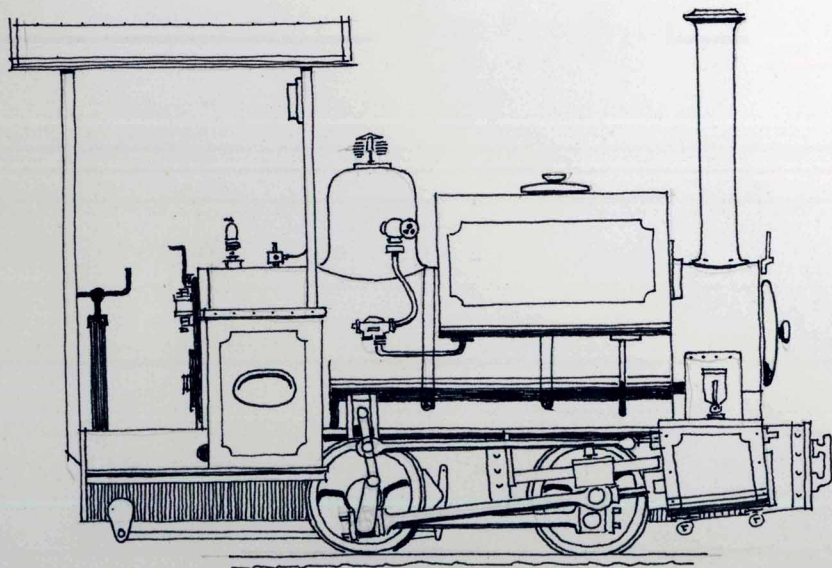


# 3114

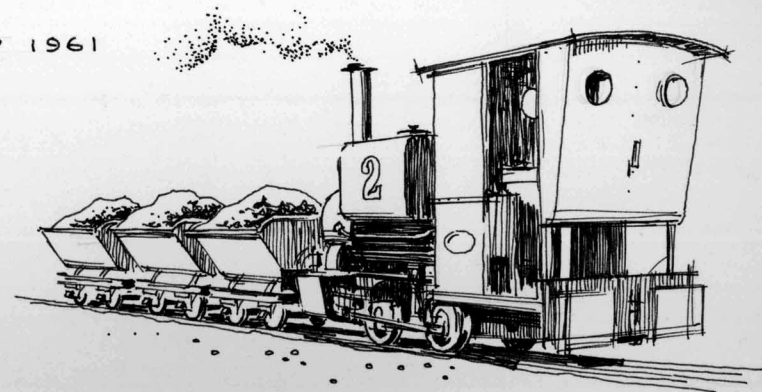




AFTER A CENTURY OF SERVICE TO INDUSTRY THE NARROW GAUGE STEAM LOCOMOTIVE IS NOW ON THE VERGE OF EXTINCTION AND FOR THE FEW THAT ARE LEFT THE SANDS OF TIME RUN FAST. DUE TO INCREASING STANDARDIZATION ON THE MAIN LINES, INTEREST IN THESE ENGINES HAS GROWN, AND WITH IT, A REALIZATION THAT HERE WAS SOMETHING THAT WAS IN DANGER OF BEING LOST FOR EVER. HAPPILY THIS REALIZATION BECAME MANIFEST IN A SURGE OF ENTHUSIASM AND IN DIRECT CONSEQUENCE THE SAFE KEEPING OF A NUMBER OF THESE ENGINES HAS BEEN ASSURED BY THE EFFORTS OF VARIOUS MUSEUMS, SOCIETIES AND PRIVATE INDIVIDUALS, WHO LIKE MYSELF SEEK NOT ONLY TO INDULGE THEIR OWN ENTHUSIASM BUT TO INSURE THE CONTINUED SURVIVAL OF THESE LOCOMOTIVES AS A LASTING MONUMENT TO AN AGE THAT IS PAST.

*Alan J. Maund*

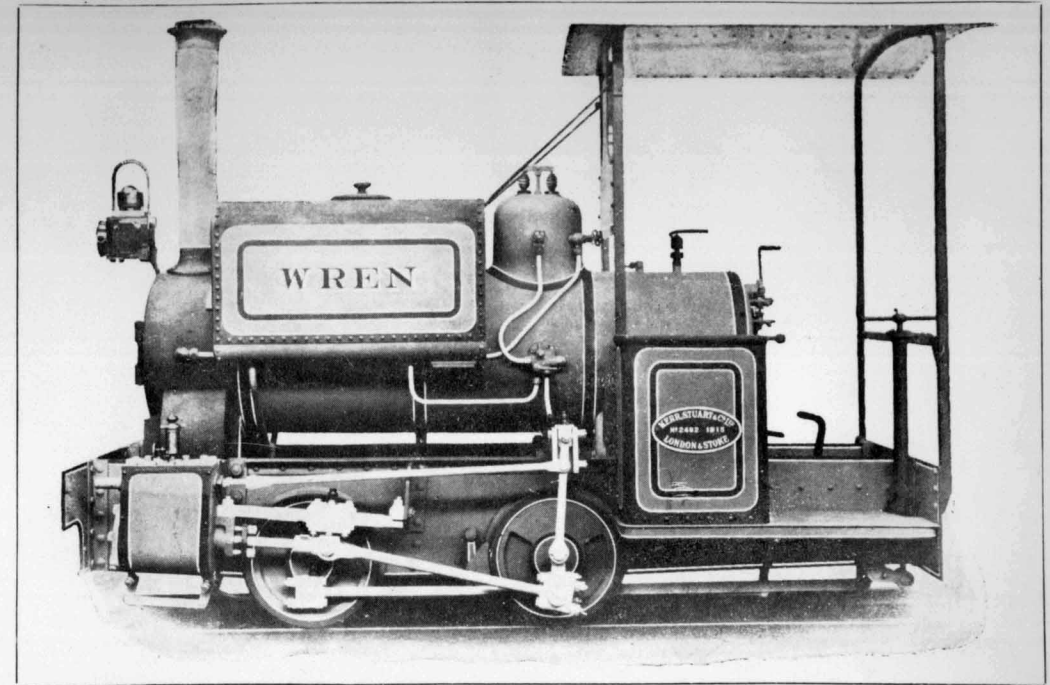
HINDLIP 1961





OF THE MANY NARROW GAUGE LOCOMOTIVES BUILT DURING THE LATER PART OF THE NINETEENTH CENTURY AND THE EARLY YEARS OF THE TWENTIETH VERY FEW EMERGED AS STANDARD TYPES. ONE EXCEPTION HOWEVER WAS THE KERR STUART WREN CLASS WHICH WAS PRODUCED IN BASICALLY THE SAME FORM FOR MANY YEARS. ALTHOUGH THE TYPE WAS EXTENSIVELY MODIFIED AND IMPROVED DURING THE FIRST WORLD WAR. THE MODIFIED ENGINE, OF WHICH DETAILS ARE HERE REPRODUCED FROM THE MAKERS CATALOGUE WAS IN EVERY WAY A SUPERIOR MACHINE TO THE EARLIER VERSION, BEING OF GENERALLY BETTER ARRANGEMENT AND CONSIDERABLY MORE ROBUST CONSTRUCTION. THEIR VITAL STATISTICS HOWEVER REMAINED THE SAME AND MANY OF THE PARTS WERE INTERCHANGEABLE. A NUMBER OF THE OLD TYPE ENGINES RECEIVED NEW TYPE BOILERS.

