E. E. Kurth

Reflections on an eminent Person



INTRODUCTION

NANGANA

How it all began

It was a small, five line, one column notice in the Saturday Age "Property For Sale" section that started it, our retirement plans and the serendipitous introduction to the name Kurth. Of course, we did not know it then, but that association over the next few years shaped our lifestyle and gave meaning to the rest of our lives.

We fell in love with the 18 acre bush-block at first sight. On a four wheel drive Landrover the Hoddles Creek Estate Agent apologised for the rough access to the property. He explained that there was a reserve for a proper street somewhere on the subdivision plan, but this had never been built. The only way to get there at the moment was by those overgrown fire lanes.

The land had everything we hoped for: an undulating 10 acre open pad-dock, dense eucalyptus bushland with huge weathered quartz boulders, sloping down to a bubbling creek. What more could you ask for! We did not haggle on the price and bought it on the spot.

The creek was the Tomahawk Creek; a pristine waterway coming from Tomahawk Gap near Mount Beenak, it joins the Shepherds Creek in Yellingbo and, via the Woori Yallock Creek then flows into Melbourne's major waterway, the Yarra River. The Tomahawk Creek not only defined the southern border of our property, it at the same time formed the southern limit of the Yarra Ranges Shire. On the other side of the creek is the Shire of Cardinia.

So, we were the southern-most outpost of the Shire, and as such frowned upon by the powers that be for stretching the Shire's resources to the limit. I remember one day explaining to the Shire Engineer the poor condition of West Beenak Road and the lack of regular garbage collection out our way, and the laconic answer was:

> If you wanted service the same as people in the village have, you should have bought a place in Yarra Junction, not out here!

Our Shire Offices are in Yarra Junction.





A timely reminder of our isolated and precarious position was the Ash Wednesday Bushfires in 1983. The devastation all around us was heart-breaking. The loss of native fauna and flora took years to recover.

But recover it did, and so did our spirit. There were even some comic aspects to it as well. We were at that time in the process of applying for a Building Permit, and to do that you need an accredited plan of your property. Equipped with an axe and machetes and a surveyor friend we tried to hack our way through the dense, fifty year old undergrowth along the boundaries. It it seemed a hopeless task without big machineries. Along came Ash Wednesday, and two days later, walking over the still smouldering ashes we had a clear line of sight from end to end!

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Within two years our dream home, an energy efficient, earth-covered house built into the slope of the hill was completed and we started to explore our surroundings.

Our Southern border was State Forest in the form of Kurth Kiln Park, a haphazard, 3500ha collection of natural bushland pieces named after an earlier pioneer who produced charcoal during WWII as a substitute fuel for the motor industry. A monumental red brick structure and several wooden huts still standing as a silent reminders of a turbulent past.

A faded old photograph of the charcoal kiln in operation pinned to the shed door, with the barest of background in a few lines of text became a challenge to us to find out more about the Dr. Ernest Edgar Kurth and the significance of these silent sentinels in the Australian bush.

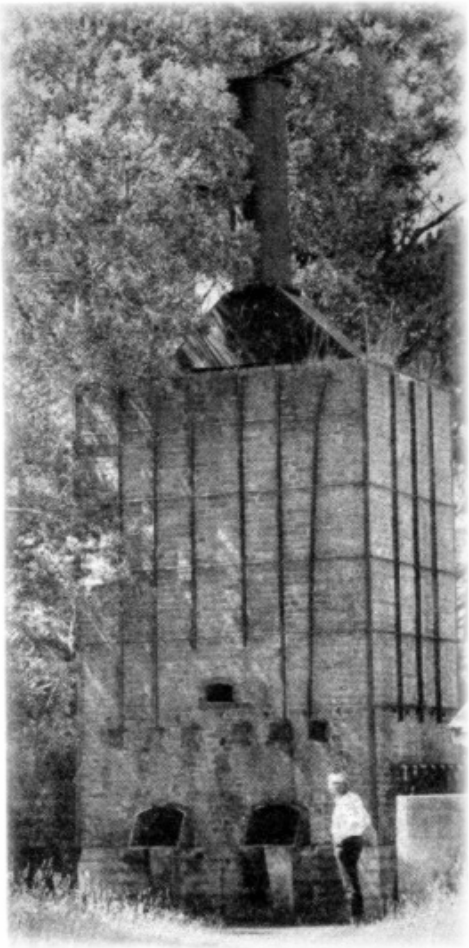
Over the next few years the following facts gradually unfolded:

Kurth Kiln Park is named after Ernest Edgar Kurth, a Doctor of Chemistry at the time at the University of Hobart, who in 1940 was investigating alternate sources of motor fuel (such as shale and wood) for the eventuality that Australia could become cut off from the supply of overseas petrol.

Kurth soon realised that mineral shale oil, while theoretically possible, would of needs be a huge project, a complete new industry, needing massive funding (see page 24), whereas charcoal production was already well established and the principle of wood-gas generation for motor vehicles universally known. So he concentrated his efforts on ways to produce charcoal in the quantities required for such an application.

He came up with a revolutionary new design for a continuous operation charcoal kiln, a vertical structure where new wood was added at the top and charcoal was extracted at the bottom; none stop, twenty-four hours a day, seven days a week. Cooling down the hot charcoal for safely extracting it via the large, steel chutes was achieved by reticulating cold water in a series of pipes installed just above the outlets.

Kurth's patented design won Federal Government approval, and in 1941 he received funding for a full-scale production model. He chose the present location, some 10km north of Gembrook, where waste wood left over from the 1939 bushfires and running water was plentiful. The sloping embankment along Tomahawk Creek facilitated the top-loading requirements of the design.



In a trial production run starting 18 March 1942 some 500 tons of charcoal were produced; three tons every 24 hours from 25 tons of wood, the loading capacity of the kiln.

The process proved to be faster, less labour intensive than any conventional method, was 15% more efficient in yield and produced consistent high quality charcoal, free from contamination. The charcoal was graded and bagged in hessian bags on site before being shipped to distribution points all over Melbourne.

But we are getting ahead of ourselves. Ursula wrote a letter to the University of Tasmania asking for some information about “our” Dr Kurth.

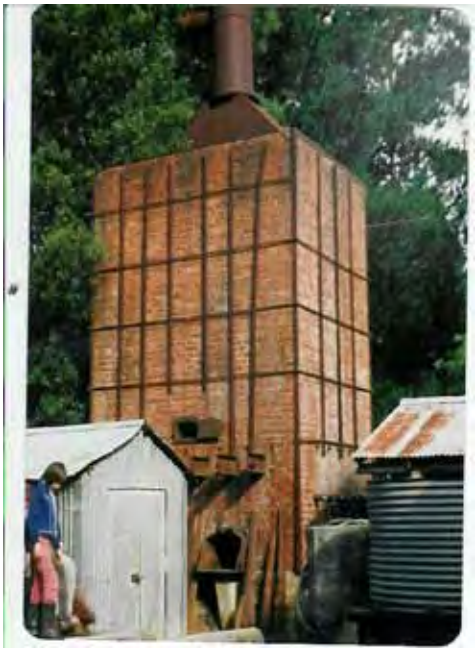
In a response the university published an article about Kurth in their Graduate Newsletter of September 1987, called “Kurth’s Kiln creates new interest in Victoria”. It listed Ursula’s enquiry and contact details, encouraging others with additional information to come forward. Word got around and contacts from Monash, Melbourne and West Australia Universities followed directly.

Names that later-on became well known in their respective field came to visit us in our bush retreat. Dr Ian Rae from Monash presented us with a copy of his report on wood distillation and charcoal production in Victoria called: “Adventures in Arcadian Chemistry”, in which Kurth and his Kiln get a short mention (see page 34). David Schmidt from Melbourne talked about the renewed interest in the Forests Commission of Victoria activities over that period; and Daniel Catrice from the Historic Places Section of the National Parks Service with plans to produce a “Kurth Kiln Conservation Plan” booklet.

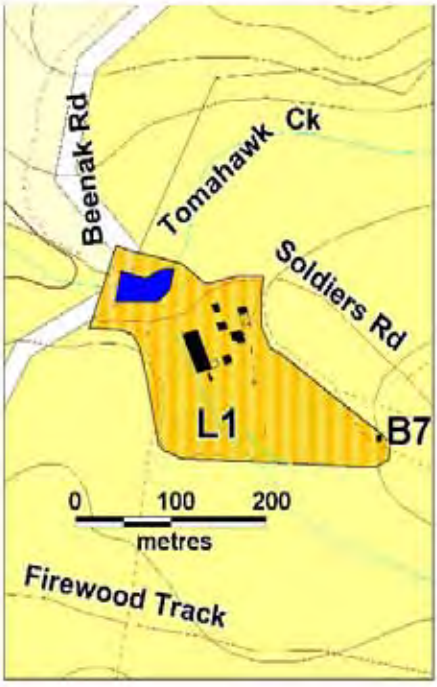
Parks Victoria in 2002 commissioned a Kurth Kiln Heritage Action Plan and the site was nominated for Listing on the Victorian Heritage Register.

Heritage Overlay Numbers HO21 and HO400 were raised (see shaded area L1) and in 2008 the kiln and its historic buildings were added to the Victoria Heritage Register under number H2012.

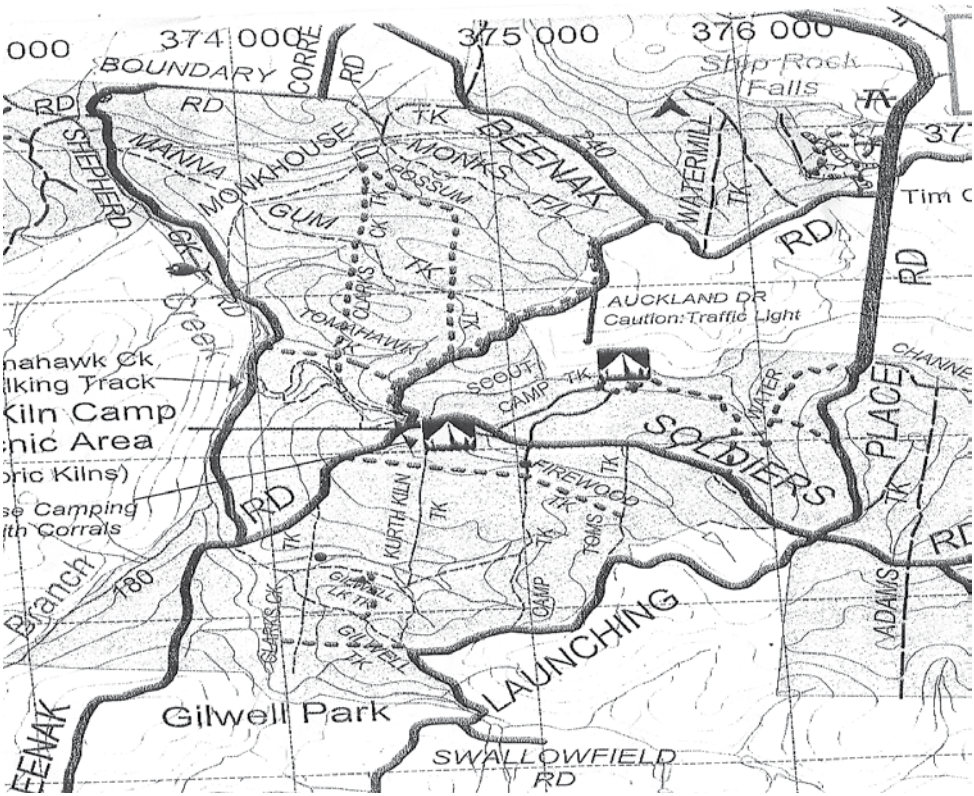
The site straddles the border between the Shire of Cardinia and the Yarra Ranges Shire.



