



# World's best tractor — in 1910!

By Ian M. Johnston

**F**ew vintage tractor enthusiasts beyond our shores have ever heard of a Caldwell Vale. Indeed even in Australia, expect blank expressions from the majority of tractor buffs if asked about the Caldwell Vale tractor. This is indeed a shame, because without question the world's most technically advanced tractor in 1910 was a totally indigenous Aussie!

## THE OTHERS

For justification of this assertion, one has only to consider the engineering designs of the few tractors that had progressed beyond the prototype stage in 1910. The US offered around a dozen production makes which included Rumely, Hart Parr, Emerson Brantingham Big Four, Birrel, Twin City and International Harvester's Titan and Mogul. Britain had the Ivel, Hornsby-Akroyd and Marshall. Europe trailed behind and was still only experimenting with cumbersome prototypes.

Without exception each of the tractors mentioned were crude clanking devices. The minds of their architects were entrapped in the philosophical parameters of the steam era. Of all the American design-



An Emerson Brantingham Big Four operating in central New South Wales. Note the three ploughs which the big tractor would handle with ease. (Photo courtesy Pioneer Park Museum, Parkes, New South Wales).

ers only D.M. Hartsough, the creator of the Big Four, had the vision to conceive a four cylinder engine specifically for powering a

tractor. All the other tractors of the period utilised stationary type single or twin cylinder slow revving engines bolted to an iron chassis. Transmissions, brakes and steering came straight out of the steam traction engine parts bins.

To his credit Dan Albone, the creator of the Ivel, had managed to divorce himself from the belief that a tractor had to be big to be good. The Ivel was a comparative lightweight aimed at replacing two Suffolk Punch draught horses. Albone was obviously not influenced by the huge bulk of the traction engines.

## THE CALDWELL VALE

In view of the foregoing, it is extraordinary that in 1910 a small engineering shop, located in the outer Sydney suburb of Auburn had in production a tractor powered by a four cylinder overhead valve engine.

Even more remarkably, the unit featured four-wheel drive, four-wheel brakes, four-wheel power steering and an implement power lift system!

The story of the Caldwell Vale has its origins in South Australia where, in 1907, the brothers Norman and Felix Caldwell registered a patent for a transmission design, which described a means of deliver-



A 1910 archival photo of an Ivel under test at the Yanco Agricultural College, New South Wales. The bonnet has been removed. This was a common practice, as the two cylinder engine was prone to overheating. Also pressure was created in an oily discharge around the engine if the bonnet was in place. (Photo courtesy The Manning Valley Historic Museum, Wingham).

ing power in equal proportions to all four wheels of a vehicle.

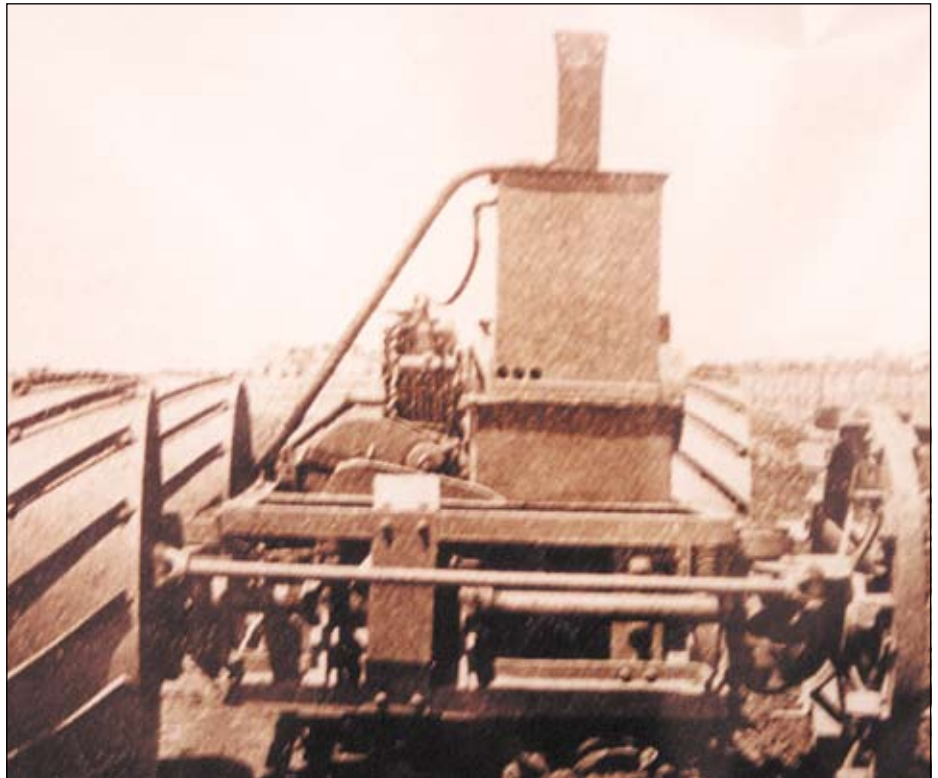
The brothers then set about building a tractor to prove that their theory would work in practice. The prototype machine consisted of a six metre long simple chassis upon which was mounted a twin cylinder water cooled petrol engine. The chassis was supported on two axles with all four wheels being driven and the four wheel steering was power operated.

