

Modern **PRIVATE OWNER WAGONS** on British Rail



David Ratcliffe

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Patrick Stephens Limited

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Front cover illustrations (Clockwise, from top left) CAWD 92717, a 41 ton two-axle container wagon loaded with a purpose-built coal container (*A. Prime*); a liquid chlorine tank leased to ICI Mond by Tiger Rail; one of a small fleet of 88 ton hoppers owned by Hall Aggregates to carry sea-dredged gravel (*A. Prime*); a 90 ton aggregate hopper used to carry 'hardstone' from Bardon Hill Quarry.

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Chapter 5

Open Hopper Wagons

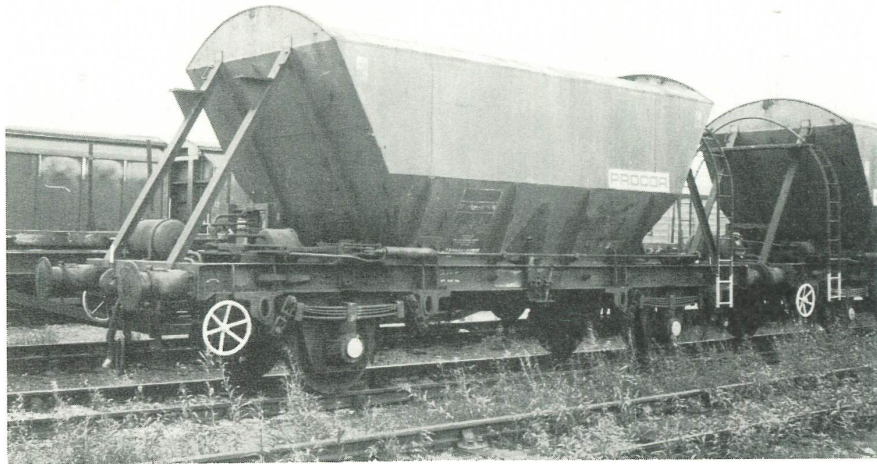
While a number of covered hopper designs date from before the Second World War, the emergence of the privately-owned open hopper is a more recent phenomenon, resulting largely from the building boom of the 1970s. A number of large fleets have now been built and the type has become one of the most common on British Rail.

Salt hoppers, two-axle

In 1971, Standard Wagon introduced the first fleet of bulk salt hoppers, initially for hire to BP Chemicals. The shape of these 46t glw wagons was most distinctive, featuring a steeply-angled body and an unusually long 26 ft 7 in underframe, with a 16 ft wheelbase. Four small vertical ribs sup-

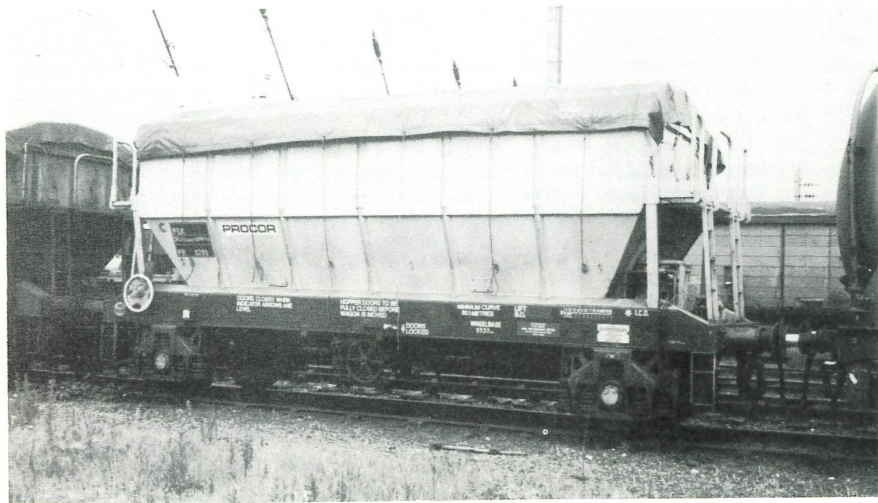
Table 13: *Open hopper wagons, two-axle*

