Papers of E. S. COX

1917  Joined Lancashire & Yorkshire Railway as a premium apprentice in Mechanical Engineers Department at Horwich
      Draughtsman at Derby and Euston
1934  Assistant Works superintendent, Derby
1935  Development Assistant, Chief Mechanical Engineers Department, Derby
1937  Personal & Technical Assistant, Euston
1939  Personal & Technical Assistant, Euston
1940  Chief Technical Assistant to Chief Mechanical Engineer, Derby
1941  Executive Officer (Design), Railway Executive Headquarters
1942  Mechanical Engineer (Development), British Transport commission
1958  Assistant Chief Mechanical Engineer
1960s Mechanical & Electrical Engineer (Design & Development)

Notable people occurring in the papers are:-

Sir Henry Fowler  Chief Mechanical Engineer, LMS Derby
S J Symes       Works Superintendent, LMS Derby
E M Gass        Chief Draughtsman, Derby
F M Grover      Chief Draughtsman, Crewe
H Chambers      Chief Draughtsman, Horwich

Abbreviations:-

C.M.E          Chief Mechanical Engineer
L.N.W.R        London & North Western Railway
L.M.S          London Midland & Scottish Railway
1. Pre-1923 papers including locomotives of pre-1923 design

/1/1 BOOK 1914
List of Locomotive Rolling Stock, issued by Lancashire and Yorkshire Railway, with
details of number of engine and type, maker, wheels arrangement, diameter of wheels
and cylinders, strike size, date of construction and new boiler, type of brake and boiler
pressure. [Annotated]

/1/2 MANUSCRIPT 1915-1924
“Modern Loco Design and Construction - Articles in Railway Engineer” written by E
S Cox. [Handwritten]

/1/3 MANUSCRIPT 14 Nov 1923
re. trials with the Ramsey Condensing Loco with a note of its particulars.
[Handwritten]

/1/4/1 MEMORANDUM 17 Apr 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to S J Symes re. the
investigations into problems experienced in the sheds with Clauohton engines.
/1/4/2 MEMORANDUM 13 May 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to S J Symes, re. the
investigations into problems experienced in the sheds with “Prince of Wales” class
engines.
/1/4/3 MEMORANDUM 9 Jun 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to S J Symes, re. 8-
wheeled coupled freight engines and the investigations into problems experienced in
the sheds with Western Division G11 and G2 types, Standard Class 7 types, 2-8-0 S &
D type engines.

/1/5 MEMORANDUM 28 Apr 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to S J Symes, re.
valve gear on the “Caprotti” engine number 5908

/1/6 MEMORANDUM 13 Aug 1931
from E S Cox, Chief Mechanical Engineers Department, Euston re. repair and fuel
costs of the different forms of the "Clauohton” engines with statement of comparison.

/1/7 MEMORANDUM 12 Oct 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to E J H Lemon re.
proposed rebuilding of "Claughton” engines.

/1/8/1 MEMORANDUM 12 Nov 1931
from E S Cox, Chief Mechanical Engineers Department, Euston to S J Symes, re.
investigations into the defects of the Horwich Class 8 engines.
/1/8/2 GRAPH 1918-1925.
Graphical representation of test runs with Horwich 4-cylinder 4-6-0 engines showing
the effect of various alterations made.
2. London Midland and Scottish Railway 1923-1947

/2/1 DIAGRAM 2 Mar 1923
of L.M.S.R. proposed 4-6-2 4-cylinder locomotive. Scale 7" – 1 ft

/2/2 DIAGRAM 2 Jun 1924
of proposed 2-8-2 engine with booster for Toton-Brent coal traffic. Scale: ¼" – 1 ft.

/2/3 FILE 6 Apr 1925
Boiler dimensions of LMS locomotives – data sheets for boiler standardization from
Derby, Crewe, Horwich, St Rollox, Kilmarnock, Inverness, Stoke and Barrow works.

