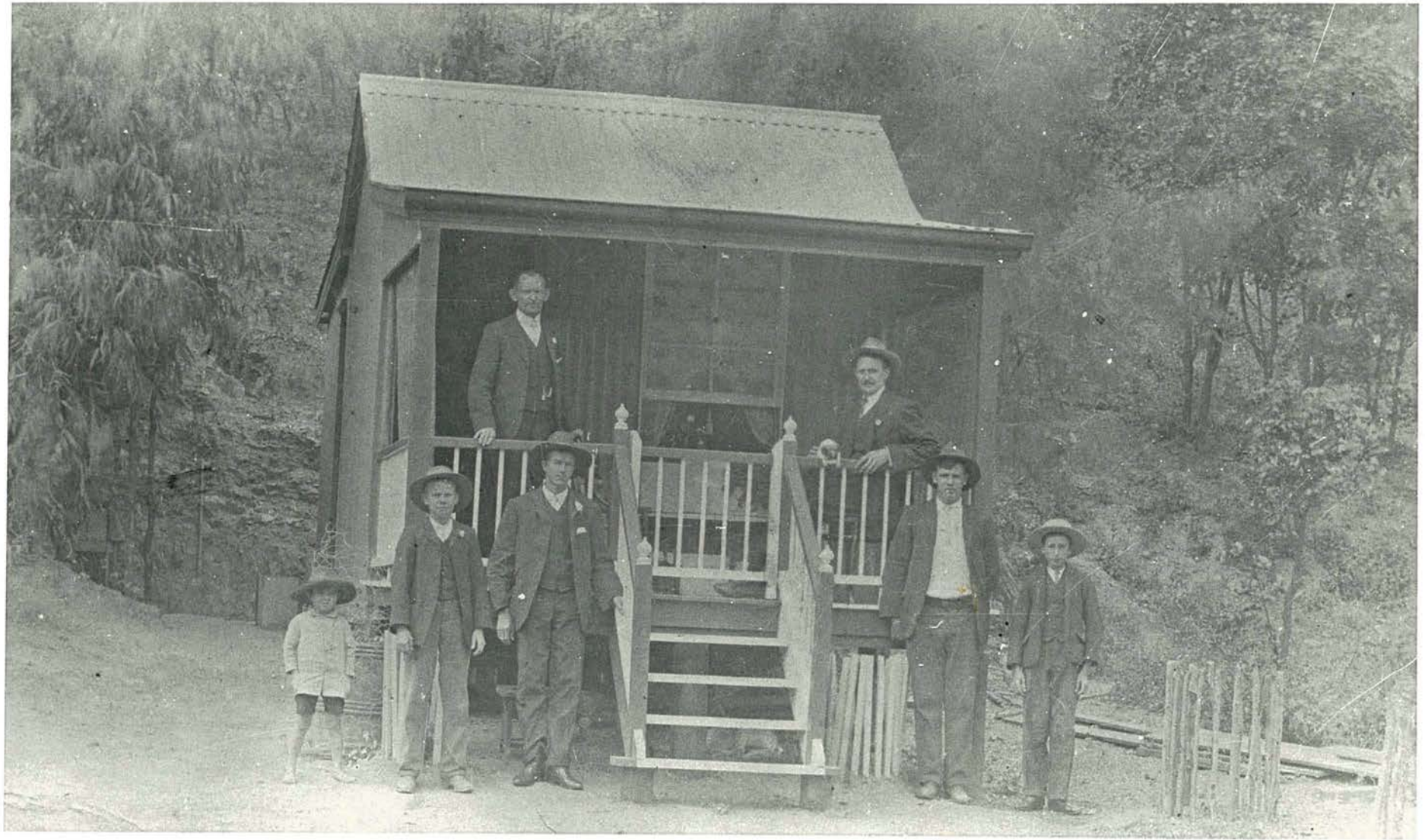


Extended two-roomed cottage with hipped core roof, Charters Towers. (Demolished 1980)



Two-roomed cottage, Charters Towers, c. 1908.

(Mrs. D. Gibson-Wilde, Townsville)



An unusually small cottage, Irvinebank.

(Cairns Historical Society)

There were of course makeshift expedients constructed in the general gabled cottage mould, few of which survive, and which merge by degrees into the category of primitive shelters. And not infrequently a well-built cottage core was disguised by later makeshift additions, completely altering its external appearance. Usually, however, these alterations were confined to the rear of the building, leaving an identifiable facade at the street frontage.

The sawn timber two-roomed cottage lent itself well to dismantling, removal and re-erection on another site. The large-scale relocation of buildings after the decline of mining is treated in a later chapter, but during the mining years there was also a steady flow of buildings from one site to another. Construction of railways, with large numbers of workmen located at the head of the line naturally involved the relocation of buildings as work progressed.¹⁸

Portable buildings were developed by the Colonial Architect to accompany such projects: a portable lockup designed for railway construction settlements in 1866 was regarded by the Colonial Architect as one in a long tradition, for he described it as "lighter and cheaper than the first that were made; they are scarcely half the weight of those used in Victoria..."¹⁹ A police station consisting of a "portable house 12 x 18 ft" travelled with the Roma railway in 1877,²⁰ and a portable railway station accompanied the Charters Towers line three years later.²¹

¹⁸This process can be followed in some detail during the construction of the Townsville-Charters Towers line in the *Northern Miner* 1880-82; and the Cairns-Myola line in the *Cairns Post* 1887-89. Particularly instructive in tracing relocations are the hotel advertisements and licence application notices.

¹⁹*Q.V. & P.* 1866 p. 1584 & see accompanying plan. The weight differential in comparison with Victoria presumably reflects disregard for insulation in Queensland.

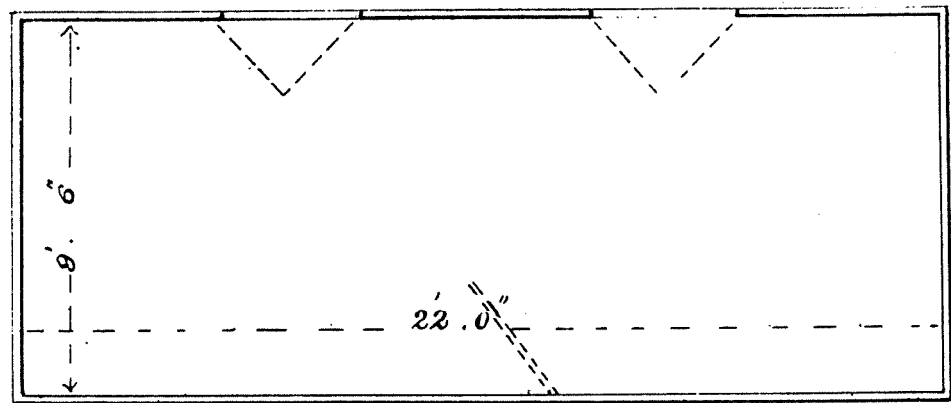
²⁰Inspector of Police, Toowoomba to Commissioner 22 February 1877, 77/649, 77/1841 WOR A 132 Q.S.A.

²¹*Northern Miner* 9 November 1880.

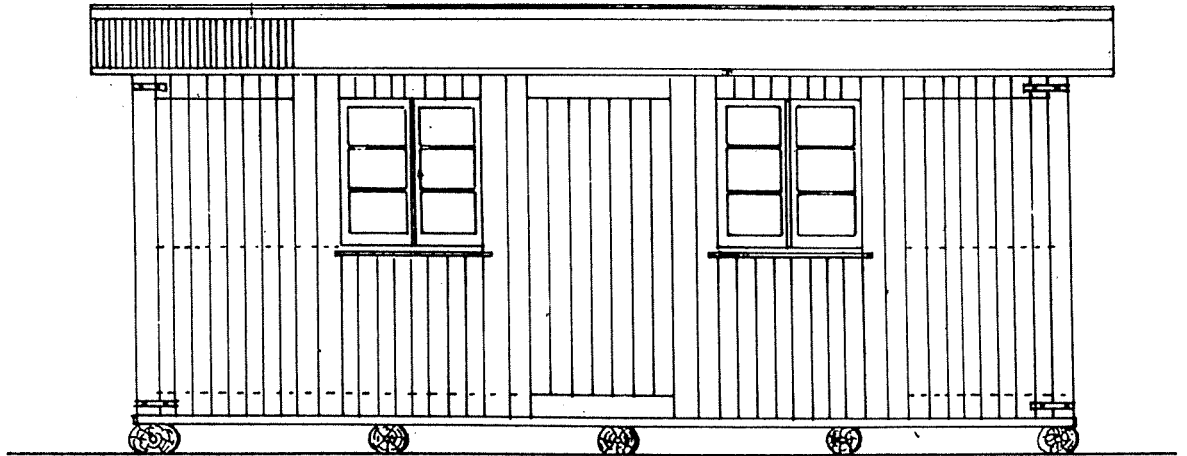


Iron cottage near Irvinebank.

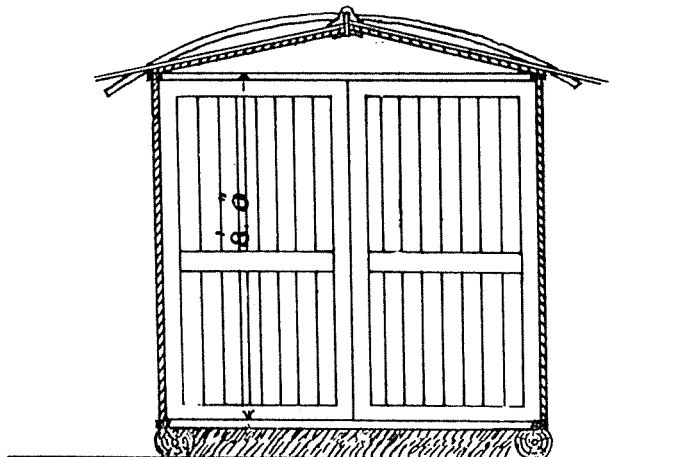
Sketch Design for Portable Barrack
Scale 4 ft. to One Inch.



Ground Plan



Front Elevation





Temporary buildings on rail transport, Cairns-Chillagoe railway, c. 1900.

(Cairns Historical Society)

Similar measures were adopted in mining towns expected to be ephemeral, especially after the rise of the base metal towns in the early twentieth century:

Mt Molloy is....one of those centres which may flourish for years; on the other hand it may peter out unexpectedly. I think that it would be best to have one of the new portable schools erected at this place. 22

The interesting thing about "the new portable schools" is that they are simply a slight modification of the common two-roomed cottage, timber framed and iron clad,²³ reinforcing the notion that one important aspect of the cottage's design was its portability.

* * * * *

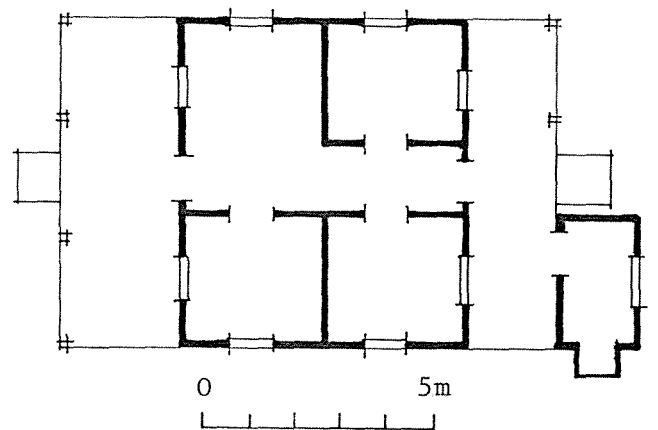
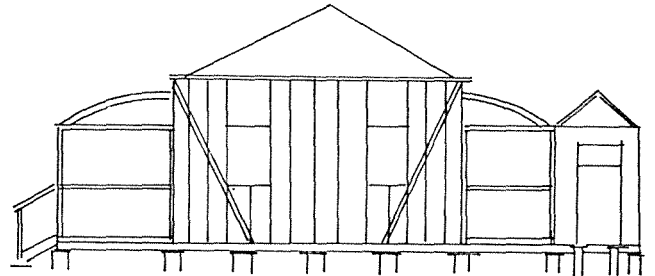
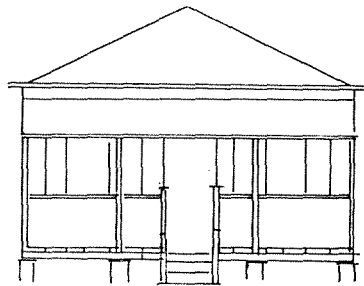
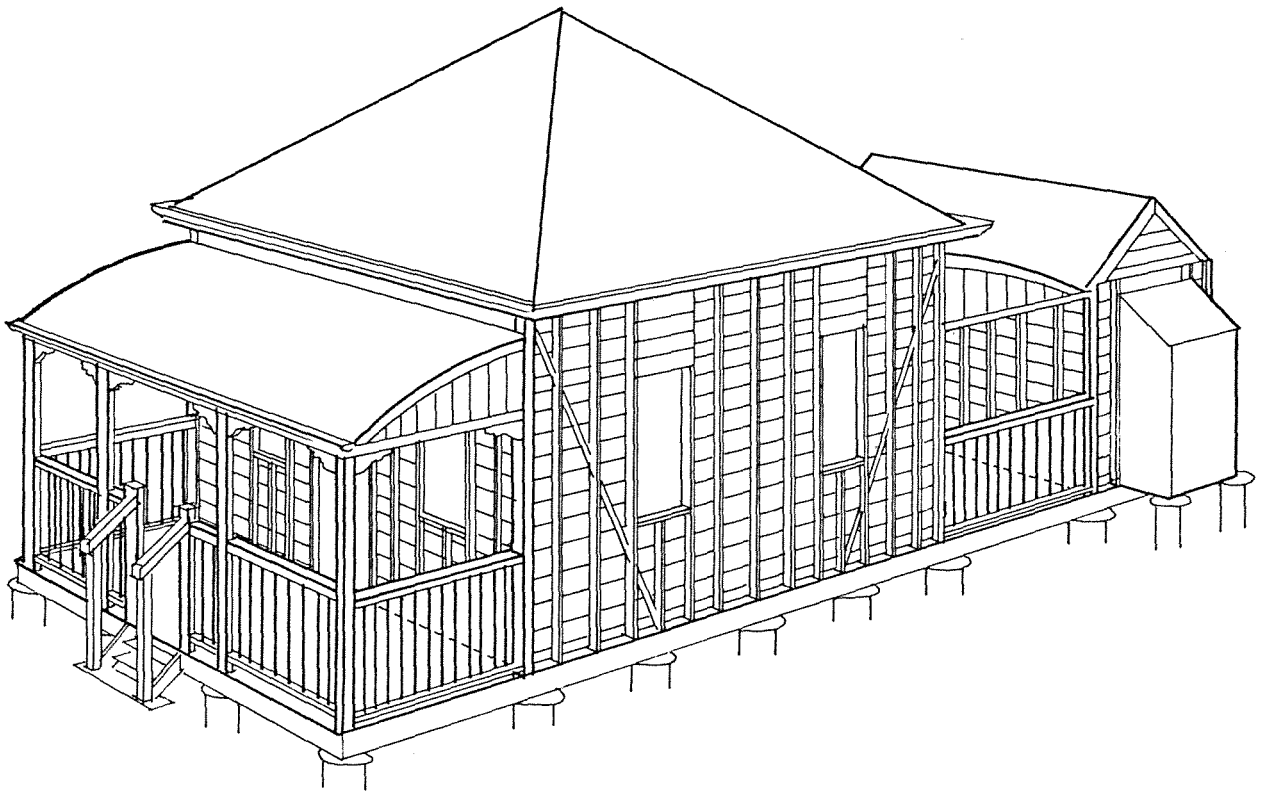
The second common house form is the four-roomed house, whose core consists of a near square about 6 x 7m in plan, usually greater in depth than in width. This core contains four rooms and a longitudinal central corridor, which may run the full length of the core, or may simply separate the two front or (more usually) the two rear rooms.

The antecedents for this floor plan appear to lie in early nineteenth century masonry houseplans with four symmetrically disposed rooms about a central hallway, which in turn may derive from English "double pile" plans.²⁴ Twopeny described generally similar plans as characteristic of Australian urban houses in the 1880's:

²²Minute attached to J.R. Peberdy to Undersecretary for Public Instruction 14 July 1905, 05/12975, EDU Z 1921 Q.S.A.

²³See plan with *ibid*; and plan for Almaden attached to 06/16136, EDU Z 29 Q.S.A.

²⁴Cox & Lucas, *Australian Colonial*, p. 22 illustrates plans of this type.



