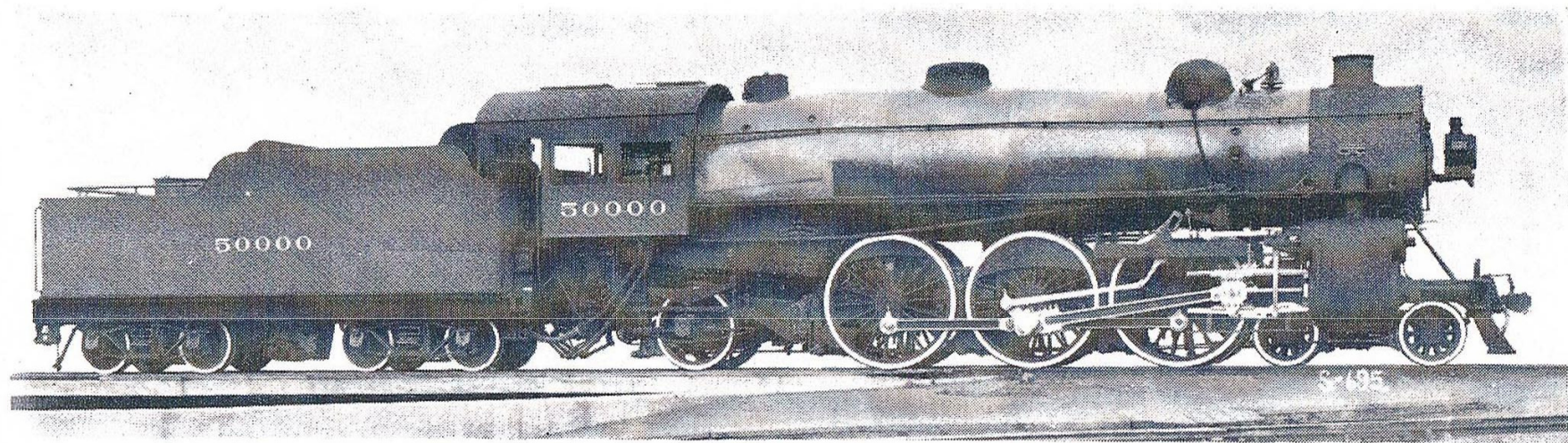
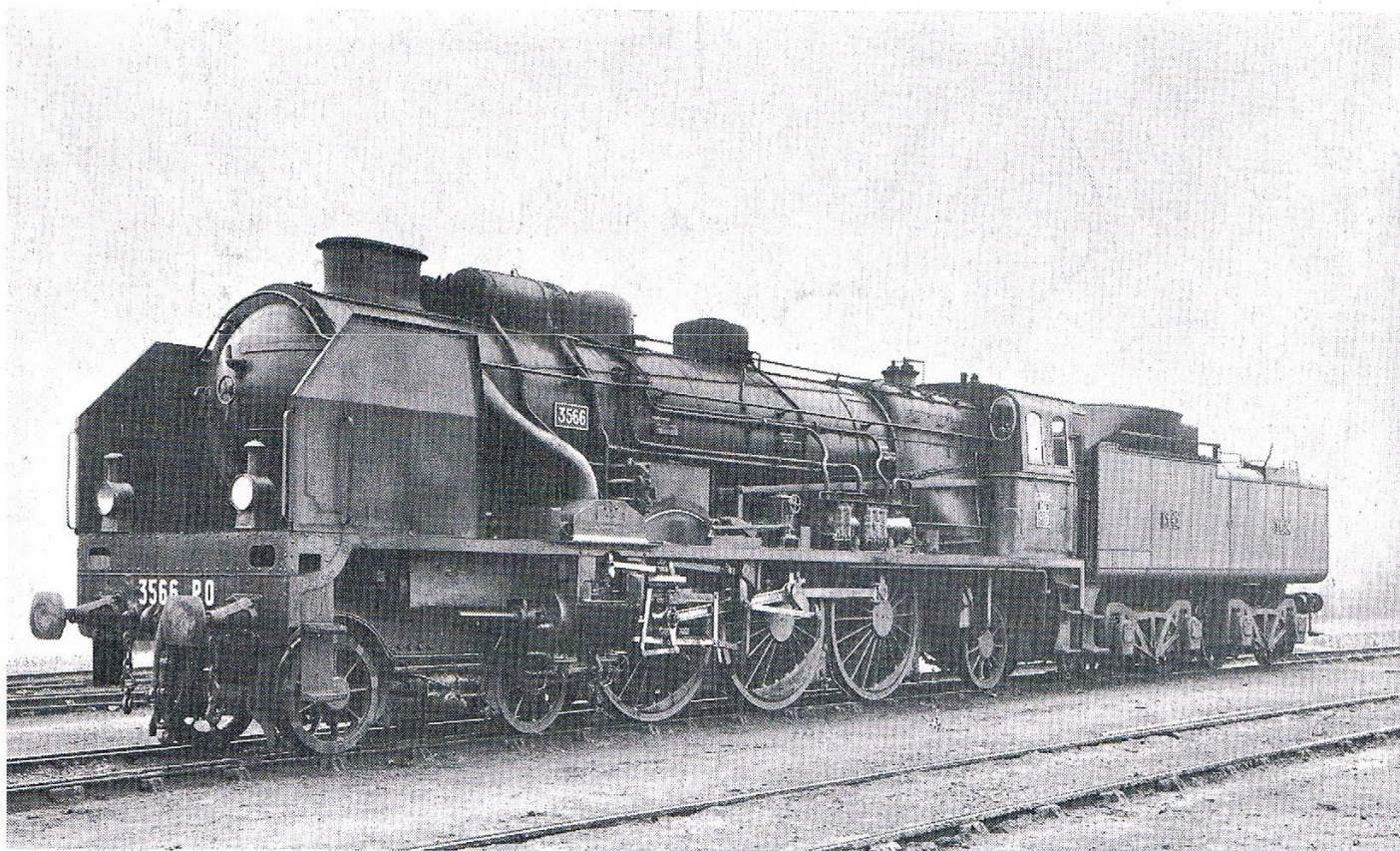
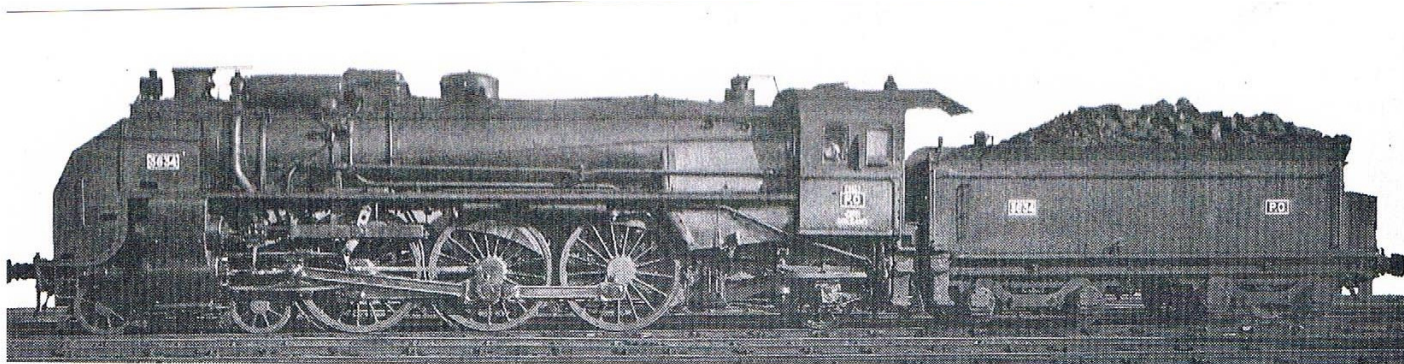




