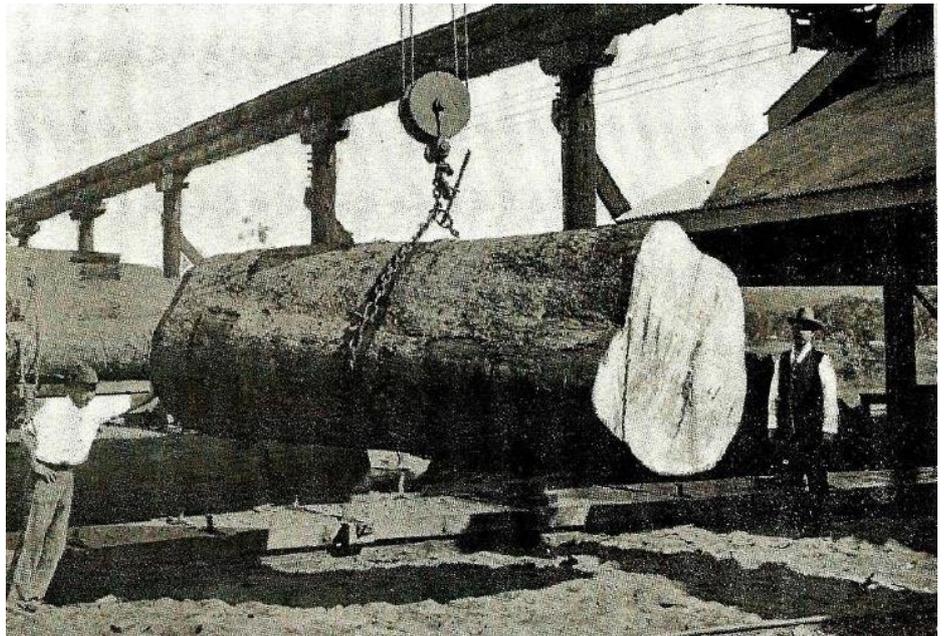

Australian Forest History Society

Newsletter No. 75
June 2018

*"... to advance historical understanding of human interactions with
Australian forest and woodland environments."*

Special Issue

Early Forestry and 100 Years of Timber Research in Queensland



A white beech log to be sawn at the Queensland Railways workshops, Ipswich.

From *The Merchantable Timbers of Queensland (Australia) With Special Reference to their
Uses for Railway Sleepers, Railway Carriage and Wagon Building, and Engineering Works.*

A Report by Philip Mac Mahon, Director, Government Botanic Gardens,
Brisbane, 1902.

Held by the John Oxley Library, State Library of Queensland, Brisbane.

Newsletter Editor: *Fintán Ó Laighin*
AFHS Address: PO Box 5128, KINGSTON ACT 2604
Web: www.foresthistory.org.au

Fintan.OLaighin@agriculture.gov.au

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NEXT ISSUE

The newsletter is generally published three times a year and the next issue - a "regular" one - should be out in August 2018.

Input is always welcome.

Contributions can be sent to
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EDITOR'S NOTE

This issue represents a first for the Australian Forest History Society - a special issue comprised largely of just one article (but with two short, related articles included at the end).

The focus of this issue arises from a couple of things mentioned in the April 2018 edition:

- An article on p9 mentioned that David Gough had prepared a paper on 100 years of forest product research in Queensland that was intended to be published later this year in the relaunched "Australia and New Zealand Forest Histories" series.
- An article on p18 reported briefly on the centenary, and the open day at the Queensland Government's Salisbury Research Facility in April 2018.

As David's article was written to mark the centenary, it's important that it be published in 2018. However, as the publication schedule for the relaunch of our forest histories series may spill over into 2019, we decided to publish his article as a special issue of the newsletter.

While the AFHS hasn't published a newsletter which is essentially a single article, we did release a special issue in September 2008 to celebrate 20 years of the society, featuring articles by Brett Stubbs, John Dargavel, Kevin Frawley, Stephen Legg, Jenny Mills, Sue Feary, Jane Lennon and Pete Steen. See

www.foresthistory.org.au/afhsnewsletter50.pdf.



The flyer from the open day at the Salisbury Research Facility, April 2018

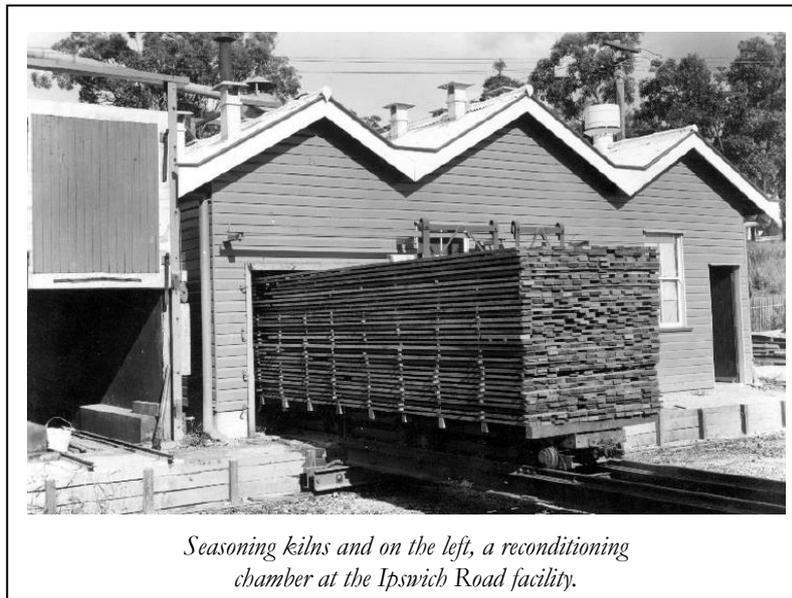
Thanks to Jolly's leadership, the seeds of forest science were at last being applied to the management of native forests and to the development of plantations. He also managed to achieve a gradual increase in staff numbers and it was during Jolly's term that the first mention was made of any timber research work being undertaken in the Forestry Branch. In 1917, he wrote to his district inspectors requesting that timber samples from their districts be forwarded for examination and evaluation. He also arranged for the bark of various species to be extracted for its tannin content by chemists in the Agriculture Department and then tested for use in leather tanning. During this time, two bulletins were prepared for general distribution on *The Structure and Identification of Queensland Timbers* and *Notes on the Principal Timbers of Queensland*.