THE STANDARD FOUR-ROOMED HOUSE

... the favourite type of Australian house is laid out in an oblong block bisected by a three to eight foot passage. The first door on one side as you go in is the drawing-room, on the other the dining-room. Then follow the bedrooms, etc., with the kitchen and scullery at the end of the passage, or sometime in a lean-to at right angles to the hinder part of the house proper. This kind of cottage is almost universal in Adelaide amongst the middle and upper middle classes, and invariable in the working-class throughout Australia. 25

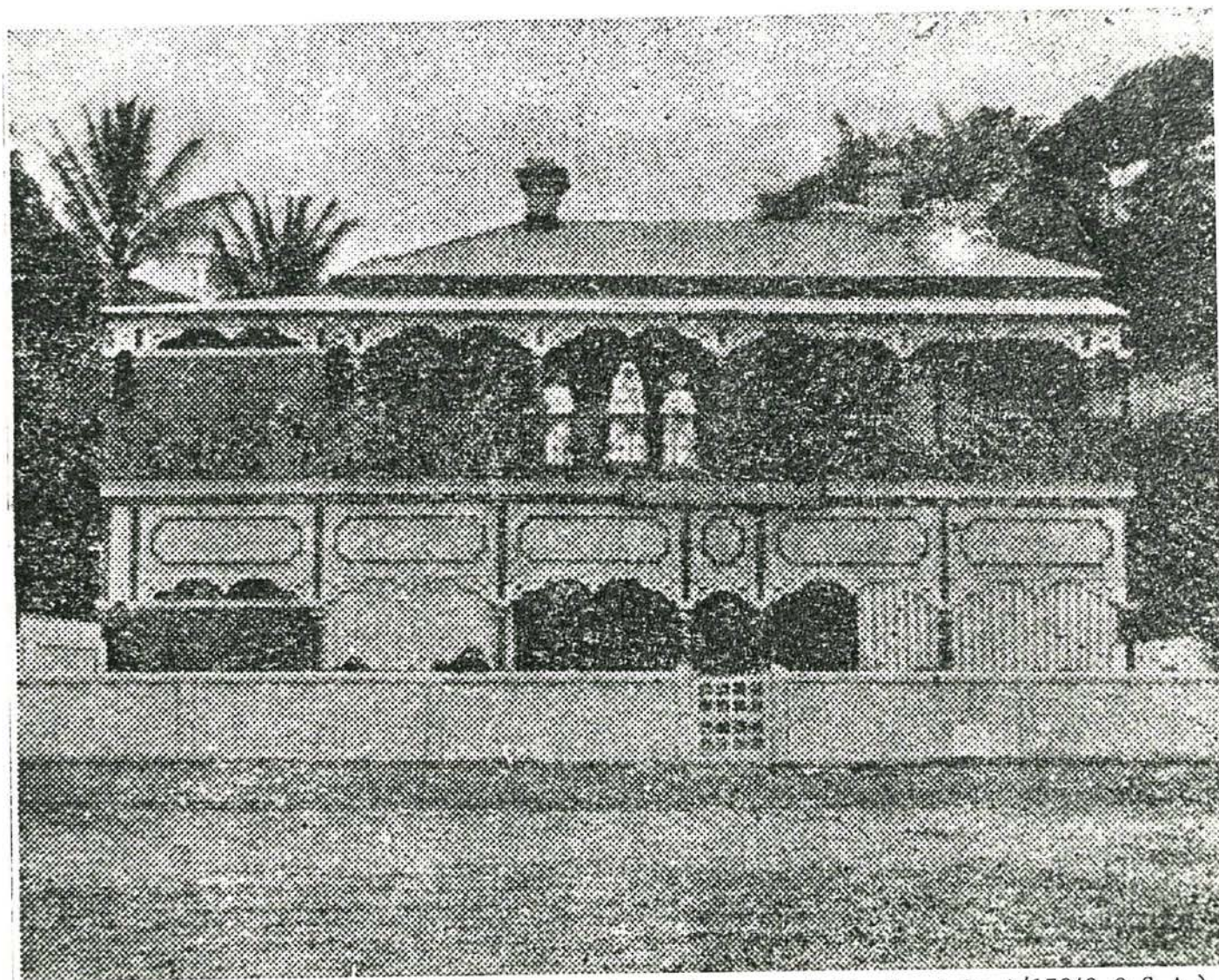
The plan is distantly related to a rare form of two story town house, several of which were built in Townsville in the 1880's, with two ground floor rooms, a central hallway incorporating a staircase, and front and rear verandahs;²⁶ which has more obvious English origins, but is quite unusual in North Queensland.

The variations in scale of the four-roomed house are considerable, and there is scope for some flexibility in the arrangement of internal walls. One common variation is for one side - or occasionally both - of the house to have its internal transverse wall pierced by a large archway, effectively creating on that side of the hall a single large room. The basic plan is capable of considerable enlargement and elaboration. Most large houses in North Queensland are simply greatly enlarged four-roomed houses: it is rare for an increase in size to be accompanied by an increase in the number of core rooms. However such increases in scale are usually accompanied by the provision of a greater number of washing, cooking and servants' rooms in a rear extension, and often by widening of the central hallway, the addition of bay windows to the front walls of the front rooms, and sometimes a gabled entrance porch.

The four-roomed house core was typically roofed by a pyramid, although the apex was sometimes a short ridge, either longitudinal or

²⁵ R.E.N. Twopeny, *Town Life in Australia*, London 1883, p. 34.

²⁶ One example is extant - Matthew Rooney's house in Fryer Street, recently renovated.



Matthew Rooney's house, Townsville (c. 1885). (Company letterhead in A/17849 Q.S.A.)

transverse according to the proportions of the core plan. The ridge might properly be held to convert the roof into a hipped form, but it is usually so short that it can be dismissed as an insignificant departure from the basic pyramid form; probably to simplify the otherwise critical joinery and sheetmetal work required at the roof peak.

The increased substance and higher social standing implied by the four-roomed house is reflected in the facilities provided outside the core. Such houses were normally built with a kitchen and often a bathroom at the rear, either separated from the house by a covered way, or in later years attached directly to the rear verandah. Two houses in Walker Street, Townsville, probably built in 1890, seem among the earliest extant with directly connected kitchens. In large houses the kitchen was expanded into a wing of several rooms with its own verandah projecting to the rear, housing a scullery, laundry and servants' bedrooms. In larger towns such as Townsville and Charters Towers this closer proximity of cooking facilities to the house core may have been influenced by the availability of reticulated gas, reducing the radiant heat and fire risk attendant on wood-burning stoves.²⁷ The kitchen was incorporated into the rear verandah space or the core by the 1920's, when greater flexibility began to characterise house plans.²⁸

The four-roomed house is subject to the same modes of verandah addition as the cottage. Front and rear verandahs are always present, although the rear verandah was often partly or fully enclosed after construction; or in later years, at the time of construction. Houses were often built with one side verandah, although as with cottages, a single side verandah frequently presents evidence of later addition.²⁹

²⁷ Townsville had reticulated gas in 1885, Charters Towers in 1887, and Cairns in 1898: J.D. Keating, *The Luminous Flame*, Melbourne 1974, p. 116.

²⁸ See plans in James Campbell & Sons, *Redicut Homes*, Brisbane [c. 1924].

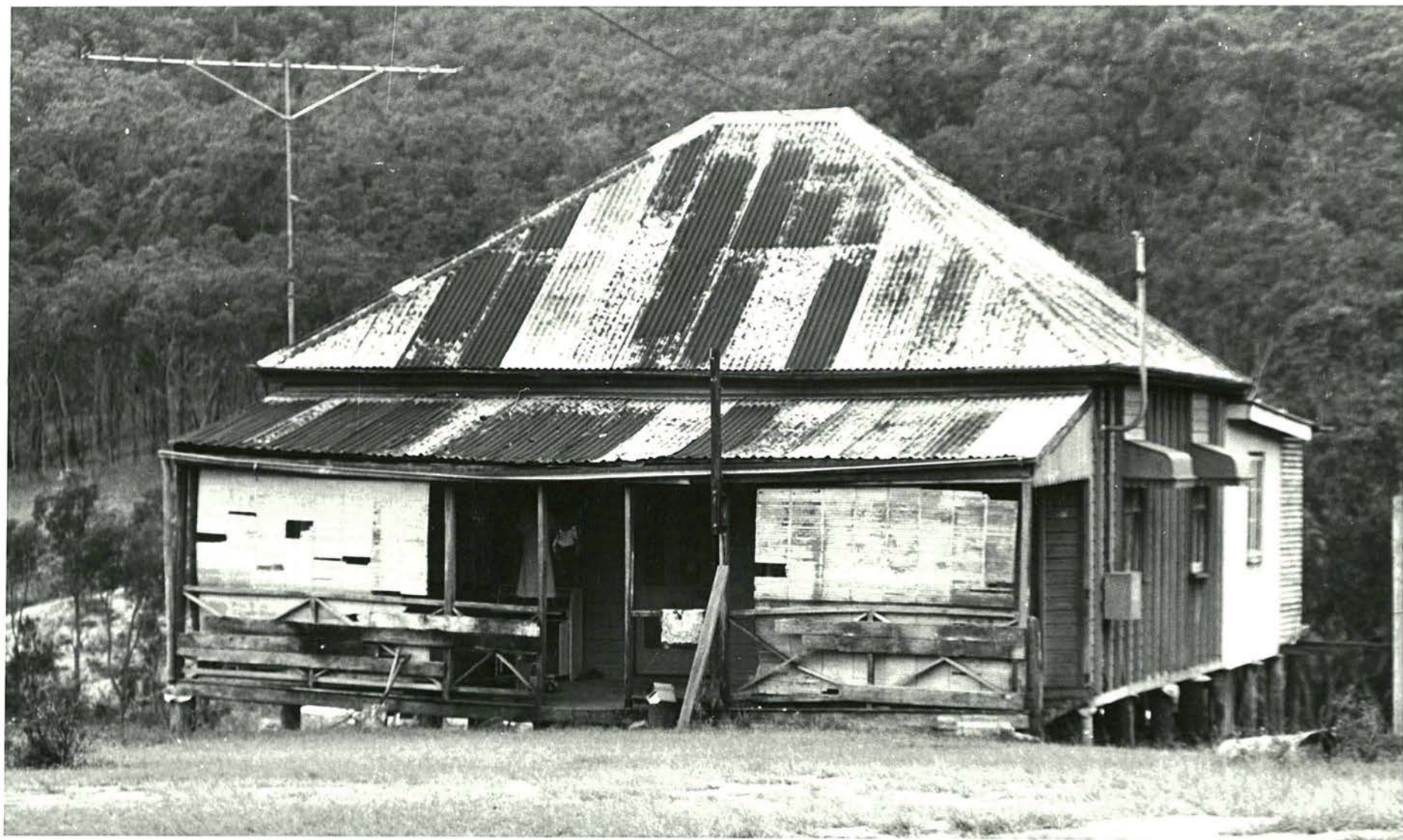
²⁹ In a sample of 1381 four-roomed houses 668 had front and rear verandahs only, 320 had one side verandah and 393 had verandahs on all sides.



Side elevation of the standard four-roomed house



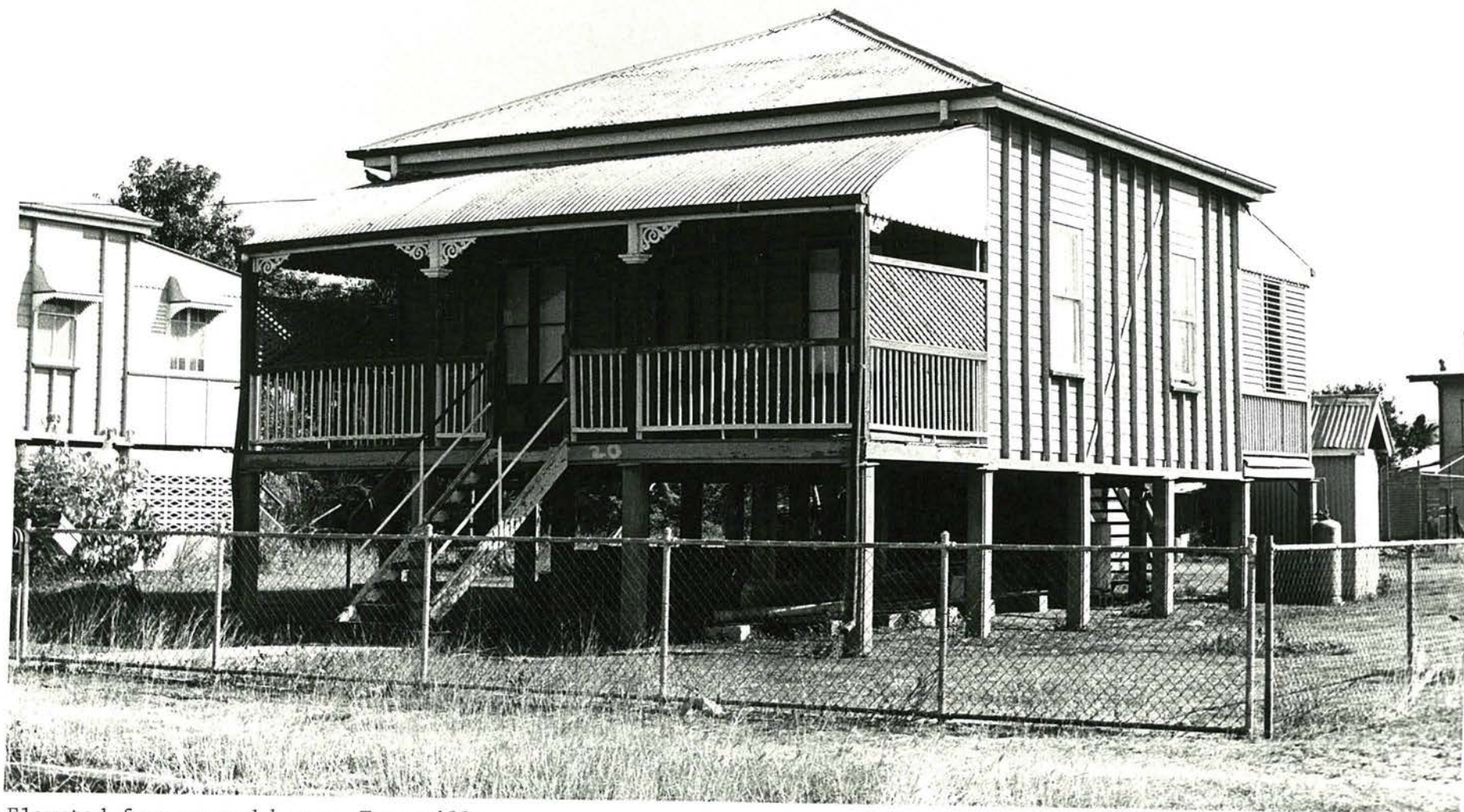
Four-roomed house, Townsville. The elaboration of timber-work is unusual.



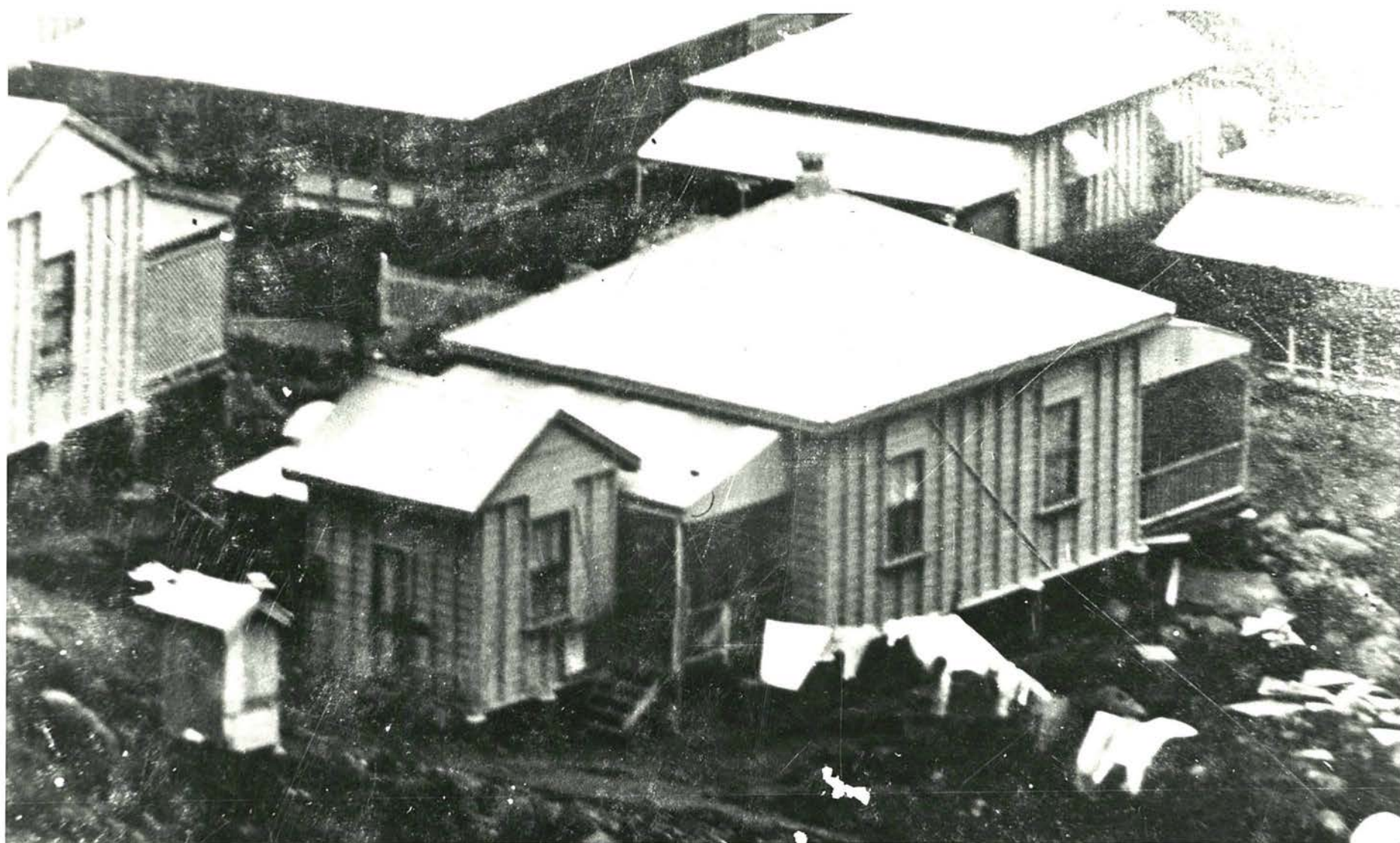
Four-roomed house, Herberton.