3114 BUILT IN 1918 WAS OF THE IMPROVED PATTERN AND LIKE MANY OF HER SISTERS WAS DESTINED TO HAVE A VARIED AND INTERESTING CAREER. STARTING LIFE WITH THE ARMY AT AN ARMS DUMP IN DRIFFIELD, SHE LATER WORKED ON CIVIL ENGINEERING CONTRACTS INCLUDING THE GOYT RESERVOIR IN DERBYSHIRE, SHE SAW SERVICE ON THE ASHOVER LIGHT RAILWAY AND FINALLY CAME TO REST ON A FARM AT BROCKAMIN NEAR WORCESTER WHERE SHE WAS TO LIE DERELICT FOR MORE THAN A DECADE UNTIL MOVED TO HINDLIP WHERE THE WORK OF RECONSTRUCTION WAS TO BE UNDERTAKEN.



0-4-0 TYPE

## SADDLE TANK LOCOMOTIVE

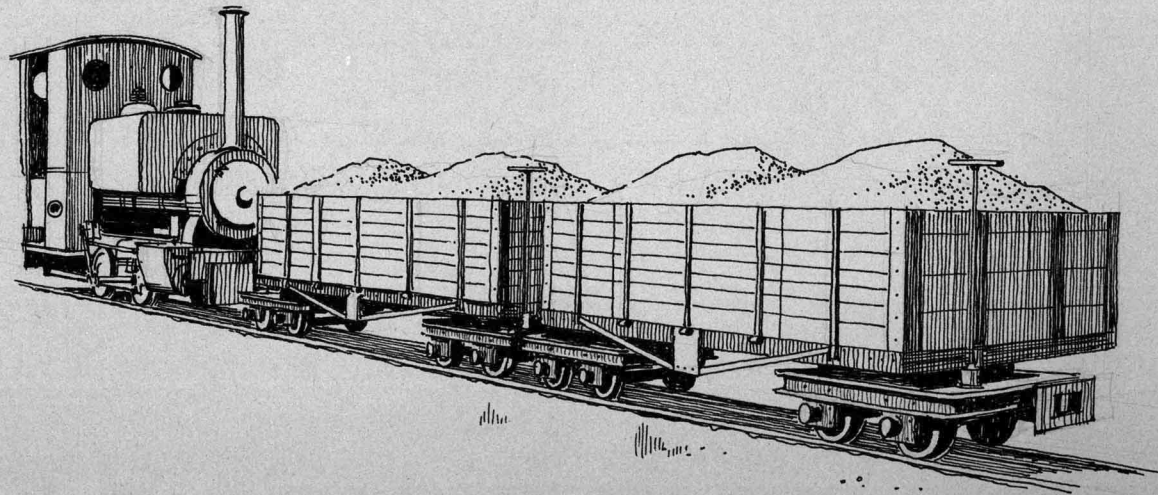
Gauge of Railway (can be modified to suit requirements)	...	...	...	2 ft. 0 in.
Size of Cylinders	...	...	...	6 in. dia. x 9 in. stroke
Dia. of Coupled Wheels	...	...	...	1 ft. 8 in.
Rigid Wheelbase	...	...	...	3 " 0 "
Height from Rail to Top of Chimney	...	...	...	7 " 8 "
Width Overall	...	...	...	4 " 2½ "
Heating Surface—Small Tubes	...	...	72 sq. ft.	
" " Firebox	...	...	14 "	
Total	...	...	86 "	86 sq. ft.
Grate Area	...	...	...	2.2 "
Working Pressure	...	...	...	140 lbs. per sq. in.
Tank Capacity	...	...	...	87 gallons
Fuel Space	...	...	...	2.5 cwts.
Weight Empty	...	...	...	3 tons 7½ cwts.
" in Working Order	...	...	...	4 " 5 "
Maximum Axle Load	...	...	...	2 " 17 "
Tractive Effort at 75 per cent. of Boiler Pressure	...	...	...	1,700 lbs.
Ratio Adhesive Weight ÷ Tractive Effort	...	...	...	5.60 to 1
Minimum Radius of Curve Engine will traverse with ease	...	...	...	35 ft.
Weight per Yard of Lightest Rail advisable	...	...	...	16 lbs.
Load Engine will haul on Level	...	...	...	90 tons
" " " up Incline of 1 in 100	...	...	...	45 "
" " " " " 1 in 50	...	...	...	25 "

Loads hauled are based on 18 lbs./ton starting resistance on level and 12 lbs./ton running resistance up inclines.

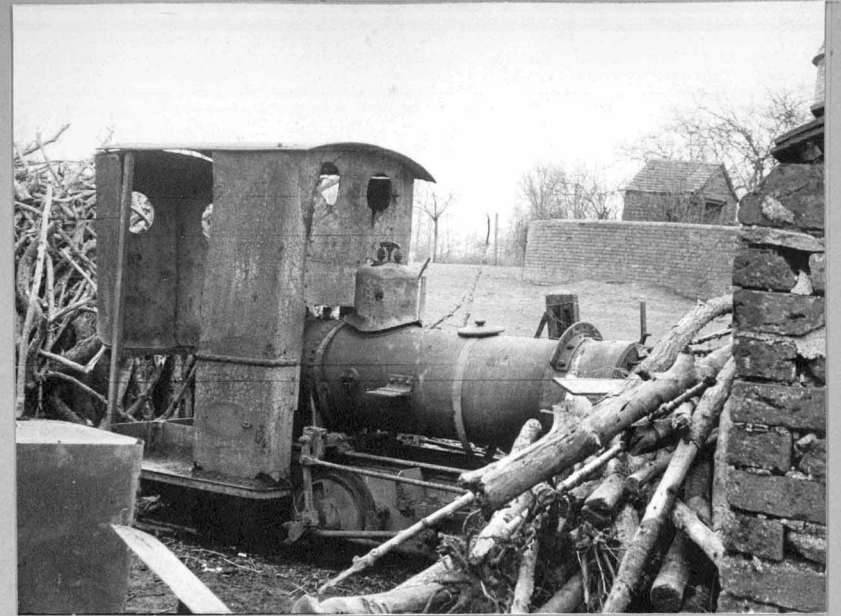
Code Word—WREN

THE WORKING LIFE OF 3114 HAD BEEN A HARD ONE . SHE WAS EMPLOYED ALMOST CONTINUOUSLY FOR THIRTY YEARS AND HER WELL WORN TYRES BEAR TESTIMONY TO A CONSIDERABLE MILEAGE .THE YEARS OF RETIREMENT AT BROCKAMIN HAD DONE NOTHING TO IMPROVE HER CONDITION AND IN 1959 THE PROSPECT OF RESTORING HER TO WORKING ORDER WAS NOT GOOD.