In 1918 Jolly resigned from the Queensland Forestry Branch to become a member of the Forestry Commission of New South Wales. He was replaced by Edward Harold Fulcher Swain, who had joined the Forestry Branch in 1916 and it may have been Swain who undertook the timber research work commenced during Jolly's term. In any event, it is apparent both men recognised that good silvicultural practice could not be achieved in the native forest

estate, unless it was done in conjunction with better utilisation. In other words, the forests must no longer be "creamed" of the favoured species. Uses had to be found and markets developed for the lesser-known species and to achieve this, a forest products laboratory was required as a priority.

Swain announced the birth of timber research in Queensland, as a more comprehensive function within the Forestry Branch of the Lands Department in 1918, with the proposal for a Forest Products Bureau. The bureau was to have three sections: i) wood technology (timber properties and use classification); ii) forest products showrooms; and iii) industrial chemistry. However, in 1918, Australia was still involved in World War I and, from information gleaned from subsequent annual reports, it appears that not all of the aspirations for the bureau were realised at once. It appears that wood technology and a showroom in Adelaide Street, Brisbane received priority, as a way of bringing the properties and characteristics of the lesser-known, or lesser-favoured timbers, to the attention of architects, builders and the timber-using public. The 1921 annual

report mentions that considerable progress has been made in wood technology and that the showroom was being moved to the headquarters of the Forestry Branch in the Executive Building. Swain then recast the bureau as the Timber Investigations Branch in 1923, and clearly, he maintained a strong interest in the promotion and cataloguing of Queensland timbers himself, with the publication in 1928 of *The Timber and Forest Products of Queensland*. This publication provided information on the properties and uses of over 200 native timber species. While Swain is listed as the sole author of this extensive work of 500 pages, he provided particular acknowledgment to CJJ (Charles) Watson for, in Swain's words, "Watson's indefatigable labours on the collection of data and the preparation of the publication for the printers". Watson, who joined the branch in the early 1920s, became the Queensland expert in timber identification and wood technology, until his retirement in 1964.



Seasoning kilns and on the left, a reconditioning chamber at the Ipswich Road facility.

Jules Tardent, a World War I veteran, with forestry experience in north and south Queensland, is thought to have been appointed in charge of the experimental yard established at Newstead in inner Brisbane. Timber seasoning kilns for developing drying schedules were built at the yard in 1934, but they were destroyed in a fire in 1937. In 1938, new offices, a showroom

and laboratories for wood chemistry were occupied in the Railway Commissioner's building in George Street and in the same year, a new experimental yard, to replace the Newstead yard was opened at Ipswich Road, Woolloongabba. The yard was next to the present Princess Alexandra Hospital and was within a workshop area operated by the Department of Public Works. This new facility had a small sawmill, seasoning kilns, a reconditioning chamber and an experimental timber treatment vat to establish treatment schedules for hardwoods against timber borers. "Ipswich Road", as it was known, was operated until 1965, when the present yard at Evans Road, Salisbury was opened.

The Salisbury site was acquired for the Forestry Department soon after the end of World War II, by the Conservator of the day, Victor Grenning, also a Rhodes Scholar, who followed Swain in 1934 and served as Conservator until 1962. Salisbury was used to provide a stores depot to service the expansion of forestry camps throughout the state. Many new migrants had arrived from war-torn Europe as displaced persons and forestry was regarded as an excellent way to provide them with

useful employment. Some of them brought wives and families to the forestry camps and there are many stories about how they settled in, or didn't settle in, to their new lives working for Forestry in the Australian bush.

The Salisbury depot also had an unusual history during the war, because a large part of the suburb of Salisbury, on the northern side of Evans Road, was occupied as an army munitions area. Apparently, munitions storage tunnels were driven back into the hills and many buildings were erected

for various uses. Salisbury depot had two small brick buildings and anecdotal information is that one building, no longer in use, was a sergeants' mess, while the other, now used as offices, was where the final calibration and testing of Browning machine guns was undertaken. This building was lined with noise reducing acoustic board, since replaced, and inside each of the windows facing the current wood composites laboratory, there was a block of concrete on which the guns were mounted and fired into "rifle butts" situated at the far end of this building. Another interesting anecdote is that the small houses around the Salisbury depot were built to house the married American army personnel based in the area.