31. Type 462. Experimental No. 50,000. Alco, 1910

BP 185 lb · Cyl 27" × 28" · DrWD 79" · TE 40,800 lb · FA 4.23 · BMOD 87" · Tu 22' 0" · Fb 114" × 75" · GA 59.7 sq ft · HSEv 4,048 sq ft · SS 897 sq ft · DrWB 14' 0" · EngWB 35' 7" · E&TWB 68' 3" · WtDrs 172,500 WtEng 269,000 lb · TCap 8,000 gal · WtT 161,500 lb



Top: A 3591 class Pacific No 3634, fitted with smoke deflectors. This was the first engine in France to have them, trials having been carried out with a small model (a

Above: The first of Chapelon's rebuilt engines. No 3566 after leaving Tours works in November 1929 and attached to a large-capacity Nord pattern tender to enable it

Fig. 198. — 1931
160A1, compound,
à surchauffe et i

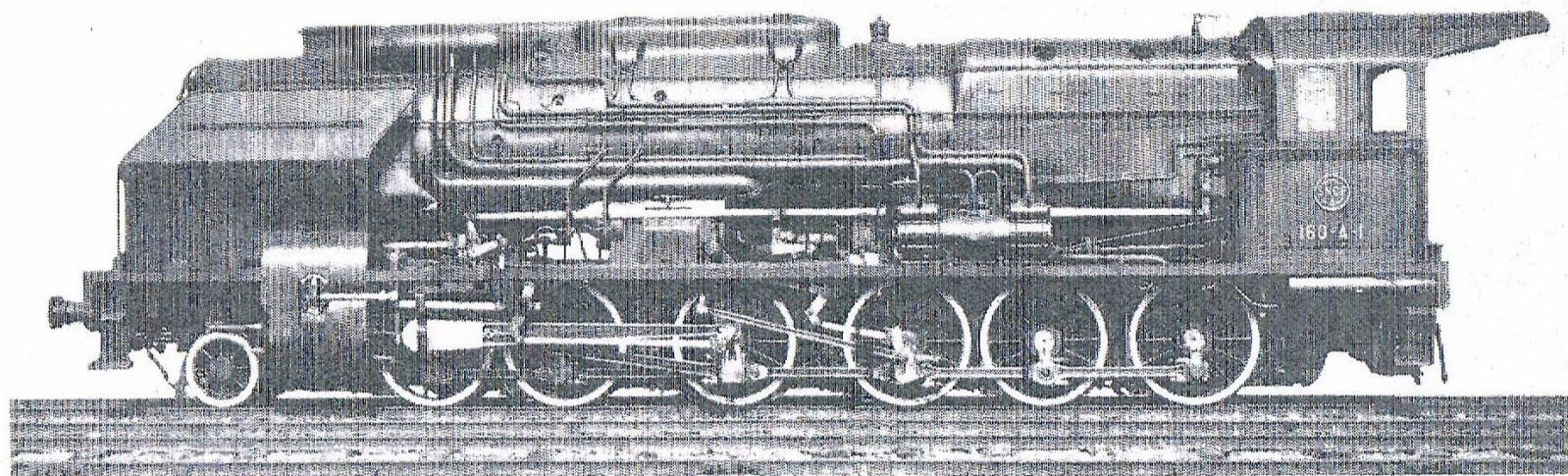
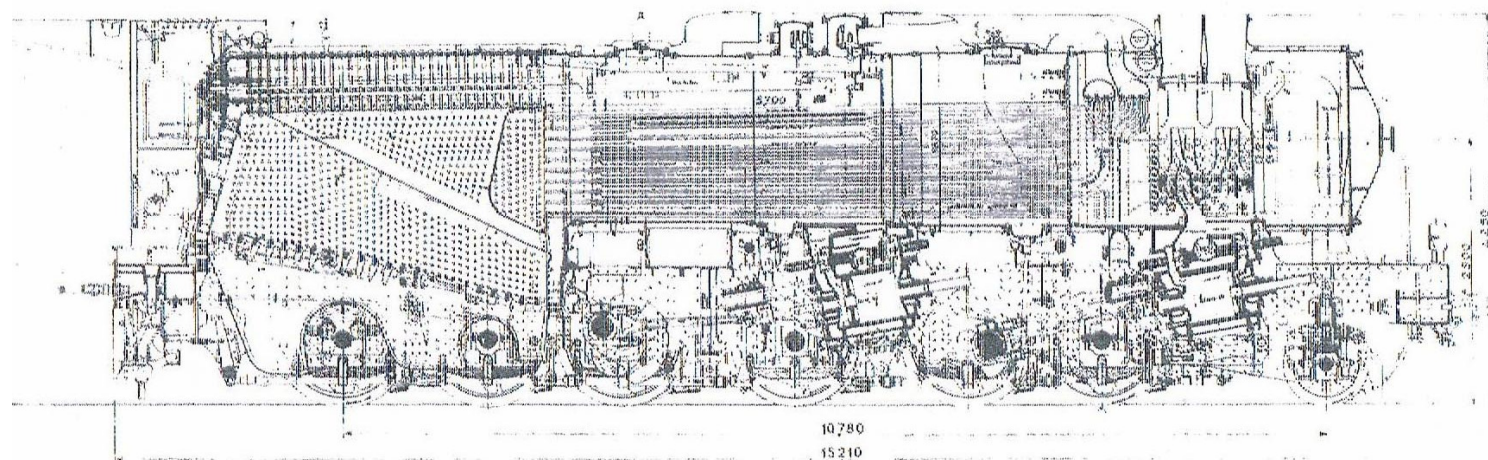
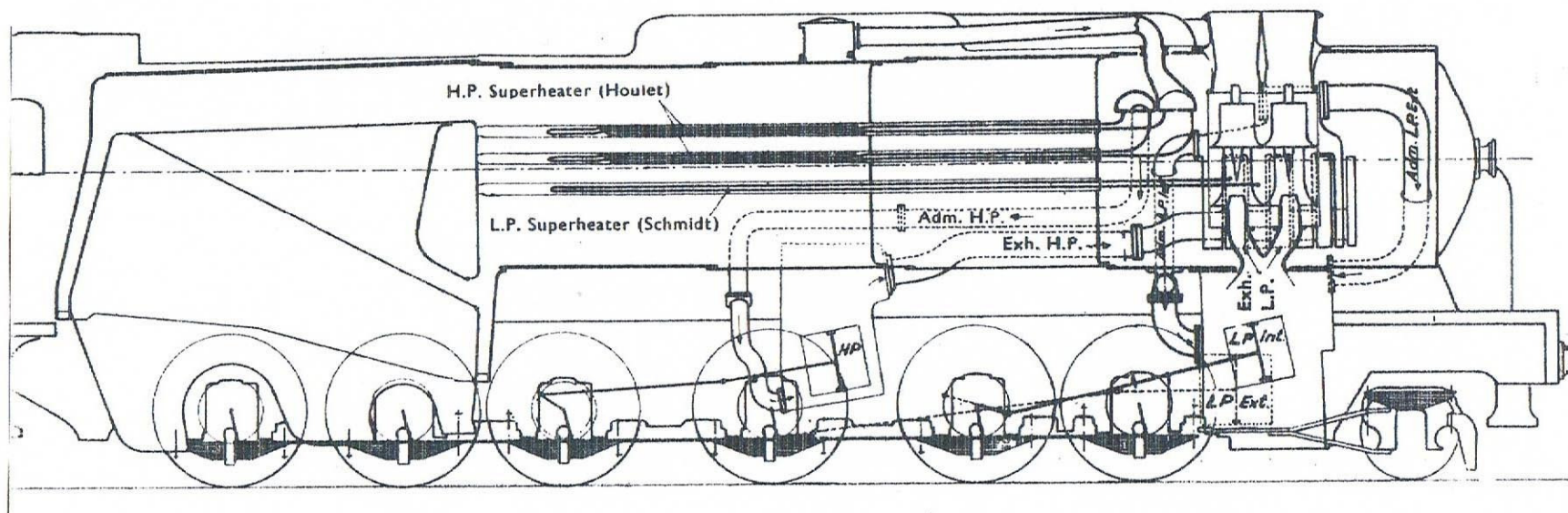