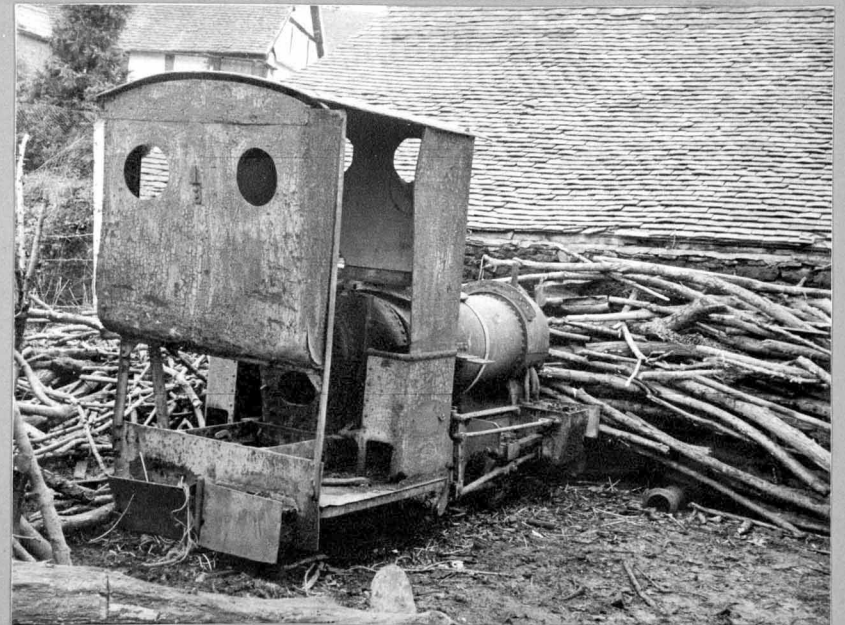
DESPITE HER ADVERSE CONDITION HOWEVER IT WAS RESOLVED THAT AT LEAST AN EFFORT SHOULD BE MADE AND PLANS WERE AT ONCE PUT INTO EFFECT. HER OWNER MR. R.P. BEARD AGREED IMMEDIATELY TO THE IDEA OF PRESERVATION AND WAS TO RENDER EVERY POSSIBLE ASSISTANCE IN THE WEEKS THAT FOLLOWED DURING WHICH TIME THE ENGINE WAS PREPARED FOR REMOVAL TO HINDLIP.







DOWN ON THE FARM . JANUARY 1959 AND 3114 WOULD APPEAR TO HAVE FINALLY COME TO THE END OF THE LINE



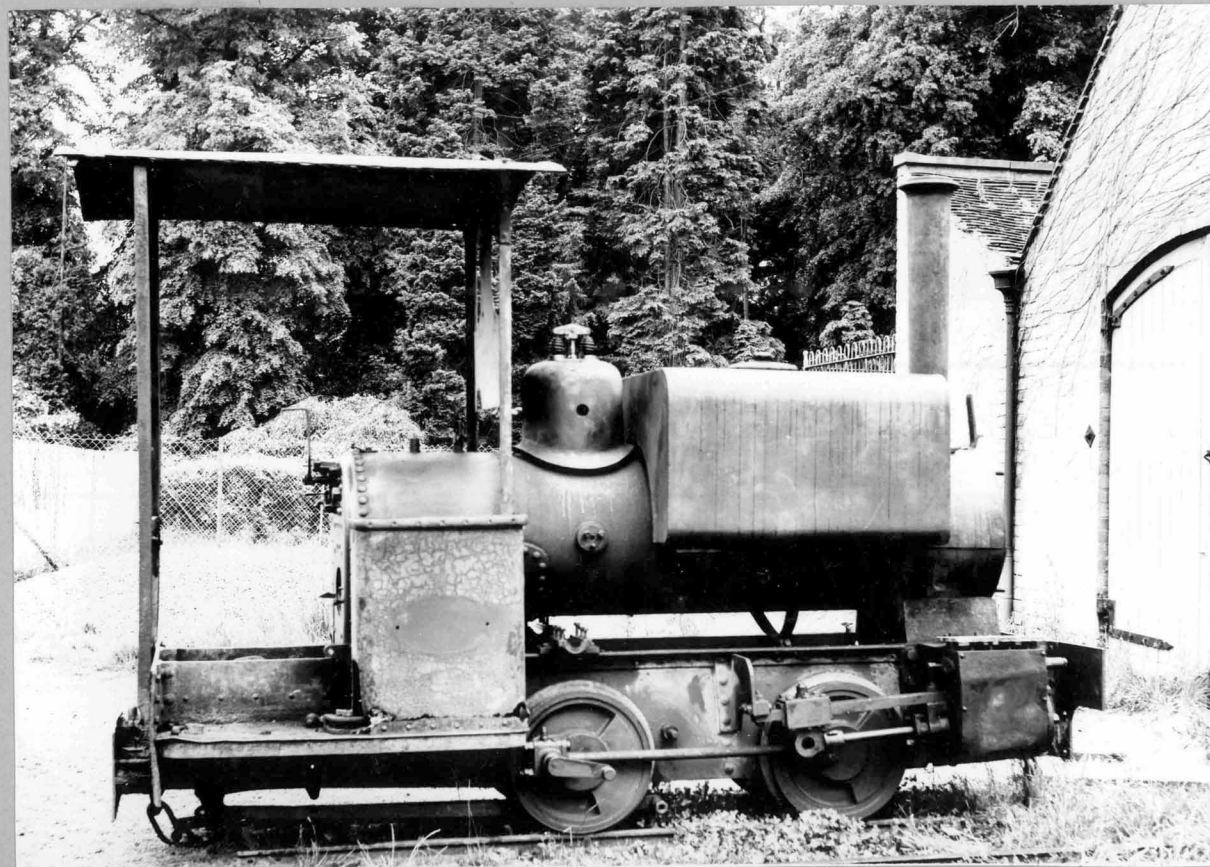


WITH THE ACQUISITION OF 3114 WORK ON PREPARING HER FOR THE MOVE TO HINDLIP WAS COMMENCED AT ONCE AND WAS TO CONTINUE FOR MANY WEEKS. VARIOUS BITS AND PIECES INCLUDING THE CHIMNEY AND TANK WERE RESTORED TO THEIR CORRECT POSITION, THE CONNECTING RODS AND VALVE GEAR WERE DISCONNECTED AND CONSIDERABLE QUANTITIES OF OIL WERE APPLIED TO AXLE BOXES.

IT WAS NECESSARY TO MOVE THE ENGINE SOME DISTANCE TO A POSITION WHERE SHE COULD BE LOADED, THIS BEING CARRIED OUT WITH THE AID OF SEVERAL LENGTHS OF PREFABRICATED TRACK AND A CASE OF BEST BURTON BREW. AS THE TRACK WAS ALL 30' RADIUS THIS INVOLVED A SOMEWHAT DEVIOUS ROUTE, FORTUNATELY ON A FAVOURING GRADIENT.



HINDLIP. JUNE 1959 AND THE WORK OF RECONSTRUCTION STARTS. THE COAL BUNKERS GIVE A GOOD INDICATION OF THE GENERAL CONDITION THAT HAD TO BE DEALT WITH.