Apart from being a stores depot, a cold-store facility was built to store mainly hoop pine seed. The Forestry Department also operated a tree nursery from the depot selling trees to the public for amenity plantings. In addition, on the site where the wood composites laboratory is now located, was a maintenance workshop for departmental vehicles and earth moving machinery.

The research sawmill within Salisbury depot was completed in 1965, replacing the earlier sawmill and drying kilns built at Ipswich Road. This new mill had a "Gibson" log carriage, said to be the first log carriage manufactured by the iconic sawmilling equipment manufacturer, Gibson & Son. The carriage was

combined with a small break-down band mill, of Japanese origin, salvaged from New Guinea after the war. Other equipment included a three-man circular saw bench, an old "Sagar", belt-driven, four-side planing machine, an industrial size drying kiln and a steam reconditioning chamber, both heated by a steam boiler that was fuelled on wood chips and shavings. In collaboration with the CSIRO Division of Forest Products, the first ever high temperature drying trials in Australia (up to 120 °C), were undertaken in this kiln in

1969. This drying approach and its technology, have since been developed further and high temperature drying has been adopted extensively by industry around the world to overcome the challenges of drying plantation-grown conifers.

In 1967, when National Parks was within the Forestry Department, Salisbury was home for several National Parks scientists. It was also home for the Forestry entomologists and pathologists before they went to new laboratories at Indooroopilly in 1968. In addition, the Wood Chemistry and Preservation section of the Forest Products Research Branch occupied the laboratory wing at Salisbury from 1981, before it too moved to the new Forestry

Building at Indooroopilly, opened in 1986. Prior to 1981, Wood Chemistry and Preservation, and also the Wood Quality section, occupied laboratories at 68 George Street, on the site where the Public Works Department building stood until 2017 when it was demolished. Indeed, it was not until the construction of the Indooroopilly facility that all sections of the Forest Research Branch were housed together under the one roof, in permanent, purpose-built accommodation, with the Salisbury depot providing ancillary services. Unfortunately, this "heyday" did not last very long. With a change of government in 1989, the Forestry Department ceased to exist and its functions were



Buildings from World War II at Salisbury Depot. The building on the left was used for testing and calibrating machine guns and the one on the right was the sergeants' mess.



The Forestry Building at Indooroopilly, at the time of its completion in 1986, and occupied until 2010 before the move to the EcoSciences Building at Dutton Park.

divided between several state departments. Most of the old department, including research, was absorbed into the Department of Primary Industries (DPI) as DPI-Forestry. During the following decade, the Timber Research and Forest Research Branches were merged into the Queensland Forestry Research Institute (QFRI) and subsequently transferred within DPI from the DPI-Forestry Division, to be aligned with DPI's agriculturally-related research institutes. QFRI and another institute, the Centre for Food Technology, were set up under a different financial model from the other institutes in a very ambitious attempt to make them self-funding. Receiving little base funding (i.e. from Queensland Treasury), external income was expected to cover all costs, including a share of departmental overheads. QFRI made a determined, energetic attempt to operate under this model, but when the department's plantation operating arm (first as DPI-Forestry, then as Forestry Plantations Queensland) drastically reduced their research expenditure in preparation for being sold to the private sector, a major downsizing of QFRI was inevitable.

In 2004, the Queensland Horticulture Institute and the remainder of QFRI became part of the new Horticulture and Forestry Science Branch. In acknowledgment of the unviability of the "full cost recovery" model, the amount of base funds allocated to Forestry Science was doubled at that time to more than \$3 million per annum, where it remains today.

Despite the turbulence that existed towards the end of the QFRI model, support for Forestry Science remained strong from the forest and timber industries and from within government. In addition to the increase in government funding for Forestry Science, a program of capital investment into the Salisbury depot, now called the Salisbury Research Facility, started from about 2004 under the supervision of Facility Manager, Dr Robert McGavin. This resulted in a series of refurbishments across the facility's buildings. Several new buildings were constructed and many new items of equipment were purchased to ensure the group's capacity and outputs were relevant and aligned with industry's needs. This included a new sawing system, replacing the original bandsaw, carriage and bench saw, new experimental drying kilns including new vacuum technology, upgraded timber preservation equipment and a range of secondary wood processing items. In 2009, the Wood Composites Facility was officially opened. This provided the Forestry Science group with unprecedented capacity to develop new veneer processing technologies and new adhesives systems which, along with the development of a range of new engineered wood products, made it possible to focus on value-adding opportunities for the emerging hardwood plantation resources.

In 2010, when a new EcoSciences Precinct at Dutton Park, Brisbane was opened, Indooroopilly was one of the many sites vacated and disposed of. It is now used by the University of Queensland. The EcoSciences Precinct is now the central site for the Horticulture and Forestry Science Branch. Branch management and administration, and higher-technology laboratories are located there,

together with nine forestry scientists. All timber research is now centred at Salisbury with total staff numbering around 20.

The branch has had many different titles since it was established in 1918 as the Forest Products Bureau. It became the Timber Investigations Branch in 1923 and the Forest Products Research Branch soon after World War II. This was followed by the Timber Research and Extension Branch, the Timber Utilisation Branch, the Timber Research Branch and it is now Forest Products Innovations. This could be considered an excess of name changes, but it does reflect to some extent the research emphasis as time transpired.