Type	Number series	TOPS code	Builder	Date	Owner/Operator
Salt	PR 8201-8255	PGA	Standard Wagon	1971	Procor/various
Salt	PR 8256-8300	PGA	Charles Roberts	1974	Procor/various
Salt	PR 8901-8918	PGA	Charles Roberts	1974	Procor/various
Aggregate	AR 14201-14264	PGA	Charles Roberts	1972-4	Amey Roadstone
Aggregate	PR 14000-14151	PGA	Various	1972	Procor/Foster Yeoman
Aggregate	PR 14688-14704	PGA	Standard Wagon	1972	Procor/Amey Roadstone
Aggregate	PR 14706-14749	PGA	Procor	1978	Procor/Amey Roadstone
Aggregate	PR 14176-14197	PGA	Procor	1979	Procor/Foster Yeoman
Aggregate	PR 14265-14388	PGA	Procor	1979-80	Procor/various
Aggregate	PR 14434-14466	PGA	Procor	1981	Procor/Foster Yeoman
Aggregate	BRT 14600-14654	PGA	Standard Wagon	1974	BRTE/various
Aggregate	TAMC 14655-14687	PGA	Standard Wagon	1974	Tarmac Roadstone
Aggregate	TAMC 14840-14870	PGA	Procor	1979	Tarmac Roadstone
Aggregate	TAMC 14900-14921	PGA	Standard Wagon	1979	Tarmac Roadstone
Aggregate	RLS 14705	PGA	Standard Wagon	1977	Railease/Tarmac Roadstone
Aggregate	TBR 14500-14522	PGA	Procor	1980	Tilbury Roadstone
Aggregate	REDA 14750-14839	PGA	Various	1978-84	Redland Aggregates
Aggregate	TCS 14400-14432	PGA	BREL Shildon	1973	Tilling Construction
Gypsum	APCM 19551-19589	PGA	BREL Shildon	1970	Assoc Portland Cement
Limestone	BSTE 18000-18114	PGA	Standard Wagon	1975	British Steel, Teesside
Minerals	SRW 18500-18529	PGA	Standard Wagon	1982	Standard Wagon/various
Demonstrator	DAVS 14433	PGA	W.H. Davis	1976	W.H. Davis & Sons
Demonstrator	DAVS 19999	PGO	W.H. Davis	1981	W.H. Davis & Sons
Self-discharge	REDA 16000-16203(r)	PGA	Standard Wagon	1988	Redland Aggregates



Above This re-sprung salt hopper PR 8230 was recorded at Tees Yard in September 1987. Livery is rusty yellow with the 'Procor' symbol in blue and white, white lettering on black patches and black underframe.

Below The end-ladder design, deep, flat-sided solebar and tarpaulin cover are all evident in this view of PR 8296, taken at Warrington in July 1987. The wagon had recently been repainted with grey body, white lettering and black underframe, but it was unlikely to remain in this condition for long given the abrasive and staining nature of its load of salt.



ported the sloping part of the sides with two larger supports at each end which also carried the sharply-curved ladders and small inspection platform. The original FAT 4 UIC suspension was subsequently replaced by various types in order to permit 60 mph operation, while two wagons were experimentally built with shorter bodies. In 1980, a number received hood supports for use in aluminium oxide traffic between Hull and Stafford, but by 1987 all the survivors were carrying salt from the Cleveland potash mine at Boulby.

The second fleet of salt hoppers, built by Charles Roberts, was a 51 t glw design which quickly displaced the earlier vehicles from the BP traffic between Cheshire and South Wales. Wagons of this type occupy two separate blocks in the number series but are otherwise identical, and, though only 24 ft 9 in long, carry over 37 t. The large hopper body is strengthened by five vertical ribs on each side which extend from the solebar to the top of the side, while footsteps at each corner give access to short ladders mounted longitudinally on the end. These in turn lead to an inspection platform running across the full width of the end which also provides additional support for the hopper body. To protect the salt from weather contamination, five metal hoops can be fixed across the top to support a tarpaulin cover. Two sets of mechanically-operated hopper doors are located between the wheels, the operating handle and ratchet mechanism being located in the centre of the unusually deep, flat-sided solebar, which slopes down at each end to a conventional headstock. BSC Friction Pedestal suspension at an 18 ft 2 in wheelbase was fitted from new. Wagons still carrying salt have been hired to ICI since 1981, but a reduction in this traffic has seen a growing number reallocated to the movement of aggregates.

Aggregate hoppers, two-axle

The 51 t salt hoppers were a variant of an existing design which had been introduced some two years previously for aggregates traffic. The building boom of the 1970s saw the construction industry having to look to remote quarries to satisfy the huge demand for crushed stone, particularly in the South-east, and only rail could provide the bulk transport required. As part of the long-term contracts signed at that time, British Rail insisted on the provision of company-owned, or leased, modern air-braked wagons for any substantial movements, and though demand has since slackened, the advantages of rail transport have seen many companies continuing to invest in their own wagon fleets.

Most two-axle hoppers derive from the initial Charles Roberts design, built in 1972 for hire to Foster Yeoman. These vehicles have part-sloping sides and ends supported by small ribs, with the deep, flat-sided solebars and ladder arrangement as on the salts. After a few years in service, they were fitted with shaped metal plates, fixed beneath the inspection platforms, to protect the brake cylinders from damage when being loaded with stone. PR 14025-14095 were built by Standard Wagon, the major difference being the locating of the brake cylinders beneath the headstocks, obviating the need for protective plates. Unlike Foster Yeoman, Amey Roadstone, another major quarrying company, initially chose to purchase its own wagons, but, after a batch of 64 vehicles had been acquired, it also decided to lease, and indeed in 1986 the original batch were sold back to Procor for re-hire to Amey Roadstone.