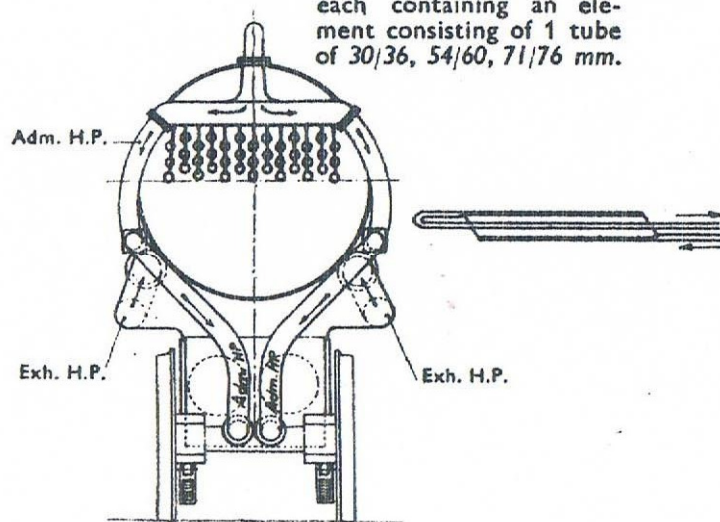
Fig. 199. — Locomotive
Coupe longitudinale (A.
lon).



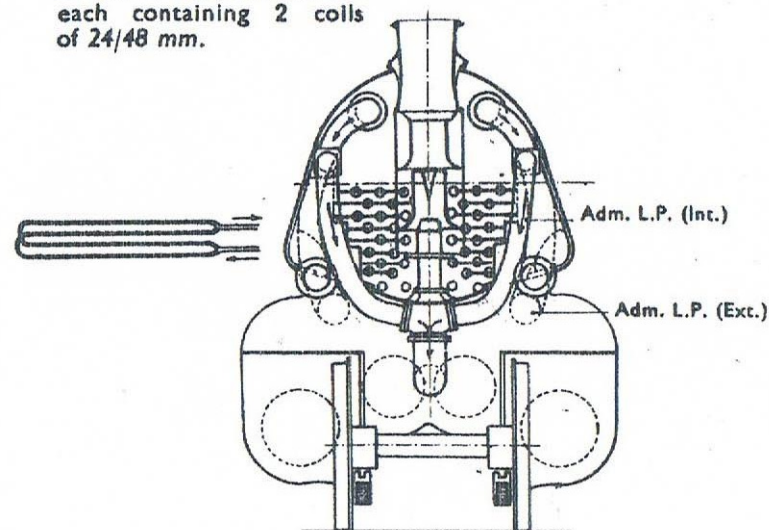
STEAM CIRCULATION IN THE TWO SUPERHEATERS (High and Low Pressures)