- Early on the chief activity was to understand the wood properties of the various lesser-known species, that were not highly sought after: to develop sapwood immunisation regimes against the lyctus (powder post) beetle, to determine appropriate seasoning schedules for value-added sawn products, to develop and deliver appropriate end-use advice and finally, to promote their use to consumers. Apart from opening showrooms in Brisbane, timber promotion involved providing displays of Queensland timbers and furniture, of both the favoured and the lesser-known species at the agricultural shows in Brisbane, Sydney and Melbourne, and to shows in the provincial centres of Queensland. Understanding wood properties has already been alluded to with mention of Philip Mac Mahon's 1905 publication of *The Merchantable Timbers of Queensland*, followed by Swain's 1928 publication, *The Timber and Forest Products of Queensland*. However, the subject of wood properties has been a continuing theme in the branch, as further information was developed regarding natural durability, strength grouping, stress grading, seasoning and use categories. The first update was in 1964, when CJJ Watson published Pamphlet No. 5, *Queensland Building Timbers and Specifications for their Use*. The second update was in 1991 when WJ Smith, WT Kynaston, ML Cause and JG Grimmer published Technical Pamphlet No. 1, *Building Timbers, Properties and Recommendations for their Use in Queensland*. Now of course, this information has been digitised and is web-based, so that it can be easily added to as necessary and is readily available to all as *QTimber* at <https://qtimber.daf.qld.gov.au>.

- During World War II, considerable work was done on charcoal production and the adaptation of motor vehicles to use producer gas, which is obtained by burning charcoal, as an alternative fuel. Producer gas equipment was either mounted on a platform at the back of the vehicle or carried in a separate trailer.

- Post World War II, there was an emphasis on plywood technology and the preservative treatment of transmission poles, bridge girders and sleepers using copper-chrome-arsenate (CCA) and creosote. In those days, when Queensland produced the bulk of Australia's plywood, the industry was reliant on hoop pine, kauri pine and rainforest species, and the plywood factories were located mainly in Brisbane, Cairns and the Atherton Tableland.

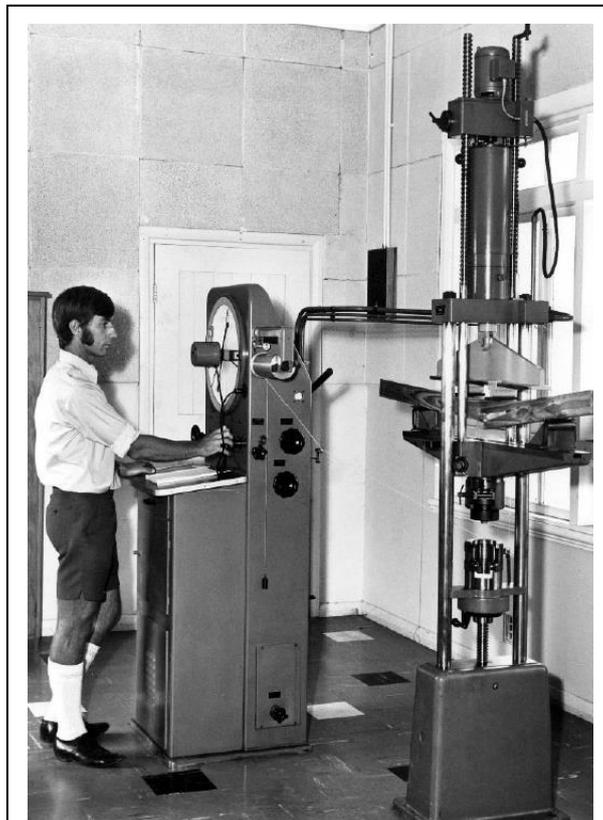
- With the expansion of the softwood plantation resource, the importance of having desirable wood quality parameters in the planted trees was given high priority by Queensland Forestry and appropriate wood structure investigations were undertaken. The results from these studies led by Wallace (Wally) Smith and later by Dr Kevin Harding were incorporated in the tree breeding programs and were of significant benefit to the success of current forest plantation resources.

- Commencing in 1969, the pioneering development work undertaken in the kiln at Salisbury, provided a critical solution to removing the barriers for industry, allowing the establishment of a huge market, supplying house framing, in particular. The most successful drying regime - 120 °C with timber stacks being placed under a heavy concrete block restraint - was able to dry straight, stable 50 mm thick house framing in 24 hours. Over the years these conditions have been extended by further research, to dry at around 200 °C in four hours.

- The xylarium or wood collection, has been an enduring and integral feature of the branch since the 1920s. It contains 12,682 timber samples from about 200 genera and 4703 microscope slides from 108 genera. Jolly and Swain were responsible for organising the early collection of wood samples and CJJ Watson, who joined the service in about 1922 and retired in 1964, was responsible for its establishment and continuing curation. Included in the collection are: i) 382 short billets that were collected by William Pettigrew, an early Brisbane sawmiller; ii) 9157 samples of Australian timbers; and iii) 3143 samples from other countries. The microscope slides date from the late 1930s, with many being prepared by the then New South Wales Forestry Commission and CSIRO. The collection is housed at Salisbury and is curated by wood scientist and timber identification expert, Gary Hopewell. It is often used to identify timber species for hobbyists, architects, etc, and to identify species involved in historical and forensic investigations.