Four-roomed house, Millchester.



Elevated four-roomed house, Townsville.



Rear view of four-roomed house with attached kitchen, Townsville, c. 1900.

(Townsville Harbour Board)

The most visually impressive of all the common North Queensland house forms is the four-roomed house with verandahs on all four sides. In all variants of the four-roomed house the verandah is usually attached to the core wall, leaving the pyramid roof visually distinct above a small vertical gap. Variation occurs however, and straight roof profiles and broken-pitched roofs are found interchangeably with the stepped roof.³⁰

While in the case of the two-roomed cottage the evolutionary movement seems to have been from the core outwards; that is, the earliest form was the core and the addition of verandahs became more common with the passage of time, the progress of the four-roomed house seems to have been the reverse. The earliest four-roomed houses were usually fairly grand and built with encircling verandahs. J.M. Black's house (1865)³¹ was of this type, and a number are visible in photographs of Townsville in the 1870's and 1880's. Two extant examples are *Rosebank* (c. 1885) and *Currajong* (c. 1889), and the much earlier Cardwell telegraph office (1870), while obviously distinct in function, was built in the form of a four-roomed house with verandahs on all four sides. The simpler four-roomed core with verandahs only at front and rear seems to have been the later form, for these are not often found in photographs before the late 1880's. Among the earliest extant are two houses in Walker Street, Townsville built for rental about 1890.³² Once the form was established, however, it proved extremely durable, and was built in unaltered form until the first world war, and probably for some time afterward.³³

There were exceptions to this general observation. One Townsville house, St. Joseph's presbytery, was built in 1872 as a four-roomed

³⁰In a sample of 1374 pyramid-roofed four-roomed houses, 1047 had stepped roofs, 205 were broken-pitched and 122 straight.

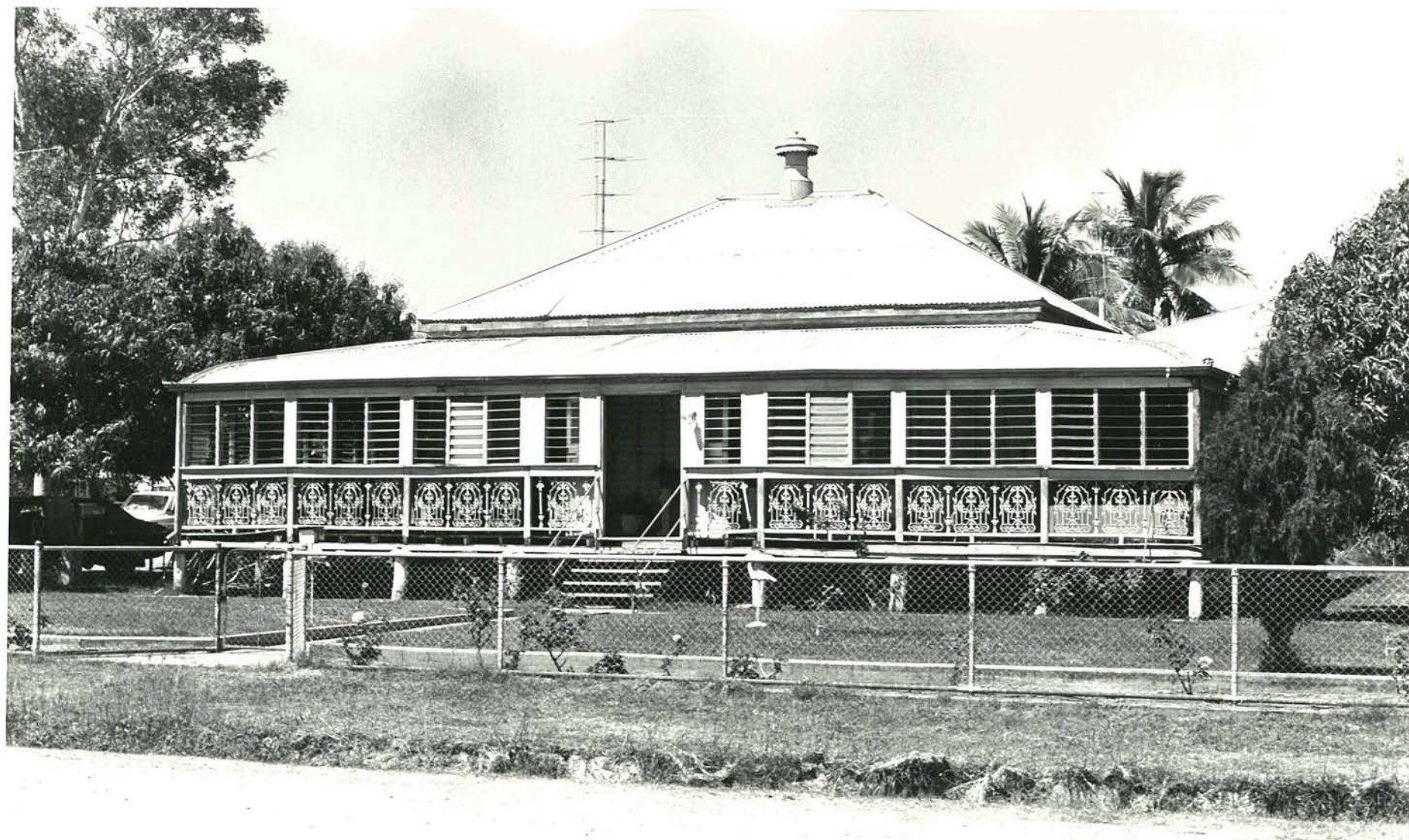
³¹Plan held by City Architect, Townsville.

³²Information from Harry Hopkins, Townsville, the grandson of the 1890 landlord.

³³See photograph of new Workers' Dwellings, Townsville 1915, in *Q.P.P.* 1915-16, vol. 3, after p. 954.



Four-roomed house with one side verandah, Charters Towers, (c. 1900).



Four-roomed house with encircling verandahs, Charters Towers.



Stationmaster's residence, Charters Towers (1896 - demolished 1979).



Four-roomed house with encircling verandahs, Cooktown.



Four-roomed house with encircling verandahs, Port Douglas.

(H.R. Watson, Urangan)



Mature form of the four-roomed house with encircling verandahs, Ravenswood (c. 1902). (Mrs. Weinheimer, Townsville)

core with no verandahs, and subsequently underwent the full gamut of possible extensions outward.³⁴ Undoubtedly other examples, less well recorded, developed in the same way.

The description thus far has embraced two distinct core plans, each with a small number of verandah combinations, which between them constitute the majority of extant pre-1914 houses in North Queensland, and which usually are found to have a predictable roof form. It has been implied, too, that the simplest form of the two-roomed cottage predates that of the four-roomed house, probably by two decades.

There are however a few problems which need to be considered, for while they may involve only a small number of houses, they tend to modify the simple picture thus far established. The first lies in the early relationship between the four-roomed plan and its roof form.

Many of the early four-roomed houses were roofed by transverse gables, not pyramids. A number of photographs show this tendency in plantation homesteads on the Herbert and Pioneer rivers.³⁵ Among the extant examples of this pre-standardisation period are the *Eureka* Hotel (1865), west of Townsville, again not built as a house in function, but presenting a variation on the four-roomed plan; the Ravenswood school residence (1873), which although since extended retains its original four-roomed core under a gabled roof; and John Moffat's house at Irvinebank (1884).

The stepped pyramid roof gained ascendancy in the 1880's: several are visible in 1881 photographs of Townsville,³⁶ and by

³⁴ Modifications to this house are treated in a later chapter.

³⁵ Stone album held by Mrs. Fardon, Townsville, and a similar album in John Oxley Library (APO-22); Marten album, Mackay City Library.

³⁶ An unknown photographer took a number of views of Townsville which can be dated by internal evidence to about April 1881. Copies are widely held, including Stone album and Oxley APO-22.



Teacher's residence, Ravenswood (1873-97).

1887 they had become quite common.³⁷ An early example was Witham's house in Sturt Street, Townsville, built in 1881 or 1882.³⁸ *Rosebank* (c. 1885) exhibits the stepped pyramid roof in its mature form.

From the earliest years another roof was at times built on four-roomed houses with encircling verandahs: a simple hipped form with neither a break in pitch nor a step at the core walls. Black's house in Townsville (1865) had such a roof, as does *Currajong* (c. 1889). Although perhaps rarer during the 1890's and early twentieth century, this form again achieved great popularity after about 1910 – a development treated later – and remains a frequently built form to the present day.

Any attempt to construct general chronological models about the frequency of construction of different house forms in different periods is made difficult because of the intrusion in every period of a small but significant number of exceptional cases among the extant houses, and the relatively common practice of extension and modification of houses after construction. Roof forms present special problems because of the frequency with which roofs were rebuilt in North Queensland towns after relocation of the house, or after cyclone damage. Even the earlier broad observation that the simplest form of the two-roomed cottage predates the simple four-roomed house in this region does not necessarily hold true for any individual examples. The cottage continued to be built in great numbers throughout the period under study, and thus one may be much more recent than a four-roomed house in its immediate vicinity. While the general tendency was for the proportion of four-roomed houses to increase

³⁷ Engravings in *Townsville Herald* 24 December 1887 based on photographs by William Rowe, some of which are held at James Cook University library.

³⁸ The house was destroyed by cyclone Leonta in 1903, but it appears in commemorative photographs of that event, held by Townsville City Library. The date of construction is circumstantial, but it replaced earlier premises destroyed in the Townsville fire of 6 August 1881: *Northern Miner* 9 & 11 August 1881.

with the passage of time, the trend was likely to be reversed in times of rapid expansion and labour shortage, with cheapness of construction favouring the two-roomed cottage. Paradoxically, as a town boomed, smaller and cheaper houses probably became more prevalent.

A further variant that arises in houses of almost every scale is the use of multiple gabled roofs. Often these occur on extended two-roomed cottages, and are sometimes the result of extension by joining a second cottage core from another site to the first. In a few cases, however, the roof form is original.

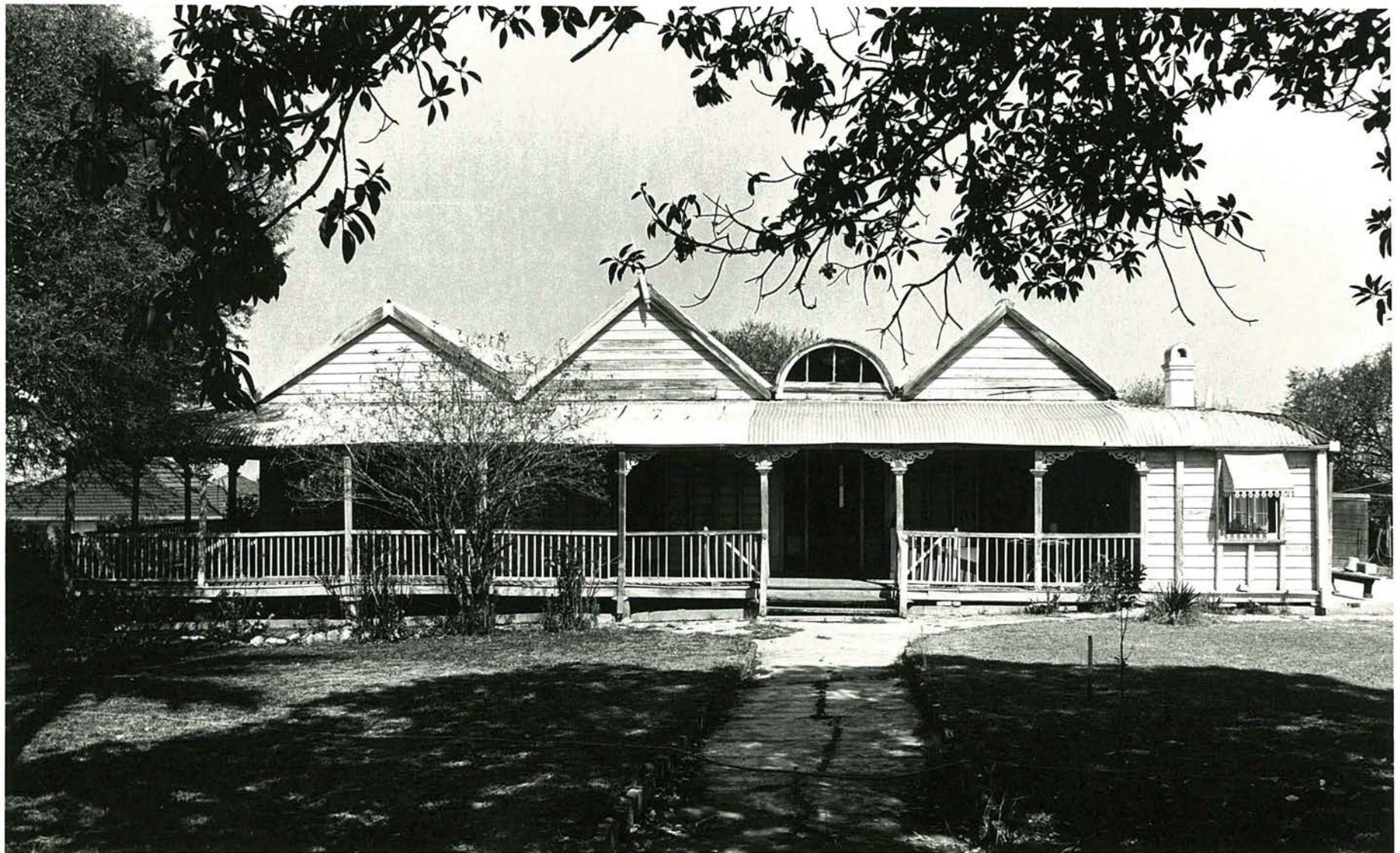
In several cases, multiple gabled roofs were used as original construction on quite elaborate houses. Friedrich Pfeiffer's house in Charters Towers³⁹ consists of four principal core rooms, roofed by three gables, with an entrance hallway roofed by an iron vault. The date of construction is uncertain, but circumstantial evidence suggests late 1881 or early 1882: Pfeiffer was married on 1 February 1882, and at that time his company was engaged in building activity, including "a substantial cottage at the mine for the Manager."⁴⁰ An indistinct photograph shows a smaller multiple gabled house (now demolished) near Pfeiffer's, which may be the manager's. Pfeiffer's house was undoubtedly built by 12 December 1882, for it appears in outline on a survey plan of that date.⁴¹

At that time, Pfeiffer's house was almost certainly the grandest private house on the Charters Towers goldfield; a circumstance which is easily overlooked, for it has long since been overshadowed by more pretentious houses built in later, more prosperous years. Its original form is not clear, for there is evidence in construction details and abandoned foundations that it has undergone both extension and later substantial demolition since it was built. A likely recon-

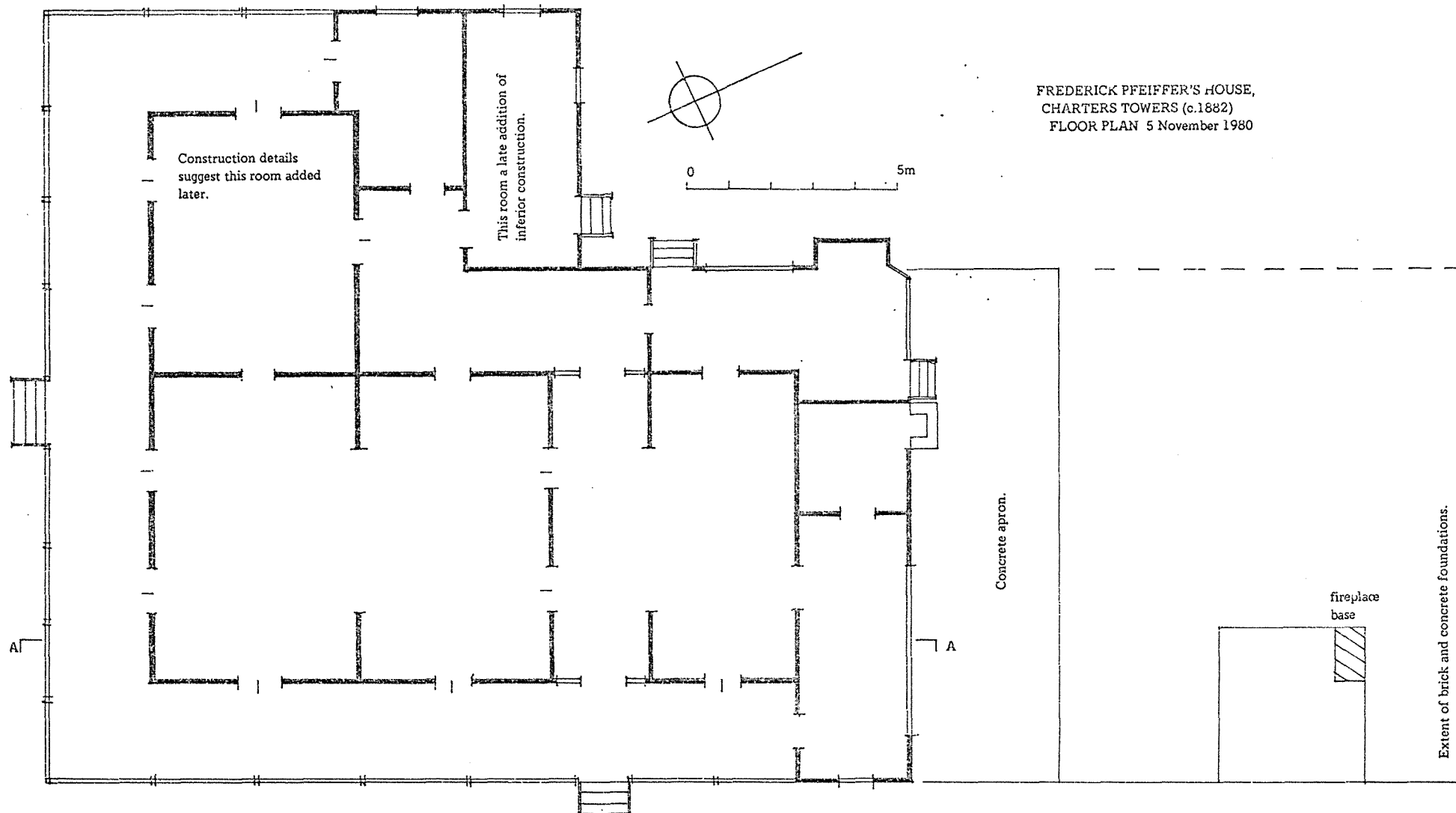
³⁹ Described by Sumner, *Settlers & Habitat*, pp. 33-35; "Charters Towers", pp. 39-48.