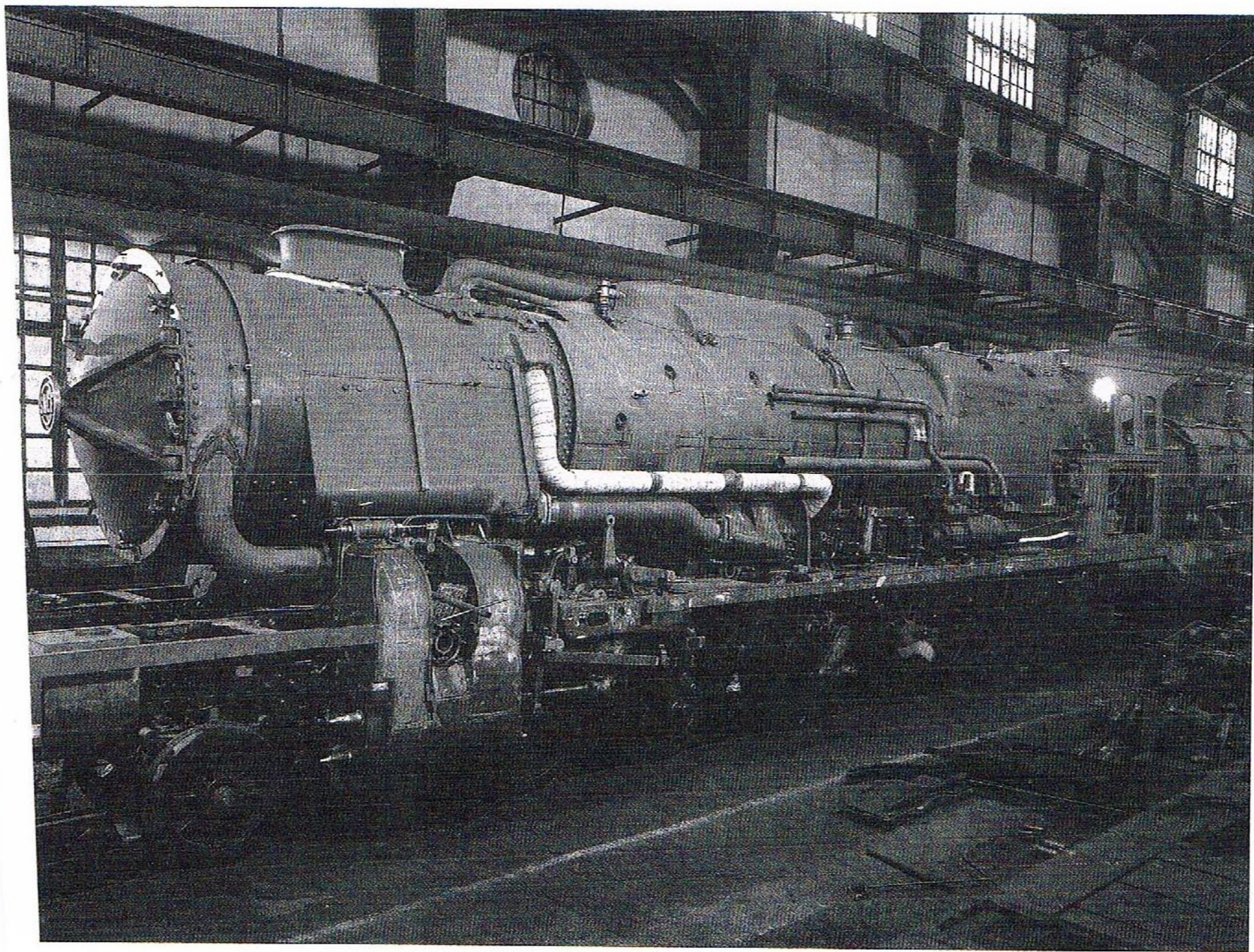


High pressure superheater (Houlet).
39 tubes— 96×102 mm.—
each containing an element consisting of 1 tube
of $30/36$, $54/60$, $71/76$ mm.