- Strength testing of the newly emerging plantation softwood timber was also necessary and a strength testing laboratory was established at Salisbury in 1968. This facility was initially for testing framing size timbers, but in subsequent years, additional equipment for mechanical properties testing, has been acquired, or

developed to test almost any timber product, including sawn and laminated structural components, power poles and even bridge girders. Much of the data from strength testing work has been used in developing Australian Timber Standards. Queensland, along with the timber industry, CSIRO and other state laboratories, was always active in contributing to the development of a range of national, timber-based grading standards and building codes.



The author assesses strength properties of Queensland-grown exotic softwood timber on an Amsler universal testing machine at Salisbury, 1972. Note the acoustic wall treatment, a relic of the WWII use of this building for ammunition and armament testing.

- Graded timber recovery studies on various parcels of logs, have been undertaken over the years in both the Ipswich Road and Salisbury sawmills, with a few of the larger studies being done in industry mills. The species involved included plantation-grown kauri, slash pine, hoop pine, southern silky oak and flooded gum, and native forest brush box and blackbutt. The studies were generally commissioned by the Harvesting and Marketing Branch of Forestry, to provide data for log pricing determinations, or they were done to evaluate the progress and suitability of certain species being grown in plantations. The new veneer lathe at Salisbury is also used for similar evaluations, albeit on peeled product.

- Chemistry and wood preservation researchers were heavily involved in global efforts to develop

viable alternatives to CCA wood preservative, following concerns about the effects of chromate and arsenate on the environment and human health. Most timber treatment in Queensland now uses more benign protectants, while CCA is used for high hazard applications, or for industrial timber where human contact is minimal. In addition to optimising impregnation treatment process schedules for Australian timbers and generating proof of longevity data under Queensland's challenging tropical conditions, the chemists also played a pivotal global role in the development and proving of analytical methods for the newer timber preservative components, needed by the industry for their quality control of the treatment processes.

- An important part of branch activity over the latter part of the last century, was the administration of two items of state legislation: the *Timber Users' Protection Act 1949*, which was replaced by the *Timber Utilisation and Marketing Act 1987*, and the *Diseases in Timber Act 1975*.

The first two mentioned were intended to ensure that:
 i) lyctid susceptible timber was adequately treated;
 ii) preservative treated timber was treated to the level required for its particular stated purpose; and
 iii) seasoned timber was dried to a moisture content required for particular uses. The *Timber Utilisation and Marketing Act* was repealed in 2010, mainly because there was very little native timber being cut from native forests any longer and it was considered that the remaining industry had reached an acceptable level of responsibility. The main reason for the *Diseases in Timber Act 1975* (since repealed, its

provisions now covered under the *Biosecurity Act 2014*) was so that the government could take measures to try to eradicate the West Indian dry-wood termite, introduced inadvertently to Brisbane from the east coast of the USA during World War II. Many houses and buildings in Brisbane, Maryborough, Rockhampton and Townsville, were found to be infested and treatment involved covering each of these buildings in heavy plastic sheeting and pumping insecticidal methyl bromide gas (changed to sulphuryl fluoride gas in 2007) under the sheeting. Two notable buildings treated in Brisbane were the State Parliament House and the Treasury Building, now the Treasury Casino. The rate of new

infestations has reduced from the early days of discovery of this pest in the 1970s and '80s, but its containment is still warranted. As an example of its continuing presence, 17 infestations were fumigated in 2017.

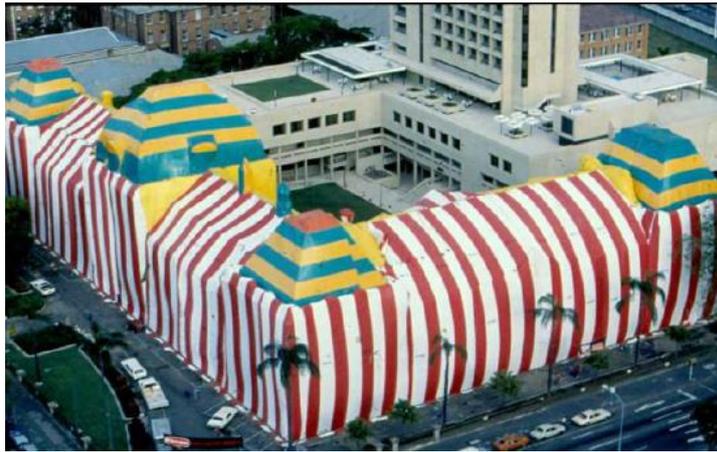
In less than a century, forestry and timber utilisation in Queensland, as in most of Australia, has changed considerably, with a high proportion of native forests no longer managed for timber production. Except for a small amount of eucalypt and cypress forest, most of Queensland's timber resource is from conifer plantations, with the aim being to establish more hardwood

plantations in the future. While the softwood sector has become well established, with major obstacles being overcome, support for the hardwood plantation program is still necessary, especially with the development of appropriate processing systems and profitable products. Having this in mind, the research emphasis at the Salisbury Research Facility is now on rotary veneer processing using relatively new spindleless lathe technology. The spindleless lathe has proven to be very effective at maximising production from small, fast-grown plantation hardwood logs and the resulting

veneer is being re-constituted to make conventional plywood as well as a variety of other wood-based, laminated and composite products. It is perhaps fitting that the important place once held by plywood manufacture in Queensland, and the work done by the branch in those days to assist the industry, is again being revived, under the leadership of Dr Robert McGavin, even though it is on plantation-grown eucalypts, using a spindleless lathe and the latest in sophisticated glues and composite product manufacturing techniques.