Picture of the kiln in the early 1980



Heritage Overlay HO21 of VHR H2012



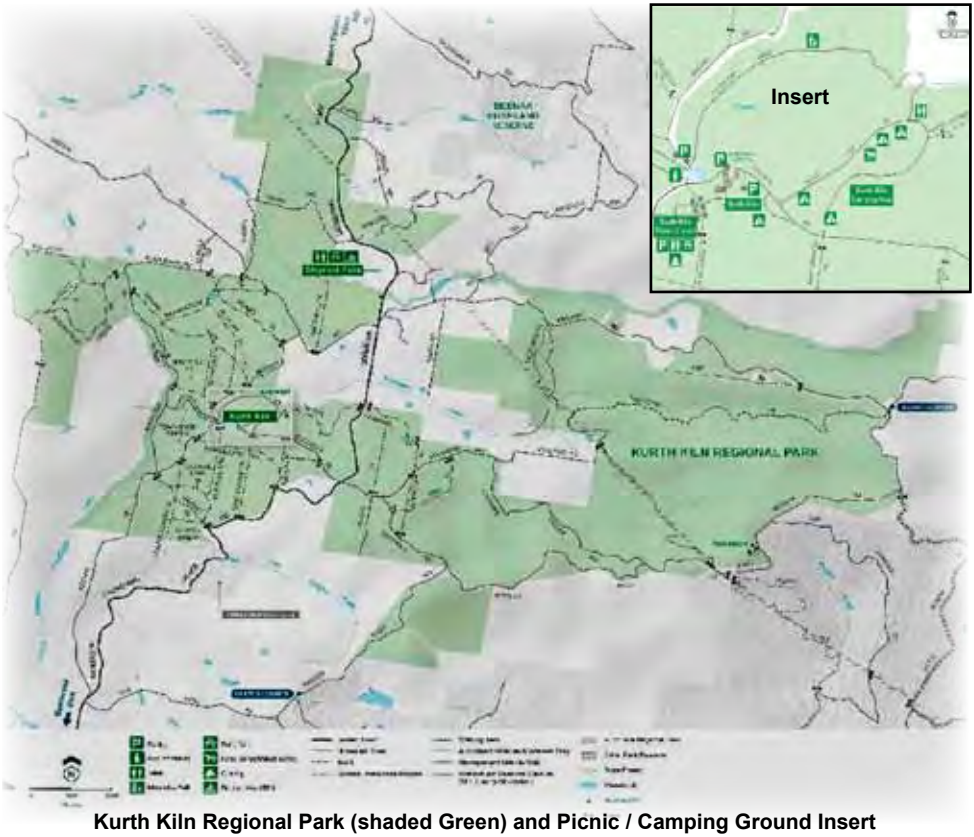
Roads and Walking Tracks around the Kurth Kiln Picnic and Camping Ground



Mount Egg Rock as it looks today, with its modern, 10 storey high Fire Tower and the living quarters on top.

Fire spotter Peter Southcote, above, keeping it touch with other towers and Government departments by radio.





Kurth Kiln Regional Park (shaded Green) and Picnic / Camping Ground Insert

Kurth Kiln Regional Park was named after the historic kiln situated at its heart. It comprises some 3,500ha of assorted bush-land, bordering on the 17,000ha Bunyip State Park in the East. The area used to be part of the Yarra Valley Multipurpose Park managed by the Forests Commission of Victoria, but in 1993 the former Land Conservation Council recommended the name “Kurth Kiln Regional Park” as the Kiln was a major feature of the park. The initially-considered name “Egg Rock Regional Park” (after a natural rock feature by that name within the park) was dropped after realising that the rock had been dynamited off its perch by vandals in the 1960’s.

The Parks Victoria map above shows the park (shaded green) and Kurth Kiln detail (insert). Except for Gembrook Launching Place Road, all roads in the park are unsealed. Some of the bush tracks shown may be subject to seasonal closure.



An early Forests Commission of Victoria promotional Sheet

FORESTS COMMISSION VICTORIA

KURTH KILN PICNIC GROUND

Kurth Kiln Picnic Ground is located on the Beenak Road, 7 km north of Gembrook in the western section of the Gembrook Forest, and Tomahawk Creek enters a small lake nearby.

The picnic ground takes its name from a kiln built at this site during the Second World War, to provide charcoal by a continuous process which was developed and patented by Professor E E Kurth of the University of Tasmania, Hobart.

The first batch of charcoal was produced in February 1942 and production continued until the end of the war. Most of the charcoal was used in gas-producer units fitted to motor cars to provide a combustible gas ("producer gas") as a substitute for petrol which was heavily rationed.

Wood from stringybark trees was cut into short lengths (billets) which were converted by the kiln into charcoal. Billets were cut and carted from the surrounding forest by cutters, many of whom were housed in a nearby camp.



The kiln held 25 tonnes of wood per loading; the metre-long billets were carted up an inclined tramway to the top of the kiln. The combustion process took two days to complete, and as the lower portion of the kiln was cooled by water passing through pipes, the charcoal was cool enough to be processed into various grades by passing it over and through vibrating screens. It was then bagged immediately and stored for despatch.

As charcoal was raked out from below the kiln, the wood descended from above and more billets were then fed in at regular intervals. Seven tonnes of wood produced 1 tonne of charcoal, and output was 20 tonnes per week if the kiln was operated on a continuous basis of 3 shifts per day. Water was brought to the site along a water race and powered a water wheel which operated the vibrating screen and other items of machinery.

The cost of the kiln, water supply, buildings etc, was £1,900, and the kiln and some of the old buildings are still standing. These and the lake are of interest to visitors to the picnic area, where tables, barbecues and toilets are provided.

Many roads through the adjoining forest are suitable for scenic drives or quiet walks.

parknotes



Kurth Kiln Regional Park

Visitor Guide

Kurth Kiln Regional Park, covering 3,500 hectares, contains a range of forest types and other interesting features awaiting exploration. Located a short distance east of Melbourne, the park is mostly known for its kiln used during the Second World War to make charcoal for gas producer units fitted to motor cars. The park is popular for picnicking, camping, nature walking and horse riding.

Location and Access

Kurth Kiln Regional Park is 65 km east of Melbourne. You can get there via Launching Place Road or Beenak Road, Gembrook. Kurth Kiln Picnic Ground and Camping Area is 7 km north of Gembrook.

History

Kurth Kiln was built during the Second World War to make charcoal. It was developed and patented by Professor E. E. Kurth of the University of Tasmania.

Most of the charcoal was used in gas producer units fitted to motor cars to produce a combustible gas as a substitute for petrol which was heavily rationed during the war. Display boards around the kiln explain the process used to produce gas.

The cottages nearby housed the early workers and their families and at a later stage, Forest Commission crews.

Things to see and do

Picnicking

Several picnic grounds have fire places, tables and toilets, making them ideal for picnics or a breath of fresh air. Refer to map overleaf for locations.

Camping

Camping is recommended at Kurth Kiln Camping Area.

Walking

Walking is the best way to get to know the park and there are several tracks with a variety of walks for all groups. Information on walks is available at the Kurth Kiln Picnic Ground.

Bike riding

There are good opportunities for mountain bike riding on 'Horses Walker and Bicycle Only' designated tracks.

Horseriding

The park has many kilometres of tracks suitable for horse riding. A horse corral is located at Scout Camp Track.

Plants and wildlife

The park has several plant communities ranging from Mountain Ash forest and riparian forest to shrubby foothill forest and swamp heathland. These support a rich flora and contain the rare plant Long Pink-bells, Tall Astelia and Brickmakers Saw-sedge.

The diversity of plant life attracts a range of wildlife including wombats, Swamp Wallabies and Echidnas.

There is also a diverse mammal population active mostly at night. They include possums, Yellow-bellied Gliders, Sugar Gliders and Greater Gliders that glide for up to 100 metres from tree to tree.

Bush Rats and Antechinus (marsupial mice) may be spotted scuttling about on the forest floor.

Birdlife is active. Keep a lookout for lyrebirds, honeyeaters, parrots and Kookaburras. Yellow-tailed Black Cockatoos, currawongs and butcherbirds.

Community Involvement

The management and preservation of Kurth Kiln Regional Park is actively assisted by voluntary community groups called 'Friends of Kurth Kiln' and 'Gembrook Flora and Fauna Group'. Regular working bees are held to maintain the natural values of the forest.

For more information call the **Parks Victoria Information Centre** on **13 1963** or visit our website at **www.parkweb.vic.gov.au**

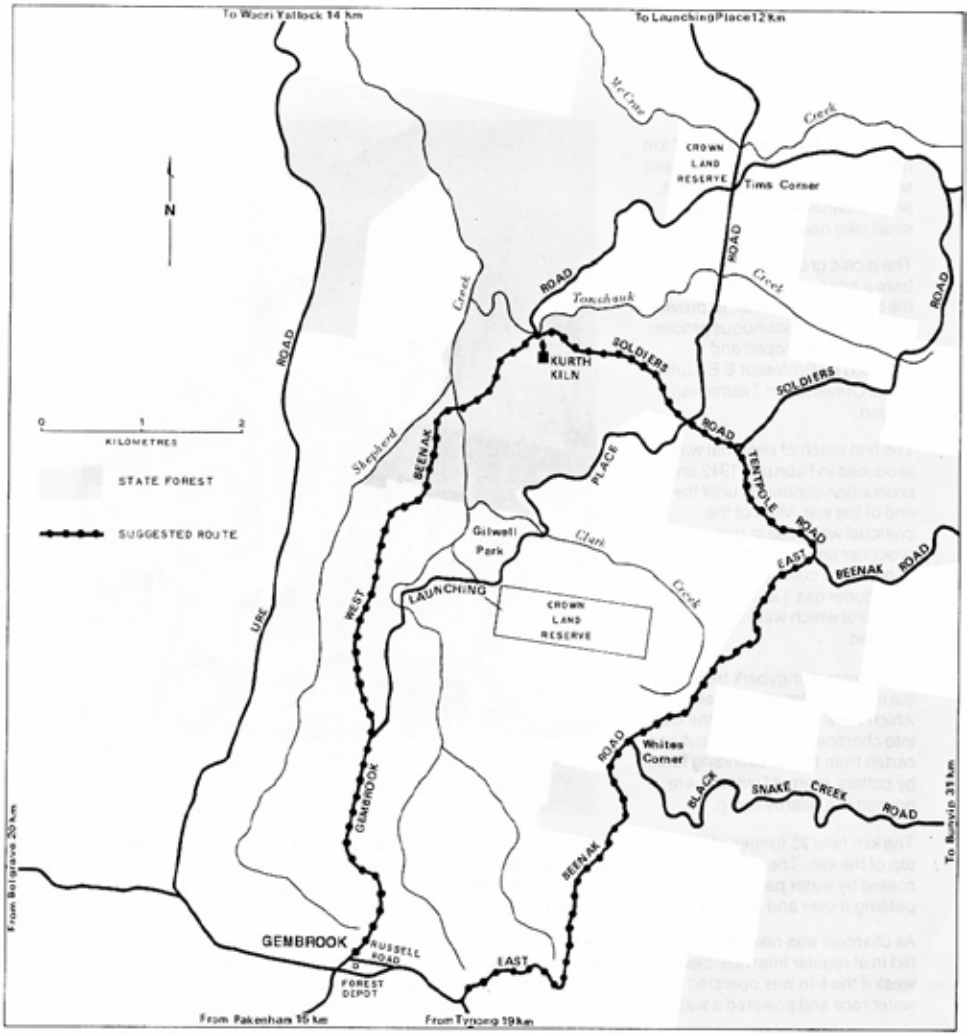
Healthy Parks Healthy People

Parks VICTORIA

The Friends of Kurth Kiln Group has been very fortunate over the years with many people supporting our endeavours in conservation and promotion of this cultural heritage and its natural bush environment. First and foremost amongst those are the Rangers and staff of Parks Victoria, without whose help we could not possibly have been able to function,