/2/4 FILE 1925
Notes of meetings between Sir Henry Fowler, Messrs. Chambers, Grover and Gass,
held at Crewe and Derby in connection with 'large engines', compound 4-6-2 and 2-8-2
engines

/2/5 REPORT 13 Feb 1928
on the history of tyre failures over the period 1877-1927, prepared by Mr Millington,
and passed to H.P.M.Beames, C.M.E Department Derby, 13 Feb 1931

/2/6. MEMORANDUM 7 Apr 1931
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
narrow rings for piston valves to reduce leakage of steam..

/2/7 MEMORANDUM 10 Apr 1931
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
exhaust steam injectors, where already fitted, and costs and savings.

/2/8 FILE 1930-1931
"Running of 40 compound engines on Midland Division, Feb-Mar 1931", train
availability diagrams for Midland Division, Claughtons Mid-Division, Royal Scot
Engines on Western Division, 5X Caprotti Claughton Engines, Claughton Engines on
Western division,

/2/9 MEMORANDUM 21 Sep 1931
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, with
notes on the comparison between simple and compound expansion in locomotives.
2/10 MEMORANDUM 27 May 1932
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
proposed test of "Fury" high pressure locomotive

2/11 MEMORANDUM 9 Nov 1932
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
standard 2-6-4 tank engines and "precursor" tank engines on Watford and Tring
residential services.

2/12 MEMORANDUM 1 Dec 1932
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
analysis of engine failures classified by speed and weight of locomotives.

2/13 MEMORANDUM 26 Jan 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
reboiling of engines in the Northern Division.

2/14 MEMORANDUM 21 Apr 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
ew coned boilers and number of flanging blocks required.

2/15 MEMORANDUM 22 May 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to S J Symes, re.
proposed light 4-6-0 engine for Northern Division.

2/16 MEMORANDUM 12 Jul 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to Mr Riddles, re.
1934 building programme, and the Prince of Wales and Northern Division 4-6-0
engines.

2/17 MEMORANDUM 20 Jun 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to Mr W.A.Stanier
re. re-design of 2-6-0 standard engines with results of clearance tests.

2/18 MEMORANDUM 11 Aug 1933
from [?E S Cox], Chief Mechanical Engineers Department, Euston to H.P.M.Beames,
Euston, re light engines for Highland and Callander and Oban lines.

2/19 MEMORANDUM 14 Aug 1933
from E S Cox, Chief Mechanical Engineers Department, Euston to Mr R.A.Riddles,
re. re. new 4-6-2 locomotive and platform clearances at Euston Station.

2/20 MEMORANDUM 27 Sep 1933
from [?A.R.], Chief Mechanical Engineer's Office, Euston to Mr R.A.Riddles, re.
re-design of standard 2-6-0 engine after clearance tests.
/2/21 MEMORANDA Jan-Feb 1934
re. proposed renumbering to bring all standard engine numbers below 10,000, with
alternative proposal, proposed numbers, details of engines and action necessary. [4
items]

/2/22 MEMORANDUM 21 Mar 1934
re. French locomotives, giving characteristics of French conditions, particular points
of interest to be followed up.

/2/23 MEMORANDUM 11 Apr 1934
re. performance of French locomotives comparing a test run with the Royal Scot.

/2/24 MEMORANDUM 21 Sep 1934
from E S Cox, Chief Mechanical Engineers Department, Euston to Mr W.A.Stanier,
re. dynamometer car tests, 3-Cylinders 5X engines on accelerated turnings between
Birmingham and Euston.

/2/25 BOOK 1936-1937
List of finished weights of 4-6-0 mixed traffic engines and tenders, Class 5P, 5F,
numbers 5225 – 5451 inclusive, built by Armstrong Whitworth & Co, issued by
London Midland & Scottish Railway Company.

/2/26 REPORT [c.Nov 1936]
re. development of a high pressure turbo-electric locomotive.

/2/27 MEMORANDUM 22 Feb 1937
from E.S.Cox, Chief Mechanical Engineers Department, Euston to Mr Stanier, re.
application of a Velox boiler to a locomotive at the works of the Cie Electro-
Mecanique, Paris.

/2/28 MEMORANDUM 17 Nov 1937
from E.S.Cox, Chief Mechanical Engineers Department, Euston to Mr Stanier, re. a
visit to Germany in connection with an investigation into smoke abatement.