Over the years, many assorted scientists, foresters, chemists, biometricians, technicians and engineers have served in the branch and notable among them are Edward Macksie, William Gottstein,

Dr Vilnis (Bill) Balodis, Dr Keith Cokley, Wallace Smith, Jack Norton, Chris Bragg, Myron Cause, Dr Kevin Harding, Andrew McNaught and Dr Graeme Palmer. Officers-in-Charge of the branch were Cecil Ellis, before and after World War II, followed by Stanley Jennings (1957-63) who, with the full support of Conservator Grenning, was instrumental in having the Salisbury Research Facility developed. Since Jennings, the O/Cs have been Thomas Ryley, James Smart, Alan Gardner, James Bardsley, David Gough, Amanda Yeates, Dr Michael Kennedy and the incumbent, Dr Henri Bailleres.



1979, the Queensland Parliament House covered in tarpaulins, in preparation for fumigation to eradicate extensive infestations of the introduced West Indian dry-wood termite.



This new spindleless lathe in operation at Salisbury, can produce veneer sheets 1.3 m wide, from 4.0 to 0.5 mm thick, down to a 40 mm core.

Under Dr Bailleres, Forest Products Innovations (FPI), the current name for Timber Research in Queensland, together with the Salisbury Research Facility, provides the only dedicated timber research program still operating in Australia. At one stage it was ranked third, behind the CSIRO Division of Forest Products (DFP) based in Melbourne and the Wood Technology and Forest Research Division (WT&FRD) of the NSW Forestry Commission based in Sydney. DFP had about 250 staff in the late 1960s, when their building was on the site now occupied by the Crown Casino. However, in 1971, DFP was disbanded as a separate division. Staff were transferred to other divisions depending on their specialty, and a gradual attrition of expertise began in about 1972. The laboratories were moved to Highett and Clayton and, in general, those staff who left were not replaced. In 1988, many of the remaining functions of the old DFP were merged with forestry research into a new Division of Forestry and Forest Products, which created some optimism. However, the executive of CSIRO continued with a demerger, a re-merger and annual budget reductions, and all timber related work was finally wound up in 2007.

The WT&FRD was in second place, and in the 1980s had about 40 staff engaged in research covering wood science, conversion, seasoning, preservation, utilisation and timber engineering. As with CSIRO, however, a steady decline began soon after that, and their few remaining programs were completed in 2006, except for some wood products, life-cycle analysis work which continued until 2011.

Timber Research in Queensland reached its highest staffing level of 35 in the mid-1990s, at which time the practice of obtaining external funding, where appropriate, had already begun. However, with declining grower and processor co-investment, the program has been scaled back considerably since then, to its current level of about 20 scientists and technicians permanently

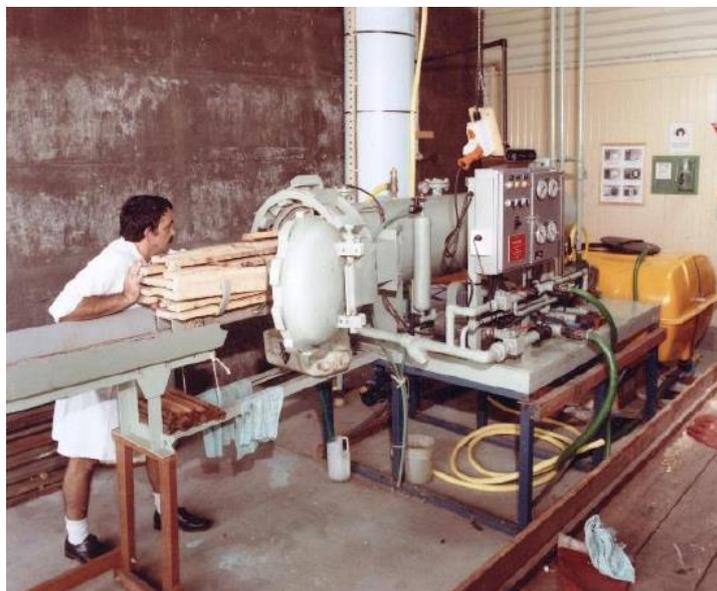
based at Salisbury. The current program of work is about 50 per cent base funded, with significant funding also coming from: i) the Australian Centre for International Agricultural Research (ACIAR); ii) directly from industry; and iii) minor amounts from Forest and Wood Products Australia, raised from industry R&D levies, matched by the federal government. While the "growing" side of Forestry Science attracts a lower proportion of external funding, FPI compares favourably with the other science streams within Agri-Science Queensland, which generally obtains about half of its funding externally.

FPI, through the Queensland Department of Agriculture and Fisheries, has obtained significant benefit from co-investment in external collaborative research programs. For example, part of the Forestry Science budget is used to subscribe to the Wood Based Composites Centre in the USA,

giving FPI researchers access to the results of fundamental and applied research into wood adhesives, undertaken by universities and industry in North America. A further commitment has also helped to establish the Centre for Future Timber Structures (CFTS) at the University of Queensland (UQ), ensuring that UQ civil engineers develop a timber focus and are



Michael Kennedy in the George Street laboratory, about 1978, developing an analytical method for the antisapstain fungicide pentachlorophenol using the department's first liquid chromatograph.



