

The birth of the backhoes: Their early days in Australia

By Ian M. Johnston, The Tractor Historian

The steam shovels of the 1920s and 30s were replaced by diesel powered cable excavators in the 1940s. In the 1950s the first hydraulic backhoes entered the earthmoving scene and went on to revolutionise the earthmoving and construction industry.

THE DINKUM DIGGER

Forget all the blurb put out by the numerous hydraulic backhoe manufacturers of today, each claiming to have pioneered the concept.

“Read my lips”: The first hydraulic backhoe, designed to be attached to the rear of a tractor, was the Dinkum Digger created by a Scotsman named Robert Ewan. The prototype was tested in Cupar, Fife, in 1952 with the co-operation of Gavin Reekie, who owned a Ferguson tractor dealership in the nearby village of Ladybank.

Another **“Read my lips” proclamation is:** Dinkum is not an original colloquial Aussie term but is in fact a Scottish word. I realise such a revelation is probably bordering on treason and will likely provoke an early morning visitation by ASIO, concerning my allegiance to the Australian flag.

But to continue — Carlton and Roy Whitlock trading as Whitlock Bros., with premises at Great Yeldham, Essex, in the 1950s were noted for their range of farm trailers and mobile shooting hides. The latter were produced for the landed gentry, including the Royals, who had bestowed upon Whitlock Bros. a Royal Warrant for services rendered.

Anxious to expand its engineering business, Whitlock Bros. successfully negotiated the rights to manufacture Dinkum Diggers for attaching to Ferguson and Fordson tractors. Their agents in Australia, Lough Equipment Pty.



Ltd. of Artarmon, NSW, imported the Whitlock Dinkum Diggers into Australia (around 1958) and appointed the Ferguson tractor dealer British Farm Equipment Pty. Ltd. as the retail outlet.

In hindsight, the Dinkum Digger was a monstrosity, although I have to confess to scores being sold — and after all it was the first! It had no hydraulic stabilisers, thus

could not be self levelled — a necessary requirement for digging vertical trenches. It therefore had to have boards placed under a wheel if working on a side slope. It was dependant on drop-down sprags to prevent it being pulled by its bucket into the excavation — a not infrequent occurrence.

The Whitlock Dinkum Digger Mark 2, manufactured in 1961 by H. Walter & Co. of Auburn, NSW, for Whitlock Australia Pty. Ltd., was equipped with hydraulic stabilisers, constituting a big improvement. But the updated model was ridiculously heavy for the poor little Ferguson 35 farm tractor, upon which it was mounted. In fact the unit was now so out of balance, that unless fitted with a frontend loader attachment, it was impossible to drive the rig along the road without the front wheels being permanently airborne!

One such unit (without a frontend loader) was sold to a plumber in Wagga Wagga, who just happened to be the brother-in-law of the local police traffic sergeant. The family relationship was severely strained when one day the sergeant almost had a seizure when he encountered the Dinkum Digger being driven along Fitzmaurice Street on its two rear wheels, being steered only by the individual turning brakes. Despite being registered, the Ferguson/Dinkum Digger was instantly banned by the sergeant for use on a public road.

Lough Equipment was sued by the plumber, Whitlock Australia was counter sued by Lough Equipment, and all parties were duly assembled at Wagga Wagga for the court hearing. Following the downing of several brandies, for medicinal purposes, in Romano’s Hotel (right opposite the court house) the Lough team got cold feet and decided to settle with the plumber out of court.

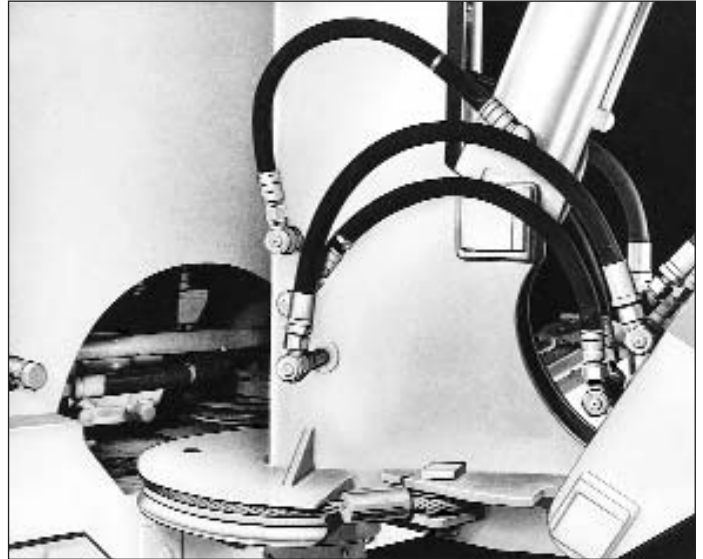
So ended the Dinkum Digger Mark 2 in Australia.