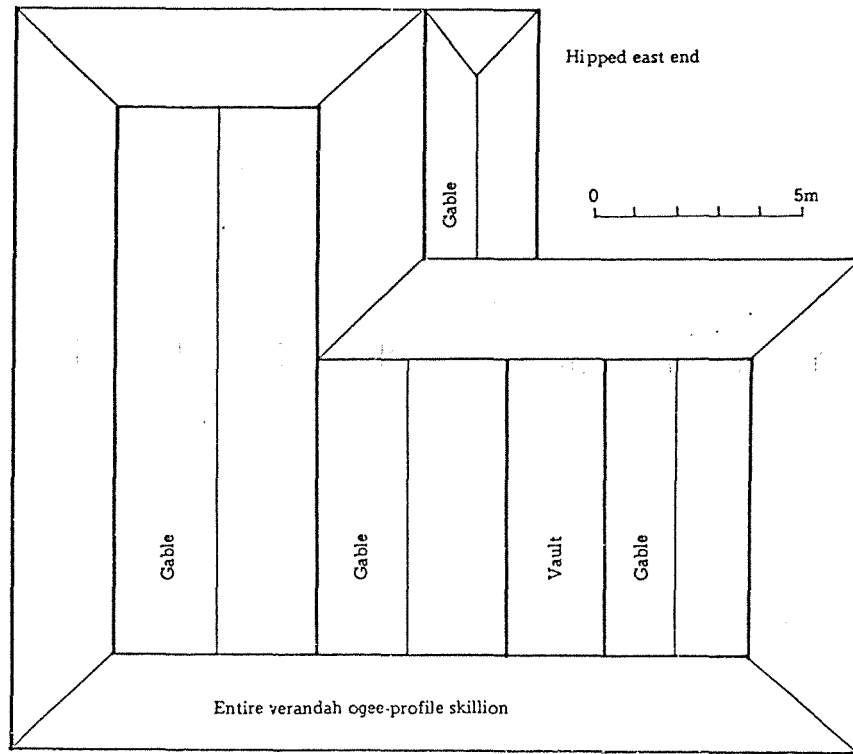
⁴⁰ *Northern Miner* 27 October 1881 and 22 April 1882.

⁴¹ Survey plan of GM Lease 393, held at Charters Towers warden's office.

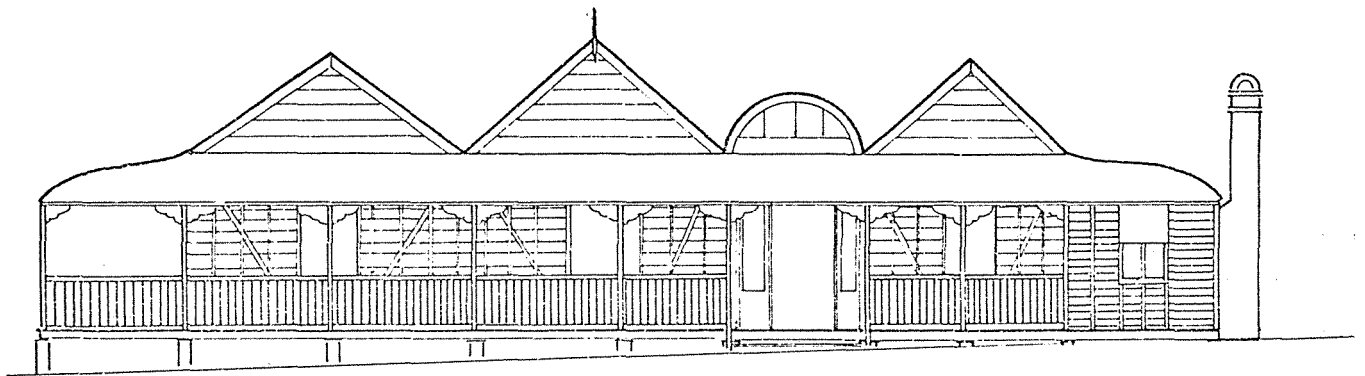


Pfeiffer's house, Charters Towers (1881).

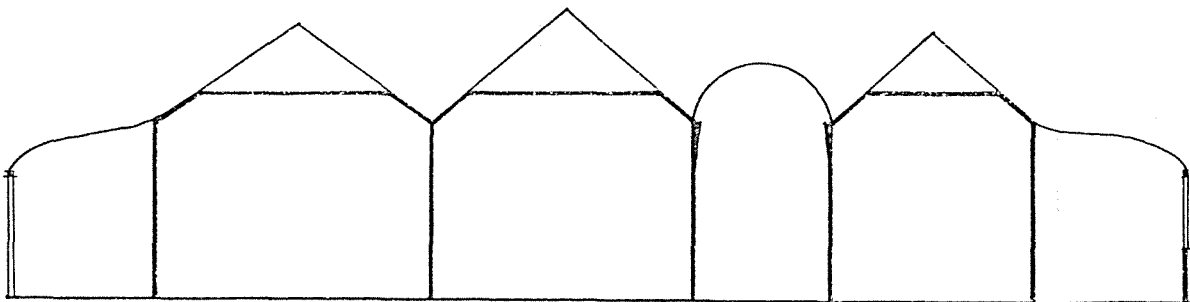




ROOF PLAN



ELEVATION FROM WEST



SECTION A-A

struction of its original form involves a single row of rooms, entirely surrounded by verandahs.

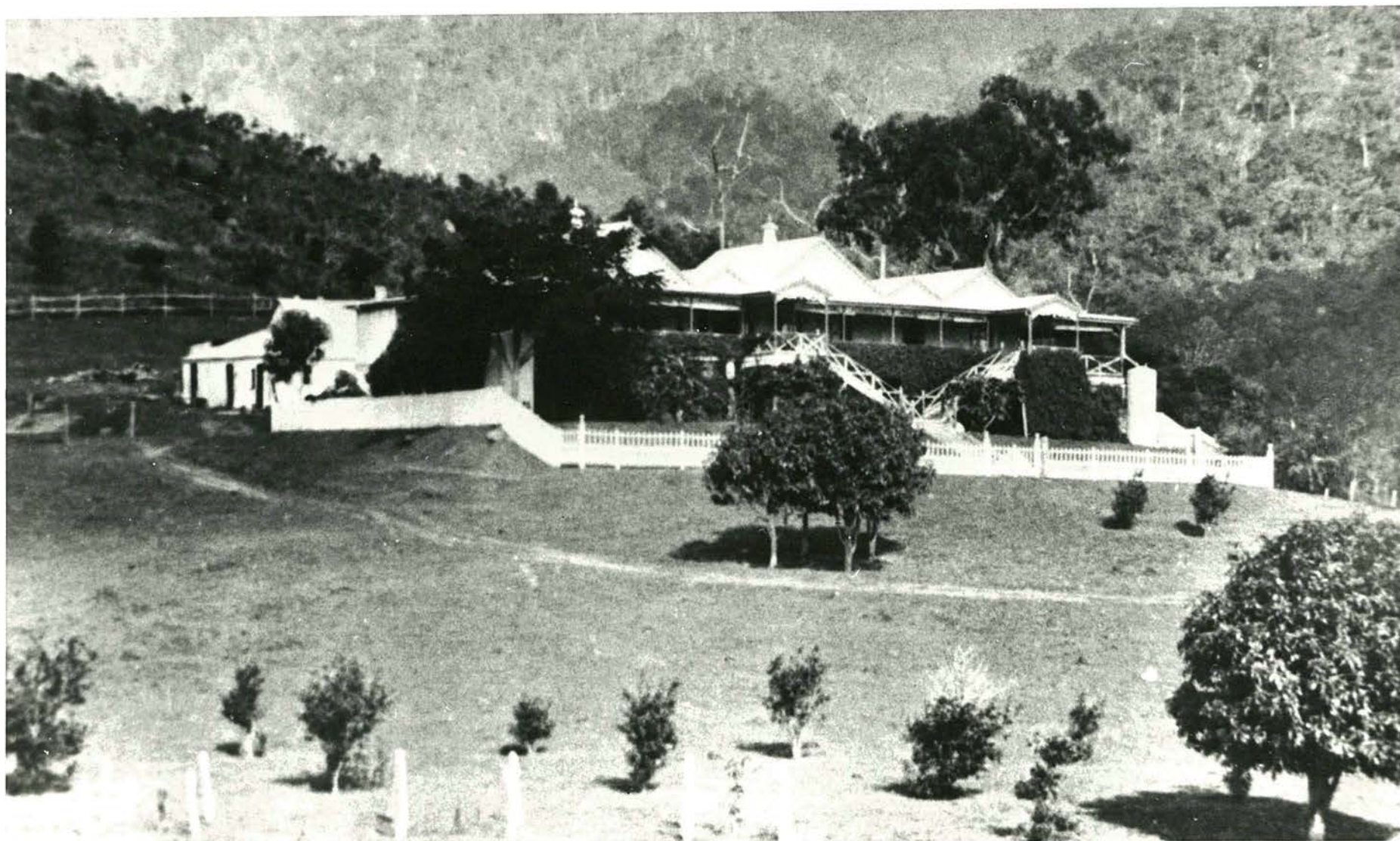
Strangely, another generally similar house was built in North Queensland at the same time as Pfeiffer's, late 1881 or early 1882. Thomas Swallow's house at the Hambledon plantation, south of Cairns, was also a long multiple-gabled house with encircling verandahs. Now demolished, the house is recorded in two photographs which show that it too was extended after initial construction.⁴² There is also an account of the house shortly after it was built:

The house is splendid, it is one of the ready-built American houses, sent out in pieces, and looks at a little distance like a Swiss Chalet on a hillside. 43

This nonchalant description of prefabricated American construction in North Queensland is rather startling. If correct, it is an illuminating example of the pattern of timber supply in the region, for Swallow's house stood no more than a hundred metres from the fringe of the rain forest of the coastal ranges, where Kauri pine and red cedar were already being logged! The account is entirely in keeping with other instances of prefabrication from sources nearer at hand at the time, and with the known supply of Oregon pine from California, but no other example of American prefabrication is recorded in the region. The description is contemporary and first-hand, by a person well-acquainted with Swallow, and there is no reason to doubt it. No such origin is suggested for the Pfeiffer house, however; it appears the simultaneous construction of the two superficially similar houses

⁴²Earlier photograph in *A Pictorial History of the Mulgrave Shire*, Cairns 1980, p. 20; later held by Cairns Historical Society. The house is also recorded in a sketch in Rowan, *Flower Hunter*, facing p. 40.

⁴³Catherine Kingsford, letter 12 August 1882, quoted in U.W. Collinson, *More About Cairns: 2. Echoes of the Past*, Brisbane 1945, p. 78. Other descriptions of the house appear in D. Rannie, *My Adventures among South Sea Cannibals*, London 1912, p. 248; and Jones, *Trinity Phoenix*, p. 166.



Swallow's house at Hambledon (c. 1881).

(Cairns Historical Society)

was entirely fortuitous.⁴⁴

The multiple gabled form reappeared in the Cairns hinterland in the early twentieth century. The Chillagoe company, a major concern backed by London capital, between 1900 and 1910 established a private railway network linking its mines and smelters to the state's Cairns-Mareeba railway. Photographs of the company's operations show a distinctive multiple gabled roof recurring on buildings now demolished at Chillagoe, Mungana, Havelock, Einasleigh and Almaden; and three houses of that form still survive: the stationmasters' residences at Almaden, Einasleigh and Forsayth, the principal towns on the Etheridge railway, built between 1906 and 1910.

The houses were designed by the company's engineer-in-charge, A.S. Frew.⁴⁵ The Almaden house has a standard four-roomed plan with encircling verandahs, and would be unremarkable if it were pyramid roofed. Instead Frew designed a double transverse gabled roof. The Einasleigh and Forsayth houses are larger, each having a central breezeway separating two sets of two rooms, and for these Frew specified a triple longitudinal gabled roof, expressing the internal divisions of the plan. Neither house has its open breezeway today, and it is possible they were enclosed at construction, for there is evidence in the plans that the builders departed from them in several other ways.

The motivation for this roof form is not clear. One possibility is that Frew was constrained in specifying long timbers for a pyramid roof over a large building by the length of timber which could conveniently be carried in a railway wagon, and so designed a roof constructed from smaller components. But the explanation is not

⁴⁴The account of the construction of Pfeiffer's manager's house names local contractors and designer: *Northern Miner* 27 October 1881; and the decorative detail of Pfeiffer's house was within the range supplied by a Charters Towers sawmill.

⁴⁵Q.S.A. holds plans of the Einasleigh and Forsayth houses, signed by Frew and dated 1908.



Stationmaster's residence, Einasleigh (c. 1910).

sufficient, for it implies that all timber structures in railway towns should be of small components. Yet enormous timbers were regularly carried to inland towns for engineering works: the four main timbers of the Mills' Day Dawn United mine headframe in Charters Towers were of New Zealand Kauri, 30m in length and 60cm in diameter.⁴⁶

A house form relatively rarely encountered in North Queensland is that with an asymmetrical facade, in which one front room projects forward to occupy the verandah space. Identified by Boyd with domestic Gothic influences as early as the 1840's⁴⁷, the form persisted as a common, indeed typical, one among urban houses in southern Australia for the rest of the nineteenth century.⁴⁸ Its popularity in the north, however, was slight. One example exists in Victoria Street, Townsville, dating from the 1880's with an asymmetrical externally clad facade which would be entirely in keeping with a southern urban streetscape, but which appears almost incongruous in a North Queensland town. Generally speaking the form is encountered in the nineteenth century only in large and exceptional houses such as E.H.T. Plant's *Thornburgh* in Charters Towers. In other cases where the floor plan is asymmetrical the verandah is usually carried forward around the projecting room, so that while the resulting house facade expresses the plan's asymmetricality the unbroken shade protection of the verandah is retained.⁴⁹

The construction of asymmetrical fronts in significant numbers began in the early twentieth century, and is probably associated with the penetration of ready-to-erect houses into the northern building market.⁵⁰ A four-roomed house built by the firm of Rooney

⁴⁶Maclaren, *Mining and Milling*, p. 9.

⁴⁷Boyd, *Australia's Home*, p. 44.