Further construction of this design commenced in 1978, some four more batches being built by Procor up to 1981. Major modifications involved the use of straight-channel solebars, with Gloucester Floating-



BRT 14611 is one of the 51 t aggregate hoppers leased to Peakstone of Buxton. Note the straight-channel solebar, preferred by the builders Standard Wagon, and the attractive livery which comprises mustard body and underframe, with black 'Peakstone' lettering and symbol, 'BRT' symbol in red, black and white, and other lettering white, some on black patches.

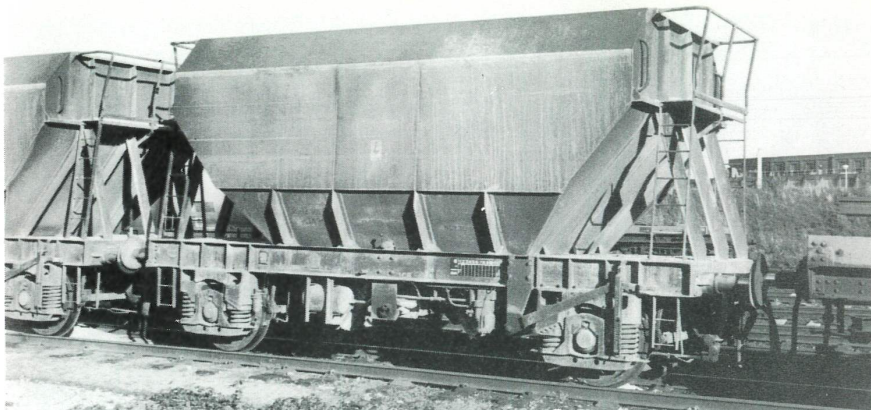
axle suspension from PR 14320, although the 16 ft wheelbase was retained. The body shape was slightly altered and strengthened by 'T'-angle struts, while conventional side-mounted ladders were fitted, capacity remaining at some 38 t.

In 1982, PR 14329 was the subject of an interesting experiment, its standard hopper body being replaced by a prototype self-discharging type divided internally into two compartments, the floor of each being formed by separate, externally powered, conveyor belts. The load was discharged through a single central opening in the underframe, but various trials proved unsuccessful and the idea was abandoned.

Foster Yeoman's fleet is painted light grey with black lettering, solebars and underframe, the first batch originally having dark grey solebars. The company name is usually carried in white on a blue panel along the flat part of the side, and the wagons operate from the company's quarry

at Merehead, near Cranmore, to various distribution depots in the South and South-east. Initially, the Amey Roadstone vehicles were yellow with black solebars and underframe, but in 1983 they were repainted pale mustard with grey solebars and underframe, the 'ARC' initials being picked out in grey with all other lettering in white. These wagons operate from quarries at Whatley, near Frome, and Tytherington, near Bristol, to depots in the Midlands and the South.

Following the success of these initial operations, a number of other companies decided to invest in their own wagon fleets. In the North-west, the Staveley Lime Company introduced block-train workings from its quarry at Dove Holes, near Buxton, to depots in Salford and Liverpool, using 27 hoppers, BRT 14600-14626, which were hired from BRTE. The remainder of this batch were initially hired to Amey Roadstone and more recently have seen use



TAMC 14905 is another 51 t aggregate hopper built by Standard Wagon, but in this case owned and operated by Tarmac Roadstone. These vehicles, which have a more 'chunky' appearance than earlier hoppers, normally run in block-train formations, although this example was recorded at Warrington in August 1987 when en route to works for routine maintenance.

carrying rock salt from Boulby.

Tarmac Roadstone also owns quarries in the Buxton area, its first batch of Standard-built hoppers being originally allocated to workings from Topley Pike to depots in Widnes and Salford. Built in 1974 with deep, flat-sided solebars, these wagons carried an attractive brown and white livery and were eventually transferred to Cliffe Hill quarry, Leicestershire, in 1979. Their replacements at Topley Pike were also built by Standard Wagon, but TAMC 14900-14921 were to a completely new design. The hopper ends have a more pronounced slope while the side slope is considerably reduced, with conventional side-mounted ladders providing access to a small inspection platform. Length is only 21 ft 7 in with a 15 ft wheelbase, though capacity remains at over 38 t, the underframe being fitted with straight-channel solebars and pneumatically-operated hopper doors. RLS 14705, the prototype for this design,

also operates out of Topley Pike, its major differences being a single set of hopper doors and a more primitive ladder arrangement. This batch carries a yellow livery, but for its third fleet, also built in 1979, Tarmac returned to the brown and white colour scheme previously used in 1974. This final batch follow Procor's standard design for the late 1970s with straight-channel solebars and conventional side-mounted ladders, the majority running from Frome to depots in the South-east.