We thank the Parks Victoria Gembrook Office and all its Rangers and staff and seasonal workers for their support in our efforts to care for Kurth Kiln and its environment, to promote the heritage of Kurth Kiln and its historic significance.

An early Forests Commission of Victoria Map of the Area



The Kurth Family

Isabella Kurth, a fourth generation member of Dr Kurth's family, signs up as the youngest member of the Friends of Kurth Kiln



The Kurth Family

THROUGH THE EYES OF DOROTHY, DUDLEY AND GEOFF



Mrs Irene Kurth at the Kurth Kiln Picnic Ground in early 1980

As our friendship with the Kurth descendants evolved, it proved to be a treasure trove of information on their family history:

KURTH KILN REDISCOVERED
by Dudley Kurth

My first acquaintance with the kiln was during its construction when as a schoolboy I accompanied my father on an inspection visit. We were holidaying in Melbourne at the time and whilst he made several trips to Gembrook one was enough for me. The train journey from Glenferrie to Upwey and then on to Gembrook by puffing Billy seemed to take for ever and even the last stretch was no novelty as our Tasmanian trains were still being hauled by steam locomotives.

After I left Tasmania in the early fifties I lived either in N.S.W. or overseas and only gave the kiln a fleeting thought when I bought a bag of charcoal to fire up the Weber. I imagined that this wartime relic had probably been demolished and the bricks put to other uses.

But I was in for a surprise in the mid seventies, several years after I came to work in Melbourne, when I attended a Scouting conference and one of the



Dudley Kurth with his wife and Dorothy Kurth attending one of our group meetings in 2002

other delegates asked me if my name had any connection with the Kurth Kiln Picnic Ground near Gilwell Park.

Intrigued I got hold of an ordinance map of the area (the Melway didn't show it) and sure enough there it was. I broke the news to my mother and sister who had been living in Melbourne for some time and hadn't heard of its existence so we all went up and celebrated by having a picnic there.

The strange thing is that being involved with the Scouts I had been to Gilwell Park many times and had missed the sign to the picnic ground if indeed it was there in those days.

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A COUPLE OF SNAPSHOTS
by Dudley Kurth

Whilst Ernest Kurth was best known for his work in the field of inorganic chemistry he was also an accomplished geologist, no doubt a legacy of his early years spent on the West Australian goldfields and subsequent studies at the Kalgoorlie School of Mines.

During the thirties before a school of geology had been established in the university of Tasmania he was the matriculation examiner for that subject as well as running evening lectures for chemical engineering diploma students which curriculum included geology.

Towards the end of this course late in the year a series of field excursions

was held which consisted of visits to a number of quarries and cuttings where mineral deposits laid down over the years could be seen on the rock face.

My little brother Geoff and I never missed being taken on these excursions, not because of the rock formations but because most of the quarries had a frog pond in them and collecting tadpoles and frogs eggs with the occasional newt thrown in was all the go at our young age.

Only one excursion stands out in my memory (I was about eight and my brother two years younger) when the following amusing incident unfolded.

My father and about twenty odd students were gathered in a cutting near the old Shot Tower on the Kingston Road near Hobart studying the cliff when things went something like this:

The professor: Here we have a good example of deposits laid down during several geological eras. Can anybody nominate the predominate one?

The students: Dead silence

The professor: Doesn't anybody recognize the strata I'm talking about?

Six year old son: Yes, it's semipermacarboniferous mudstone

The Students: Much laughter and applause

The Professor: Well at least one person here has learnt something from these excursions.

Sadly my brother did not pursue a career in geology but emigrated to Canada at an early age and applied his talents to promoting Revlon cosmetics!



Geoff Kurth at Kurth Kiln in 1978

Geoff came for a visit once, giving us the picture (above) and a calendar of his home town, below.

Sadly he passed away soon after



Dorothy and Dudley Kurth have written many articles for the Friends of Kurth Kiln Newsletter “THE KILN”

Dorothy regularly came to festivals and sometimes on a meeting day, always with a tin of delicious shortbread and sometimes with a generous donation for our treasurer Riet Bouck.



She is seen here talking with Tammy Lobato MP, Member for Gembrook, at our Heritage Festival in 2004

Professor Kurth relatives Lynn and her daughter on a visit to Kurth Kiln in 2007.



On a sad note, Dudley Kurth passed away in January 2011.

Dorothy and Dudley at Kurth Kiln in 2008



Recollections on the Kurth Family
by Dorothy C. Kurth

My father, E.C.E.Kurth, was a very humble, gentle person, a man of few words, concise in expression and meticulous in documentation, who had a presence that commanded respect from all who knew him.

My memory is that he talked very little about his German family heritage/origins. Perhaps this was not of significance to him any more. As the youngest of four children spanning ten years, who never knew their Grandparents and were young before and during WWII, I wish we had asked a lot more questions then, when we had the opportunity.

His father, Friedrich Ernst Kurth, was born in Roda, Saxony on 26 October 1855. It is believed he 'ran away to sea' at 14 years of age then spent some 15 years at sea on the Germany to Brazil route around Cape Horn to Rio de Janeiro where he nearly settled.

It is not known where he jumped ship or signed off, possibly in New Zealand. His mother's parents were both of German stock, born in Bomst, Prussia and married there on 4 May 1851. They left Germany due to division in the Lutheran Church with their three living children on the ship Ceaser Godeffroy. Emma was born on 13 August 1869 off the Cape of Good Hope, 35' latitude and 4' longitude, and christened in Hahndorf, South Australia, 29 September 1869.

Friedrich Ernst Kurth and Ceaserine Emma Muller were married in Hahndorf on 8 May 1890. The wedding certificate gives his address as Broken Hill and



Dorothy C. Kurth

Hill in the Colony of New South Wales three children were born to them: Eveleen Stella, born and died in 1891; Leslie Arnold born 28 June 1892 and died 1980, and Ernest Carl Edgar born 1 November 1895 in Lane Street, North Broken Hill. The father's occupation is given as fruiterer, the birth being registered in Sturt. It would appear that at this time the family was already moving westward to the goldfields of W.A.

A letter written from Goongarrie, W.A. on 13 August 1896 by Friedrich Ernst, now using Ernest, to Emma, in a very neat hand, in English, with the greater use of capitals on nouns and the odd phonetic spelling the only indication of his origins, gives an insight as to the family situation. He speaks about an accident, the death of Mr. Rodda, at the Consols Mine, Coolgardie, about how glad he is to have left the mines for Emma and the children's sakes and how he hopes he never has to go back to mining again, about his

new job with longer hours but better pay and easier work (although he really needs help on pay days which are very busy), about the wild flowers and how nice they would look in a garden, about how he enjoyed the Metwurst, about 'Unkel' liking being over in the west earning 4 pounds per week, and boarding at 30 shillings.

The family eventually settled in Davyhurst, a gold mining town N.W. of Kalgoorlie, East of Menzies, now only shown on some older maps. Ernest Sn. eventually owned the Davyhurst general store which included the bakery. The bakers oven was still present in the early 1980's even though no buildings were left. It is normal practice in those remote areas for any usable materials left at the demise of one town to be reused in another area.

I remember being told as a child that the residence of my Grandparents originally had a dirt floor. That in dry times water could cost as much as a sovereign a four gallon drum. Stores came by camel train, the butter arrived in liquid form, that food was stored in a Coolgardie safe.

Having spent some time in these hot dry inland areas, and in the cooler season too, and seeing the number of ants around it is hard to imagine how the early settlers survived.

The wild flowers of spring after rain were a joy to behold; especially for the women. There were pressed pink paper daisies found amongst many of my grandmother's things. How strong is the call of the yellow metal.

Not a lot is known about the early days from when the family arrived in West Australia; or the later days in Davyhurst. Nor when this town and the Kurth's Union Store, later the E. Kurth General Store, (grocery, drapery, boots) we presume he owned, were established. There is a 35mm transparency taken by my father in the 1950's, labelled in his near perfect print, '…from near old house position Goongarrie". Perhaps they lived some time in Goongarrie before moving to Davyhurst.

The main mine near Davyhurst was the Golden Poles, in which my Grandfather is said to have lost a considerable amount of money. The wooden head structure was still standing in 1978. Ernest Sn took out Australian Citizenship in 1906, the 'Certificate of Naturalization' was issued in Melbourne on 19 July 1906, Vol 4, page 3763, parchment measuring 45x33cm.



The two boys attended the Davyhurst School under the tuition of a Mr R.T.Stubbs. Ernest was sent off to Scotch College, Perth on a scholarship at about 11 years of age. He then received a scholarship to the Kalgoorlie School of Mines. Throughout his education he excelled academically even obtaining the gold medal for accountancy and several medals for punctuality and attendance every Sunday School day 1905-07.

Leslie remained in Davyhurst and became a very good baker, an occupation he followed much later in Dover, Tasmania. Leslie enlisted in the Army, 11th Battalion, in March 1916, served in France, and was discharged in July 1919.

There is in the family possession a silver plate tea and coffee service inscribed: "Presented to Mr. and Mrs E. Kurth, from the residents of Goongarrie". The reason for the presentation is unknown. Leslie Kurth told me before he died that Goongarrie was both a town and a district and that his father held a position similar to Mayor.

On the 21 July 1914 Ernest Sn was killed (or died later) as the result of an accident. It is said: "He was pinned against the verandah post while attending to the horse and trap while getting ready to attend a Melba concert".