C. KNIGHT

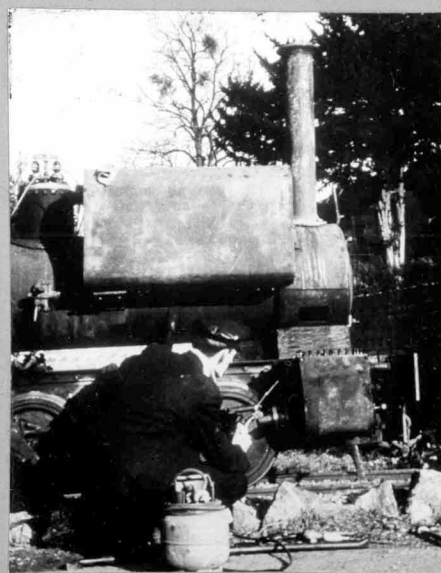
THERE IS A GREAT DEAL MORE TO A LOCOMOTIVE THAN JUST FOUR WHEELS AND A BOILER. APART FROM A FRACTURED LEFT HAND CYLINDER AND BROKEN SPRINGS WHICH WOULD HAVE TO BE REPLACED 3114 HAD TO BE EQUIPED WITH A FULL SET OF SPARE PARTS FROM REGULATOR HANDLE TO CYLINDER COCKS.

IN VIEW OF THE HIGH COST OF REPLACEMENTS AND LOW FINANCIAL RESOURCES RECOURSE WAS MADE TO THE SECOND HAND MARKET, A COURSE OF ACTION NOT WITHOUT PRECEDENT IN THE WORLD OF NARROW GAUGE RAILWAYS. THE TRANSACTIONS WHICH FOLLOWED ARE EXTREMELY INVOLVED AND LARGELY IRRELEVANT TO OUR STORY. THEY WERE TO RESULT HOWEVER IN SOLVING THE SPARES PROBLEM AND AT THE SAME TIME SAVING A FURTHER SEVEN ENGINES FROM THE HANDS OF DESTRUCTION. A SUMMARY OF THESE ENGINES IS GIVEN BELOW.

ONE OF THE MOST USEFULL SOURCES OF SPARE PARTS WAS TO BE THE ENGINE AT CROMHALL, GLOUCESTERSHIRE THE NUMBER OF WHICH APPEARS TO BE IN SOME DOUBT. WHILST PHOTOGRAPHS OF THIS ENGINE EXIST SHOWING THE NUMBER 4255 THE LEFT HAND CYLINDER WHICH WAS USED AS A REPLACEMENT ON 3114 BEARS THE NUMBER 4292 AND ON THE VALVE GEAR WAS TO BE FOUND THE NUMBER 4297. UNFORTUNATELY THE NUMBER ON THE BOILER BACK PLATE WAS NOT DECIPHERABLE BUT AS THERE WERE MUD HOLES OVER THE FIREBOX IT COULD NOT HAVE BEEN 4255. AS THESE WERE INTRODUCED FOR THE FIRST TIME ON 4273.. THE ENGINE, OR WHAT WAS LEFT OF HER WAS FINALLY BROKEN UP EARLY IN 1961.



CROMHALL MAY 1959



BUILDERS	YEAR	NO.	NAME	PRESERVED BY
KERR STUART	1918	3114		A. J. MAUND HINDLIP, WORCESTER.
KERR STUART	1922	4256	PETER PAN	J. HARDY. BROMSGROVE.
KERR STUART	1918	3128		A. MATHEWS LANGSTAFF, ONTARIO.
KERR STUART	1922	4250	LORNA DOONE	BIRMINGHAM SCIENCE MUSEUM.
PECKET	1923	1632		A. MATHEWS LANGSTAFF ONTARIO.
HUNSLET			GERTRUDE	A. MATHEWS LANGSTAFF ONTARIO.
HUNSLET			EDWARD SHOLTO	A MATHEWS LANGSTAFF ONTARIO.

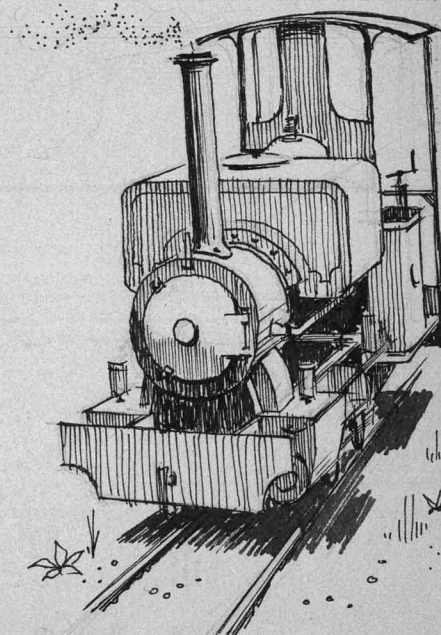
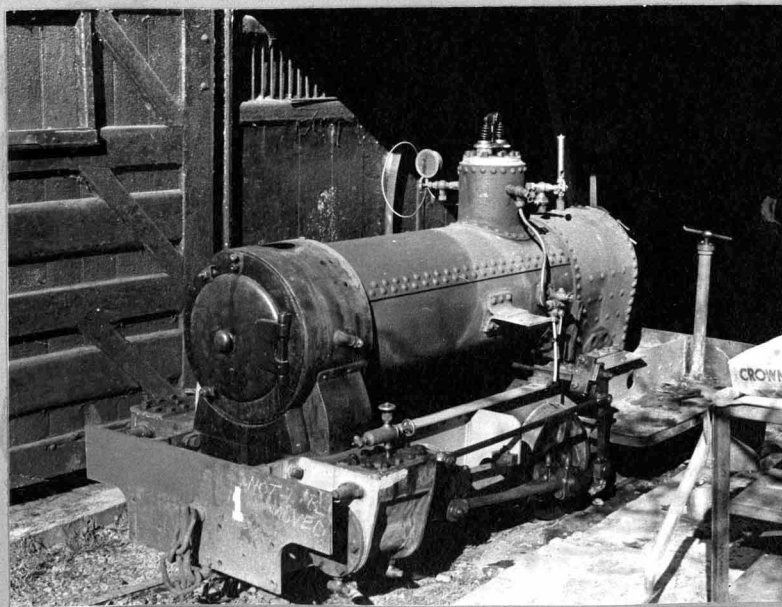
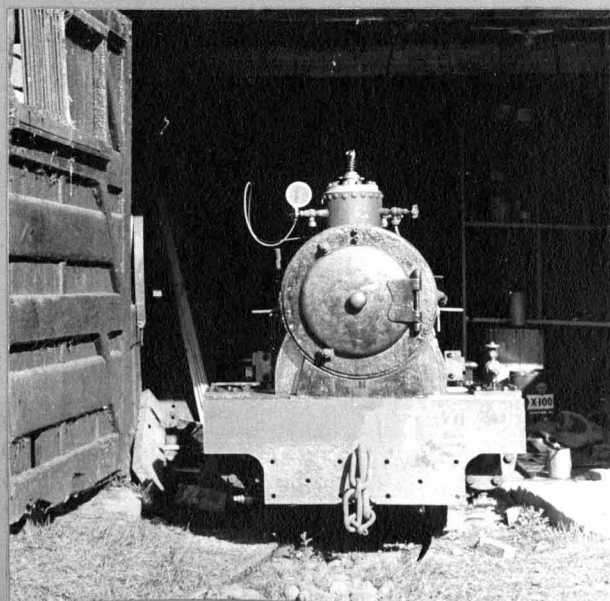


THE WORK OF RECONSTRUCTION PROCEEDED STEADILY THROUGH 1959 AND 1960. THE EXISTING RIGHT HAND CYLINDER WHICH WAS TO BE REUSED WAS SENT AWAY FOR TREATMENT TO THE VALVE FACE WHILST THE REPLACEMENT CYLINDER RECEIVED MANY HOURS OF ATTENTION WITH AN EMERY BLOCK AND CUTTING PASTE.