The Tilbury Roadstone fleet is also to the same basic design, though somewhat higher with a pronounced slope to the sides and a deeper lip along the top. There is also a noticeable skirt between the lower part of the hopper and the solebar, but the underframe is identical with Gloucester suspension units. In 1986, this fleet was sold to Redland, the black 'Tilbury Roadstone' name being replaced by 'Redland' in red on the white panel which covers the flat part



REDA 16200, a 'Self-Discharge Hopper Train' 'outer' wagon. Note the conveyor belt which is extended beyond the headstock when unloading. This train is particularly suitable for short-term traffic flows as it can be unloaded without the need for any on-site facilities other than a rail siding. Body and solebars are pale green; the 'Redland' name is red, while other lettering and suspension units are black. Heywood, April 1988.

of the side. The remainder of the body is red, and the solebars and underframe are black; these wagons operate to various depots in East Anglia.

Redland has also purchased a large fleet of its own, the bulk being constructed between 1978 and 1980 by Standard Wagon to a design that combines the standard 22 ft 3 in long, 16 ft wheelbase underframe with a hopper body similar to that fitted to the Tarmac hoppers, TAMC 149xx. In 1986, a number were fitted with pneumatic doors operated via the train's air brake reservoir pipe in order to speed discharge. REDA 14781-14786 were built by Procor in 1984 to the same design as the final batch of Tarmac's, and all operate from Redland's quarry at Mountsorrel to depots in the London area and in East Anglia. The initial

body livery of white with red and blue stripes has been gradually replaced by pale green with red lettering; solebars and underframes remain black. In 1988, Redland introduced its revolutionary 'Self Discharge Hopper Train'. Built by Standard Wagon, each of the four prototype trains comprises ten 51 t glw two-axle hoppers, semi-permanently coupled, and fitted with a continuous conveyor belt at solebar level on to which the hoppers discharge.

Only one batch of modern aggregate hoppers has been built by BREL, the 33 51 t glw Tilcon hoppers which operate from Tilling Construction's quarry at Rylstone, near Skipton, to depots in Hull and Leeds. They are higher than other aggregate hoppers, with steeply-angled sides and ends, the sides being supported by five

angled buttresses and the ends by protective plates fitted over the brake cylinders. Their clamshell-type hopper doors are pneumatically-operated and the 22 ft 8 in long underframe carries BSC Friction Pedestal suspension. The hopper body is painted Wedgwood blue with the word Tilcon pickled out in white on a maroon panel, and the double 'T' motif in white on a black panel. Solebars are maroon, with the suspension units and brake gear black.