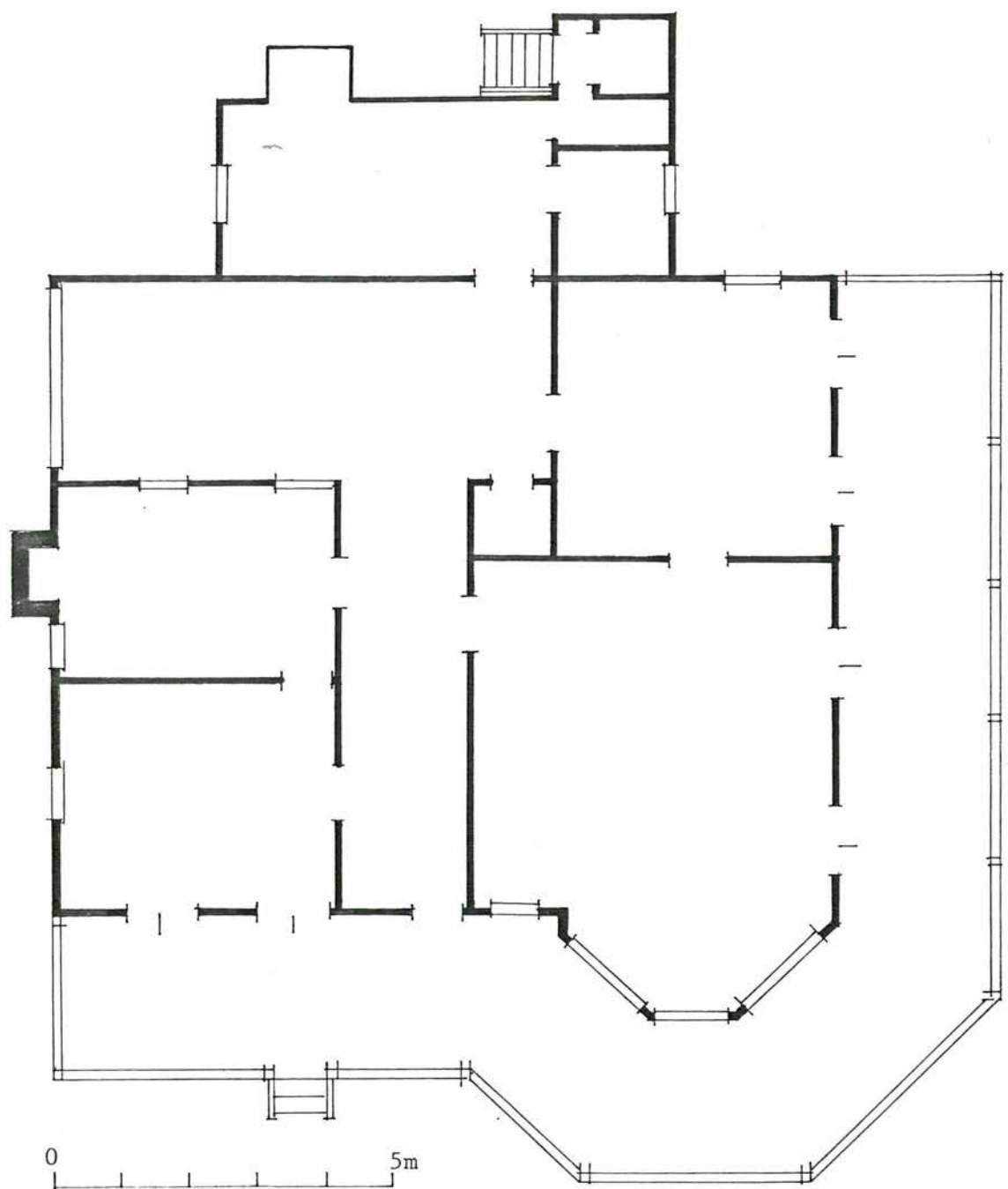
⁴⁸Freeland, *Architecture*, p. 181.

⁴⁹See plan of *Ay Ot* in Sumner, *Settlers*, p. 34.

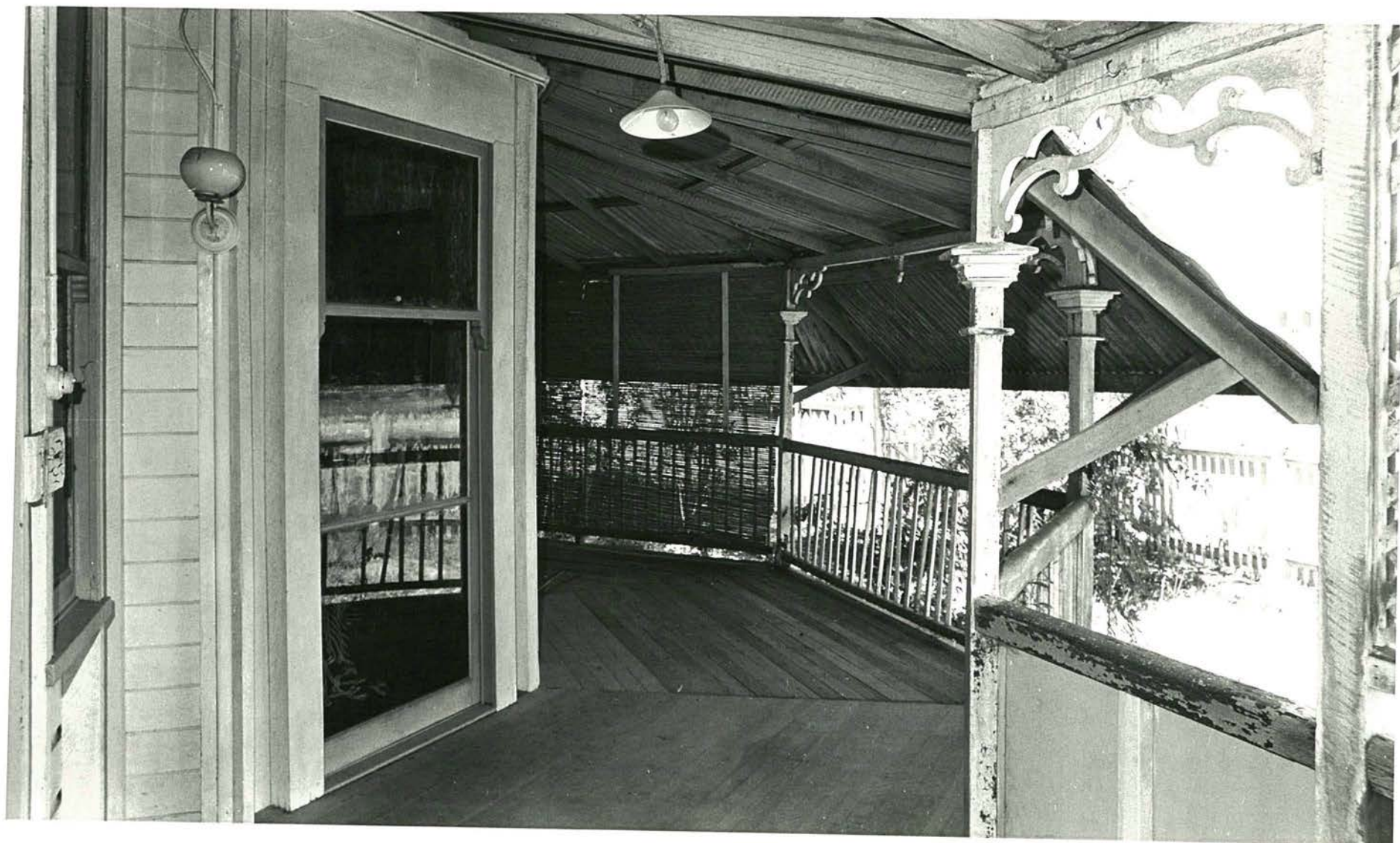
⁵⁰See following chapter.



Asymmetrical house, Victoria Street, Townsville (c. 1888).



Asymmetrical house with verandah around front extension,
Anne Street, Charters Towers.



Verandah carried around bay window, Charters Towers.



Gabled cottage with projecting front room, Townsville.

Brothers about 1900 survives in Townsville as an early example of asymmetry in an otherwise standard four-roomed house, and the form began to be advertised in 1903 as one of the prefabricated houses available from James Campbell & Sons in Brisbane.⁵¹ It seems though that the form only achieved popularity in North Queensland during the 1920's in combination with major stylistic and constructional changes that followed the world war. The asymmetrical four-roomed house is particularly common in Cairns, but there is no good reason to believe that any extant example there was built before 1918.

Houses built in the grand manner were few in number. Even at the peak of the mining fields' prosperity, the number of people who became wealthy was quite small: capital investment was provided through distant stock exchanges, and the largest earnings from North Queensland mines not infrequently accrued to investors who had never set foot in the region. Of the great mining entrepreneurs who lived in North Queensland, many were transient and spent their earnings elsewhere:

It has been too much the practice for colonists on becoming wealthy to cease to be colonists altogether, and to remove their establishments and their families to the mother country, drawing their incomes from colonial investments but spending them at the other end of the world. 52

The architectural evidence of such wealth is found in distant places. One substantial Melbourne house, *Myoora* at North Caulfield, was financed by Charters Towers gold.⁵³ J.S. Reid, best known in North Queensland as a newspaper proprietor and later principal of the Chillagoe Company, built three elaborate houses in Victoria and South Australia.⁵⁴

⁵¹Design No. 3, in *Queenslander* 22 August 1903.

⁵²*Q.G.M.J.* March 1901, p. 13.

⁵³The house of Thomas Christian, a partner of Pfeiffer in the Day Dawn PC: "Wanted: New life for Historic Mansion", *Trust News*, August 1978, p.5.

⁵⁴*Duneira* at Mt. Macedon, *Romsdal* at Toorak and *Rostrevor* at Magill: P.L. Moore, *Pride of the Hills: the story of Rostrevor House*, Blackwood 1975.

Most of the successful men who stayed built relatively modest houses close to their mines or treatment works, deliberately choosing to express their day-to-day involvement with mining industry by their proximity. Pfeiffer's house in Charters Towers is literally across the street from his Day Dawn PC mine:

Mr Pfeiffer resided on the Day Dawn Ridge ever since he arrived on the field, and his unpretending but comfortable and roomy one story house now occupies the site that his tent did in his bachelor days. 55

Moffat's house in Irvinebank is two minutes' walk from the site of his company's smelters. A.L. Wilson's stood in the centre of Ravenswood, surrounded by his mines.⁵⁶ Of course it is simplistic to concentrate only on mine owners and investors, as it is apparent that many of the wealthiest men in mining towns were agents, carriers, merchants and publicans. But the majority of the grander houses are simply expanded and elaborated versions of the timber four-roomed house with encircling verandahs.⁵⁷ Some, such as *Yelvertoft* and *Ay Ot* in Charters Towers, are distinctive in form, clearly architect-designed and original in conception; but even these are entirely within the regional building industry's established techniques of construction and embellishment.

The one North Queensland house which is squarely within the mainstream of metropolitan masonry architecture is E.H.T. Plant's

⁵⁵Pfeiffer's obituary, *North Queensland Register* 16 March 1903.

⁵⁶Wilson's house was demolished in the 1960's.

⁵⁷A.J. Wallwork, "Four Early Timber Houses in Townsville", *Architecture in Australia*, February 1968, pp. 96-100 illustrates several examples. Philp's *Ellerslie* in Townsville; *Tower Villa* (c. 1890) and *Aldbrough* (c. 1903) in Charters Towers are also of this form.

two story *Thornburgh* built in Charters Towers in 1890.⁵⁸

The new house, which is being erected for Mr. E.H.T. Plant, on Plant's Ridge, near the Bonnie Dundee Mill, will, when completed, be the largest, handsomest, and most complete villa residence in this part of the North, and with its surrounding shrubbery and garden will reflect credit on the good taste of its proprietor, who is evidently imbued with a keen appreciation of the eternal fitness of things, inasmuch as he has done his best to combine comfort and convenience with elegance and stability in building his new residence. 59

Thornburgh, in its materials, scale and form, seems quite alien to what by that time had become an entrenched pattern of building in North Queensland towns.⁶⁰ Yet it serves as evidence that the design and construction of buildings in the region did not occur in a cultural vacuum: despite their isolation, householders, architects and builders were quite well aware of metropolitan trends. *Thornburgh* was designed by a local architect and built by local tradesmen. Insofar as the great majority of houses deviated from mainstream architectural practice, *Thornburgh* suggests that they did so not from ignorance, but by conscious choice. Economic circumstances and the structure of the building industry undoubtedly influenced that choice for most of the population, but there were in Charters Towers and Townsville in 1890 at least a dozen men no less wealthy than Plant. Yet these men chose to build houses within the local tradition.

⁵⁸Summer, *Settlers*, pp. 31-33 and "Charters Towers". Note that Thornburgh was Plant's third given name. It has no connection with the similarly-pronounced mining town of Thornborough, named in 1876 for Postmaster-General George Thorn.

⁵⁹*Northern Miner* 21 February 1890. Note the locally unusual use of the word "villa" in recognition of the house's imposing nature.

⁶⁰Its location, however, was entirely within the "practical manager" tradition in being immediately beside Plant's Bonnie Dundee mill.



Plant's *Thornburgh*, Charters Towers (1890).

(John Oxley Library)



Thornburgh with verandahs enclosed, 1978.

The grand houses of later decades reinforce the idea that conformity to established local practice was a dominant influence in houses of any scale. Jacob Leu, a Townsville solicitor, built his house *Warringah* in 1912 on a superb site atop Melton Hill, overlooking Cleveland Bay and Magnetic Island. The house is large in scale and built of brick, but is in form simply another elaborated four-roomed house with encircling verandahs. In form, scale and detail it closely resembles *Rosebank*, a Townsville house nearly 30 years older.⁶¹

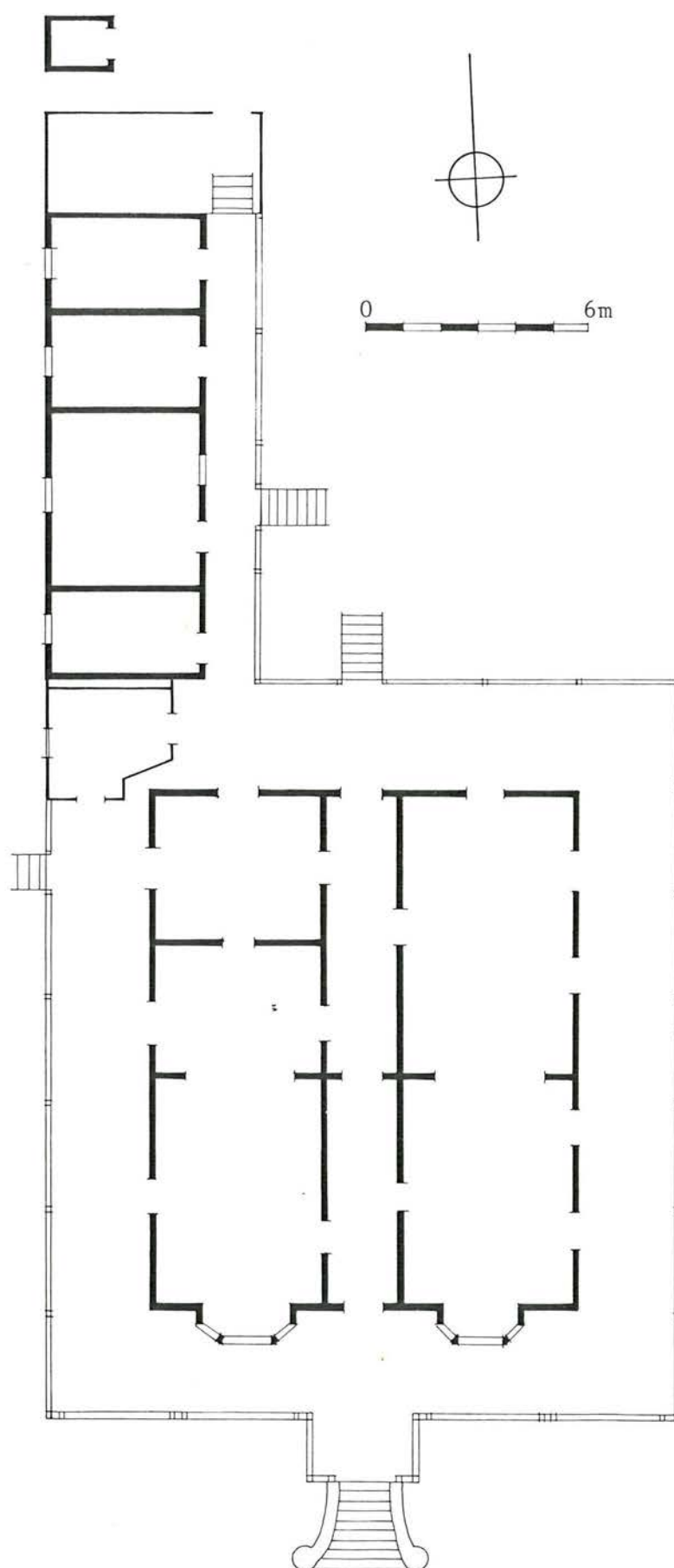
Warringah might be thought to be an exercise in nostalgic colonial revivalism, but there is no hint that any such academic motive existed; nor is there evidence that any newer tradition existed in the north prior to 1912 against which such a revival movement might have been a reaction. It is much simpler to regard the house as a manifestation of the conservatism which had dominated house design since the 1880's: it was perfectly acceptable in Townsville in 1912 to build quite unselfconsciously in the same stylistic mould as had been popular in 1885.

The nexus of floorplan and roof form in the four roomed house underwent revision early in the twentieth century, with the rise in popularity of a simplified roof with no step or break in pitch between core and verandah. This roof took one of two forms: a hipped gable in which the core roof was a transverse ridge, hipped at the ends, with the side walls of the house extending a short distance above ceiling height to form a truncated gable; or a simpler version in which the transverse ridge was eliminated entirely, and the front and rear surfaces of the pyramidal core roof simply extended uninterruptedly over the verandahs. For convenience, both forms are henceforth described as hipped gables, although the second is more properly an extended pyramid. The form was not new - at least one example can be identified in an 1887 photograph of Townsville -

⁶¹The fretwork ventilating panels at *Warringah* are identical to those in Matthew Rooney's house (c. 1885).



Leu's Warringah, Townsville (1912).