The Whitlock Dinkum Digger Mark 2 was manufactured in Australia in 1961–62. Note the depth and enclosed design of the standard bucket. In clay soil the operator would spend half his day with a crowbar endeavouring to clean out the packed clay from its innards. (I.M.J. archives).



The Whitlock Dinkum 60 is shown with an optional clam shell attachment. In order to gain stability when using the clam shell or a large trenching bucket, the wide stabilisers were a necessity to prevent the tractor tipping when a full bucket was slewed to right angles in preparation for dumping. However the design of the stabilisers prevented the backhoe digging a parallel trench close to a wall or obstruction. Note the trapezium boom linkage. (I.M.J. archives).



The slow cables, attached to hydraulic cylinders below the tractor, were prone to snapping, despite experimentations with different cable materials. A snapped cable resulted in the extremely dangerous situation of a free swinging uncontrollable boom. (I.M.J. archives).

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THE WHITLOCK DINKUM 60

The demise of the Dinkum Digger Mark 2 did not herald the end of the Whitlock saga in Australia.

In 1960 Lough had imported the first of the new loader/backhoe rigs from Great Yeldham. There were actually two models — the Dinkum Major and the Dinkum 60. The 60 was just a bigger version of the Major.

The Whitlock Dinkum 60 was a giant in its day, but grossly overweight for the Fordson Power Major that was its base. A full length chassis, incorporating its own 'industrial' front axle, was bolted to the housings of the Fordson. This was expected to support the weight of the one cubic yard loader and the patented trapezium design massively heavy backhoe.

The big machines certainly looked the goods and many were sold purely on account of their rugged appearance.

Owners soon learned however, it was necessary to always have handy a reserve of slow cables. Dual hydraulic cylinders were mounted longitudinally on the underside of the tractor. Steel cables attached to the end of the cylinders were fed through dual pulleys and wrapped around the slew post. The counter exertions of the cylinders actuated the slewing of the backhoe.

The trouble was — the cables kept snapping, resulting in the free uncontrolled swinging of the main boom.

With a quarter of a ton of dirt in a 36 inch bucket, extending out 20 feet from the slew post, this resulted in an extremely dangerous situation.

The tractor rear axle housings, designed for farm work, were incapable of supporting the load. Their flanges cracked and the bolts connecting them to the differential housing stretched and pulled out. Not a happy event and even if the bolts simply loosened, this was enough to leak the oil out of the differential.

The backhoe and loader had a squillion steel pins with bronze bushes. The bronze bushes had an unacceptably short life, especially if the unit was working in sand or grit and they were extremely expensive to replace.

The weird hydraulic rotary distributor mounted on the slew post, blew O rings with monotonous regularity. Replacing O rings was a time consuming and exacting job.

The Fordson Power Major was fitted with drum brakes that were inadequate even for the bare farm tractor. If called



Conquip loader backhoes were the best of the Australian designs. The FEL 27 loader, with its parallelogram linkage, was the brain child of designer Sid Wild and a perfect match for the Chamberlain tractor unit. The BH 1 backhoe was powerful but slow and bulky. (I.M.J. archives).

upon to effect an emergency stop with the Whitlock rig, the brakes were totally ineffective. When the Fordson Super Major replaced the Power Major, the most noticeable improvements were the new disc brakes. But even these were hazardous in the extreme when the big machine was being propelled along a multi-lane city thoroughfare.

The Whitlock Dinkum 60 was eventually superseded by the even heavier 60A — but that's another story. Sufficient to state, it is not surprising that Lough Equipment ditched the Whitlock range in favour of JCB — Whitlock's arch rival in Britain. Eventually Whitlock had an association with HyMac Excavators, before disappearing from the scene. JCB Loader/Backhoes went from strength to strength to ultimately become the world's top seller.

THE OTHERS

It should be noted that by 1960 there were several indigenous Australian backhoes.