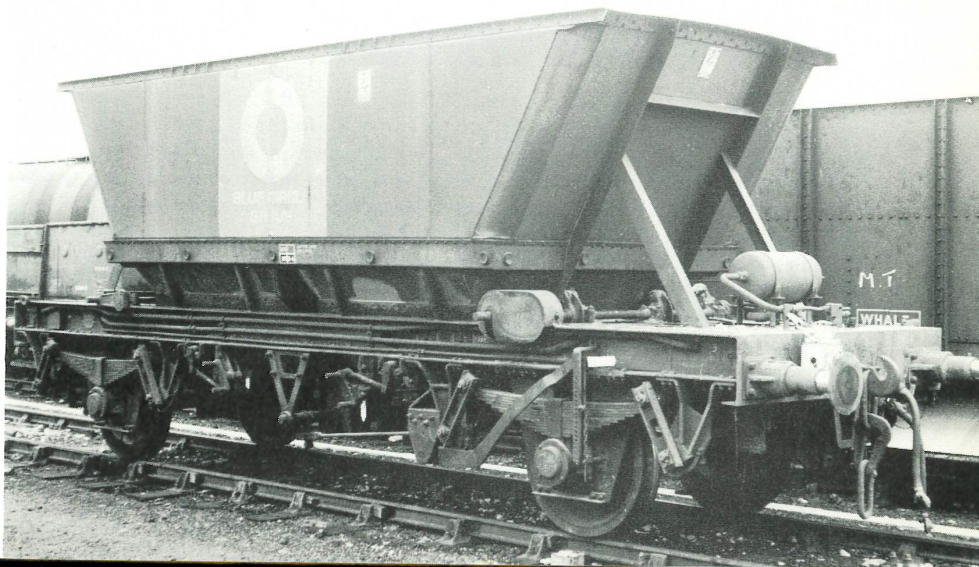
Other open hoppers, two-axle

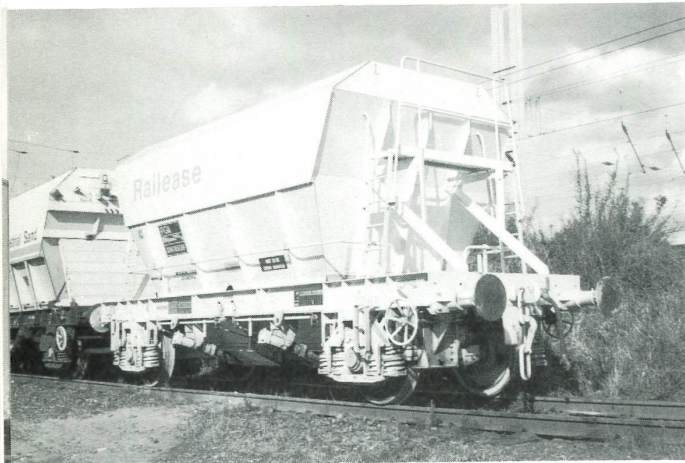
In addition to the Tilcon hoppers, BREL's Shildon works also built a batch of 46 t glw hoppers for carrying gypsum, a mineral used in the manufacture of certain types of cement. Introduced in 1970, they are a smaller version of the familiar railway-owned 'Merry-go-Round' coal hopper, but are only 29 ft long, with two sets of hopper doors fitted with automatic discharge gear

to allow for unloading on the move. As gypsum is a much denser commodity than coal, capacity is still 33 t, and the wagons normally run between the British Gypsum mine at Mountfield, Sussex, and the Blue Circle Cement factory in Northfleet, Kent.

Also fitted with automatic discharge gear are the large fleet of limestone hoppers owned by British Steel, Teesside. Built in 1975, they serve the massive steelworks complex at Redcar and, unlike other wagons of this type, are fitted with BSC primary coil suspension set on a 16 ft 6 in wheelbase. The body design is also unusual in having a very high lip along the top of the sides and ends and no inspection platforms. Capacity is 37 t, the fleet normally running in block-train formations between Redmire and Redcar. When, in 1982, a number of this fleet became redundant, they were resold to Standard Wagon and renumbered in the SRW 185xx series after having been modified for general mineral

APCM 19557, a gypsum hopper, recorded when stopped for repair at Hoo Junction in April 1980. The bodywork is galvanized steel with black lettering and underframe. The central panel is pickled in yellow with a blue circle (R. Silsbury).





As detailed in the text, a number of the British Steel Teesside hoppers have been rebuilt for general aggregate traffic. One such vehicle, SRW 18509, was recorded at Warrington in September 1987 sparkling in its new overall white livery with 'Railease' in blue and other lettering in white on black patches.



The automatic door-operating mechanism can be clearly seen in this view of BSTE 18058, taken at Tees Yard in September 1987. Note the lack of prefix letters on the vehicle's data panel, a feature common to this fleet. Originally painted a pale green, these wagons were being repainted in the grey and black livery illustrated here, with blue and white British Steel symbol.

traffic by the fitting of inspection platforms, modified door gear and cut-down sides. Subsequently, the majority of the modified vehicles were hired by British Rail to carry sand from Holmethorpe, near Redhill, to Crosfield's chemical plant in Warrington.

Finally, mention must be made of the two wagons built by W.H. Davis of Shirebrook as speculative ventures in the hopes of attracting future orders. DAVS 14433 was a conventional 51 t glw, 38 t capacity aggregate hopper fitted with

Gloucester Floating-axle suspension and most of the features common to this type. It initially appeared in a green and yellow livery before being repainted red with black lettering. The second vehicle, DAVS 19999, was a 36 t glw, 27½ t capacity sand hopper, built on a redundant 16 ft wheelbase underframe taken from an ex-pallet van. Both wagons appeared at various exhibitions and open days but were never used in traffic and had been withdrawn by 1987.



The unique 51 t aggregate hopper built by W.H. Davis, DAVS 14433, photographed when stored out of use at Shirebrook in November 1985. By this date it was painted red with black 'Davis' symbol and underframe.