He is buried in the Davyhurst Cemetery, the grave marked with a substantial marble cross, which as late as 1990 stood tall above the surrounding scrub, and other flat tablets inscribed with only the name, age, result of accident or killed at the Golden Poles, marking the graves of mining accident victims.

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Dorothy with Byron, Isabella and Vicky Kurth on a visit from Queensland in front of the kiln



And Dudley again:

Whilst my father's successful scientific activities have been well documented there were some projects in which he played a leading role that withered on the vine so to speak.

Magnesium

In the early thirties, long before an aluminium industry was established in Australia, he foresaw the desirability of locally producing light metal alloys for aircraft - construction and other uses. Accordingly he interested a group of businessmen in the possibility of extracting magnesium from Tasmanian dolorite rock. A company was set up called the Australian Magnesium Co. Pty. Ltd. and a laboratory and pilot plant fitted out in the grounds of the Hobart Coal Gas Works in 1934.

Working in his spare time at night and during weekends for the next three or four years aided by a single assistant he finally perfected the necessary extraction process. The outbreak of war shortly afterwards in 1939 cut off the supply of aluminium from the U.S.A because of the sudden demand for increased requirements by British and French aircraft manufacturers.

The light metal situation in Australia became critical to the extent that every source of scrap aluminium was pursued right down to the collection of old household saucepans.

One would have thought that this was a promising opportunity for the Australian Magnesium Co. to make some headway, so my father set off for Canberra on the Company's behalf to put before Parliament a plan for magnesium production. I remember him saying that stocks of aluminium ingot had fallen to just a few hundred pounds at that stage. But even in wartime some governments take time to make decisions and aircraft construction using light metals was not high on its priority list.

Nevertheless the Australian Magnesium Co. continued to press its case; but just when there seemed to be government support forthcoming the U.S.A. entered the war in 1941 and the consequent flow of vital wartime materials to the Pacific area dashed the hopes of the Company as interest in magnesium lapsed.

Strangely it has taken sixty years for another company to make its appearance and forecast a bright future for investors.

Another project which occupied my father's research time for some years, the extraction of bitumen and oil from Tasmanian shale deposits, also became a commercial nonevent.

The Tasmanian Shale Oil Co. which began preliminary production near Latrobe in the island's northeast was associated with a much larger operation at Glen Davis in N.S.W.

The development of a shale oil industry soon caught the attention of the Petroleum moguls who saw it as a possible competitor in the Australian fuel market and one of them bought both companies and closed them down.

After these experiences it must have been a refreshing change for him to light upon an idea which did not attract multinational interest or depend on government committees:

A CHARCOAL KILN!

Dorothy Kurth seen here cutting Ursula's Black Forest cake (with Alfred giving some helpful advice) at our 10th anniversary celebration (note the 10 candles).



E. (C) E. Kurth

A collection of Fragments in the Life
of an
Eminent Person



Dr. E. E. Kurth

REFLECTIONS ON AN EMINENT PERSON

The Days of
Ernest Carl Edgar Kurth
1895 - 1966



1895 Ernest was born on 1 November in Broken Hill. He was raised in the West Australian gold fields and attended Scotch College in Perth.

He gained his Diploma at the Kalgoorlie School of Mines and worked at the "Sons of Gwalia Gold Mine" there.

1919 Moved to Hobart Tasmania and worked for the Electrolytic Zinc Co in the early stages of its establishment at Risdon, and was instrumental in the development of its scientists and technologists.

1923 Lecturer at the University of Tasmania, for Chemistry and Geology.

1924 married Irene Saunders. They had four Children. Two boys, Dudley and Geoffrey; and two girls, Shirley and Dorothy.

1928 received Bachelor of Science Degree. Helped the Tasmanian Shakle Oil Investigation examine the possibility of developing an oil industry.

1934 received Doctorate in Science, continued research in the composition of Tasmanian and NSW oil shales.

1940 designed gas producers for motor cars. Patented a design for an improved charcoal kiln

1941 became Professor of Chemistry at the University of Tasmania and Head of Chemistry Dept at Hobart Technical College. Supervised construction of a charcoal Kiln to his design at Gembrook Victoria.

1946 became Dean of the Faculty of Science, designed the new Chemistry Building at Sandy Bay.

1960 retired, honoured with the title Professor Emeritus. Continued studies on trace elements in timber ash.

1966 Ernest Edgar Kurth died on 4 January and is buried in the Cornelian Bay Cemetery.

Career Positions

1915 Chemist at Oroya Links Ltd

1916 Metallurgy Associate of Western Australian School of Mines; Robert Falconer Research Scholar; Education Diploma completed at the Kalgoorlie School of Mines

1917 Engineer's Assistant at Sons of Gwalia Ltd

1918 - 1921 Research Chemist at Electrolytic Zinc Co in Risdon, Tasmania

1923 - 1927 Lecturer in Applied Chemistry at the University of Tasmania

1928 Bachelor of Science (BSc) completed at the University of Tasmania

1934 Doctor of Science (DSc) received from the University of Tasmania

1937 - 1941 Head of Chemistry Department at the University of Tasmania

1941 - 1960 Foundation Professor of Chemistry at the University of Tasmania

1946 - 1948 Dean of the Faculty of Science at the University of Tasmania

From the Obituary Ernest Edgar Kurth, Journal and Proceedings of the Royal Australian Chemical Institute, Vol. 33, no. 3, 1966

Awards

Degrees Conferred

In recognition of his brilliant work in the field of scientific research, the degree of Doctor of Science was conferred upon Mr. Ernest Edgar Kurth, B.Sc, at a meeting of the Tasmanian University Council last night (1934).

Dr. Kurth was educated at the Davyhurst State School, and subsequently attended Scotch College at Claremont, West Australia. In 1909 he was awarded the Fremantle Chamber of Commerce Gold Medal and also obtained a junior exhibition in the Adelaide University junior public examination of 1910.

From 1911 to 1914 he attended the West Australia School of Mines at Kalgoorlie, where he was awarded junior and senior scholarships, and completed the course for associateship in metallurgy. In 1915 he was employed as metallurgist's assistant at the Oroya Links gold mines, and in 1916 took up an appointment as demonstrator in chemistry at the School of Mines, Kalgoorlie. As the first Robert Falconer research scholar he was engaged in an investigation of corrosion problems in relation to the goldfields water supply scheme.

From 1917 to 1918 Dr. Kurth served as engineer's assistant and draughtsman on the Sons of Gwalia gold mines.

From 1918 to 1921 Dr. Kurth held the position of experimental engineer and research chemist with the Electrolytic Zinc Co. of Australia at Risdon, resigning this post to join the staff of the Hobart Technical College.

In 1923 the University of Tasmania appointed him Lecturer in Applied Chemistry, with that of lecturer at the Hobart Technical College.

He completed his studies for the B.Sc. degree in 1927, and this degree was conferred in 1928. From that date he commenced an extensive investigation into the character and utilisation of the Tasmanite oil shales from the Mersey Valley, which was the subject of the thesis presented for the Degree of Doctor of Science:

The oil shales of Tasmania and New South Wales.
Author Kurth, Ernest Edgar. Published 1934.
University of Tasmania.
Theses Subjects: Oil-shales -- Tasmania. Oil-shales -- New South Wales.
Notes Thesis (D.Sc.)--University of Tasmania, 1934. Language English
Libraries Australia ID 40745304
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This investigation covered research into the separation and constitution of the oil bearing material in the shale, its pyrolysis and decomposition under many conditions of treatment. Detailed examination has been made of methods and conditions of retorting and the correlation of laboratory and large scale work. The composition of the resulting oils and their distillates has been closely studied with the result that much useful knowledge has been gained as to their properties. Comparative work has also been carried out on several of the New South Wales oil shales and the oil yielded from them.

The results of the research have made it possible to gauge the prospects of the Tasmanite shale oil industry. One conclusion of interest Is that the production of bitumen as the major product and oil as a minor offers superior economic possibilities, and a shale treatment scheme with this end in view is under consideration by the Commonwealth Government.

The experimental work for Dr. Kurth's thesis was carried out in the joint chemical laboratories of the University of Tasmania and the Hobart Technical College, under the administration of the Engineering Board of Management. The workshop and certain engineering equipment of these institutions were availed to a considerable extent in that part of the research involving the use of high pressure gas apparatus under a pressure of approximately one ton per square inch.

In addition to his ordinary duties, Dr. Kurth has served as consultant and testing officer to the State Government on the Investigation of bitumens, tars, oils, and miscellaneous chemical and metallurgical problems. He was a member of the State Development Advisory Board for some years prior to its abolition.

Since taking up the investigations of the Tasmanite oil shale, he has acted as technical consultant to the Prime Minister's Department with reference to the utilisation of "the Newnes and Capertee shales" and has also served the Newnes investigation committee in a similar capacity. During the last two years he has also carried out work as technical adviser to the Australian Magnesium Co. Pty. Ltd., which is investigating the utilisation of the Smithton dolomite deposits.

We have included here a current report on Shale Oil potential to show the relevance of the pioneering work carried out by Dr E E Kurth so many years ago.

The modern Story of Shale Oil

Oil shale is an organic-rich shale, which yields substantial quantities of oil (normally referred to as shale oil) and combustible gas by heating (retorting) and distillation. The organic material in oil shale is called kerogen, which under appropriate conditions in the Earth's crust can be a precursor to conventional oil reservoirs. One tonne of commercial grade oil shale may yield from about 100 to 200 litres of oil.

In Australia the majority of oil shale resources of commercial interest are located in a series of narrow and deep extensional-basins near Gladstone and Mackay, and further north near Prosperpine in central Queensland. These are thick Cenozoic lacustrine (lake-formed) deposits which are relatively easy to mine and process compared to carbonate-rich oil shales (marls) elsewhere in the world. Oil shales occur in the Cretaceous Toolebuc Formation of the Eromanga Basin in northwest Qld. Oil shale deposits of varying quality are located in the Sydney Basin, New South Wales, northern Tasmania (Latrobe tasmanite deposit), Eyre Peninsular in South Australia and as oil shale – heavy mineral sand deposit in southern Western Australia.

Resource estimates were reviewed to take into account the historic nature of the estimates and losses resulting from processing. Australia's shale oil resources estimates are for recoverable shale oil:

- Paramarginal and Submarginal Demonstrated Resources of shale oil are 213 gigalitres (about 1340 million barrels) and
- 2074GL (about 13 050 million barrels) respectively.

An Inferred Resource is estimated to amount to 1272GL (about 8000 million barrels). This figure excludes the 'total potential' shale oil resources of the Toolebuc Formation (Qld) of around 245 000 GL which was an estimate made by Geoscience Australia's predecessor, the Bureau of Mineral Resources, and the CSIRO in 1931. The research project undertook detailed geological, petrophysical and geochemical examination of the oil shales of the Toolebuc Formation. The project was aimed at investigating and developing methods to assist government and industry to assess the potential of the sedimentary sequence as a possible future source of oil shale and developing an understanding of geological controls and the distribution of oil shale within the Toolebuc Formation. The resource assessment of around 245 000GL was based on productive oil shale covering an area of 484 000 square kilometres and ranging from 6.5 to 7 metres thick with a specific gravity of 1.9 and yielding an average 37 litres of oil per tonne oil shale.