BOTH CYLINDERS WERE READY FOR REFITTING EARLY IN AUGUST 1960 AND THE DAY FOR TESTING WAS NOW CLOSE AT HAND. THE BOILER HAD ALREADY BEEN TESTED SUCCESSFULLY IN STEAM AND ALTHOUGH THE BOTTOM ROW OF TUBES APPEARED TO BE IN POOR CONDITION THERE WERE NO LEAKS AND IT WAS DECIDED NOT TO ATTEMPT RETUBING AT THIS STAGE. VALVES WERE SET BY TRIAL AND ERROR THE ENGINE BEING MOVED BACKWARDS AND FORWARDS WHILST MINUTET ADJUSTMENTS WERE MADE TO THE SETTING.

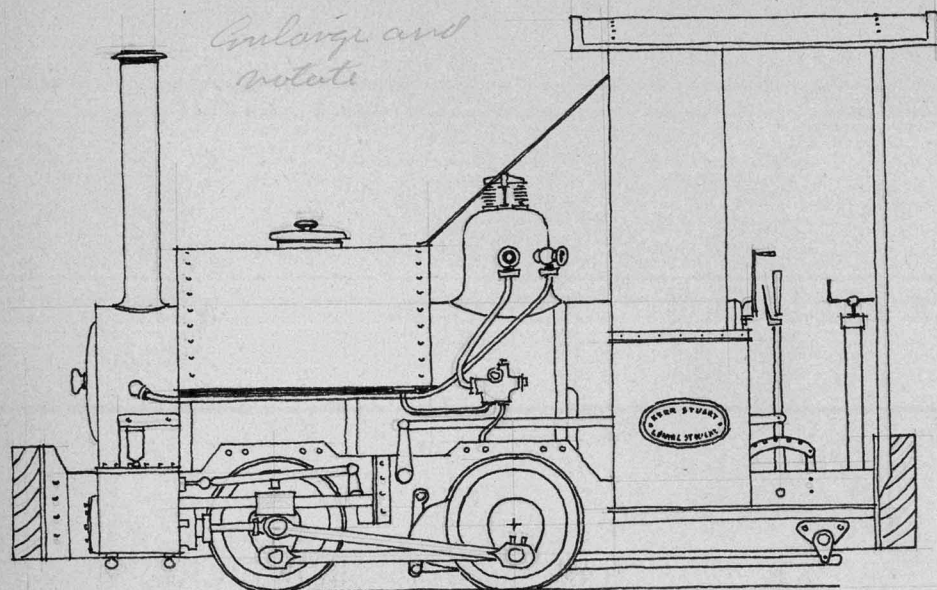
HAVING FINALLY SATISFIED MYSELF THAT ALL WAS IN ORDER THE GREAT MOMENT HAD COME. EARLY ONE SATURDAY MORNING THE FIRE WAS LIT AND WITH ALMOST UNBEARABLE SUSPENCE I WAITED FOR PRESSURE TO RISE. AS THE BOILER WAS NOT LAGGED AT THIS TIME ALMOST TWO HOURS ELAPSED BEFORE ANYTHING HAPPENED AND THEN QUITE SUDDENLY LIKE SOME CREATURE AWAKENING FROM A DEEP SLUMBER SHE BEGAN TO STIR AND AS THE BLOWER PICKED UP THE NEEDLE CREPT SLOWLY ACROSS THE FACE OF THE PRESSURE GAUGE.

WHEN 3516s HAD BEEN REACHED I DECIDED THAT THE MOMENT HAD COME, TREMBLING WITH ANTICIPATION AND HALF EXPECTING DISSAPPOINTMENT I MOVED THE GEAR LEVER FORWARD AND EASED THE REGULATOR. THERE WAS A RUSH OF STEAM FROM THE CYLINDER COCKS WHICH LOOKED AND SOUNDED MOST IMPRESSIVE BUT MOVEMENT WAS CONFINED TO THE SMALL GROUP OF SPECTATORS IN THEIR EFFORTS TO AVOID A SHOWER OF BLACK OILY WATER AND SMUTTS. IN MY EXCITEMENT I HAD OVERLOOKED THE FACT THAT THE HAND BRAKE WAS SCREWED HARD DOWN. THIS WAS QUICKLY PUT RIGHT AND CLOSING THE CYLINDER COCKS WE TRIED AGAIN AND FOR THE FIRST TIME IN YEARS 3114 MOVED UNDER HER OWN STEAM.



READY FOR LAGGING. JANUARY 61.

HAVING REACHED A POINT WHERE WE MAY CONVENIENTLY DIGRESS LET US CONSIDER FOR A MOMENT GENERAL DETAILS OF THE WREN CLASS. AS HAS ALREADY BEEN DESCRIBED THE CLASS FELL INTO TWO DISTINCT GROUPS, NAMELY THE EARLIER TYPE BUILT FROM 1907 TO 1915 AND THE LATER IMPROVED TYPE BUILT FROM 1915 TO 1928. OF THE FORMER FEW DETAILS APPEAR TO HAVE SURVIVED BUT, AS WILL BE SEEN FROM THE DRAWING, CHARACTERISTICS APPEAR TO HAVE BEEN VERY SIMILAR AND THAT VARIATIONS IN DESIGN WERE CONFINED LARGELY TO THE GENERAL ARRANGEMENT.



FEATURES WORTH NOTING HOWEVER ARE THE LOW PITCHED BOILER, CENTRE LINE  $2'7\frac{1}{2}"$  ABOVE RAIL LEVEL, HORIZONTAL CYLINDERS AND LEFT-HAND DRIVE WITH THE BRAKE COLUMN ON THE RIGHT. THE POSITION OF THE REVERSING LEVER MUST HAVE PROVED MOST INCONVENIENT TO THE CREW. THEY WERE FITTED WITH INSIDE MOTION WHICH ACTUATED THE VALVES THROUGH A ROCKING SHAFT, AN ARRANGEMENT SIMILAR IN PRINCIPLE TO THE PRICE-BAGULEY PATENT GEAR USED EXTENSIVELY BY W.G. BAGNALL. POSSIBLY STIMULATED BY THE FIRST WORLD WAR WHEN LARGE NUMBERS OF NARROW GAUGE LOCOS WERE REQUIRED FOR MILITARY PURPOSES THE CLASS WAS REDESIGNED AND MUCH IMPROVED. THESE