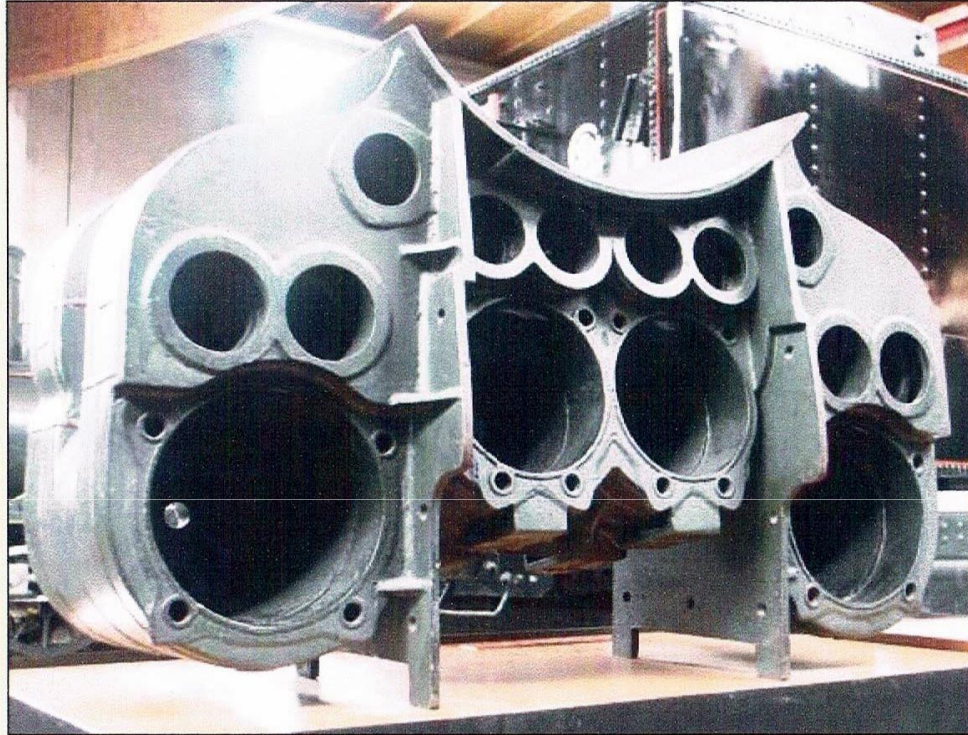
Low pressure superheater (Schmidt).
68 tubes— 96×102 mm.—
each containing 2 coils
of $24/48$ mm.





9/7/2017

The French National Railway Museum, Mulhouse



Before the rebuilding of a Paris Orleans 6000 Class 2-10-0 as a 2-12-0, 160A1, a model was constructed of the front set of low pressure cylinders. This view shows the front of the cylinder block. The high pressure cylinders were positioned further back down the locomotive driving on to the forth coupled axle. The locomotive was equipped with Lentz Oscillating Cam Poppet valves operated by Walschaerts valvegear. October 9 2003

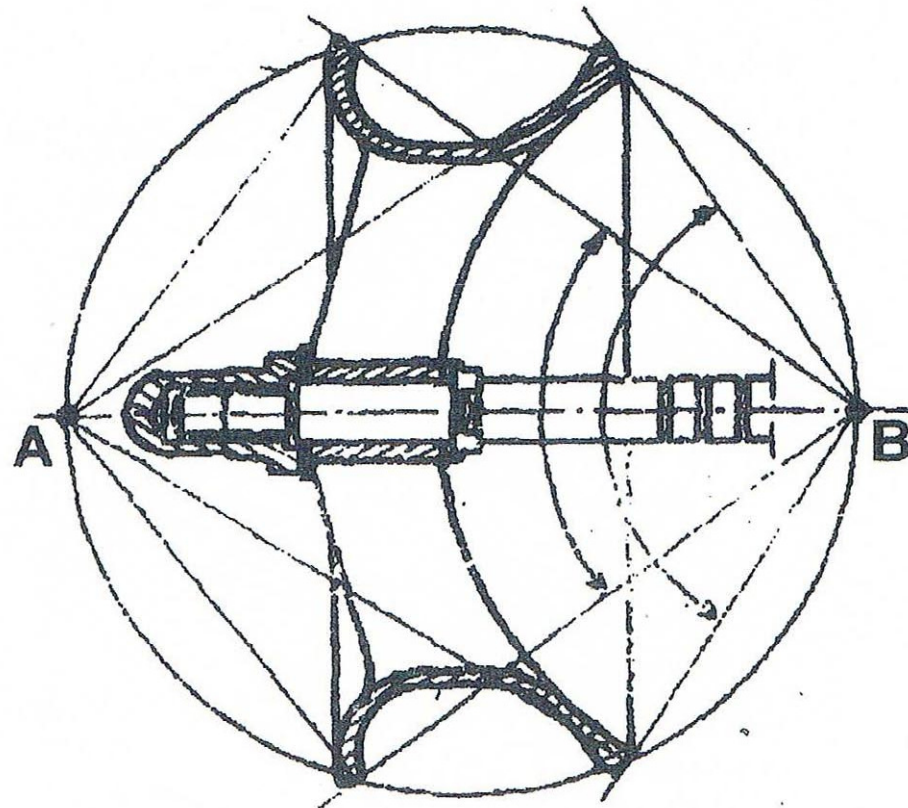
Sadly 160A1, despite being a highly successful prototype, was not preserved so the model cylinder block is the only item left. 160A1 was scrapped in November 1955. October 9 2003