In Queensland, the majority of exploration activity has been in care and maintenance since the Queensland Government announced a two year review into the oil shale industry and a 20-year moratorium on oil shale development in the Whitsunday region around Proserpine. Previously, exploration was predominantly focused near Gladstone and Mackay in central Qld and in northwest Qld. In Tasmania, Boss Energy Ltd is continuing to undertake exploration work southeast of Devonport at the Latrobe oil shale deposit and Eagle Nickel Ltd is assessing exploration tenements adjacent to

the Latrobe project.

In September 2011, Queensland Energy Resources Ltd (QER) produced its first crude oil from its demonstration Paraho IITM vertical shaft kiln processing plant at the Stuart deposit near Gladstone, central Qld. The oil is being stored in secure tanks on-site, awaiting commissioning of the oil upgrading unit (refinery).

There was no oil being extracted from oil shale in Australia between 2004 and September 2011. From 2000 to 2004, the previous demonstration processing plant at the Stuart deposit (Qld) produced more than 1.5 million barrels of oil using a horizontal rotating kiln process (Alberta Taciuk Process). The facility has been dismantled and the site re-mediated.

The demonstration plant achieved stable production capacity of 6000 tonne of shale per day and oil yield totalling 4500 barrels per stream day while maintaining product quality and adhering to Environment Protection Authority emissions limits.

The ULSN, which can be used to make petrol, diesel and jet fuel, has a sulphur content of less than one part per million (ppm). To put this into perspective, from January 1, 2008, the Fuel Standard (Petrol) Determination regulated that the maximum content of sulphur is 50ppm in premium unleaded petrol.

The 2010 Survey of Energy Resources by the World Energy Council (WEC) reported that total world in-place resources of shale oil are estimated to be 4.8 trillion barrels. The largest known deposit is in the western USA (3 trillion barrels in-place resource), with other important deposits in China, the Russian Federation, the Democratic Republic of the Congo, Brazil, Italy, Morocco, Jordon and Estonia, as well as Australia.

Only Estonia, China and Brazil do currently produce shale oil in commercial quantities.

The WEC survey reported that total shale oil production at the end of 2008 was about 1165ML, with Estonia producing 445ML, China 470ML and Brazil 250ML.



Another Overview

Earnest Carl Edgar Kurth was born in Broken Hill in 1895. He was the son of a Western Australian farmer of German stock and strong Lutheran persuasion. He trained at the Kalgoorlie School of Mines just before World War 1. Soon after the outbreak of hostilities, he offered his services as a munitions chemist in Great Britain. He would recount with a wary smile "that his name was against him", and he was rejected for this activity.

At the end of WW1, plans to generate electricity by hydro-power were undertaken by the Tasmanian Education Department and the Tasmanian University. The university was being pressed by commercial interests to provide adequate chemistry instruction and the Hydro-Electric commission supplied some money to initiate an electrical engineering course. Thus the chemistry staff was increased. For 22yrs, Peter Mcleod had run the department single handedly although largely " in absentia". The second staff member was Earnest Kurth, who was to mould the department for the next 37 years.

He was a person of deep moral and religious belief. He was usually solemn of demeanour and many colleagues and students were greatly taken aback by a witty comment delivered with a deadpan expression. His enthusiasm for research continued unabated for many years.

One of the most interesting investigations during the war years was the development of kilns for the production of high grade wood charcoal for use in vehicle gas producers. Initially in small scale laboratory experiments, Kurth examined the kinetics of pyrolysis of the wood of a number of native species and determined the temperature at which the reaction became self sustaining. By holding the reaction at this temperature by cooling devices, the yield of charcoal was greatly enhanced and various volatile breakdown products retained in the charcoal. This process was up-scaled to production level, temperature control being effected by water cooling via coils in the interior of the kiln.

A quarter size prototype of Kurth's charcoal production kiln was built at Dover, the concept was proven and his patented design won a government contract to build a full scale version at a suitable location in Victoria.

Although Kurth patented this design, his rights were over-ridden by the government under war-time powers and it is understood he was never compensated for his time and effort he put into the project. The records show he was paid the princely sum of five pounds for the use of his patented design, with a promise of royalties from the commercial production proceeds; which never eventuated.

Kurth stayed with the University of Tasmania, became Professor of Chemistry and Head of Chemistry Dept at Hobart Technical College. As Dean of the Faculty of Science he designed the new Chemistry Building at Sandy Bay and retired in 1960, honoured with the title Professor Emeritus. He continued his studies on trace elements in timber ash.

Ernest Edgar Kurth died on 4 January 1966 and is buried in the Cornelian Bay Cemetery.

Synopsis of Education and Career :

1899 - 1907 Primary, Daveyhurst Primary, Western Australia.

1908 - 1910 Secondary, Scotch College, Claremont, Western Australia.

1909 Presented with the Fremantle Chamber of Commerce Gold Medal (see page 26). 14th December, gained the highest number of marks in Commercial Examinations.

1910 Passed Adelaide Junior Public Examination, gained an Exhibition

1911 - 1915: Western Australian School of Mines, Kalgoorlie. During this period passed in 25 subjects gaining 20 first class, 4 second class and 1 third class passes. Gained the Entrance and Senior Scholarships in the year.

1914 Qualified for the Associateship in Metallurgy.

1915 - 1916: Held the position of Demonstrator in Chemistry at the School of Mines.

1915 Gained experience in assaying, chemical and experimental metallurgical work on the Oroya Links Ltd. plant, Kalgoorlie.

1916 Became the first holder of the Robert Falconer Research Scholarship for research of iron corrosion with special reference to the Mundaring water.

1916 - 1918: Worked as engineers assistant on the Sons of Gwalia Ltd. at Gwalia, W.A.,

1918 - 1921: Research Chemist at the Electrolytic Zinc Company's plant at Risdon, Tasmania. Two and one half years of this time he worked next to the Research Superintendent and in charge during his temporary absences.

1921 Joined the staff of the Hobart Technical College at the E.Z.Co's request during a cessation of research work.

1923 Appointed Lecturer in Applied Chemistry in the University of Tasmania.

1924 Duties and remuneration increased and then appointed to Head of Chemistry Department (no Chair of Chemistry was as yet established).

1926 Began and completed B.Sc. degrees. [mathematics, physics and chemistry]. Gained distinction in Physics III and high distinction in Chemistry III in final examinations.

1928 Commenced comprehensive research into the Tasmanite Oil Shale and its utilisation.

1934 D.Sc. degree for the six years of Oil Shale work. Examiners: Sir David Rivett, C.S.R. and Professor Lancelot C. Bagster of Queensland University.

1934 - 1935: Investigated the Smithton Dolomite deposits for commercial potential. Resulted in formation of £50,000 company, Magnesium Products Ltd.

1934 Holder of Australian Letters Patent, 19231/34 for process of manufacture of bituminous substances by the concentration of Tasmanite Oil Shale and treatment of the concentrate. Application dated 8 September, 1934

1924 - 1937: Acted as referee analyst for the Government and commercial interests on liquors, foods, oils, bitumen, manures, alloys, soils, fish products and many other things. Member of the State Development Advisory Board during its existence.

Acted as consultant to the State and Federal Governments on oil shale matters. Carried out investigational work on the Newnes and Capertee oil shales for the Newnes Investigation Committee and earlier on the same shales for the Electrolytic Zinc Company.

Acted as an advisor to the Governments of Tasmania on many chemical and metallurgical matters.

Was a member of the Tasmanite Shale Oil Investigation Committee since its inception.

1937 Currently there is no position for Professor of Chemistry at the Tasmanian University but two full-time lectures. For a good many years supervised and ordered all stores, chemicals and apparatus for the chemical laboratories. Official complete charge of the Chemistry Department.

TEACHING EXPERIENCE –

For the Hobart Technical College: Taught at different times all grades of chemistry, assaying, metallurgy, chemical technology and geology.

For the University: Mainly confined to teaching and examining in Physical Chemistry, General Inorganic Chemistry, applied Chemistry of various divisions. There have been three independent subjects of Chemistry III, with complete responsibility for two of these, viz. Chemistry III, General Inorganic and Physical Chemistry and Chemistry III and Applied Industrial Chemistry.

: In addition the supervision and direction of the research students working under the recent C.S.I.R. arrangements.

: Examined in Chemistry for 13 years in the Public Examinations, and latterly [for 3 years] also in Geology.

: Acted for 12 Years as Inspector of Chemical Laboratories for the Board of Public Examinations.

Enclosed are testimonials from the Vice Chancellor of this University, Professor E. Morris Miller and one from Professor Alan Burn, Chairman of the Board of Management.

For personal reference : Sir David Rivett, C.S.I.R, 314 Albert St., East Melbourne, Vic.; Sir Herbert Gepp, Australian Paper Manufactures, Princes Bridge, Melbourne, Vic.; David Meredith, Esq., General Manager, Electrolytic Zinc Co., Risdon, Tasmania.

: I am 41 years of age, 5' 10" high, with no physical disabilities, find enclosed medical certificate to that effect, also a photograph taken June 15th, 1937.

SOURCE: Application for appointment to the Chair of Chemistry at University of Western Australia, Crawley, Western Australia.

[hand written draft and final type written carbon copy both held]

1941 to 1966: Incomplete - further details still to be resourced and documented.

1941: Charcoal Kiln. Patent application Titled “Improvements in and connected with charcoal kilns”. No 2563/41

1942: Complete specifications and drawings for Charcoal Kiln lodged 15 May,1942.

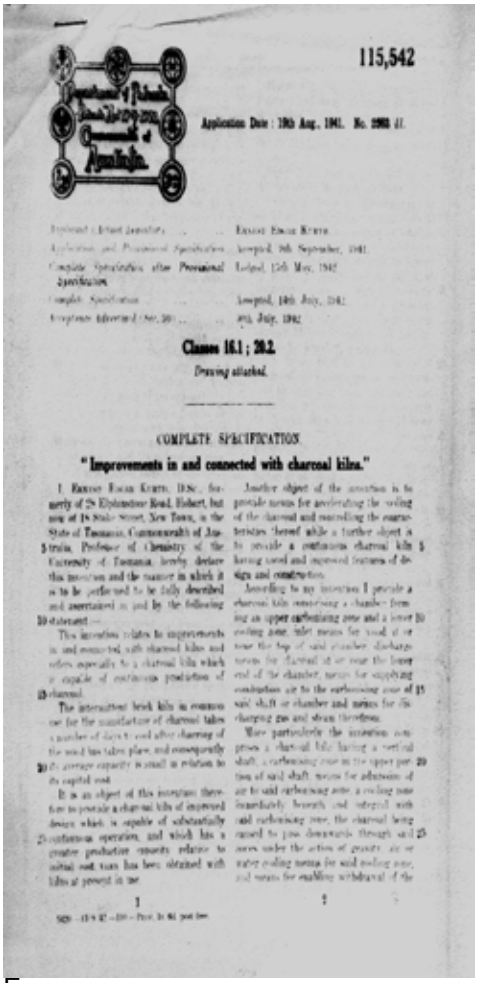
1941 - 1960: Foundation Professor of Chemistry, University of Tasmania.