Warringah, Townsville (1912)

but the early examples are probably best regarded as an unusual mode of attaching the verandah roof to a hipped core rather than a distinct form of any real significance. The hipped gable roof was specified for some small government residences from the 1880's onward,⁶² but its popular ascendancy was associated with the rise of mail order houses from Brisbane, and occurred simultaneously with the asymmetrical house front, roofed by a forward-projecting gable.⁶³

When extended by the addition of side verandahs projected without a break from the core roof, the hipped gable became a low-pitched hipped roof (or low rectangular pyramid if no ridge was present). This form, always present in some numbers since first settlement of North Queensland,⁶⁴ enjoyed renewed popularity in the years preceding 1914, and has remained in vogue to the present. A roof of this kind is still popularly described in the region as a bungalow roof, although the term is not new, nor restricted in this usage to North Queensland. An 1890's Melbourne reference describes the "bungalow form in which the sloping roof of the house is continued to cover the verandah also".⁶⁵ Campbell's catalogue of the 1920's also refers to "a bungalow type of roof", which in context clearly describes a roof of unbroken profile from ridge to guttering.⁶⁶

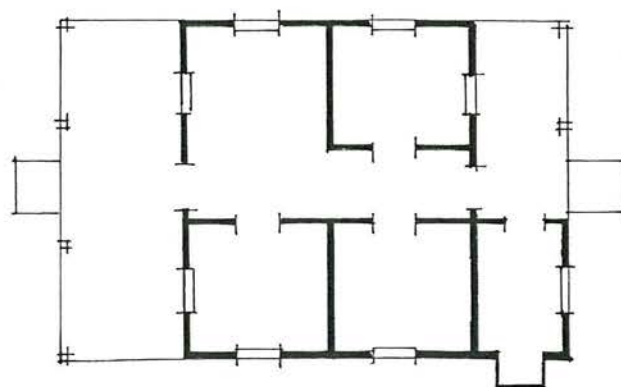
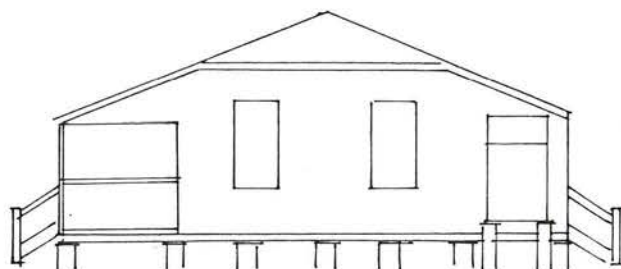
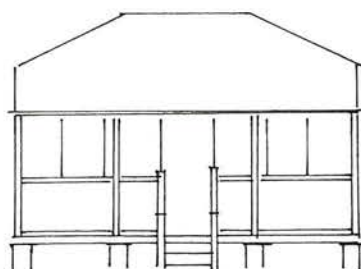
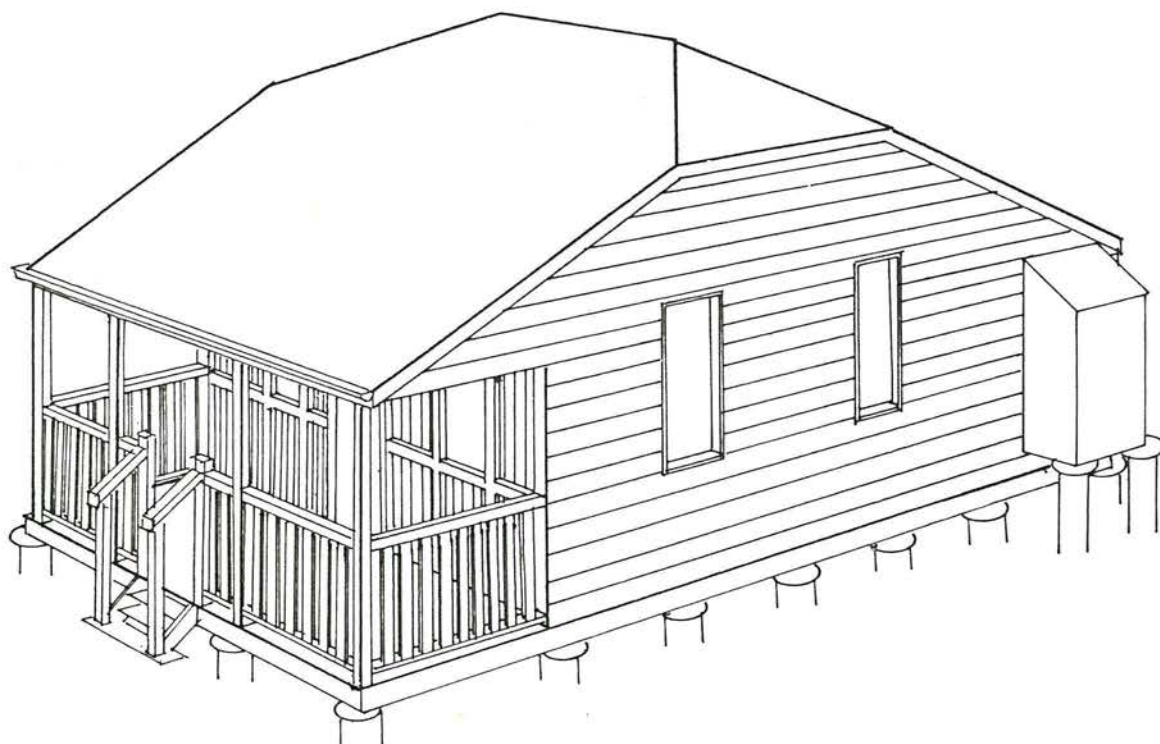
⁶²For example the pilot's cottages at Dungeness and Johnstone River (1884), and the caretaker's cottage at the Magnetic Island quarantine station (1885): plans held by Queensland Department of Works and Housing, Brisbane.

⁶³*Queenslander* 22 August 1903.

⁶⁴J.M. Black's house (1865) was roofed in this way. The earliest example extant is probably *Currajong* (c. 1889) in Townsville.

⁶⁵*Building and Engineering Journal* 2 July 1892, p. 6; quoted in Orth, *American Influences*, p. 19. Orth elsewhere (p. 34) regards inclusion of the verandah within the mass of the house as an American innovation of the 1890's. While this may be true of the specific stylistic applications she describes, the idea is nearly as old as Australian building construction: see illustrations in Freeland, *Architecture*, pp. 29-49.

⁶⁶Campbell, *Redicut Homes*, p. 4.



THE HIPPED-GABLED FOUR-ROOMED HOUSE.



Four-roomed house with hipped gable variant roof, Cairns (c. 1915).



Four-roomed house with hipped gable variant roof, Cairns, (c. 1910).

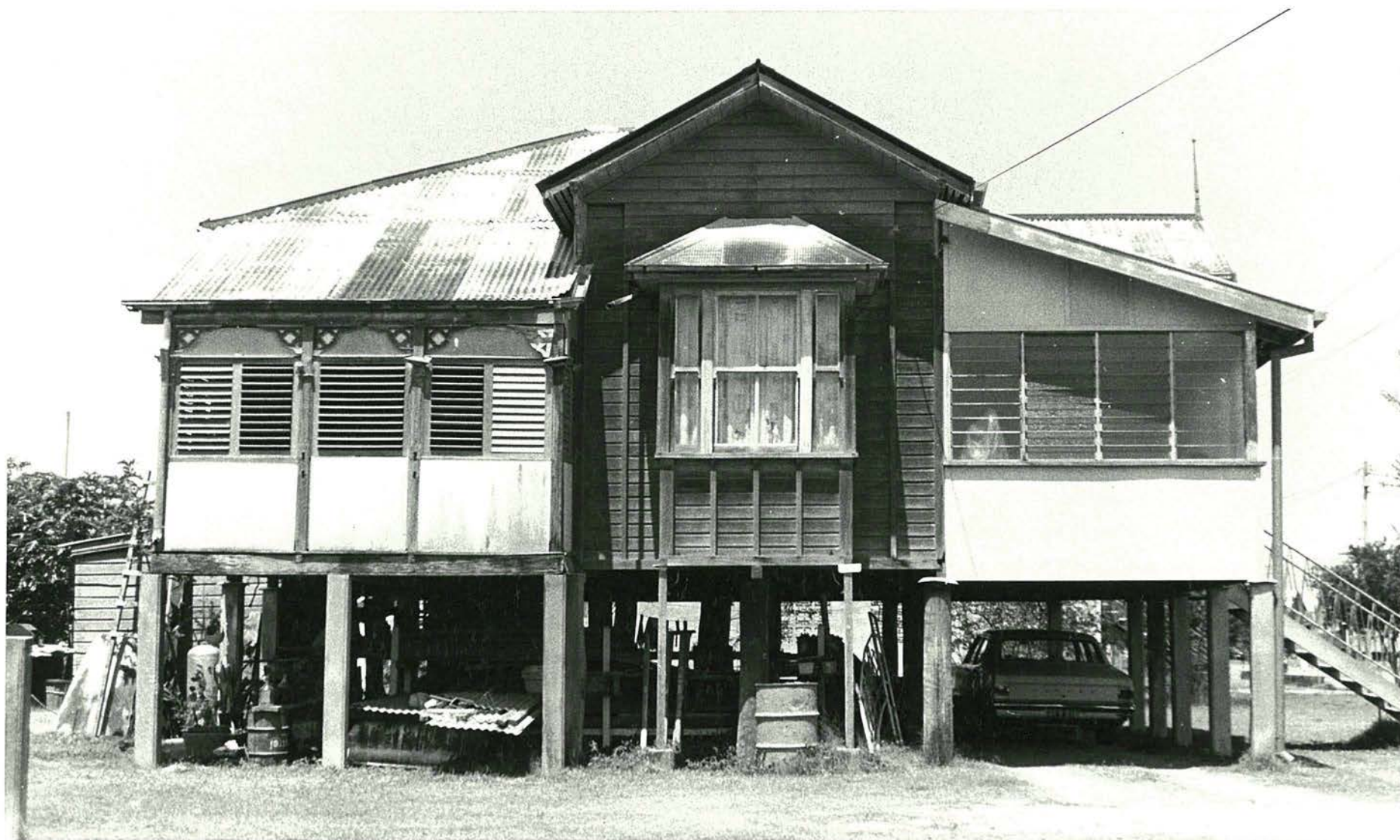


Four-roomed houses showing transition in roof forms, Boundary Street, South Townsville (1915).



Manager's residence, State Coal Mine, Collinsville.

(Q.G.M.J. September 1925, p. 343)



Greater complexity in floorplan, with projecting gables, Townsville (1915).



Late bungalow-roofed four-roomed house, Merinda.

The term is most interesting for its specific application. While it is capable of a variety of interpretations, it elsewhere has most clearly the sense of a house of one story.⁶⁷ Such a word has little utility in North Queensland where most houses have always been of one story, and the word has taken on the task of describing a roof form, a usage only tenuously, if at all, related to its original meaning.

Probably the most pervasive element of North Queensland houses from shortly after European settlement until the second world war was the verandah. Virtually every house in that period had a verandah on at least one core wall, usually on two, and frequently on three or four. In the survey of urban houses undertaken during research for this thesis the only houses entirely without verandahs were those undergoing modification at the time; some showing clear evidence that previously existing verandahs had been removed, and a small number of makeshift iron huts which in earlier years would very probably have been equipped with a bough shelter, performing the verandah's function.

The function of the verandah seems obvious: it is to provide shade without impairing ventilation; that is, to reduce insolation on the wall surface while maintaining the flow of air for heat exchange. The verandah also has several subsidiary functions. It reduces glare, protects both walls and windows from rain, and provides an external sheltered space at relatively low cost. Sometimes these other considerations can lead to modifications to the verandah which interfere with its principal function - a point considered in a later chapter.

⁶⁷ H. Yule and A.C. Burnell, *Hobson-Jobson: a glossary of colloquial Anglo-Indian words and phrases*, 2nd edn. Delhi 1968, pp. 128-129 gives the etymology and varying usages of the word to 1875. J. Cameron, *Our Tropical Possessions in Malayan India*, London 1865, p. 75 has: "Bungalows, a term often applied to any style of dwelling-house in the East, are, properly speaking, only of one story...".

The origins of the verandah are not a regional or even a national historical issue. The essential principle of shading the walls by means of a horizontal extension of the roof is so ancient as to be a fundamental axiom of building. Verandahs and loggias are known throughout Europe, and indeed although the word is commonly taken to be an English borrowing from India, there is serious doubt whether it is in fact Hindi or Portuguese in origin,⁶⁸ reflecting uncertainty whether the form's origins are exotic or indigenous to Europe. The verandah is known wherever Europeans have settled in warm climates.⁶⁹

So fundamental was the verandah as an element of the North Queensland house that documentary sources, while describing existing or proposed verandahs, rarely mention why they were considered desirable. When the school residence at Ravenswood was constructed with only one in 1873, the secretary of the local committee complained "There is much wanted the addition of a back verandah to the teacher's residence".⁷⁰ The secretary of the Port Douglas school committee in 1878 requested the construction of a school which should have verandahs "at least twelve feet wide. All the principle [sic] buildings have them that width here."⁷¹ A newspaper correspondent in 1880, drawing on Indian experience, recommended "verandahs all round, at least eight feet

⁶⁸Yule & Burnell, *Hobson-Jobson*, p. 965.

⁶⁹See for example, Cameron, *Tropical Possessions*, p. 75; R. Finley & E.M. Scott, "A Great Lakes-to-Gulf Profile of Dispersed Dwelling types", *Geographical Review* 30, 1940, pp. 412-419; M. Garland, "The English Architecture of Port Elizabeth", *Architectural Review* 135, 1964, pp. 374-377; E. Johnston, "The Tin Tradition", *Royal Institute of British Architects Journal*, May 1981; F.B. Kniffen, "Louisiana House Types", *Annals of the Association of American Geographers* XXVI, 1936, pp. 179-193; R.B. Lewcock, *Early Nineteenth Century Architecture in South Africa: a study of the interaction of two cultures 1795-1837*, Capetown 1963; B. Kearney, *Architecture in Natal from 1824 to 1893*, Capetown 1973; S. Nilsson, *European Architecture in India 1750-1850*, London 1968; D. Picton-Seymour, *Victorian Buildings in South Africa*, Rotterdam 1977; M.D. Ross, "Caribbean Colonial Architecture in Jamaica", *Journal of the Society of Architectural Historians* 10, 1951, pp. 22-27; S.B. Saini, *Architecture in Tropical Australia*, Melbourne 1970.

⁷⁰Cecil Henning to Edward Butterfield 28 January 1874, 74/317, EDU Z 2309 Q.S.A.

⁷¹George Huddy to Undersecretary for Public Instruction 16 February 1878, 78/623, EDU Z 2252 Q.S.A. Note that the principal buildings provide the model, not the coolest buildings.

wide",⁷² and the school residence at Cloncurry in 1905 was recommended to be "a house of four rooms ... with 9 feet verandahs all round, and detached kitchen".⁷³

The latter three writers all make vague mention of the heat, without further explanation. It is noticeable that verandahs "all round" were considered desirable, and that no consensus existed on their preferred width. Those encountered in North Queensland field surveys have varied from 1720mm to 3040mm, the width having no obvious correlation either with the size of the house or the period in which it was built. Verandah width seems to have remained entirely a matter of personal taste, with no attempt at standardisation. Even in the prefabricated range offered by Campbells of Brisbane verandah widths in 1914 varied from 6'3" to 8' ⁷⁴ and in the 1920's from 6' to 10', although in these catalogues there is a marked correlation between verandah width and house size.⁷⁵

Despite the seemingly obvious environmental explanations for the existence and design of verandahs, their use on North Queensland houses conforms so uniformly to a stereotype involving the house's orientation to the street frontage rather than the directions of maximum insolation, as to call into question any explanation for their popularity based entirely on the physical environment. The most common house forms with verandahs at front and rear only - that is, the basic forms of the two-roomed cottage and four-roomed house - are in an urban setting invariably turned to face the street frontage.

⁷²*Northern Miner* 2 September 1880.

⁷³Robert Tanner to Undersecretary for Public Instruction 23 November 1905, 05/19910, EDU Z 606 Q.S.A.

⁷⁴Catalogue of Campbell's house designs, undated but amongst 1914 correspondence in Pioneer Mill records, James Cook University Library.

⁷⁵Campbell, *Redicut Homes*.

In other settings they usually face a road, footpath, railway, beach, river, or other linear feature. The simplest variant of these houses always has a verandah along the front wall; that is, the entrance wall: there is no such thing as a house with side verandahs and no front verandah. But a moment's reflection reveals that houses facing in all four directions in a standard urban subdivision will thus have their verandahs disposed to all four points of the compass.

The directions of maximum insolation vary with the time of day and the season. The afternoon is hotter than the morning, however, and a verandah on the western wall is thus more important than one on the eastern wall. All of the region lies between the Equator and the Tropic of Capricorn, so that although the sun shines from the north for most of the year in North Queensland, it shines from the *south* during the hottest months in every place significantly north of 23°S. The period of insolation on the south wall in settlements in the region is roughly as follows:

<u>TOWNS</u>	<u>LATITUDE</u>	<u>PERIOD</u>
Bowen, Charters Towers	20°	mid December - early January
Townsville, Georgetown	19°	early December - mid January
Cairns, Chillagoe	17°	late November - late January
Cooktown, Maytown	15°	late November - late January
Port Stewart, Coen	14°	mid November - early February
Thursday Island	11°	early November - mid February

76

Thus verandahs on all sides of a house would be desirable; but if a choice had to be made strictly on grounds of maximum comfort, verandahs on the south and west sides would provide greatest reduction of insolation during the hottest part of the day in the hottest months of the year.

⁷⁶Based on tables in the *Nautical Almanac*. Precision is not attempted, for the effects of the southern sun will only be felt an unspecifiable time after it passes the latitude of any locality, and shines on the southern wall.