Jack Norton developing treatment schedules for Queensland timbers, using the pilot scale vacuum pressure impregnation (VPI) treatment plant at Salisbury, about 1984.

working with FPI and industry to make high-rise timber buildings a reality in Australia. UQ matched the department's \$1 million contribution and the total amount was used to attract substantial additional funding from the Australian Research Council for this important work. The department, as a founding partner, has significant input into setting the CFTS's work program. This allows FPI researchers to work in centre-funded projects with UQ engineering researchers, to solve the practical impediments to the wider use of massive timber panels and other timber components being used in these "plyscrapers" of the future.

As well as this vital UQ connection, the Salisbury Research Facility has evolved as a high-level hub for various aspects of timber research, with the key wood scientists being on staff and other scientists, engineers and mathematicians being co-opted for particular projects, depending on their special fields. Apart from the UQ connection, other partnerships are in place with universities such as Griffith University, Queensland University of Technology, University of the Sunshine Coast and Melbourne University.

The principal focus at Salisbury is on the application of innovative processing for the maximum use of small plantation grown logs, both hardwood and softwood, and the development of new engineered products from the resulting veneer and sawn timber. Without doubt, the current timber research program in Queensland, remains as relevant to the needs of industry and the community, as it was when the first timber research projects were undertaken 100 years ago.

Acknowledgements

The outstanding work done by Peter Holzworth in producing his historical publications on timber-getting and forestry in Queensland is gratefully acknowledged:

Monarchs of the Woods, 1999.

Jacky Howes and Crown Hammers, 2010.

Dog on a Log, 2012.

A Tribute to Edward Harold Fulcher Swain, 2014.

Notable Men of the Forests, 2016

Extensive use has been made of these publications, with the author's permission, to provide an introduction to this note. Their reading is certainly recommended to all those with an interest in forestry in Queensland.

Others who have been of great assistance with information are Dr Henri Bailleres, Dr Robert McGavin, Dr Ian Bevege, Gary Hopewell, Jock Kennedy, John Huth, Wally Smith, Dr Jugo Ilic, Dr Robert Eldridge and in particular Dr Michael Kennedy, for his encouragement, information, editing, and for parts of this story. Dr Kennedy joined the Department of Forestry in 1968, saw most of his service as a chemist in Timber Research, led the unit for several years and retired in 2018, as General Manager of the Horticulture and Forestry Science Branch of the Queensland Department of Agriculture and Fisheries. It is noteworthy that he has served Timber Research in Queensland for 50 years, half of the time it has been in existence. Finally, grateful thanks are expressed to the AFHS for publishing this article and to the ever patient editor of the newsletter, Fintán Ó Laighin.



Pictured in front of the first spindleless lathe to be installed at Salisbury are from left, Dr Michael Kennedy, Dr Henri Bailleres, Dr Robert McGavin and Eric Littee.

AUSTRALIAN DICTIONARY OF BIOGRAPHY:

JOLLY, NORMAN WILLIAM (1882–1954)

By NB Lewis³

Norman William Jolly (1882-1954), forester, was born on 5 August 1882 at Mintaro, South Australia, son of Henry Dickson Jolly, storekeeper, and his wife Annie, née Lathlean. Educated at Mintaro State School, Prince Alfred College, Adelaide, (where he was dux) and the University of Adelaide (B.Sc., 1901), he taught at Townsville Grammar School, Queensland, before proceeding to Balliol College, Oxford, in 1904 as South Australia's first Rhodes Scholar. His sporting ability matched his intellectual brilliance: he played A-grade cricket, rowed in the Adelaide university eight and three times represented South Australia in Australian Rules football. After graduating B.A. from Oxford with a first in natural science (1907) he studied under (Sir) William Schlich, and briefly in Europe, to obtain the Oxford diploma of forestry. He joined the Indian Forest Service in Burma in 1907 but returned to Australia in 1909 to teach at Geelong Church of England Grammar School.

Next year, as instructor in forestry for the South Australian Department of Woods and Forests, Jolly founded the first course in higher forestry training in Australia; he was also assistant conservator of forests in 1911. On 18 August at Parkside Methodist Church he married a widow, Mary Clyatt Gellert, née Colebatch, and that month moved to Queensland as director of forests, remaining there until 1918 when he became one of the forestry commissioners in New South Wales. An appointment as the first professor of forestry at the University of Adelaide followed in 1925. However, when that school was closed after the formation of the Australian Forestry School by the Commonwealth government in 1926, Jolly resigned to return to New South Wales as sole forestry commissioner. He retired in October 1933 with impaired health after continual conflicts with the government over policy, and returned to Adelaide. In 1937 Jolly undertook consultancy work with New Zealand Perpetual Forests Ltd and in 1939 he became forestry consultant to the South Australian Woods and Forests Department and a member of the South Australian Forestry Board. He was elected an honorary member of the Institute of Foresters of Australia in 1953.

Reticent about his personal achievements, Jolly commanded the enduring respect of students and subordinates. He is credited with the establishment of proper forest management in Queensland and his 'Silvicultural notes on forest trees in Queensland' and 'The structure and identification of Queensland woods', published by the Public Lands Department in 1917, were pioneering technical forestry publications in that State. The authorship of the first manual of Australian silviculture, published by the Forest Commission of New South Wales in 1920, is also attributed to Jolly. Yet he was a reluctant author and his sixteen papers do not fully

indicate his contribution to Australian forestry. Regrettably he restricted publication of his adaptation to South Australian conditions of German mensuration work on the volume line theory to internal manuscript only, although that work was the corner-stone of South Australia's subsequent high international standing in the forecasting and management of the yield from plantation forests.