THESE LATER ENGINES HAD THEIR BOILERS PITCHED AT  $3'4"$  ABOVE RAIL LEVEL MOUNTED ON STRAIGHT FRAMES STRENGTHENED WITH ANGLE IRON ALONG THE TOP EDGE. THE CYLINDERS ARE NOW INCLINED AND MODIFIED HACKWORTH VALVE GEAR HAS REPLACED THE INSIDE MOTION. CIRCULAR CROSS SECTION RODS WERE RETAINED BUT THE EARLIER TYPE BIG ENDS WERE REPLACED BY MARINE PATTERN BEARINGS. THE DRIVE WAS ALTERED TO RIGHT-HAND AND THE REVERSING LEVER TUCKED AWAY BETWEEN BUNKER AND FIREBOX. THE ONLY RETROGRADE STEP APPEARS TO HAVE BEEN IN RESPECT OF PROTECTION FOR THE CREW AS THE CAB WAS REDUCED

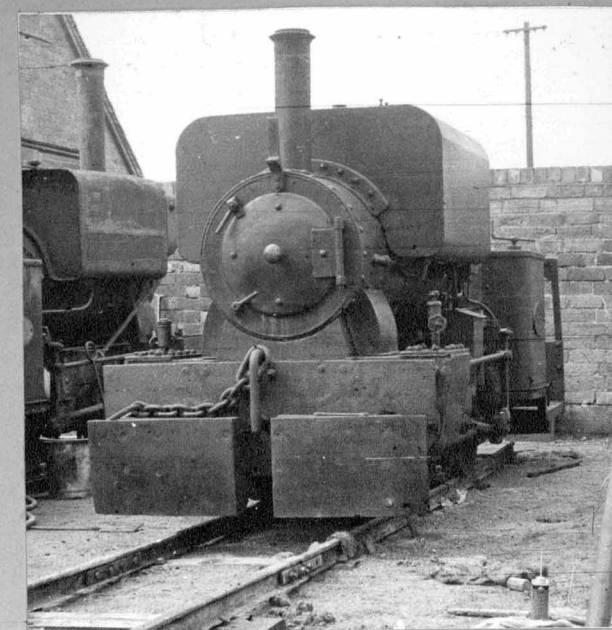
TO A CANOPY AND SIMPLE WEATHER-BOARD. BOTH THE EARLIER AND LATER TYPES OF ENGINE WERE FITTED WITH COMBINATION INJECTORS WHICH ON 3114 WORK AT ABOUT 50 lbs.

GRAVITY FEED SANDING EQUIPMENT WAS PROVIDED AS AN OPTIONAL EXTRA. THE SANDBOXES WERE FITTED TO THE FRONT OF THE SADDLE-TANK AND THE FEED PIPE WAS POSITIONED BETWEEN THE COUPLED WHEELS ON THE LATER ENGINES AND IN FRONT ON THE OLDER TYPE WHICH MUST HAVE BEEN VERY USEFUL WHEN RUNNING CAB FIRST.

WITH THE EXCEPTION OF NUMBERS 2472, 4154 AND 4328 ALL WREN CLASS LOCOS WERE BUILT TO 2' GAUGE

IN LATER YEARS A NUMBER OF ENGINES WERE MODIFIED BY THEIR

OWNERS TO SUIT THEIR REQUIREMENTS. MANY HAD THEIR CABS SHEETED IN WHILST OTHERS LIKE 3128 ILLUSTRATED HERE, HAD THEM REMOVED ALTOGETHER. 3128 ALSO RECEIVED A SHORT CHIMNEY AND STEPPED FOOTPLATE. 3114 RAN FOR MANY YEARS WITH CAB SIDE AND BACK SHEETS BUT HAS NOW BEEN RESTORED TO HER ORIGINAL CONDITION.

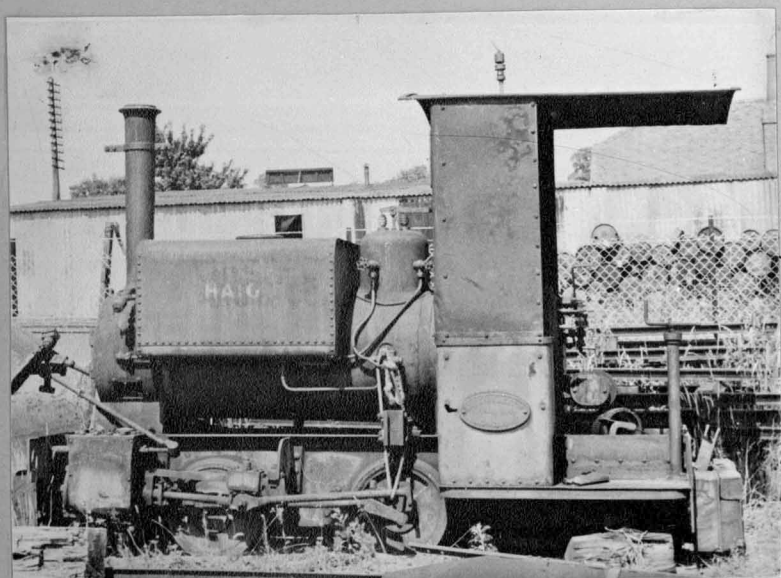


#### WREN CLASS FIRST SERIES

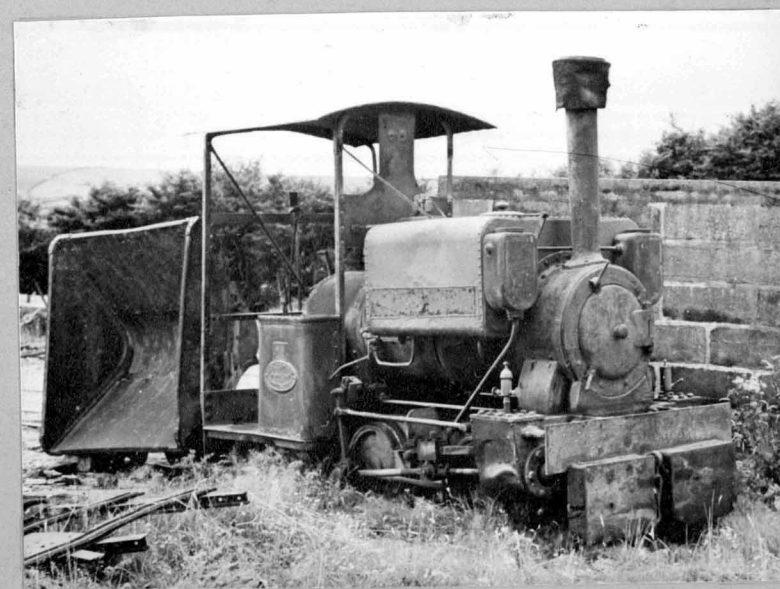
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1041		1106		1249		2393	
1042		1188	1910	1250		2418	1915
1043		1189		1251		2419	
1044		1190		1252		2420	
1099	1908	1191		2386	1914	2421	
1100		1192		2387		2422	
1101		1193		2388		2423	
1102		1194		2389			
1103		1195		2390			