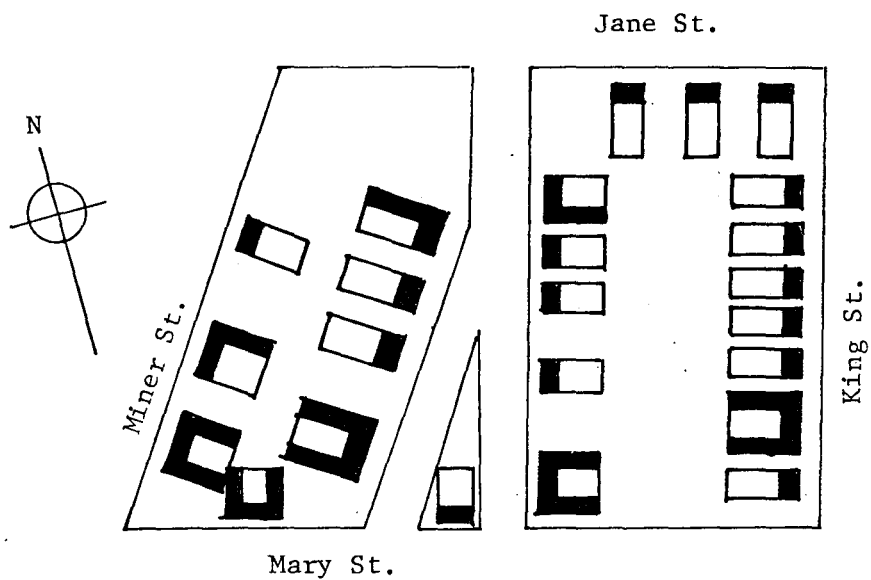
Yet this disposition of verandahs is rarely found. As the determinant of verandah position is almost invariably the street aspect, the orientation of verandahs is found to be uniformly distributed among the compass points in every North Queensland town. (An analysis of verandah positioning in some typical urban sections to illustrate this tendency appears on the following page.) As this elementary reasoning, based on observation of the sun's annual and diurnal behaviour, cannot have been beyond the designers and builders of North Queensland houses in the nineteenth century, the conclusion arises that the functions of the verandah were not in fact primarily connected with the control of insolation.

A space for relaxing in the shade, sleeping in hot weather, greeting, entertaining and farewelling guests; and to provide extra room for drying clothes and other wet weather activity may have been more important considerations in verandah construction. And in view of the public streetward location of the front verandah, and the relative infrequency with which subsequent modification of its appearance was undertaken, it may have had symbolic and psychological importance as a conventional facade for public observation. The verandah is both a space for the occupants and a barrier to strangers: that second role is expressed by its balustrade, which is simply a fence renamed.⁷⁷

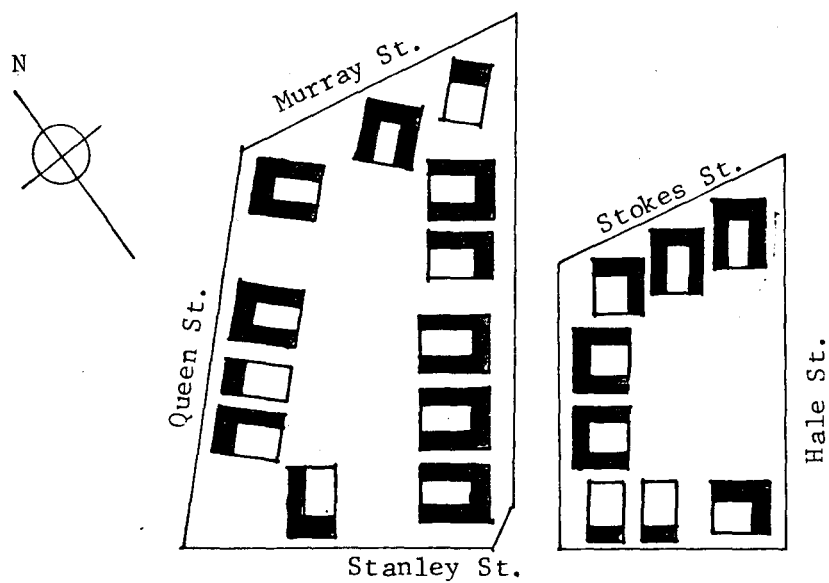
The practice of elevating houses on high stumps⁷⁸ of timber and later brick or concrete has attracted considerable attention in writings on Queensland houses. Approximately 40% of the houses

⁷⁷ A similar observation on the social functions of the verandah is made in D. Langmead, "Folk Architecture in South Australia", in D. Whitelock (ed.), *Aspects of South Australian History*, University of Adelaide 1976, pp. 14-18.

⁷⁸ The term "stumps" is most commonly used in the region, although they are variously referred to as "stilts", "blocks", "piles" and "posts" in writings on the subject. They were normally round timber posts about 30cm in diameter, spaced 2 - 3 m apart supporting the house, and ranging in height above ground from a few centimetres to about 3m.



CHARTERS TOWERS



TOWNSVILLE

PLANS OF URBAN SECTIONS, SHOWING ORIENTATION OF VERANDAHS

surveyed in North Queensland are highset,⁷⁹ although the practice appears to have become more popular in the later years of the period under study, and is usually confined to four-roomed houses. Elevated two-roomed cottages are most unusual. The extent of high stumping in the early years of settlement is not clear, although individual examples are known in North Queensland from 1870 onward.

It has often been stated that the popularity of elevated houses dates only from the early twentieth century. Freeland mentioned isolated examples in the late 1870's, but found that frequent use of "six to nine feet" stumps came about only at the turn of the century.⁸⁰ Sumner described the practice as originating in Brisbane,⁸¹ and remaining relatively rare until the 1920's, although she recognised examples in North Queensland from as early as 1877.⁸² Newell described the elevation of houses as a slow continuous process:

By the 1870's, houses were raised about 20 centimetres above ground level. The floor levels were gradually raised to one metre over the next 20 years, but the traditional Queensland house raised on its two-metre stumps was relatively slow in development. 83

Nineteenth century travellers' descriptions unfortunately do not comment on the practice of elevating houses with sufficient frequency to allow any overall view of its development. An 1870

⁷⁹ 37.2% of a sample of 3,978 houses were assessed as "highset" by research assistants working from photographs. The criterion used differed from Sumner's "those with standing head-room for an adult" (*Settlers and Habitat*, p. 17): "highset" was defined as providing space to park a car beneath the house, or having more than 8 treads on a flight of stairs.

⁸⁰ Freeland, *Architecture*, pp. 119 & 207.

⁸¹ Sumner, "Environment and Architecture", p. 84.

⁸² Sumner, *Settlers & Habitat*, p. 18; and see Sumner and Oliver, "Early Housing", p. 17.

⁸³ Newell, "Origins & Development", p. 19.

description, probably of Gympie, refers to "wooden or iron constructions, raised on piles"⁸⁴ but without commenting on their height. By 1898 however, travellers were accepting the practice as commonplace: "This house [Jardine's at Somerset, possibly built 1864], like other Queensland houses, is built on piles with a wide verandah all round".⁸⁵ Some acute observers such as Anthony Trollope and Andrew Garran made no mention of highset houses.⁸⁶

The use of low stumps was sufficiently widely known throughout Australia by 1861 to require no comment, and all but the humblest cottages built in North Queensland were provided with a wooden floor elevated a few centimetres above ground. J.M. Black's house (1865) was so elevated,⁸⁷ and the Cardwell Post Office (1870) originally stood on timber stumps only "9" to 12" " from the ground.⁸⁸ Early photographs of towns and the few extant buildings⁸⁹ demonstrate the widespread adoption of this low stumping technique before the mid-1880's. Even in the primitive tradition of slab construction framed foundations and elevation on stumps were not unusual. Four substantial slab buildings surviving in North Queensland were all elevated and timber floored: the *Bowen River* hotel (c. 1862)⁹⁰ at about 50cm; the *Eureka* hotel at Thornton Gap (1865)⁹¹ at 40cm;

⁸⁴ Allen, *Visit to Queensland*, p. 162.

⁸⁵ Rowan, *Flower Hunter*, p. 141. An accompanying illustration establishes that Jardine's house was highset.

⁸⁶ A. Garran (ed.), *Picturesque Atlas of Australasia* (2 vols.), Sydney 1886; Trollope, *Australia & New Zealand*.

⁸⁷ Wallwork, "Four Early Timber Homes", p. 98.

⁸⁸ Colonial Architect to Undersecretary for Works 20 August 1889, 89/2871, WOR A577 Q.S.A. The post office was restumped at its present height of 1 m in 1904.

⁸⁹ Pfeiffer's house (1881) is on timber stumps up to 1.3m in height, and Matthew Rooney's house, *Currajong* and *Rosebank*, all built in Townsville between 1885 and 1890, are on 50cm brick piers. A cottage in Carter Street, Townsville (c. 1884) is on 33cm brick piers.

⁹⁰ J. Hogan, *Building Queensland's Heritage*, Richmond 1978, pp. 120-121.

⁹¹ D. Gibson-Wilde, "The Eureka Hotel - the best country stand in North Queensland", *John Oxley Journal* 1, 1980, pp. 6-10.

the *Wambiana* hut (c. 1870)⁹², about 50cm; and *Blechynden* homestead at Murray Upper.⁹³ These lowset floored buildings often had insufficient space beneath them for access: the reasons for stumping must have been to provide ventilation, alleviating fungal decay; and to allow enough height for a comfortably sprung timber floor.

Manuals describing the construction of slab buildings differed in their descriptions of foundations and flooring. Some advocated an earth floor,⁹⁴ while others gave detailed instructions for raised timber floors similar to those found in North Queensland.⁹⁵ C.W. Bryde's reminiscences describe the construction of a slab house with a floor of sawn boards,⁹⁶ and Eden's slab house was carpenter-built and floored, although he advocated an earth floor in his advice for other settlers.⁹⁷

However from about 1870 a quite distinct practice had appeared in the coastal sugar growing areas near the Pioneer, Burdekin and Herbert rivers. In these regions there was no slow tendency to increase the elevation of houses, but an abrupt adoption of stumps two metres or more in height in some houses from the earliest period of settlement. A number of the first plantation houses on the lower Burdekin and Pioneer rivers were built on high stumps in the 1870's

⁹²Summer, *Settlers*, p. 10: height estimated from photograph 10.

⁹³The date of construction of *Blechynden* is not known: it was probably in the 1870's. When seen in 1978 it had been moved from its original site, but photographs held by the Cairns Historical Society and Pamela Watling of Cairns show that it was built about 30cm above ground level.

⁹⁴A.J. Boyd, "Hints to New Settlers", *Queensland Agricultural Journal* XXX, 1913, p. 153.

⁹⁵Fletcher, *Hints to Immigrants*, pp. 33-34.

⁹⁶C.W. Bryde, *From Chart House to Bush Hut*, Melbourne [c. 1920] pp. 93-94.

⁹⁷Eden, *My Wife & I*, pp. 60-65.

and early 1880's.⁹⁸ Elevated houses were also built at Swallow's Hambledon plantation south of Cairns in 1882. Swallow's own house was described as "...an ideal tropical bungalow. Built on piles and surrounded by fine broad verandas..."⁹⁹; his overseer's residence and a number of workmen's cottages were all highset - some of the cottages to well over three metres.¹⁰⁰ The best documented region of early highset houses is the lower Herbert. Written descriptions of at least nine houses on high stumps commence in 1871,¹⁰¹ and are supplemented by a remarkable set of photographs taken by Thomas Mathewson, probably in 1874.¹⁰²

Neither the origins nor the reasons for the practice of elevating houses has ever been satisfactorily and simply explained; there are several possible origins and numerous undoubted motivations. Elevation of buildings is by no means unique to Queensland: it occurs in several other parts of the world, notably in Melanesia, Indonesia and mainland southeast Asia. Throughout Europe, buildings such as granaries were elevated on staddles for protection from vermin,¹⁰³

⁹⁸ See illustrations in R. Connolly, *John Drysdale and the Burdekin*, Sydney 1964, plates 2, 4 & 6 after p. 64; H.L. Roth, *The Discovery and Settlement of Port Mackay*, Halifax 1908, pp. 50, 63 & 66; and Winterbourne, Mount Spencer and Branscombe homesteads, Marten album, Mackay City Library.

⁹⁹ Rannie, *Adventures*, p. 248.

¹⁰⁰ Cairns Historical Society holds photographs of these buildings, and one appears in Bolton, *Thousand Miles*, facing p. 129.

¹⁰¹ See Neame diary pp. 28, 32 & 36; *Queenslander* 23 September 1871 & 5 June 1875. I am grateful to Janice Wegner for bringing this material to my attention.

¹⁰² Albums held by Mrs. Fardon of Townsville and the John Oxley library. Mathewson's 1874 visit to the lower Herbert is mentioned in "A Veteran Photographer", *Harrington's Photographic Journal* 2 October 1922, p. 13. The highset houses identified in these sources were at Ashstone, Avoca, Cudmore selection, Gairloch, Galdra, Macknade, Roscommon, Victoria and the Native Police camp.

¹⁰³ See Briggs, *English Farmhouse*, p. 116; Rudofsky, *Architecture without Architects*, plates 90-94; Suzuki, *Wooden Houses*, pp. 66 & 70 - 72. Illustrations of elevated English market halls appear in H.J. Hansen (ed.) *Architecture in Wood*, New York 1971, p. 139; R. Whitmore, *Victorian and Edwardian Hertfordshire from Old Photographs*, London 1976, pl. 60; *Town and Country Planning in Britain*, London 1975, after p. 22.



Rosscommon homestead, Lower Herbert (c. 1870).

(Mrs. Fardon, Townsville)



Workers' house, Hambledon (c. 1882).

(Cairns Historical Society)

and the principle of high elevation with enclosed rooms at ground floor level is not dissimilar from that of a ground floor colonnaded verandah or loggia in a two story building. Thus the origins of the highset house are not as far removed from European tradition as folklore suggests.

There are two origins which might have had direct influence on the construction of highset houses in North Queensland, but which at present remain inconclusive for want of evidence. One is suggested by the early adoption of high stumps in the coastal sugar-growing areas. The earlier experience of the planters in these regions remains to be studied, but it is at least conceivable that some had previously been involved in sugar cultivation in the Caribbean and Louisiana. In Louisiana there had existed since the French colonial period a tradition of house construction which in general form resembled the Herbert river plantation houses: either a highset house with partial enclosure underneath, or a two story house with a wide ground floor loggia.¹⁰⁴ No North Queensland house can be shown to have antecedents in Louisiana, but the question at least remains open.

The second is the earlier attempt at settlement in north Australia, at Victoria, Port Essington. Two buildings there, the officers' mess and a storehouse, had been built "on piles 8 feet high" when the settlement was established in 1838.¹⁰⁵ Why this was done is not made clear in any account of the Port Essington settlement, but there are comments on advantages subsequently discovered. A likely originator of the idea was George Windsor Earl, who was in large measure responsible for the establishment of Port Essington, and was present to guide its fortunes.¹⁰⁶ Earl was familiar with the East

¹⁰⁴ See examples 1727-1801 illustrated in Morrison, *Early American Architecture*, especially pp. 259 & 264-66.

¹⁰⁵ Captain McArthur, despatch 16 October 1847 in *H.R.A.* ser. 1, vol. XXVI, p. 373.

¹⁰⁶ Earl had strongly advocated the establishment of a trading settlement in northwest Australia in his book *The Eastern Sea: or voyages and adventures in the Indian Archipelago*, London 1837, see appendixes pp. 421-461. Spillett (*Forsaken Settlement*, p. 17) credits this and other pressure from Earl with the foundation of Port Essington.

Indies, and his accounts of his travels contain passing reference to the Malay practice of highset house construction.¹⁰⁷ The two buildings at Port Essington were apparently the first known to have been elevated in Australia, and several writers on Queensland houses have drawn attention to them.¹⁰⁸ However there is difficulty in establishing any causal link between these buildings and later practice elsewhere in Australia.

Possible connections exist, not strong enough to establish direct influence, but suggesting mechanisms by which it might have occurred. In 1863, just as European settlement was commencing in North Queensland, Earl published a "Handbook for Colonists in Tropical Australia".¹⁰ In it he referred in passing to a "building with the floor raised 5 feet above the ground" at Port Essington, and praised the durability of Ironbark timber for "piles" - which could mean wharf piles - but nowhere did he specifically advocate elevated construction, nor indeed offer advice of any kind on building, beyond the statement that a "better description of dwelling than a tent will reduce the temperature within doors very considerably".¹¹⁰ It is likely that members of the Port Essington community dispersed in Australia after 1849, for Earl mentions that some of the marines purchased their discharge in Sydney,¹¹ but their subsequent activities are unknown. In the absence of a clearer link between the elevated buildings of 1838 and those of 1870 onward, it would be unwise to make too much of the Port Essington precedent.

¹⁰⁷ Earl, *Eastern Sea*, *passim*; and see a description in Cameron, *Tropical Possessions*, p. 119 of Malay houses "well elevated from the ground....upon posts some seven or eight feet high". Cameron (p. 75) also refers to Europeans' houses "elevated some five or six feet from the ground upon arched masonry."

¹⁰⁸ Freeland, *Architecture*, pp. 118 & 207; Cox & Freeland, *Rude Timber Buildings*, p. 63; Summer, *Settlers*, p. 18.

¹⁰⁹ Earl, "Handbook for Colonists in Tropical Australia", *Journal of the Indian Archipelago and Eastern Asia*, ser. II, vol. 4, 1863.

¹¹⁰ *Ibid.*, pp. 6, 16 & 70.