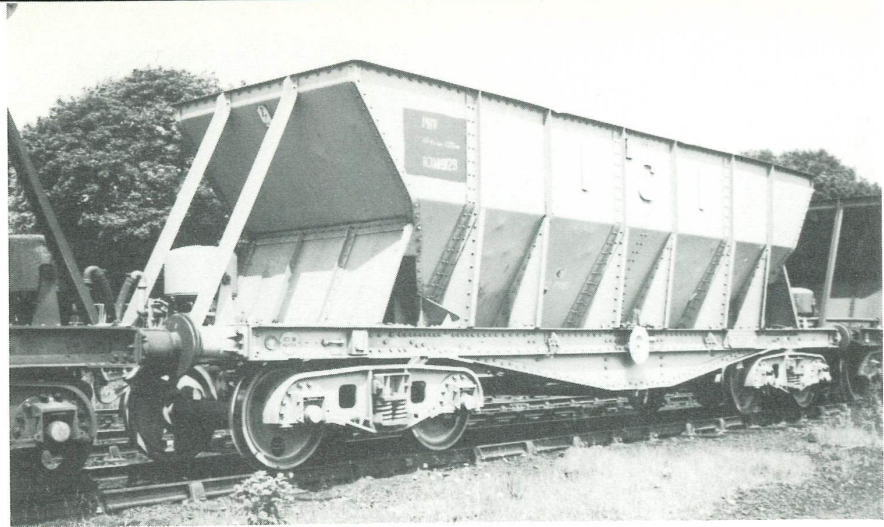
Table 14: Open hopper wagons, bogie

Type	Number series	TOPS code	Builder	Date	Owner/Operator
Limestone	ICIM 19000-19164	PHV	Charles Roberts	1936-58	ICI Mond
Iron ore	BSSH 13060-13182	PHO	Charles Roberts	1952-8	British Steel, Shotton
Ballast	GLE 15000-15005	PHO	Metropolitan C & W	1928-36	Grant, Lyon & Eagre
Ballast	TWT 15100-15102	PHA	Metropolitan C & W	1936	Tyne & Wear Transport
Aggregate	MPHY17701-17712	PHA	Charles Roberts	1968-9	Murphy Aggregates
Aggregate	MAR 17713-17722	PHA	W.H. Davis	1983	Marcon
Aggregates	ELC 17501-17520	PHA	Charles Roberts	1970	Equipment Leasing/Brett
Aggregates	BHQ 17101-17121	PHA	W.H. Davis	1986	Bardon Hill Quarries
Aggregates	RHR 17301-17327	PHA	W.H. Davis	1987	RH Roadstone
Aggregates	HALL13700-13712	PHA	Standard Wagon	1984	Hall Aggregates
Aggregates	RMC 17201-17224	PHA	Standard Wagon	1986	Ready Mixed Concrete
Aggregates	PR 17801-17837	PHA	Procor	1984	Procor/Foster Yeoman
Aggregates	FR 17001-17011	PHA	Installation MC	1971-2	Francis Parker

Limestone, iron ore and ballast hoppers, bogie

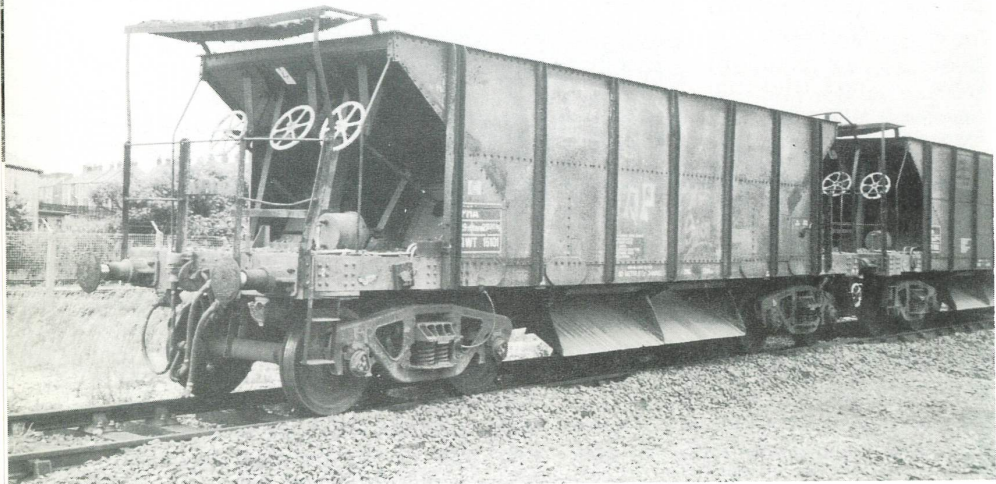
ICI Mond's fleet of bogie limestone hoppers are amongst the oldest privately-owned wagons still in regular use on British

Rail, a number having been built as early as 1936. Construction continued intermittently until 1953, all to the same design, with a 35 t capacity body divided into two compartments and supported by six



Above ICIM 19129, one of the Charles Roberts-built limestone bogie hoppers, photographed at Northwich in August 1987. Apart from the addition of roller bearings, this wagon remains in virtually its original condition, although it has recently been repainted pale grey with the number panel in white on a black ground. Note the raised 'ICI' letters on the side; an earlier version of the livery had these painted orange.