The six ton machine was demonstrated at the Roseworthy Agricultural College of South Australia, before a group of prominent agriculturists. A 10 furrow disc plough was located under the belly of the tractor and could be raised out of the ground by the power lift mechanism.

In 1910 the Caldwell brothers wished to expand their recently established tractor manufacturing business and required an injection of capital. The Sydney based financier Henry Vale saw the potential of four wheel drive tractors and offered to put up the necessary funding.

A factory was built at Auburn, New South Wales and the Caldwell Vale Motor & Tractor Construction Co. Ltd. commenced business.

The original prototype was re-designed and a new three ton farm tractor was re-



**An archival photo of the 1907 prototype tractor, designed and built by Felix and Norman Caldwell, during its trials at Roseworthy Agricultural College. (Photo IMJ archives).**

leased, powered by the company's own design 40 hp four cylinder engine capable of running on kerosene, following the

initial warm-up period on petrol. The new tractor incorporated all the features of the ...56 ▷

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This photo taken in 1910 is of a Caldwell Vale Rough Terrain Road Tractor loaded up with bales of wool. These big transporters had a top speed of six miles per hour. (Photo IMJ archives).



A contemporary photo of a fully restored Caldwell Vale, being demonstrated at the 2004 Rusty Iron Rally. The restorer and operator is Reg Schuster. The engine had just been started and the cloud of smoke from the exhaust disappeared as the engine warmed up. (Photo IMJ).



A 1910 photo of the 80 hp Caldwell Vale in action. Note the four wheel steer, also the additional cooling tank mounted on the rear of the tractor, suggesting that the front radiator alone was insufficient to maintain a normal working temperature for the engine. (Photo IMJ archives).

prototype and had the ability to pull an eight furrow mouldboard plough at a depth of 10 inches at three mph.

The 40 hp unit was followed by a series of 80 hp tractors. Although essentially agricultural units, there was a demand for some to be fitted with a truck type body. These were referred to as being Rough Terrain Road Tractors and were deployed in a variety of situations. One operated in the arid semi-desert regions of South Australia, where it covered vast distances hauling a road train of eight heavily loaded wagons.

Several were purchased by The New South Wales Water Conservation and Irrigation Commission based at Leeton and were used for carting supplies to the teams of engineers and labourers involved in the initial construction of the Murrumbidgee Irrigation Scheme. Others were put to use on work sites during the early development of the new national capital at Canberra.

A fleet of Caldwell Vale tractors was purchased by the Australian Pastoral Company and used for hauling supplies into, and wool out of, the remote Longreach area of outback Queensland.

The engine in the 80 hp tractor was of the "square" design and featured a 16.5 cm bore and stroke. The resultant displacement of the Caldwell Vale engine was 11.1 litres and the 80 hp was developed at a leisurely 800 rpm. A Bosch magneto and trembler coil supplied the electrical impulse to the two spark plugs per cylinder. A decompression valve lifter was necessary to enable the massive engine to be hand cranked.

A three forward speed gearbox provided the big vehicle with a top speed of six mph. This seems incredibly slow by modern standards, but it should be remembered that a bullock team could only travel at half that speed and the tractor could maintain its six miles per hour for 24 hours a day.

By way of interest, the Caldwell brothers designed and built the world's first four wheel drive four wheel steer touring car in 1913.

Regrettably also in 1913 the Company was faced with a civil law suit. The judgement went against it and the financial penalties involved were considerable. Accordingly, the Caldwell Vale Motor & Tractor Construction Co Ltd was forced into liquidation.

This was a tragic development and one can only contemplate what the future would have been for Caldwell Vale had not fate intervened.



Pictured is the world's first four wheel drive, four wheel steer, touring car. This Caldwell Vale innovation is being tested at the Cronulla sand hills, circa 1913. (Photo IMJ archives).

## IAN'S MYSTERY TRACTOR

**QUESTION:** I discovered this derelict old rusty tractor near an abandoned mine deep in the Canadian Rockies. My pulse rate increased a few notches as I realised what I had stumbled across. Can you identify this tractor?

**CLUE:** It is one of a family of American tractors that all had a similar profile. A few of this model were sold in Australia.

**DEGREE OF DIFFICULTY:** Piece of cake, if you know your old American tractors!

**ANSWER:** See page 64.



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