/2/29 REPORT 5 Apr 1939
from [?E S Cox], Chief Mechanical Engineers Department, Euston re. visit to Paris,
March 1939, in company of Pacific Locomotive Company.

/2/30 REPORT 11 May 1939
from [?E.S.Cox], Chief Mechanical Engineers Department, Euston re.
analysis of causes of casualties with graphs showing effects of engine design

/2/31 REPORT [post 1941]
by E S.Cox,[Chief Mechanical Engineers Department, Euston] re. post war steam
traction policy and development.

/2/32 REPORT 8 Jun 1942
on “2 to 1” Gresley valve gear on L.N.E.R. 3-cylinder locomotives
/2/33 MINUTES 6 Jul 1945
of meeting of L.M.S Works Superintendents at Euston Station, 29 June 1945.

/2/34 REPORT 28 Dec 1945
on Water Treatment as carried out on American Railroads, issued by L.M.S. Chief
Mechanical Engineers Department, Watford.

/2/35 TRANSCRIPT Jan 1946
of "The Building of an Engine" Radio broadcast on Midland Home Service given by
Mr Cox, Chief Technical Assistant and Mr Robson, Acting Works Superintendent.

/2/36 MEMORANDUM 4 Mar 1946
to Mr Cox from Mr H.G.Ivatt, Chief Mechanical Engineer, re. organization of the
L.M.S. Railway C.M.E. Department.

/2/37 REPORT Mar 1946
to the Chairman and Members of the Traffic and Mechanical and Electrical
Engineering Committees on Water Softening for locomotives, issued by L.M.S.,
Watford and Derby.

/2/38 REPORT 5 Jun 1946
on footplate run on L.N.E.R. 2-cylinder mixed traffic 4-6-0 loco B1 class, and
comparison with L.M.S Class 5 mixed traffic locomotive.

/2/39 RESUME 30 Apr 1946
of third progress report of locomotive development committee on coal fired gas
turbine locomotives.

/2/40 MEMORANDUM 3 Apr 1946
to Mr Cox re. laminated springs for locomotives, and proposal to re-organize and
re-equip the spring shop at Derby Locomotive Works.

/2/41 REPORT 13 Jun 1946
First report of the Laminated Spring Committee, re. dissatisfaction with the life of
laminated springs and proposals for their redesign.

/2/42. MEMORANDUM 16 Aug 1946
from L.M.S.R. C.M.E. Department, Nelson Street, Derby, re. classes on which
laminated springs are used, quantity in service and estimated life.

/2/43. MEMORANDUM 24 Jun 1946
from C.M.E Department, Nelson Street, Derby, of interview with Mr Symington
MacDonald re. his development of pulverized fuel firing on locomotives, earlier
reported on in 1939 and 1942.

/2/44 REPORT 8 Mar 1947
on the division of work as between L.M.S. Railway Company and English Electric Co
on the construction of two 1600 H.P. main line diesel electric locos, from C.M.E
Department, Nelson Street, Derby.
/2/45 MEMORANDUM
from L.M.S.R. C.M.E. Department, Nelson Street, Derby, re. new 2-6-0 and 2-6-2
locomotives and their limited use at certain sheds.


/3/1 REPORT
Draft first report on standard steam locomotives, by the Executive Officer (Design),
issued by the Railway Executive

/3/2 FILE
Dimensional details and ratios for B.R. standard locomotives

/3/3 REPORT
Feb 1952
on the performance of the B.R. Standard Class 5 4-6-0 mixed traffic locomotive in the
Scottish Region, issued by M.P.S.O. Glasgow.

/3/4 REPORT
Apr 1952
on Motive power Policy, issued by the British Transport Commission. [Incomplete]

/3/5 REPORT
Jul 1952
on the mechanical and electrical engineering on British railways.

/3/6 REPORT
Aug 1952
on the performance of the B.R. Standard “class 6” 4-6-2 mixed traffic locomotive in
the Scottish Region, issued by M.P.S.O. Glasgow.

/3/7 REPORT
Jun 1953
Preliminary report on the performance of the B.R. Standard “Class 4” 2-6-0 mixed
traffic locomotive in the Scottish Region, issued by M.P.S.O. Glasgow.