WREN CLASS SECOND SERIES															
2458	1915	2471	1916	4001	1918	4020	1918	4161	1920	4256	1922	4270	1922	4296	1923
2459		2472	*	4002		4021		4162		4257		4271		4297	
2460		2473		4003		4022		4163		4258		4273	1922	4298	
2461		2474		4004		4023		4246	1921	4259		4274		4299	
2462		2475		4005		4024		4247		4260		4275		4324	1924
2463		2476		4006		4031		4248		4261		4276		4325	
2464		2477		4013		4154	■ 1920	4249		4262		4277		4326	
2465		3026		4014		4155		4250	1922	4263		4278		4327	
2466		3103	1917	4015		4156		4251		4264		4290		4328	▲ 1927
2467		3104		4016		4157		4252		4265		4291		4329	1928
2468		3105		4017		4158		4253		4266		4292		4330	
2469		3114	1918	4018		4159		4254		4267		4293		4331	
2470	1916	3128		4019		4160		4255		4268		4294			
* 2'6" GAUGE    ■ 2'1¾" GAUGE    ▲ 2'6" GAUGE										4269		4295			

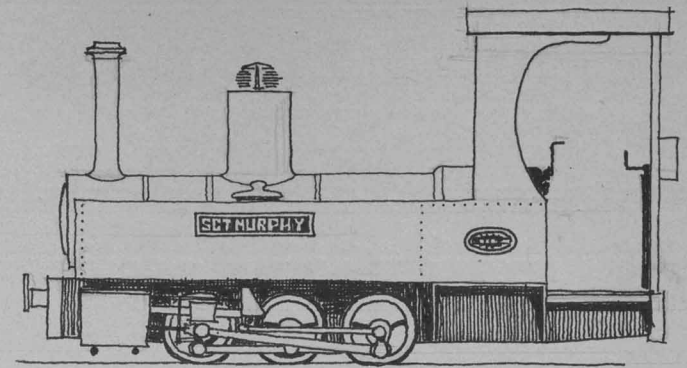


3105. LEIGHTON BUZZARD BRICK CO. POTSGROVE  
JUNE. 1949. FITTED WITH EALIER TYPE CAB.



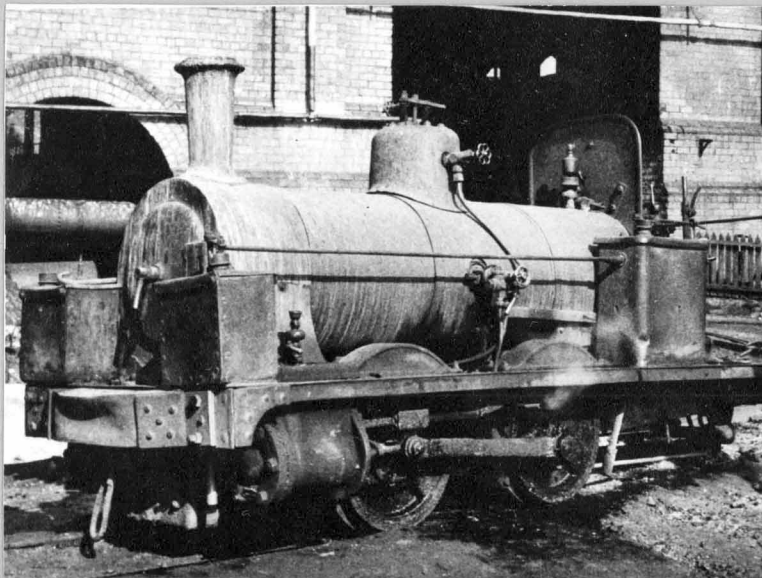
4256 'PETER PAN' DEVON COUNTY COUNCIL  
PARRACOMBE AUG. 1951. NOTE SANDING GEAR.

# VARIATIONS ON A THEME

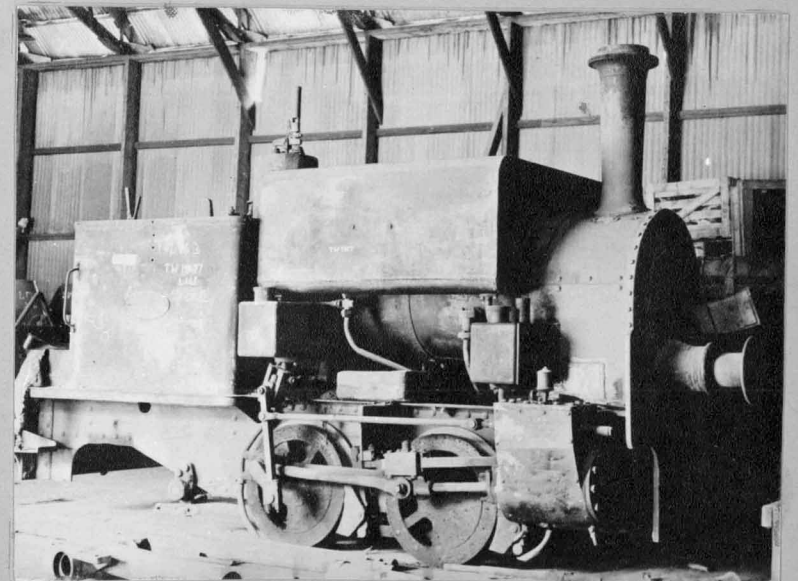


K.S. 0-6-0T. 3117 / 1918 PENRYN SLATE QUARRIES

PREDECESSOR TO THE WREN. DUNDEE GAS COMPANY  
KERR STUART 720 OF 1896. PHOTOGRAPHED MARCH 46.  
CERTAIN CHARACTERISTIC FEATURES BEGIN TO EMERGE



'SUPER WREN'. A KERR STUART STANDARD GAUGE  
0-4-2T WITH STRIKING SIMILARITIES TO THE WREN  
CLASS. WARDS, TITAN WORKS, GRAYS. JULY 1952

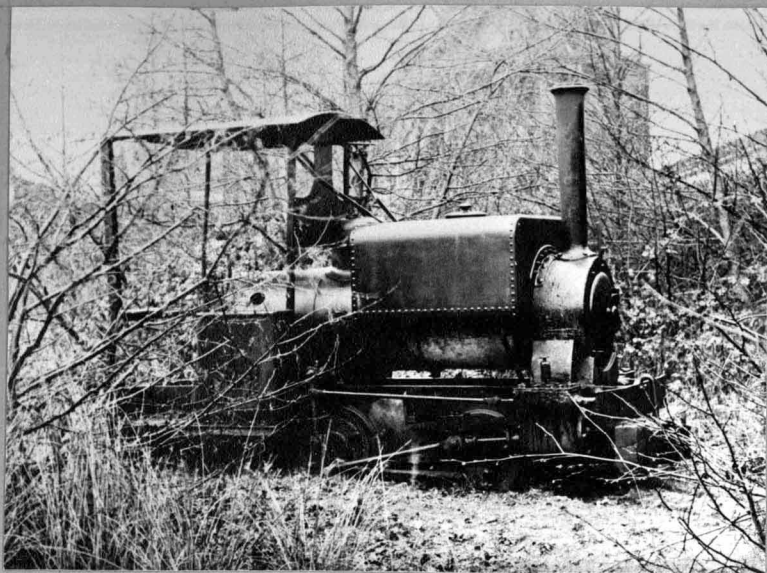


CITY & SOUTH LONDON ?