valves were made of special steel with 20 – 25% nickel and 10% chrome, 1 tensile strengths. The original flat seats did indeed pose problems with faced by conical seats, the two cones having the same centre, which ensured and equalised expansion.

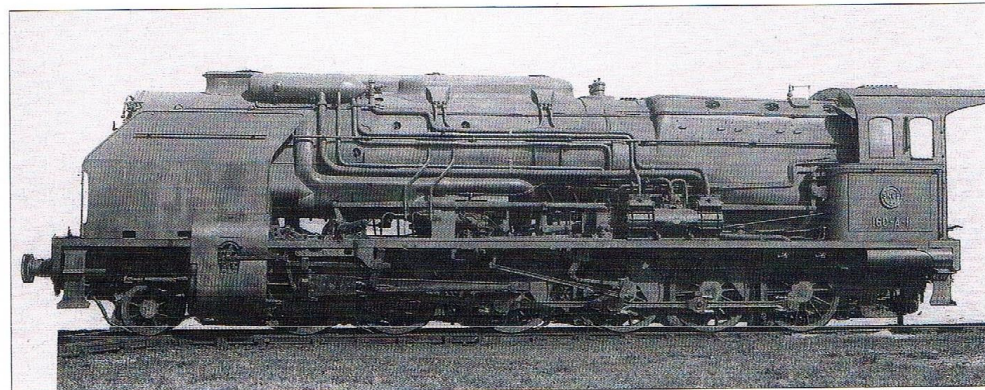
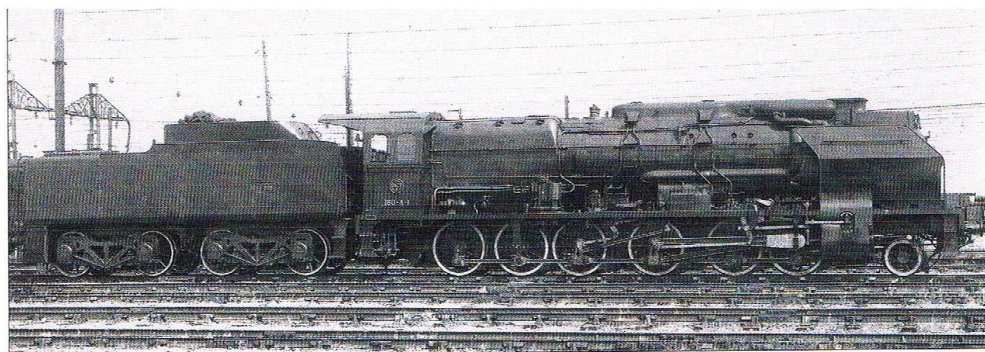
own is that these valves, despite their low weight and short travel compared to considerable effort to get them moving, by reason of their very rapid opening ed to be accelerated at ort of inertia of about ecessary for the spring il force (otherwise the ne out of contact with ation), an effort of 400 i the valve. And since ne wonders why ...) ent of the cam, the force of 800 kg. (as ve, but on a very small ial steels of very high blemis in wartime) to ed reliably.

Est valve was both ouble exhaust.

Daniel Berthélemy



entre of inscribed spheres (self-centring) B: Common apex of cones (expansion)



Trois vues officielles de la 160 A 1 (SNCF-MT).