/3/8 MEMORANDUM
6 Sep 1954
to J.C.L.Train re. Locomotive Building Programme 1956, The Steam Locomotive in
relation to Proposals for Electrification and Diesel Traction.

/3/9 REPORT
31 Jan 1955
No E.39, on the effect of speed and steam temperature on the cylinder efficiency of
steam locomotives, provision of increased superheat by electrical means, issued by
British Railways Research Department from the engineering Division, Derby.

/3/10 REPORT
Jul 1956
on the selection of diesel locomotive types assessing technical considerations
influencing the choice, issued by the Chief Mechanical Engineer’s Office, British
Railways Central Staff.
1992-7383

/3/11 NOTES  5 Jul 1957
of meeting re. design of diesel main line locomotives

/3/12 REPORT  Jun 1959
No. E.229, on the effect of speed and steam temperature on the cylinder performance
of steam locomotives, tests carried out by Rugby Testing Station. British Railways.

/3/13 NOTES  16 Jul 1959
of meeting held at Locomotive testing station, rugby re. Giesl equipment.

/3/14 LIST  11 Mar 1964
of numbers of locomotives built, 1948-1963, organized by railway and builder

/3/15 CORRESPONDENCE  Nov1965-Jan1966
to Mr Cox from Locomotive and Allied Manufacturers’ Association and British
Railways board, re. W.D. Austerity locomotives

4. Miscellaneous

/4/1 REPRINT  Jul 1940
of ‘The Locomotive boiler’ by C.A.Brandt, with discussions, reprinted from
Transactions of the A.S.M.E.

/4/2 PROCEEDINGS  Jun 1941
of the Railroad Sessions at the A.S.M.E. Semi-annual meeting, published by the
American Society of Mechanical Engineers, New York.

/4/3 REPORT  May-Jun1958
on visit of delegation to the soviet Union, issued by British Transport Commission,
with map of Russian Railways.

/4/4 BOOK  [post 1932]
“La Commande Individuelle Des Essieux, Mécanismes Appliques Aux Locomotives
Électriques Et Automotrices Avec Indication Des Expériences Faites En Exploitation
5. Diagrams and drawings

Rolls 1-4

Beyer Garratt Schemes (Beyer, Peacock & Co)

Roll 1
4-4-2 + 2-4-4

6-cylinder compound
BP No 110096 June 1930 dyeline
BP No 110096 Derby Oct 1930 Linen

6-cylinder (simple)
BP No 112647 Sept. 1932 dyeline

4-cylinder (simple)
BP No 112648 Sept. 1932 dyeline

Roll 2
2-6-0 + 0-6-2

BP No 98092 undated dyeline
BP No 98085 undated dyeline

Weights and wheel spacing 5 Jan 1926 dyeline
BP Order No 1114 undated dyeline

Roll 3
2-6-2 + 2-6-2

BP No 95866 undated dyeline
BP No 95866A undated dyeline
BP No 97945 undated dyeline

Roll 4
2-6-2 + 2-6-4

6-cylinder compound passenger engine
BP No 112295 c.1932 dyeline
BP No 127114 June 1948 dyeline
BP No  127115       June 1948  dyeline
BP No  127115A     June 1948  dyeline
BP No  127801      Oct 1948 dyeline

Roll 5

Wartime 0-6-0 and 2-6-0 schemes

0-6-0 taper boiler (some with bar frames and side firebox)
DD3526     dyeline
DD3681     dyeline
DD3711     dyeline
DD3714     dyeline
DD3714A    dyeline
DD3771     dyeline

Light 2-6-0
DD3742     dyeline
DD3742A    dyeline
DD 3742B   dyeline

3-cylinder 2-6-2
DD 3616    dyeline

Roll 6

Tank locomotives
2-4-2T    DD3735B     dyeline
0-6-2T    DD 3777   1928 dyeline
0-6-2T    S 4332     7 Mar 1928 dyeline
0-6-2T taper boiler DD3619 undated dyeline
0-6-2T taper boiler DD3621 undated dyeline

Light 2-6-2T
DD 3726     dyeline
DD 3726A    dyeline
DD3726B     dyeline
DD3618      dyeline