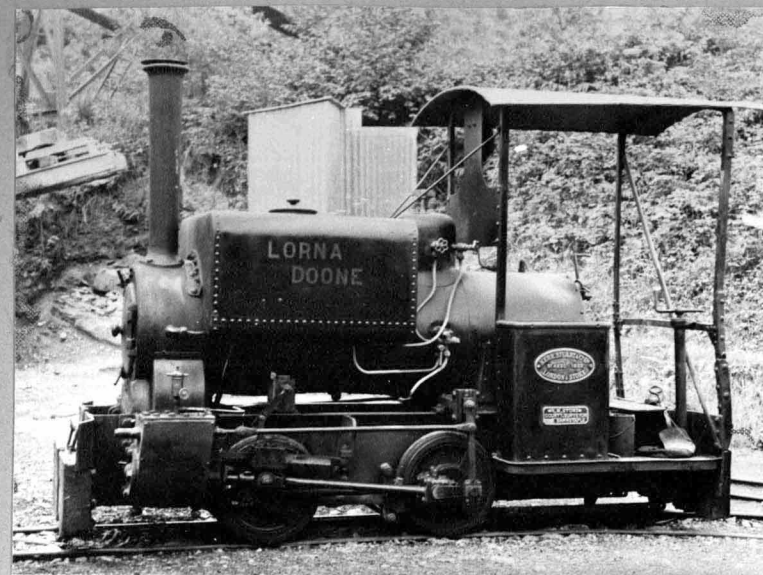
K.S. 1922

WHEELS 2'6"  
CYLS 9" x 15"  
WEIGHT 12 TONS





4255 AT CROMHALL C.1950 . NOTE THE MUD HOLES

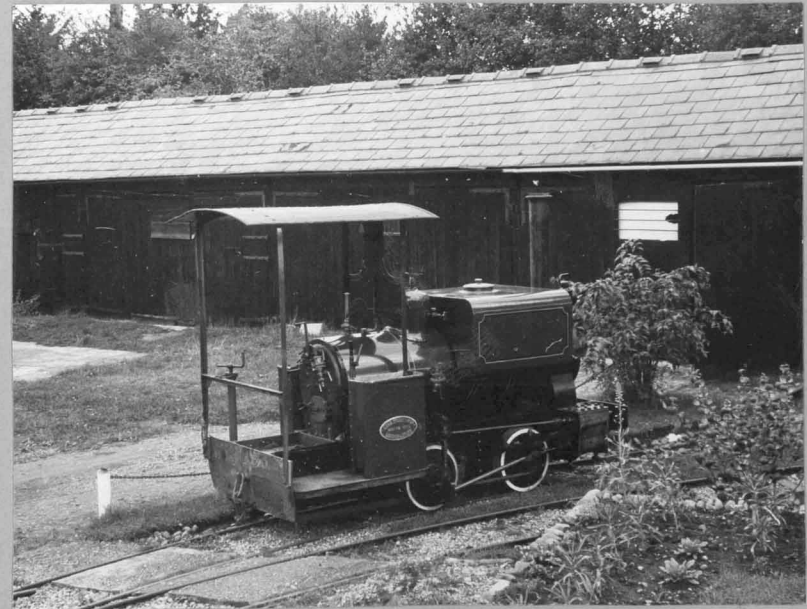


4250 'LORNA DOONE' AT TAVISTOCK AUGUST 1951.

WITH 3114 A WORKING PROPOSITION THE MAJOR WORK OF RECONSTRUCTION WAS COMPLETE AND SEEMED TO HAVE BEEN ACHIEVED WITH REMARKABLE EASE, THERE REMAINED HOWEVER A GREAT DEAL TO BE DONE.

DURING THE WINTER OF 1960 THE BOILER WAS LAGGED AND NEW COVERING SHEETS WERE CUT AND FITTED. AS THE EXISTING BUNKERS WERE IN POOR CONDITION IT WAS DECIDED TO FIT NEW ONES TOGETHER WITH NEW FOOTPLATES. PAINTING WAS BEING CARRIED OUT IN STAGES AND NUMEROUS COATS OF GREY LEAD PRIMER WERE USED PARTICULARLY ON THE WATER TANK WHERE THE PLATES HAD BECOME PITTED. A GREEN LIVERY WAS ADOPTED WITH DEEP MAROON FRAMES, BLACK AND YELLOW LINING ON THE GREEN, VERMILLION ON THE MAROON. SMOKE BOX AND CHIMNEY WERE OF COURSE BLACK.

NOT THE LEAST DIFFICULT PROBLEM WAS THE REPLACEMENT OF THE NUMBER PLATES THE ORIGINAL ONES HAVING DISAPPEARED DURING THE YEARS AT BROCKAMIN. SO THAT WE MIGHT ACHIEVE AUTHENTICITY AN ORIGINAL PLATE WAS REQUIRED FOR A PATTERN AND IF POSSIBLE WAS TO BE OF 1918 VINTAGE. THE VERY THING WAS FOUND IN NORTH WALES ON THE PENRHYN SLATE QUARRIES ENGINE, 'SGT MURPHY' K.S. 3117. THIS PLATE WAS KINDLY LENT TO US AND BY SIMPLY CHANGING THE SEVEN TO A FOUR THE NEW PLATES WERE QUICKLY PRODUCED. IN THE INTERESTS OF THE CAUSE 'SGT. MURPHY' WAS ALSO TO GIVE UP ONE OF HER TWO WATER LEVEL GAUGES.







OF ALL MANS INVENTIONS NONE HAS SERVED HIM MORE FAITHFULLY OR FOUND A MORE SECURE PLACE IN HIS HEART THAN HAS THE STEAM LOCOMOTIVE. IT MAY BE ARGUED THAT THE DIESEL AND ELECTRIC LOCOMOTIVES THAT HAVE COME TO TAKE ITS PLACE IS MORE POWERFUL AND GENERALLY MORE EFFICIENT AND AS SUCH MUST BE ACCEPTED AS THE INEVITABLE CONSEQUENCE OF PROGRESS. IT IS UNLIKELY HOWEVER THAT THEY WILL EVER ENJOY THE UNIQUE AFFECTION THAT THE ENTHUSIAST HAS ALWAYS HAD FOR THE STEAM LOCOMOTIVE.

GRATEFUL ACKNOWLEDGMENT IS MADE TO THE FOLLOWING PEOPLE WHO BY THEIR INTEREST AND GENEROSITY HAVE DONE MUCH TO MAKE POSSIBLE THE RESTORATION OF 3114



TO MR. R. P. BEARD BUT FOR WHOM THIS STORY MAY NEVER HAVE BEEN WRITTEN

TO MR. R. M. SINCLAIR FOR A GREAT DEAL OF HARD WORK AND ENTHUSIASM

TO MR. L. LAMBE FOR HIS GENEROUS ASSISTANCE WITH TRANSPORT

TO MR. A. CARTWRIGHT FOR WHOM I WAS UNABLE TO FIND A PROBLEM TOO DIFFICULT TO SOLVE.

TO QUARTZITE QUARRIES LTD FOR THE SPARE PARTS FROM 4255

TO MY FATHER WHO HAS ALWAYS BEEN READY TO LEND A HAND.

TO PENRHYN QUARRIES LTD. FOR THEIR HELP ON MORE THAN ONE OCCASION WITH SPARE PARTS.

TO MANY FELLOW ENTHUSIASTS FOR THEIR HELPFUL SUGGESTIONS AND ENCOURAGEMENT

AND FINALLY TO WENDY FOR PUTTING UP WITH IT ALL.