1946 – 1948: Dean, Faculty of Science.

1960 : Retired.

1961 : Appointed Professor Emeritus, University of Tasmania. Continued with research.

SOURCE: Family, Bright Sparcs: http://www.asap.unimelb.edu.au/bsparcs/bs_index.htm



115,542

Application Date: 19th Aug., 1941. No. 2983 /1.

Applicant (Actual Inventor) ... Ernest Edgar Kurth.
Application and Provisional Specification ... Accepted, 8th September, 1941.
Complete Specification after Provisional Specification ... Lodged, 15th May, 1942.
Complete Specification ... Accepted, 14th July, 1942.
Acceptance Advertised (Sec. 30) ... 9th July, 1942.

Classes 16.1; 20.2.

Drawing attached.

COMPLETE SPECIFICATION.

"Improvements in and connected with charcoal kilns."

I, Ernest Edgar Kurth, D.Sc., formerly of 28 Elphingstone Road, Hobart, but now of 18 Stoke Street, New Town, in the State of Tasmania, Commonwealth of Australia, Professor of Chemistry of the University of Tasmania, hereby declare this invention and the manner in which it is to be performed to be fully described and ascertained in and by the following statement:—

This invention relates to improvements in and connected with charcoal kilns and refers especially to a charcoal kiln which is capable of continuous production of charcoal.

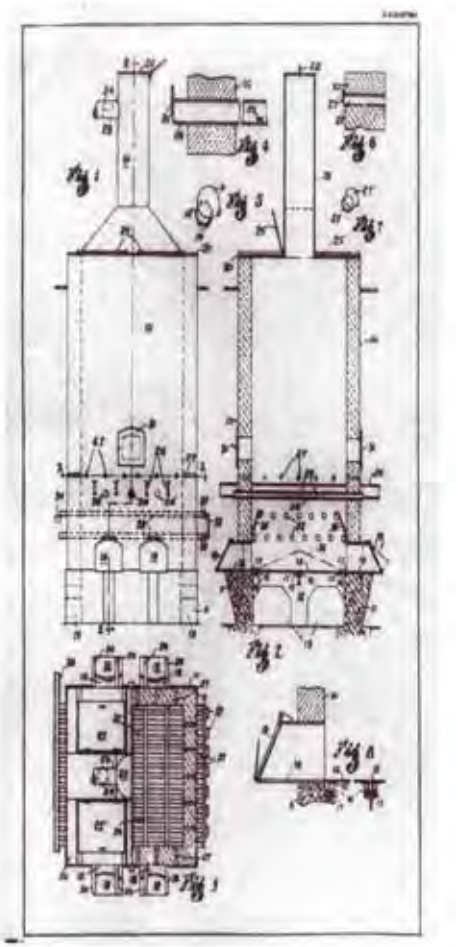
The intermittent brick kiln in common use for the manufacture of charcoal takes a number of days to cool after charring of the wood has taken place, and consequently the average capacity is small in relation to the capital cost.

It is an object of this invention therefore to provide a charcoal kiln of improved design which is capable of substantially continuous operation, and which has a greater productive capacity relative to initial cost, than has been obtained with kilns at present in use.

Another object of the invention is to provide means for accelerating the cooling of the charcoal and controlling the characteristics thereof while a further object is to provide a continuous charcoal kiln having used and improved features of design and construction.

According to my invention I provide a charcoal kiln comprising a chamber forming an upper carbonising zone and a lower cooling zone, inlet means for wood at or near the top of said chamber, discharge means for charcoal at or near the lower end of the chamber, means for supplying combustion air to the carbonising zone of said shaft or chamber and means for discharging gas and steam therefrom.

More particularly the invention comprises a charcoal kiln having a vertical shaft, a carbonising zone in the upper portion of said shaft, means for admission of air to said carbonising zone, a cooling zone immediately beneath and integral with said carbonising zone, the charcoal being caused to pass downwards through said zones under the action of gravity, air or water cooling means for said cooling zone, and means for enabling withdrawal of the



EXTRACT

I, Ernest Edgar Kurth, D.Sc., formerly of 28 Elphingstone Road , Hobart, but now of 18 Stoke Street, New Town, in the State of Tasmania, Commonwealth of Australia, Professor of Chemistry of the University of Tasmania, hereby declare this invention and the manner in which it is to be performed to be fully described and ascertained in and by the following statement:

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"It is an object of this invention therefore to provide a charcoal kiln of improved design which is capable of substantially continuous operation, and which has a greater productive capacity relative to initial cost..."



A 1942 Ration Ticket, valid for the purchase of one gallon of petrol in the State of Victoria. At the height of rationing two of these had to last a person for one month.

For those born after 1964 two gallons is about 9 litres

One day, while giving a talk to a visiting group about Kurth Kiln and the war-time petrol rationing, one of the visitors held up his hand and said, I still have one of those Ration Tickets in my wallet. And he showed it around.

I grabbed the opportunity and asked if I could borrow it for a few minutes, went home (we live just across the creek from Kurth Kiln), photocopied it and gave it back to him with thanks.

...

The Cash Book

Probably the best known text on the use of producer gas was written by John & Martin Cash of Kew, Victoria. Called **"Producer Gas for Motor Vehicles"** it was published in 1940. The stated aim of the book was to contribute to the solving of Australia's wartime transport problem.



It offered factual information as a form of protection against the "extravagant claims of over-enthusiastic salesmen". It has survived as the definitive bible on the techno-practical side of producer gas.

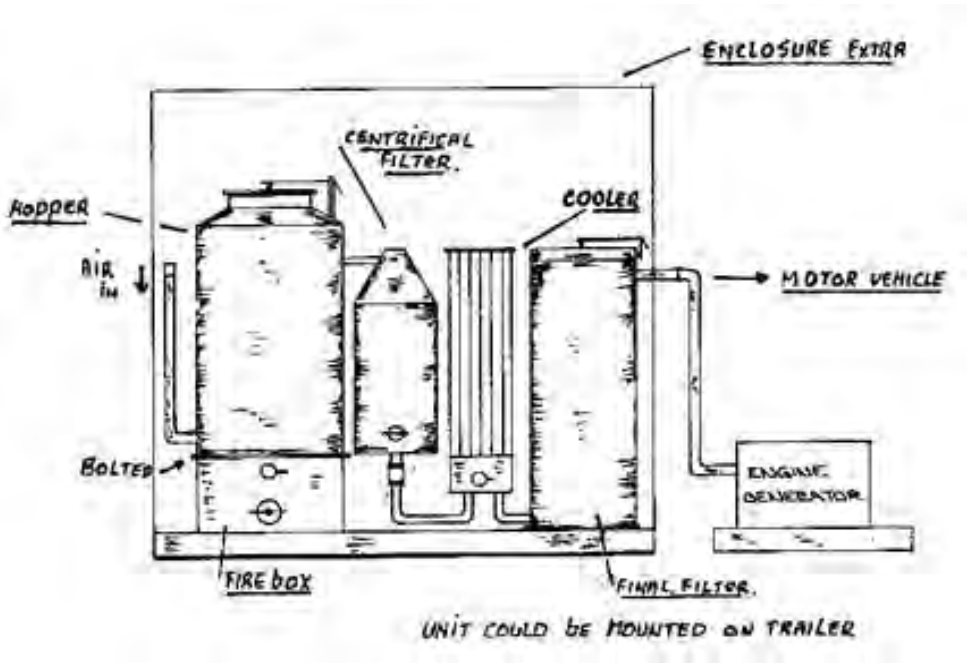
Some points from the Cash book are :• Fuel consumption is between 0.8 and 1 lb of charcoal per bhp hour.

• The GPU is effective without the addition of water or steam.

• Although water does increase the power, it takes heat from the system, which is not always a good thing.

• The GPU is an inconvenient, bulky and in most cases, unsightly piece of apparatus but you must balance your prejudice against the fact that it enables you to move around.

• Producer gas is less efficient than petrol. About 10 000 BThU are required to produce 1 horse-power.



Schematic of typical Gas Producer unit as installed on Mobile Equipment

PRODUCER GAS

- Producer Gas contains carbon monoxide as the working gas. It is made by passing air through a core of glowing charcoal at normal atmospheric pressure.
- The temperature of the core should be above 900 degrees Celsius (or else you just get Carbon Dioxide)
- The temperature can be as high as 1920 degrees Celsius
- The temperature of the gas as it leaves the unit is about 700-800 de grees.
- Producer Gas is a mixture of gases – mainly Nitrogen (N2) and Carbon Monoxide (CO) in the ratio of about 2:1.
- Keep in mind that for each unit of oxygen used in the process, four times as much nitrogen (by volume) joins the party. Being totally inert, the nitro gen passes along to the engine.
- The first recorded producer was that of Bischof (1839), and 1st gas producer driven vehicle was built by J.W. Parker 1901. The early model producers were very cumbersome & heavy and even today producers are still manufactured along the same lines as the early German designs.
- Gas producers can be fitted to a generator set, tractor, motor vehicle, or simply for heating purposes such as water heating, grain drying etc.

...

Kurth Kiln

History and Heritage

Kurth Kiln was established by the Forests Commission of Victoria in 1941, as a result of concerns about reliability of petroleum supplies due to World War Two. Petrol rationing was introduced in October 1940 and by 1942 motorists were only allowed to drive 1300km a year with petrol.

Dr Ernest Kurth from the University of Tasmania was commissioned to design the Kiln with the aim to mass-produce charcoal, and was paid 5 Pounds for the use of his design. The total cost of establishing the Kiln was 1,799 Pounds 17 shillings and 2 pence.

Gembrook was selected as the ideal site for the Kurth Kiln as it fully met three essential criteria required for successful operation, these being:

- Water availability - The Kiln required 9,100 litres of water per day in order for the cooling systems to be effective. Kurth tapped into an existing water race, left over from earlier mining activities, needing only minor repairs.
- Timber availability - The Kiln used over 100 cubic metres of timber a week
- Sloping Land - This enabled easier top loading of wood into the kiln and limited the superstructure requirements

The completed kiln was commissioned on 18 March 1942 and, after an initial fine tuning period, produced some 600 tons of charcoal in that year.

The Kurth Kiln

Charcoal for the motor industry and the war effort

Adventures in Arcadian Chemistry
Wood Distillation in Australia,
by Professor Ian D. Rae of Monash University

Extracts from a paper in which Professor Rae takes a look at wood distillation in general and lists the highlights of many wood-processing establishments in the country:

"...The two World Wars have played important roles in Australian industrial and scientific history. On both occasions , imports of many types of goods were restricted or stopped and the defence of the country was considered to be imperilled by shortages of critical items."

"Cummings Smith and Campbell founded a company in 1872 in Yarraville were they produced fertilizers amongst other things. In 1904 Cummings Jr. went on an extensive fact finding tour around the world, attended the 23 Annual Meeting of the Society of Chemical Engineering in New York. Wood distillation was at its peak in America around that time.