Roll 7

2-6-0 schemes mainly by Cox preliminary to production of the Hughes/Fowler “Crab”

Horwich drawings
16919     21 2/1924     dyeline
17080     6 May 1924    dyeline
17338  8 Jul 1924  dyeline
17619  30 Oct 1924  pencil
18613  no date   dyeline
18827  no date   dyeline

Roll 8

Pre-1932 4-6-2 and 2-8-2 schemes

Four cylinder 4-6-2 and 2-8-2

Horwich drawing
17550  end views   2 Oct 1924  dyeline
17560  elevation  9 Oct 1924  dyeline

Three cylinder 4-6-2 and 2-8-2

Horwich drawing
18478  undated   dyeline

Roll 9

2-8-0/4-8-0 schemes

2-8-0 engine   31/8/1931  pencil drawing
4-8-0 G9 1/2S boiler   D2056  14/5/1931  dyeline
4-8-0 G5X(-) boiler     D2056/1  14/5/1931  dyeline

Roll 10

E12  proposed 4-6-2 passenger engine, 4-cylinder 20/4/32  blueprint
E274  2-6-0 superheated freight engine  undated  dyeline
Fig 4  proposed 4-6-2 mixed traffic loco, class 5  undated  dyeline
DD1153  proposed 4-6-2 compound engine 3-cylinders undated  dyeline
DD3749  proposed 2-6-0 superheated freight engine  dyeline
8335  proposed 4-6-2 passenger and 2-8-2 goods engine  dyeline

Roll 11

Cut away drawing of 4-6-2 loco
Folder 1

1. Drawing of Lancashire & Yorkshire 4-6-2 tank engines, Horwich, pencil 26/6/1918
2. Graphs – horse power required for various loads and speeds for Coronation Scot engine 23/5/1945
3. Suggested scheme for 2-6-4 tank engine to use same parts as 2-6-0 tender engine Horwich diagram No 17020 pen 15/4/1924
4. DE 22. Scheme for turbine-electric locomotive, motor-bogie type
5. EU 1286. Proposed large passenger locomotive, C.M.E. Euston Stanier 21/1/1938
6. DD1153. Proposed 4-6-0 compound engine 3-cylinders
7. DRS 4370. Proposed 4-6-0 passenger tender engine. 9/9/1941
8. DVD 181. B.T.C Design Study – STD DE Loco layouts with various power equipts. 15/5/1959
9. Scheme for 4-6-0 to run on Midland Division & in Scotland using 2-6-0 cylinders and modified Prince of Wales Belpaire boiler. 10/4/1924
10. Electro-turbo locomotive, by North British Loco Co Ltd.
11. D 17039 Co-ordination of design – 12 possible standard loco types to deal with all LMS traffic. 23/4/1924
13. Scheme for proposed rail motor car to carry 32 passengers. 19/11/1923
14. 16720 Scheme for proposed rail motor car to carry 20 passengers. 21/11/1923
15. Suggested Class 5, 4-6-0, with Caprotti valve gear and Franco-Crosti boiler using boiler generally similar to Class 4, 4-6-0 and 2-6-4T
16. 27-10671 LM&SR Cab side tank and bunker arrangement, end views. 28/6/1927
17. 27-10670 Cab side tank and bunker arrangement, water capacity 2000 gallons.
18. S-2194 Proposed 2-6-2 tank engine with superheater, L.T.&.S. Section. 25/8/1914

Folder 2

1. 17632 Proposed 2-6-0 mixed traffic engine scheme for 48'6" wheelbase engine. 7/11/1924
2. 17604 21" x 28" 2-6-0 mixed traffic engine. 1/11/1924
3. 17641 21" x 26" 2-6-0 mixed traffic engine. 12/11/1924
4. 16909 Proposed 2-6-0 with Derby G9AS Boiler. 4/2/1924
5. 17080 Proposed 2-6-0 mixed traffic engine. 6/5/1924
6. 17338 Proposed 2-6-0 mixed traffic engine with Baltic Tank Boiler. 8/7/1924
7. Bundle of photocopies of various drawings of locomotives and parts.