Below TWT 15101, one of the rebuilt ex-Southern Railway 'Walrus' ballast hoppers, awaits loading at North Shields on the Tyne & Wear Metro in August 1987. This vehicle carries overall black livery with white lettering. The yellow patch near the top of the second panel should carry the blue and black 'Metro' symbol.



substantial ribs along each side and two angled struts at each end. Gloucester plateback bogies, standard on the post-war build, have gradually been fitted to the entire fleet, replacing the diamond-frame bogies found under the earlier wagons. As they were intended to operate along the severely graded lines between Tunstead and Northwich, vacuum brakes were provided from new, the single brake cylinder being a prominent feature on one end. The original livery comprised pale green bodywork with white lettering, and black solebar and bogies.

In the 1950s, British Steel, Shotton, bought a number of similar, but unfitted, hoppers from Charles Roberts, to transport imported iron ore from Bidston Dock, Merseyside, to the steelworks at Shotton, near Wrexham. When steelmaking ceased there in 1983, ICI purchased the bulk of this fleet, some 13 being refurbished and vacuum-braked for future use in limestone traffic. They were repainted in the later ICI livery of light grey and renumbered ICIM 19152-19164.

Grant, Lyon & Eagre, a Scunthorpe-based civil engineering firm, owned six former Southern Railway 'Walrus' bogie ballast hoppers, purchased from British Rail in the 1960s for use on railway-related construction projects. All six were built by the Metropolitan Carriage & Wagon Company; GLE 15000-15002 were from the original 1928 batch, while GLE 15003-15005 were from the slightly modified batch built in 1936 to Southern Railway diagram 1774, rated at 61½ rather than 60½ t glw. All were unfitted, carried 40 t, and remained virtually in their original condition in private ownership, complete with diamond-frame bogies centred at 23 ft. All six were withdrawn in 1982 following completion of work on the Midland City Line electrification scheme

between Bedford and Moorgate. Livery was all-over black with white lettering.

Tyne & Wear Transport also own three ex-Southern Railway ballast hoppers from the 1936 batch. However, following purchase in 1977 they were air-braked and fitted with Gloucester FBT 5 bogies, before being despatched to Newcastle in 1978. To conform to axle-load restrictions on the Metro, they are rated at 50 t glw, 28 t capacity, and are fitted with raised mesh screens at each end in order to protect the operator from the overhead live wires when climbing up to check whether the hopper is fully discharged.

Aggregate hoppers, bogie

Murphy Aggregates introduced a dozen modern bogie hoppers in 1968 to carry sea-dredged gravel from their depot at Angerstein Wharf, on the Thames, to various terminals in the South-east. These 102 t glw wagons are 50 ft 7 in long, with Gloucester cast steel bogies centred at 37 ft 10 in, and carry 75 t. The specially-shaped body has a long, rectangular top opening and three sets of discharge doors situated towards the centre of the floor. The bogies are carried on short stub-frames to allow lorry-mounted conveyors to be driven underneath when unloading. A further batch of ten similar hoppers was built for Marcon in 1983, the main difference being the fitting of Gloucester GPS bogies and a nose cowl on the end to protect the brake gear. At the same time, the earlier wagons were transferred to Marcon (the ready-mixed concrete arm of Murphy Aggregates), and recoded 'MAR'. Since 1984, Marcon has shifted its entire operation to the Brett Aggregates depot at Cliffe in Kent.

Also operating from Cliffe with sea-dredged gravel is a fleet of 102 t glw hoppers owned by Equipment Leasing and hired to

Brett. While similar in design to the Murphy hoppers, they are only 41 ft 7 in long and present a more robust appearance. They have full length solebars, Gloucester Mk 4 cast steel bogies, and run as a block-train to terminals at Purley and Salfords in South London.

W.H. Davis, having built the Marcon hoppers in 1983, further developed this particular design with two batches of 90 t glw vehicles which appeared in 1986 and 1987 intended for stone traffic. The first batch, owned by Bardon Hill Quarries, are fitted with French Y25C bogies and carry 68½ t. They have full-length solebars with prominent end-plates to support the hopper body and protect the brake gear. Inspection ladders are fitted at diagonally opposite corners and they run as a block-train following a complicated programme which takes them to quarries at Westbury, Croft and Bardon Hill, as well as to stone terminals at

West Drayton, Theale and Brentford, in the course of a week.

The second batch, owned by R.H. Roadstone, a subsidiary of Tarmac, have Gloucester GPS bogies fitted to short stub-frames and four sets of discharge doors. The hopper body is similar to the Bardon Hill wagons and is finished in a greenish-grey livery with black lettering, solebar and running gear. Intended to carry limestone and sand, this fleet operates from loading terminals in Somerset and Essex to depots in the south of England.