The Cranvel, with massive dual single acting slew rams that kept blowing seals and a boom that could never be too distant from an electric welder.

The Ace that had no oomph and would only excavate in soft ground.



Massey Ferguson took the sales lead with its excellent loader backhoe, despite the fact that the tractor was basically a modified MF 135 farm tractor. Pictured is a 1969 MF 40. (I.M.J. archives).

The Steelweld that had a bizarre saw-tooth slew mechanism and, like the Ace, was hopeless in hard ground.

Also there was the Conquip BH1 mounted upon a Chamberlain Champion and built like the Sydney Harbour Bridge and about as useless in confined excavating sites. Certainly it was powerful and the Chamberlain had no trouble in supporting

the rig, but the digging cycle was painfully slow and it was overly bulky for most backhoe jobs.

Then along came the Massey Ferguson Workbull, followed by the 702/203/207 (not an access code — that was its title). A brilliant little machine that quickly gained sales supremacy throughout Australia in

62 ▷



Lough Equipment Pty. Ltd. ditched the Whitlock in favour of JCB in 1956. As part of a global arrangement Blackwood Hodge Ltd. acquired the franchise in Australia a few years later. Pictured is a JCB 3Cii mounted upon a Leyland 4 cyl. diesel farm tractor. (I.M.J. archives).



Ian M. Johnston (fourth from left) inspects a Furukawa articulated 4 wheel drive FL 70 in Japan, to assess its suitability for the Australian market with a backhoe attachment. Some months later the first shipment arrived in Australia and in the first 12 months over 100 units had been sold. (I.M.J. archives).

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the 1960s. It was challenged in technology only by the arrival of the Furukawa from Japan in 1971.

Ford, John Deere, Case and most of the other tractor manufacturers soon followed Massey Ferguson with well-designed industrial loader/backhoe rigs. In due course the larger of these were replaced by track mounted hydraulic excavators.

So from that distant time in Fife, Scotland, the backhoes have evolved into the high tech machines of today.

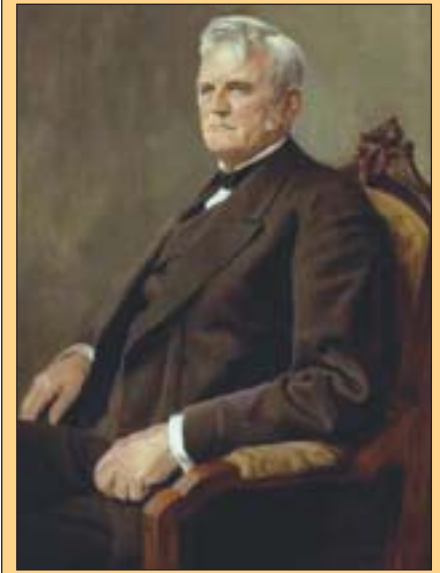
FOOTNOTE: The foregoing has examined the early tractor mounted backhoes.

For the record, it should be stated that the American firm Warner and Swasey Co. of Solon, Ohio, was undoubtedly the first to produce a hydraulic excavator, as distinct from a tractor mounted backhoe. The Warner and Swasey excavator prototype was fitted to a Dodge truck body and was first tested in 1947.

The company went on to become one of America's major producers of hydraulic excavators. It also acquired the Hopto range, which was unique in having a swivel wrist action bucket and a rotating telescopic boom. This enabled the Hopto to extend its bucket into cavities such as tunnels and also shape banks in the manner of a tilted grader blade.

Readers are invited to visit my web site: www.ozemail.com.au/~ianmjohnston

IAN'S MYSTERY IDENTITY QUIZ



QUESTION:

Who is this distinguished gentleman and where does he fit into the tractor industry?

CLUE:

His name is familiar to every farmer.

DEGREE OF DIFFICULTY:

You either know — or you don't. But you might guess with the aid of the clue.

ANSWER:

See page 80



A Furukawa FL 70 loader backhoe shown working on the NSW central coast. This was the first tractor ever sold in Australia custom built from the ground up specifically as a base for a loader backhoe. It represented a breakaway from the outdated farm tractor philosophy. Warranty problems were negligible and the 4 cyl. Isuzu diesel provided an abundance of power. The 4 wheel drive and articulated chassis for this type of machine, was cutting edge technology. Imported into Australia by Ian M. Johnston Pty. Ltd. Rydalmere, NSW from 1971. (I.M.J. archives).