Jolly's outstanding characteristic was his professional integrity; in all matters of administrative judgement he was first and foremost a forester. This led, on the one hand, to implementation of sound forestry practice in both *Eucalyptus* forests and *Pinus* plantations, and, on the other, to some difficulty in compromising over conjoint matters.

Jolly died in Adelaide of pyelonephritis on 18 May 1954 and was cremated; he was survived by a daughter. In 1954 the Institute of Foresters established the N. W. Jolly medal as its highest award and in 1957 a cairn to his memory was unveiled in a 180 ft (55 m) high stand of virgin *Eucalyptus microcorys* (tallow wood) in Moonpar State Forest, near Dorrigo, New South Wales.

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Related Thematic Essay

- John Dargavel, [Australia's Foresters](#)

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- [Adams, Arthur John Sorby](#) (pupil)
- [Bailey, Frederick Manson](#) (pupil)
- [Crane, Alexander Herbert](#) (pupil)

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**AUSTRALIAN DICTIONARY OF BIOGRAPHY:
 SWAIN, EDWARD HAROLD (1883–1970)**

By *LT Carron*

Edward Harold Fulcher Swain (1883–1970), forester, was born on 6 April 1883 at Glebe, Sydney, third child of English-born Edward Plant Swain, flour merchant, and his Tasmanian wife Annie Maria, née Dodd. Educated at Parramatta South Public and Fort Street Model schools, he was appointed the first cadet forester in the forestry branch, Department of Lands, on 18 June 1900. He attended the University of Sydney in 1901, Sydney Technical College in 1902 and studied eucalypts under J. H. Maiden at the National Herbarium of New South Wales in 1904. During a series of country appointments, mainly on the north coast, he undertook pioneering forest surveys and resource assessments before becoming assistant district forester at Fernmount in 1910. Next year he published *Reafforestation and the Hardwood Supply in Relation to North Coast Forests* and was appointed district forester for the north-west, based at Narrabri. He visited New Zealand in 1912.

On 28 April 1915 Swain married Margaret Milroy Hewetson with Presbyterian forms at St Andrew's Church, Glen Innes. Taking long service leave, he completed a six-month forestry course at the University of Montana, United States of America, and wrote *An Australian Study of American Forestry* (1918). He moved to Queensland in 1916 as district forest inspector at Gympie and Nanango. Having succeeded N. W. Jolly as director of forests in 1918, he became chairman of the Provisional Forestry Board in 1924. In this post he created a professional staff training scheme and combined the national parks with the State forests under the board's supervision. Believing that silviculture—the pivot of forestry—depended on effective, economic harvesting and utilization, he established a forest products division to investigate the properties and uses of local woods; the resulting *Timbers and Forest Products of Queensland* (1928) became a standard reference work.

Amid conflict over the allocation of land, a royal commission was appointed in 1931 to inquire into the development of North Queensland. Mounting strong opposition to settlement of the rainforests, Swain was accused by the commission of making 'false statements on oath', but was subsequently exonerated by the auditor-general. In September 1932 the Provisional Forestry Board was abolished by the new Labor government and his services terminated.

Setting up as a private consultant, Swain conducted several inquiries, including a comprehensive survey in 1934 for the South Australian government and Australian Paper Manufacturers Ltd on various aspects of a long-standing and publicly sensitive proposal to thin the State's radiata pine plantations for wood pulp. His voluminous report received close consideration by the 1935 royal commission on coniferous afforestation, although many of his findings and recommendations were disputed by other foresters.

Appointed sole commissioner for forestry in New South Wales in August 1935, Swain created a professional staff training scheme and a division of wood technology which became the commission's major centre for research. His conviction of the need for the mutual understanding and co-operation of foresters, sawmillers and timber merchants had prompted his fervent sponsorship of equitable royalty (stumpage) systems, and led him to found the Eastern States (Australian) Timber Industry Stabilisation conferences in 1943. In 1947 he attended the British Empire Forestry Conference in London. Following continual disagreements involving the government and the Public Service Board, he retired in April 1948. He was employed by the United Nations as forestry adviser to the Emperor of Ethiopia in 1950–55 and awarded the N. W. Jolly medal by the Institute of Foresters of Australia in 1963 for his contributions to Australian forestry.

Although at odds on occasions with his more academically qualified contemporaries, Swain had an extensive self-taught knowledge of forests and forestry, an enormous capacity for work and a strong rapport with the bush and its people. Confident in his abilities and judgements, he was impatient with those whose ideas differed from his own. As a writer, he was prodigious and colourful: his work ranged from tender, lyrical poetry to impassioned speeches and polemics on the value of forests and forestry. He was also a confirmed diarist. He had an interest in climatology, especially in the value of homoclimatic indexes for tree introduction, and belonged to the Royal societies of New South Wales and Queensland. Golf, landscape gardening and literature provided his recreation. In retirement he lived in the Blue Mountains until moving to Brisbane where he died at Indooroopilly on 3 July 1970. He was survived by his son and daughter.

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