Standard Wagon has built two batches of an 88 t glw 66 t capacity bogie hopper design for Ready Mixed Concrete. Both batches have a curved 'hog's-back'-shaped hopper body carried on French Y25C bogies centred at 31 ft 9½ in, the underframes featuring flat-sided solebars, with inspection ladders and small brake gear protection plates at each end. All carry an

The distinctive shape of RMC 17218, an 88 t bogie hopper belonging to Ready Mixed Concrete, can be seen in this view, recorded at Peak Forest in May 1987. The bodywork is orange with a broad white panel along the top of each side, with black lettering and underframe.



orange and white livery, though there are detailed differences between the two batches. The first are lettered up for Hall Aggregates, an RMC subsidiary, and carry sea-dredged gravel from Newhaven to terminals at Tolworth and Crawley, while the second batch are based at the Dove Holes quarry, Peak Forest, and carry limestone to Washwood Heath and Salford, as well as the occasional load of granite from Penmaenmawr on the North Wales coast.

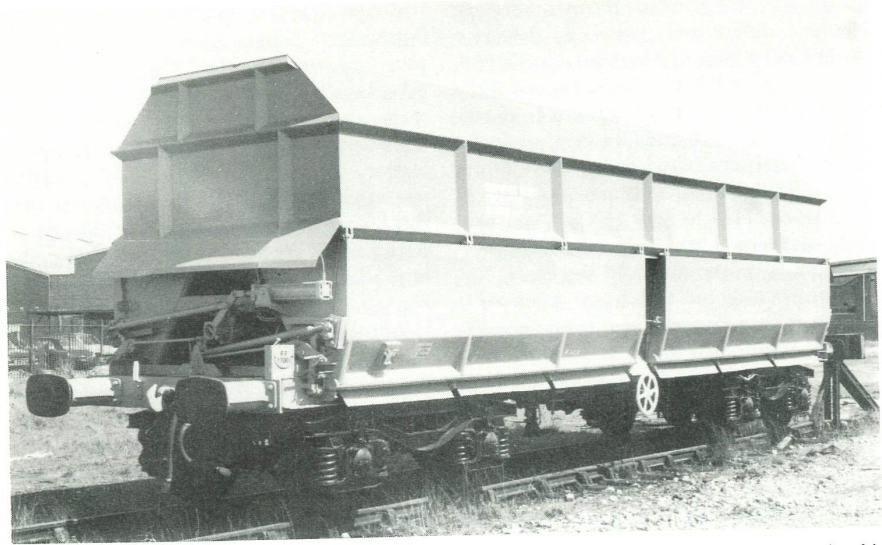
Procor's fleet of 102 t glw hoppers is unique in being constructed from wide extruded aluminium sections produced by Alusuisse to a design developed jointly with Procor and Foster Yeoman. The body shape is also unusual as its cladding slopes towards the headstocks, and the sides end in a strip which is higher than the headstocks. The four sets of discharge doors are prominent between the Gloucester GPS bogies

which are centred at 37 ft 3 $\frac{3}{4}$ in, and the lightweight design allows a carrying capacity of over 81 t. In 1986, the Instanter couplings and buffers were removed from these wagons, being replaced by automatic buckeyes in order to allow the operation of longer, heavier trains. All 37 vehicles operated between Merehead quarry and the Foster Yeoman terminal at Theale in Berkshire. Body livery is unpainted aluminium, with the Yeoman symbol picked out in blue.

Another batch of unique vehicles are the 11 side-discharge hoppers owned by Francis Parker Limited, now part of the Tarmac group. These 91 t glw wagons were built by Installation Manufacturing Contractors of Hartlepool in 1971 and have 5 ft 11 in wheelbase bogies supplied by Franco Belge fitted at 24 ft 4 in centres, the overall length being 41 ft and the capacity 67 t. The

PR 17818, an aluminium-bodied bogie hopper built by Procor in 1974, was photographed when on display at the Eastleigh Open Day, October 1986. Bodywork is finished in natural alloy with the 'Yeoman' name and symbol in blue and white, other lettering white on black patches. Headstocks and solebars are blue while the bogies and discharge doors are black with white markings (P. Fidczuk).





The first of the bogie gravel hoppers, FR 17001, was recorded at Fratton in May 1979 when newly painted in yellow ochre livery with white lettering and black running gear. The wagon was returning to Chichester after a visit to Eastleigh for tyre turning (R. Silsbury).

lower half of the hopper sides comprise two top-hinged doors, the operating cranks for which are located on the wagon ends. This small fleet operates as a block-train on the short five-mile haul from gravel workings at Lavant to a processing terminal at Drayton, the use of rail being one of the planning conditions laid down owing to the inadequate road system around

Chichester. Initial livery was grey with white lettering, with the name 'Francis' in green on a large white patch over the two centre fixed side-panels. In 1979 the wagons were repainted yellow ochre, a shade which blends well with the gravel stains, the lettering remaining white and the bogies black.