The volatile product of wood distillation (pyroligneous acid) contained methanol, used as a solvent and as denaturant for otherwise potable alcohol, and acetic acid which could be diluted for use as vinegar. Both were used extensively as raw materials in the chemical industry. The residual charcoal had considerable value as a fuel."

"In 1905 the company started developing a wood-processing plant at Brittania Creek, just east of Yarra Junction. They took out timber leases, purchased a sawmill and built a factory on a 25 ha site obtained from the Victoria Department of State Forest. The plant was in operation from 1907 - 1924 and at times employed 100 men."

"There were several wood distillation plants in operation in New South Wales during World War 1, but things went quiet after that until the early 1940 when world situations renewed interest in alternate supplies. Professor E. E. Kurth at the University of Tasmania worked on the production of charcoal for use in automobile 'gas producers', and incidentally studied the volatile by-products. Kurth patented a new type of charcoal kiln which allowed for by-product recovery. Kurth Kiln was eventually constructed 7km north of Gembrook, although the by-product refinement was never implemented there. The kiln came into operation in 1942 and is still standing today."

"... the construction of a plant at Narooma on the New South Wales south coast was considered by others, but it seems not to have eventuated. A small plant was operated for a while at Mirimbah, Victoria, in conjunction with Christensen's saw mill, but it was never a commercial success..."

Background History

Australia's declaration of war in 1939 raised immediate concerns about petroleum supplies. In an effort to reduce the consumption of imported fuel, rationing was introduced on 1 October 1940, and by 1942 motorists were only allowed petrol for 1300km per year.

The use of substitute fuels, specifically charcoal, was encouraged, as Australia had an abundance of suitable wood. Over the war-years some 56,000 gas producer units of varying design were fitted to vehicles.

The cost of installation was the equivalent of 16 times the average weekly wage and a bag of charcoal gave between 50 and 100km at a cost between 6 and 10 shillings. Consumption of charcoal rose from 300 tons per month in 1941 to 1000 tons by mid 1942. To meet this demand the Forests Commission of Victoria constructed about 50 kilns at various locations, including Heywood, Dunolly, Cohuna, Ballarat, Yarram and Benalla and looked at the various ways charcoal was produced.

As Kurth's revolutionary design promised higher yield plus a more consistent quality charcoal, they arranged with him to build a full-scale production kiln at a suitable location. Kurth was paid 5 pounds for the use of his design and assured 'just consideration' of commercial manufacture.

In October 1941 the contract for the construction of the kiln at Gembrook was awarded to Messrs. Stanley and Nance, of Middle Park, the architect was S. J. B. Hart. The cost of construction was 1,799 Pounds, and the first firing of the kiln took place on 18 March 1942.

In the end the feared oil blockade did not eventuate and petrol, although rationed, remained available. Kurth Kiln, having proven itself by delivering some 600 tons of charcoal in just 6 month was, at the end of 1942, put into "mothballs" and only lit occasionally. After the end of the war the site became the Centre of Forestry Management for the area. At times up to 100 workers were stationed here, in huts as shown on the next panel in front of the Caretaker Residence. In the early 1980 the site was developed into a picnic and camping ground.

Sources: private archives D.C. Kurth; the University of Tasmania; Monash and the Melbourne University and the Historic Places Section.

Kurth Kiln is well worth a visit.

At the corner of Beenak Road and Solders Road, about 7km north of Gembrook in the centre of Kurth Kiln Park, lies the Kurth Kiln Picnic Ground. Apart from the normal picnic amenities it features camping and bush-walking facilities and has as its centrepiece the historic charcoal kiln built by professor Ernest Kurth.

The kiln was the first continuous process charcoal kiln built in Victoria and is the only complete example of its type still in existence. The Friends of Kurth Kiln have installed new informative interpretation boards on site that give visitors an insight into the early days of this area. With funding made available for the conservation of the historic kiln site the group have repaired the damaged steel works on the massive red-brick structure and replaced the missing kiln doors. The small dam behind the storage shed

has been repaired and a new post and rail fence now gives it a nice finishing touch. The waterwheel restoration was completed, ready to drive some of the period machinery still stored in the shed. A tentative date for its inauguration has been set for 9 June 2001.

The picnic area overlooks a large, tranquil pond. It is a wondrous sight to see the red iron roof of the shed and the brown timber buildings reflecting serenely in the water.

Just past the dam a Walking Track follows the Tomahawk Creek, where one can hear the water gushing over the rocks, listen to the birds sing their cheerful songs, see the tall majestic eucalyptus tree gently swaying in the wind.

Rare wildflowers hide in the dabbled sunlight filtering through the trees and two rustic wooden bridges invite you to cross the creek. Should you like to sit awhile on the way and reflect on the wonders of nature, there are benches strategically placed in the most picturesque spots.

Investigations into the source for water Kurth would have used for the cooling process of the kiln led to the creation of two Interpretation Boards along Waterchannel Track, to commemorate the early miners responsible.

The Friends of Kurth Kiln are busy collating the background of this attractive bush setting and would welcome any additional historic information that could add to the collection.

A small lake on the Tomahawk Creek adds to the serenity of the bush land setting



My war-time experience with Charcoal Gas Producers

by Graeme Tibbett

My first vehicle fitted with a NASCa model, was a 1926 Chrysler 60 Tourer. The unit was mounted on a heavy carrier attached to the back of the vehicle.

It consisted of a hopper which from memory was about 2 feet square and about 3 feet high. The air was admitted at the side of the hopper about 5-6 inches above the bottom through a fitting known as a tuyere (pronounced TWEE-ER) which was made of some ceramic material somewhat akin to fire bricks used in furnaces.

The fire itself was not very large and was concentrated around the tuyere and as it burned the charcoal, so further charcoal would feed down from the hopper. The fire produced gas and ash and this had to be removed from time to time, from an ash trap at the bottom through a trapdoor.

On the side of the unit was a gas filter through which the gas was passed to remove as much grit as possible before it was fed into the engine through a "T" fitting, with a butterfly valve usually fitted under the normal carburettor.

The filter on my first unit consisted of, I think, four white felt bags over wire frames. They were about 12 inches by 24 inches by 1 inches thick and the gas passed from the outside to the inside of the bags. Dust was collected and fell into the ash trap. The gas hose from the unit to the engine was rubber, about 2 inches in diameter.

To operate, the hopper was filled through the top opening with charcoal, the lid locked down and the motor started on petrol. The gas valve in the "T" fitting was cracked open then a piece of wire with a rag tied on the end was dipped in kerosene and lit and pushed into the tuyere where the flame was sucked into the charcoal and ignited it.

One then got into the vehicle" and with the judicious use of the accelerator, "T" valve and choke, gas would be drawn into the engine and then the petrol would be shut off and everything was ready to go. This procedure took about 13 minutes. Later models used an electric blower to start the process and so some petrol was saved.

In my experience the motor only produced about 60¬70 per cent of the normal petrol engine, evens the gas unit was working at 100%, due to lower thermal efficiency of gas compared to petrol. Other factors that reduced the efficiency of the system was the charcoal quality, which varied markedly in the wood it was made from and the moisture it contained.

I later wondered if a motor bike would work on gas, so I bought a Harley Davidson outfit for 5 pounds (I wish I still had it today) and made a small Gas Producer unit to go on the back of the sidecar. The hopper was a five gallon drum modified to suit. The filter was one of Mother's old sugar canisters, with a couple of quarts of old engine oil in the bottom, into which the incoming gas threw its heavy particles, then went up through some oily sisal.

The Harley went well and I rode it from Brunswick to Maribynong every day to work until one day it came to a sad end when going through central Melbourne it backfired, and blew the bottom out of the filter and spread oil all over Elizabeth Street.

We thank Graeme for his contribution to our archives and our display.

STATE CHARCOAL BRANCH
RAILWAY BUILDINGS. FLINDERS STREET, MELBOURNE. C.I
30TH MARCH. 1942.

EXTRACTS FROM THE
PLAN FOR INCREASING PRODUCTION AND CO-ORDINATING CHARCOAL SUPPLIES FOR VICTORIA .

The Government has directed the Forests Commission of Victoria to establish the State Charcoal Branch, and has arranged for the assistance of an Advisory Panel to take in hand the matter of stimulating the production of charcoal in sufficient quantities to provide for the ever-increasing number of Gas Producers being fitted, as it is evident that the present rate of charcoal production will need to be trebled within the next few months, otherwise shortage will be such that Essential Services, in connection with the War Effort, may be seriously handicapped.

Distribution of charcoal from the State Charcoal Branch's depots in the metropolitan area and in the country will be to wholesale and Fleet Owners only.

Retailing will be entirely through Local Garages. Charcoal is to be sold in weighted bags, labelled with

- LIGHT Charcoal 40lb bag
  YELLOW Label 0-03s-01d

- MEDIUM Charcoal 45lb bag
  RED Label 0-04s-01d

- HEAVY Charcoal 50lb bag
  BLUE Label 0-04s-06d

The above prices, in all cases, are for a full bag of charcoal of regular wheat sack type. The weight variation of the bags from 40lb. to 50lb. is entirely due to the weight of the charcoal itself. It requires more wood to produce a given amount of light weight charcoal than it does of heavy charcoal. Also a garage man gives the same amount of service with a light as with a heavy bag, and, therefore, should be paid accordingly.

These are the facts governing the Branch's decision to sell Charcoal by the bag, and to have separate prices for Heavy, Medium and Light weight charcoal, or in other words, a price for the actual potential mileage to be obtained from the contents of the bag.



ALL CORRESPONDENCE should be addressed to:

The State Charcoal Branch,
Railways Buildings, Flinders Street,
MELBOURNE, C.I.

EARLY DEVELOPMENT OF PRODUCER GAS …

- 1839 – Bischof (Germany).
- 1857 – Siemens Bros.
- 1860 – first successful gas engine.
- 1872 – used PG to power an airship.
- 1901 – PG used to power Car (Parker UK).

1914-18 War – PG not even considered.

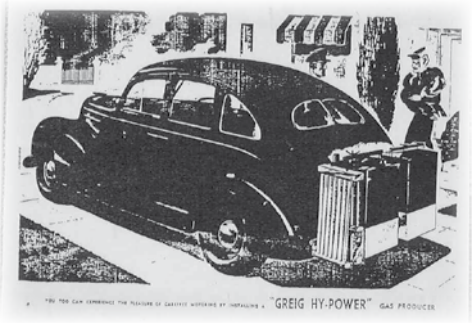
1920-1935 – given serious consideration, particularly in remote areas

RESEARCH & DEVELOPMENT …

- Rennie (1930) – heavy units for Trucks.
- Woods (1938) – Rhodes Scholar.
- DoD - (1939) – prescriptive Manual.
- CSIR (1940) – Charcoal from Australian wood.
- J & D Cash (1940) – definitive text.
- Bowden (WA - 1941) – GPU on Tractors



The GPU of this truck has been donated to us, together with relevant background information (see below)



Car fitted with GPU at the rear

NATIONAL SECURITY (GAS PRODUCER) REGULATIONS

LIQUID FUEL CONTROL BOARD (VICTORIA) V1c/3/1L/2697/10/0

8668

PERMIT TO INSTALL PRODUCER GAS EQUIPMENT

The person named herein is hereby authorized to ~~acquire and/or~~ install producer gas equipment for use on the vehicle owned by him, details of which are shown hereunder.