¹¹¹ *Ibid.*, p. 134. A third barely possible mechanism for influence is McArthur's despatch of 1847, but it was unlikely to have been read in Australia before its publication in *H.R.A.*

Several reasons have been proposed for the adoption of high stumps under Queensland houses. Freeland considered protection from termites to have been the original reason.¹¹² Newell expanded this to "seasonal flooding, mosquitoes and white ants",¹¹³ while Sumner similarly found hillslope construction problems, control of termites and flooding to have been the principal motivations.¹¹⁴ All three writers have drawn attention to the discovery at Port Essington that elevation of buildings made possible the detection and control of termites in the stumps before they entered the building:

This temporary method of piling in order to raise the buildings has proved very useful. Had they been fixed on the ground in the usual manner, they must have been destroyed long since by vermin....The Blockhouse and Fort are particularly infested by the White Ant; having so much solidity in the construction, it is not possible to reach the destructive creature, and ultimately it must be destroyed by them... 115

The earliest documented explanations for the practice of elevating North Queensland houses give quite different reasons. Neame, writing of the lower Herbert in 1871, commented: "as a precaution against fever one ought to sleep 7 or 8 ft. above the ground."¹¹⁶ This was apparently orthodox opinion in the district, for a description of Avoca plantation in the same year reported, "A fine substantial house has been erected on piles ten feet high, the object of which is to get the sea breeze and to avoid miasma."¹¹⁷ This reflects

¹¹²Freeland, *Architecture*, p. 119.

¹¹³Newell, "Tropical House", p. 165.

¹¹⁴Sumner, "Environment & Architecture", p. 84.

¹¹⁵McArthur, despatch 16 October 1847, p. 374. McArthur also observed: "The capacity of every house so raised was doubled."

¹¹⁶Neame diary, p. 32, and similar comments appear on pp. 28 & 36. Elsewhere (p. 20), Neame specifically equated "fever" and "Malaria".

¹¹⁷*Queenslander* 23 September 1871.

contemporary belief that malaria was contracted from vapours rising from stagnant water or damp ground. Earl had warned colonists:

that land-locked harbours in tropical climates are always unhealthy unless they are acted on by a breeze constantly blowing, so as to dissipate at once, the malaria which arises from stagnant sea-water exposed to the rays of a tropical sun. 118

The sea breeze that dispersed miasma was of course conducive to comfort more generally, as another traveller on the lower Herbert found at the Gairloch Native Police camp:

The dwelling-house is substantially built on high piles, a peculiarly [sic] , by-the-bye, everywhere noticeable. It might be thought to be suggestive of floods, but on enquiry it appears that by building in this manner, cool and airy dining-rooms and store rooms are provided. 119

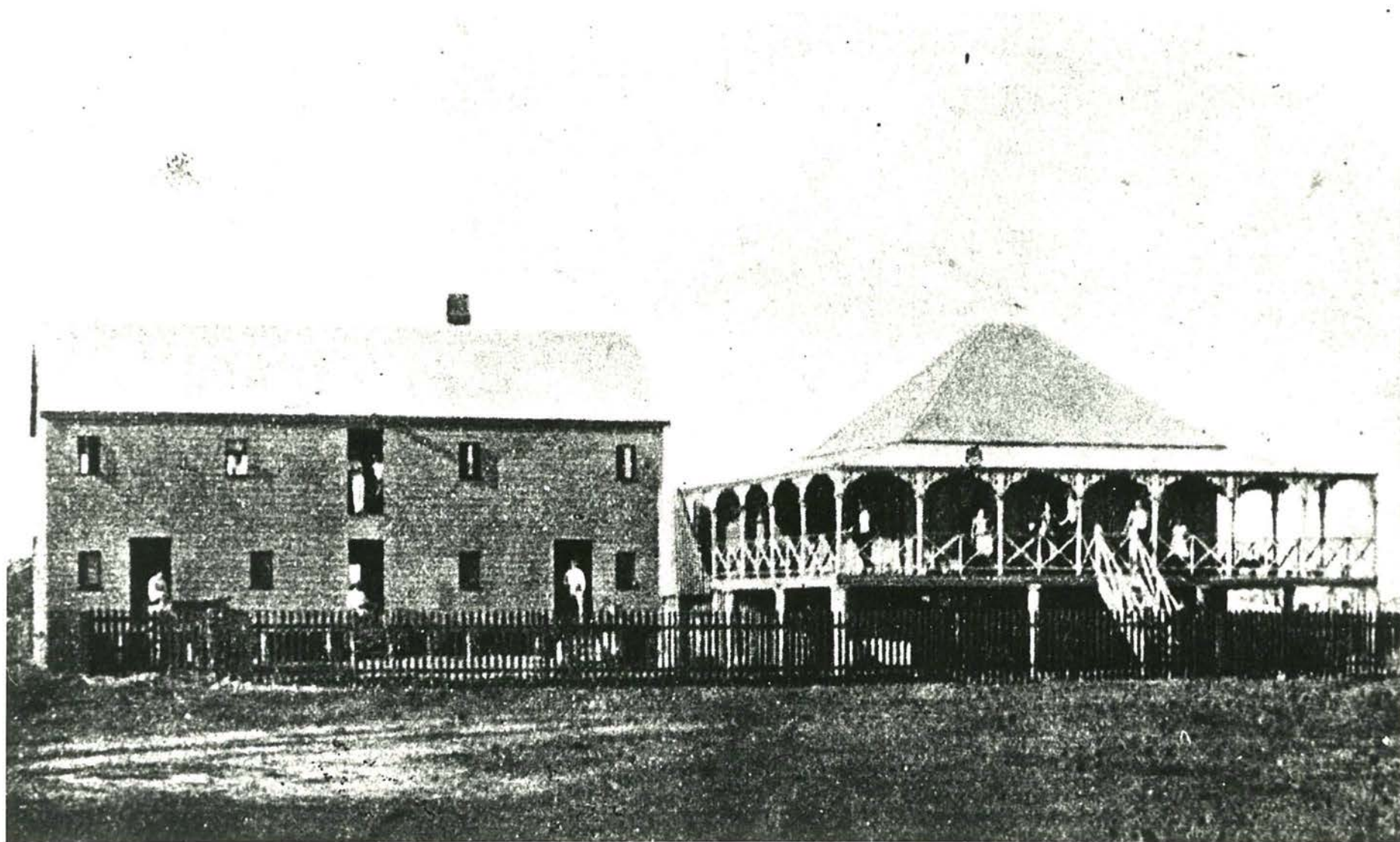
By the early 1880's high stumps were encountered quite commonly in many of the new North Queensland towns. Witham's house (c. 1882), and Robert Philp's house *Ellerslie* in Townsville were built on stumps about 2m high.¹²⁰ The manager's house at Homebush sugar mill, near Mackay, was built in 1883 on brick piers nearly 3m high.¹²¹ For a decade or more, such elevation was associated with the houses of the relatively well-to-do, but the motives of even the wealthy were sometimes expressed in terms of utility rather than prestige. Early in 1884 John Moffat described his Irvinebank house to a

¹¹⁸ Earl, "Handbook for Colonists", p. 34.

¹¹⁹ *Queenslander* 5 June 1875.

¹²⁰ See photograph in H.C. Perry, *Memoirs of the Hon. Sir Robert Philp*, Brisbane 1923, after p. 76. The date of construction is not certain, but the *Queenslander* 16 January 1886 mentions "Ellerslie, the residence of Mr. Philp."

¹²¹ Photograph in album 142/3649 p. 68, CSR records, Archives of Business and Labour, Australian National University. The date is established by a reference to the photograph in Edward Knox to J. Robertson 26 November 1883, 142/1227, *ibid*.



Witham's house and bakery, Townsville (c. 1881, destroyed 1903).

(Townsville City Library)



Philp's *Ellerslie*, Townsville.

(Perry, *Philp*, p. 76)



House at Homebush, 1883.

(CSR records, Australian National University)



Moffat's house, Irvinebank (1884).

(Cairns Historical Society)

northern areas: the earliest such highset plans extant are those for the Georgetown and Geraldton (Innisfail) post and telegraph offices, drawn in June 1884.¹²⁵

Thus contemporary documentary sources provide four explicit explanations for the adoption of high stumps in North Queensland in the 1870's and early 1880's: defence against malaria, improved ventilation, control of termites and increased space at low cost.¹²⁶ By the 1890's the elevated house was no longer exceptional, and rarely called for comment or explanation. Probably association of the practice with the early twentieth century has been assisted by the impression given by the catalogues and advertisements of the prefabricated house merchants, widely distributed at that time, which usually depict their houses on high stumps. But the advertising illustrations create a misleading impression of the influence of ready-to-erect houses. There was in fact no prescription for high stumps implied in the advertisements: the stumps were the one element of the house the suppliers did *not* provide.

House stumps, and Battens between stumps, are not included in our quotations. Stumps are usually more easily and cheaply procured locally. 127

While the literature of the early twentieth century building firms may have served to foster the public image of the elevated house, the actual houses supplied did nothing to increase its prevalence, for the elevation at which the prefabricated houses were erected was entirely a matter for the purchaser, and thus entirely dependent on personal taste and local custom.

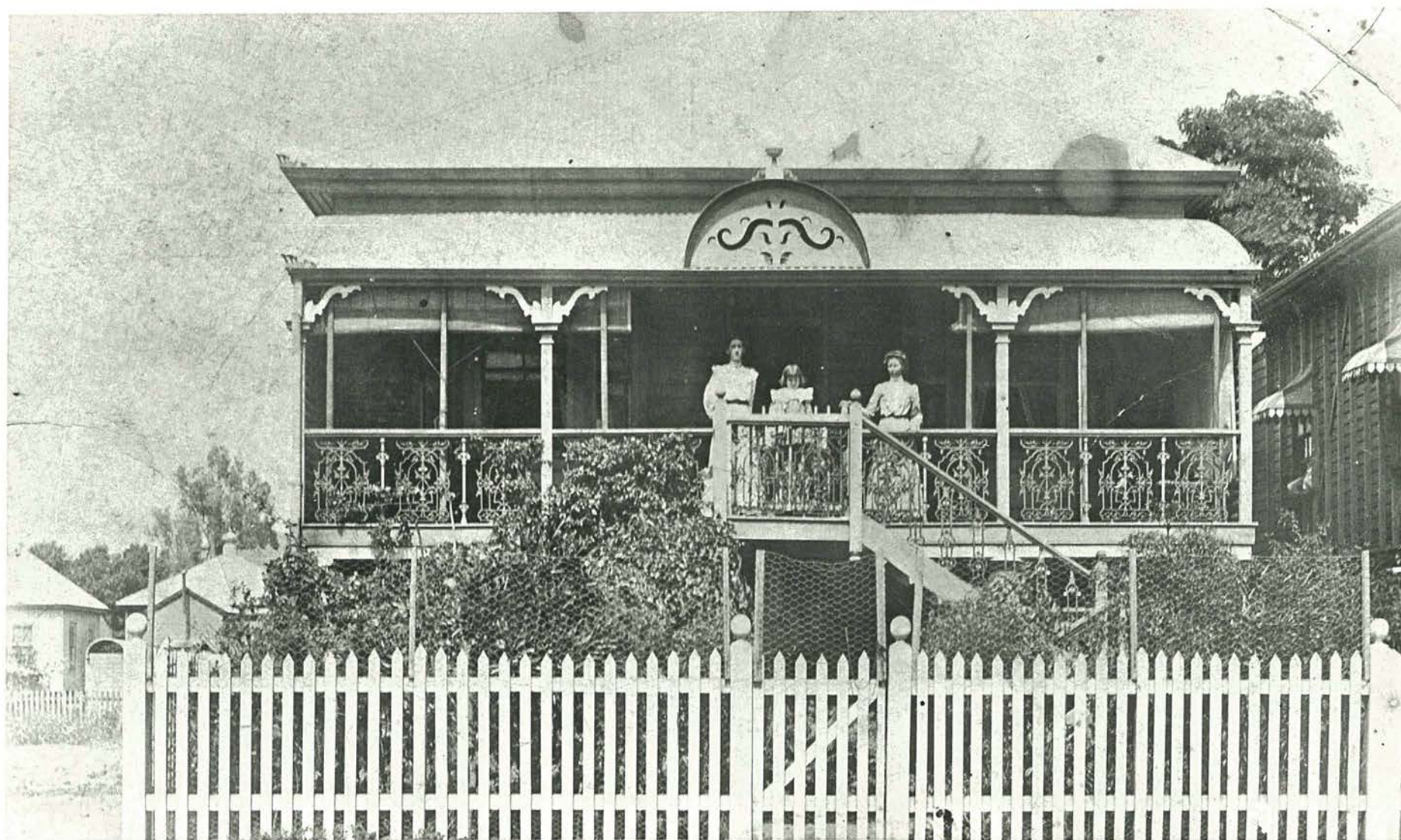
¹²⁵Held by Australia Post Historical Section, Brisbane.

¹²⁶See Boyd, *Australia's Home*, p. 196 for details of a 1944 survey of reasons for high stumps.

¹²⁷Campbell, *Redicut Homes*, p. 5.

There was probably at no time in the period under study a single house form which predominated throughout the region, but a small number of common forms are evident, and a loose chronology can be attempted. The period before 1880 was a time of experimentation and diversity, but two house forms came to prominence from the earliest years of settlement: the lowset two-roomed cottage with a hipped or gabled core roof and front and rear skillion verandahs; and the four-roomed pyramid roofed house with encircling verandahs, sometimes elevated. During the 1880's the more common urban four-roomed house with front and rear verandahs became standardised, and was built with little variation alongside the two-roomed cottage throughout the 1890's.

While all these forms persisted for decades into the twentieth century, greater diversity again became apparent shortly after 1900, manifested in asymmetrical house facades, simplified roof profiles, and greater variety in floor plans as service rooms previously segregated were accommodated in the core. But all these later changes only had their full impact after 1918.



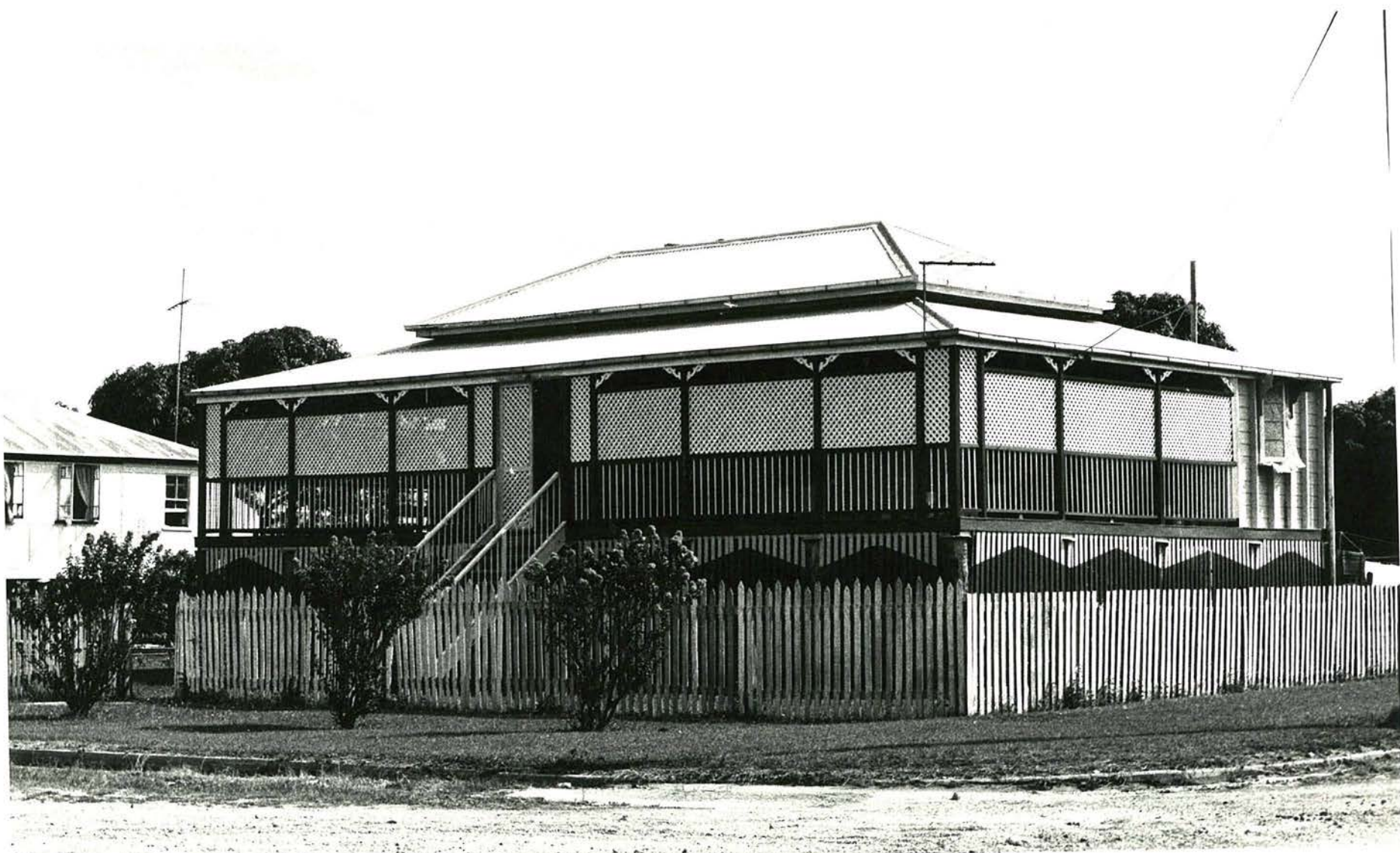
Elevated four-roomed house, Cairns, 1903.

(Mrs. B.K. Harris, Brisbane)



Elevated two-roomed cottage, Croydon (c. 1896).

(Jewell sisters, Cairns)



Elevated two-roomed cottage with encircling verandahs, Bowen.