Permit No.	Name and Address of Holder VH.	Details of Vehicle: Make and Type	Details of Vehicle: Registered No.	Motor Spirit Consumer's Licence No.
8668	U. H. Pestling, Bagshot.	Ford Utility.	FF-284	

NOTE.—1. Producer gas equipment may only be sold or fitted on the order of a person who has been granted a permit to fit producer gas equipment to the vehicle specified on such permit and the permit must be produced by the holder at the time of arranging purchase or fitment of the unit.

2. In respect of each sale, disposal or fitment of producer gas equipment, the supplier and fitter must each keep a record of the number of the permit, name and address of holder, registered number of vehicle, and serial number and trade name of the producer gas equipment.

Make of Unit Dowson
(This is the only make of unit authorized to be sold or fitted)

Name of Supplier

Fitment by W. H. Symons.

Priority of Fitment

Date of Issue 2/11/43.

Signed [signature]

ADDRESS—EXHIBITION BUILDINGS, RATHDOWN STREET, CARLTON, N.3.

E. V. FIELD, Secretary.

NOTE:—ENDORSEMENT BY PERSON OR FIRM FITTING UNIT IS REQUIRED ON BACK OF PERMIT IN SPACE PROVIDED.

P.8258/10.43—47.11855

Time-line of Kurth Kiln

1940 Following the introduction of petrol rationing in October 1940 Doctor Ernest Kurth of Tasmania is commissioned by the Government to create a kiln that could mass-produce charcoal as a substitute for motor fuel.



1941 Kurth Kiln is established by the Forests Commission of Victoria on Tomahawk Creek, some 7km north of Gembrook. It is a rectangular brick structure 4m x 3.5m x 8m high on a concrete foundation.



Kiln in operation, note the stark, barren background following the 1939 bushfire

1942 The first firing of the kiln takes place on the 18th March 1942. The kiln could hold about 25 tonnes of wood (metre-long billets) and, if optimum loading was maintained, produced about 21 tonnes of charcoal a week from 120 tonnes of wood.



A water-cooled grate at the bottom of the stack caused the charred wood to crumble under the weight of the stack into manageable bits, and at the same time maintained the charring temperature at the critical point to produce a consistent quality coal. Not only was this process 50% faster than any other method then in use, it was also 15% more efficient in the conversion.

The easing of petrol rationing, along with an oversupply of charcoal from private producers results in continuous operations at the Kiln coming to a

halt in August 1942. The following four years see only intermittent use of the kiln. In all, some 1000 tonnes of charcoal were produced at Kurth Kiln.

1946 In February 1946 the Victorian Forests Commission starts using the area as a camp for forest workers. Huts are purchased from the army and placed at the Kurth Kiln site (a few of them are still standing) and Kurth Kiln becomes the main base camp for the region, housing 80 -100 men in 18 huts.



1963 The FCV operations are scaled down; 3 huts burn down, only 8 remain.

1982 The site is developed as a picnic and camping ground. A further three huts are demolished in 1982 and the material used to modify one of the remaining ones as a Caretaker's Residence.



Dorothy Kurth visits in the early 1980

1984 Ron Thornton moves into the Residence and assumes the unofficial role of Caretaker.



1996 Conservation Plan prepared for Kurth Kiln by the Department of Natural Resources and Environment; (Daniel Catrice).

1997 Major Repair to the Flue and Chimney structure of the Kiln are carried out by Parks Victoria.

1999 Formation of the Friends of Kurth Kiln as an Incorporated Association. Procurements of Volunteer Grants for the Conservation and Promotion of Kurth Kiln.



2000 Repair to Steel work of Kiln, replacement of two missing charcoal chute doors. Re-establishment of retaining dam for Waterwheel. Install a 5000 litre rainwater collection Tank. In June Ron Thornton dies.



2001 Construct a new 6 foot waterwheel and flume as a working exhibit to symbolise the historic past. Construct three new Interpretation/Display Boards on Shed.



2002 Commission Kurth Kiln Heritage Action Plan; BIOSIS (Gary Vines). Investigate the reconstruction of the Charcoal Grader. Create a new 1km long Thornton Walking Track on the north side of Tomahawk Creek; build a 15m bridge across the Creek. Commence categorising and computer cataloguing the Cultural Heritage Items at Kurth Kiln. First Heritage festival.

2003 Install a Solar Electric system to allow use of on-site computer and operate Visitor Displays. Construct benches and trestle tables for use on site. Repair annexe (04A) next to Kiln Continue the cataloguing work. Produce the “Friendship Festival”.

2004 The Kurth Kiln Heritage Festival won the Cardinia Shire ‘Event of the Year Award’ at the 2005 Australia Day Celebration in Pakenham.

2006 Parks Victoria arranged major repair to the Big Shed to secure the structure of the building. A grant from Parks Victoria helped us to create a couple of Interpretation Boards to help the casual visitors with historic information on the site.

2007-8 Grants from Melbourne Water, the Waratah Company, Port Philip and Westernport Catchment Management Authority and the Department. of Families, Community Services & Indigenous Affairs made a big difference with environmental improvements.

2011 Parks Victoria undertakes reroofing the buildings

Nowadays Kurth Kiln, at the centre of Kurth Kiln Park, is appreciated for its picturesque picnic and camping ground environment, its walking tracks as well as its historical Heritage. Additions to the area since the charcoal producing and base camp days have been minimal and mainly consist of picnic tables and improved public toilets facilities..

Kurth Kiln Regional Park consists of some 3500ha of State Forest. It is managed and maintained by Parks Victoria from their Gembrook Office.

The Friends of Kurth Kiln

a group of Volunteers
caring for Kurth Kiln
and its natural heritage environment
and
promoting greater public awareness
of its historic significance



The Friends of Kurth Kiln

Caring for the Kurth Kiln heritage and its environment, and promoting greater public awareness of its historic significance

Kurth Kiln is a historic site some 70km east of Melbourne and the Home of the Friends of Kurth Kiln Volunteer Group.

The group officially started in June 1999 with 12 members, that is when we registered the name and became incorporated. But our interest in the historic place goes back some 10 years further, when we started to collect information on the historic site and its creator from libraries, universities and living descendants of Professor Kurth.

You can learn more about Kurth Kiln and the Friends Group looking after it, at their website www.vicnet.net.au/~fofkk, by contacting them on 5967 4201 or email auk@c031.aone.net.au

Living History at Kurth Kiln

at the Kurth Kiln Picnic Ground Corner Beenak and Soldiers Road, 10km north of Gembrook.

The Friends of Kurth Kiln Group's stated aim is: "To preserve and maintain the Kiln site and to promote greater public awareness of its historic and cultural significance". Realisation of this vision is an ongoing project for them and includes such things as:

- Create historic display areas;
- encourage visitors and tourists to come, and provide guided tours of the kiln-site for them;
- restore period machinery and create interactive displays like the functional water wheel;
- install a tank to collect rainwater for public use;
- create a computer archive of the historic artefacts found at the kiln;
- produce promotional material for displays at public meetings;
- enhance the picnic area borders with native re-vegetation;
- promote the walking tracks along Tomahawk Creek;
- install signs with information on local flora and fauna;
- hold an annual Heritage Festival.
- With grants received from Parks Victoria, from Commonwealth and State, and support from local business the group has so far been able to:

1. Repair the vandalised steel work on the kiln. It was one of our first projects funded by Parks Victoria starting in May 2000.



Sparks flew as David DeCoite repaired the steel doors on the Kiln! One of the two missing steel doors of the Kiln was found close by in the bush, the second was never found and had to

be recast with the help of a local steel foundry.

2. install Interpretative Display boards at the big shed



3. install a water tank



4 reconstruct the broken dam - complete with historic fencing.



5 construct and install a 6 foot water wheel



6 create the new Thornton Bushwalking Track



7 build a new footbridge over the Tomahawk Creek



- re-vegetate damaged bush, involving both the Gembrook and Hoddles School children



A group photo in front of the Kiln was taken after a sausage sizzle, a talk about the history of the kiln site, presentation of certificates of appreciation and a walk along the Thornton Track.



- secure picnic and parking areas;
- provide a friendly work environ ment with tables and chairs,
- a gas barbeque and patio heater;
- Install a Solar Panel electricity system to provide power for a computer to catalogue and categorize, number and photograph some of the 2000 Movable Cultural Heritage Items found so far on site.



Creating a solid Display Wall for featuring small items was one of the first for this project.



Numbered, identified and photographed, safe behind a see-through plastic curtain some 50 items from the Cultural Heritage Collection are now on permanent display.



The Friends of Kurth Kiln are also involved in leading bushwalking groups along the picturesque tracks around the Kiln area



and give talks about the history and heritage of the Kiln to Clubs, Schools and Social Groups.



The group participates in various local activities, such as Gembrook Puffing Billy Festivals, re-locating nesting aviaries for the endangered Helmeted Honeyeaters



and promoting the Kiln's historic significance at the monthly Gembrook Market.



The annual "Kurth Kiln Heritage Festival" has been awarded the Cardinia Shire Australia Day Award for best Community Festival in 2005.



The Kurth Kiln Friends Group has presently (2012) 95 members. Scheduled working bees are held every seconded Saturday of the month. After a short General Meeting everyone works on their favourite project.



It is our firm believe that as volunteers everyone can and will contribute best in something they feel good and comfortable about: such as maintenance, computer work, track work, bush care, writing history, new projects, design etc.

Our local historian and most senior member, Bill Parker, once exclaimed in amazement: “I have never, in my 60 year long experience with committees and councils, been part of such a friendly, easy going yet effective committee as this”. Perhaps, he reflects, it is the multinational, multicultural collection of our members (six different ethnic origins) that provides the magic mix.

If you like volunteering why don’t you visit us on any Working Bee day and get a feel for the place and the group, you might decide to join us. -- Call us anytime on 5967 4201.



Ranger Dave Drangsholt and local historian Bill Parker unveiling a plaque erected at the site of the Red Letter Box Post Office in Beenak by the Friends of Kurth Kiln. Bill and John Waghorn (retired from Australia Post) researched the history of the Red Letter Box Post Office site from 1901 to 1951 in an extensive report.

The Friends of Kurth Kiln group gratefully acknowledge the support of Parks Victoria in our endeavours, especially so the Rangers and the Staff of the Gembrook Office. Without their back-up, their continued guidance and encouragement none of the foregoing would have eventuated.

References used in this brochure are:

Kurth Kiln Gembrook Conservation Plan, July 1996 by Daniel Catrice, Department of National Resources and Environment.

Kurth Kiln Heritage Action Plan, February 2002, by Gary Vines & David Wixted, Heritage Alliance, Natural & Cultural Heritage Consultants.

Kurth Kiln Pictorial Calendar 2003/4, produced by Alfred & Ursula Klink, for the Friends of Kurth Kiln.