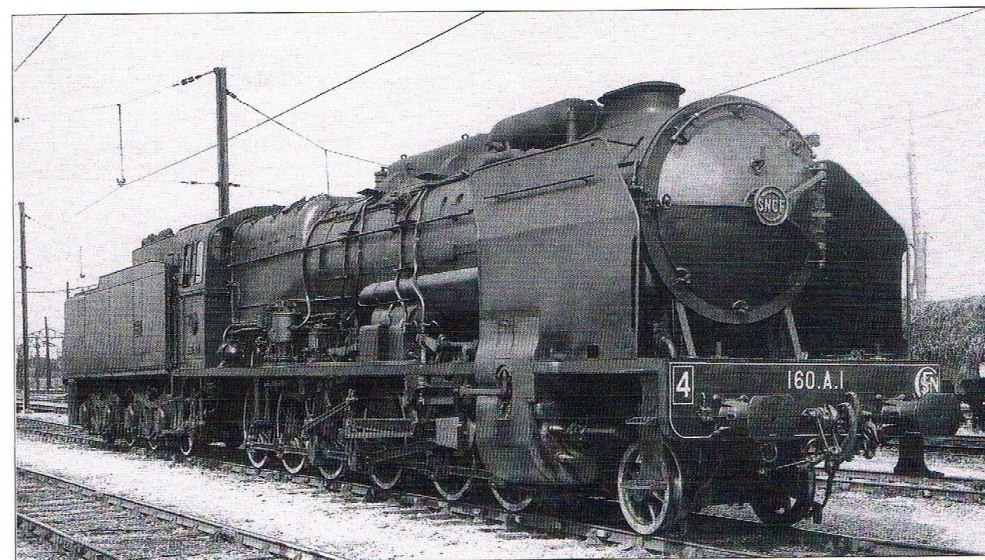


Fig. 198. — 1939-160A1, compound à surchauffe et res

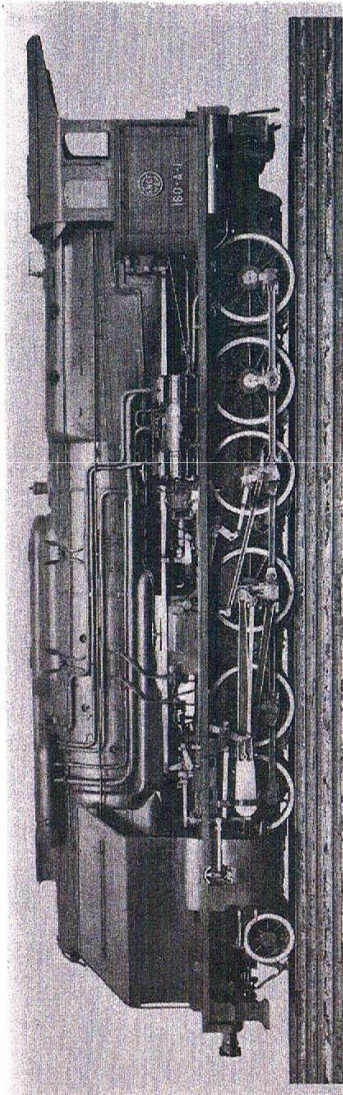
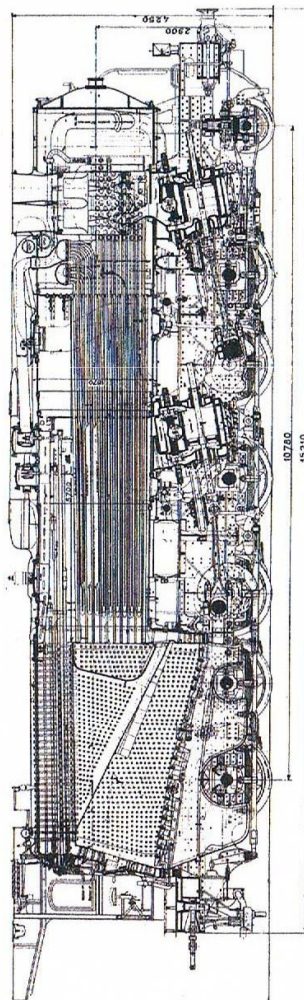


Fig. 199. — Locomotive 16 Coupe longitudinale (A. Ch lon).



Enseignements fournis par les essais de la locomotive 160 AI. —

Les nombreux essais auxquels a été soumise cette machine ont prouvé, d'une part, la parfaite tenue des organes moteurs d'une locomotive polycylindrique contrairement à une opinion couramment admise et malgré qu'il s'agisse de la reconstruction d'une machine ancienne dans laquelle les éléments primitifs ne laissaient pas toute latitude dans l'établissement du nouveau moteur ; d'autre part, des constatations et des enseignements d'ordre thermodynamique très importants ont été enregistrés.

C'est ainsi que pour une locomotive de ce genre, à vitesse faible ou relativement faible et à grands efforts de traction, l'alimentation des cylindres HP, avec de la vapeur saturée, n'a donné lieu, par rapport à l'alimentation des mêmes cylindres avec de la vapeur surchauffée, qu'à une augmentation très faible de la consommation, ce que l'on peut attribuer à l'efficacité des enveloppes de vapeur sous la forme où elles ont été utilisées ainsi que de l'accroissement du rendement du surchauffeur BP fonctionnant en vapeur saturée.

L'accroissement de consommation en calories par ch/h indiqué n'a varié que de 1,5 % pour 60 km/h à 3 % pour 20 km/h.

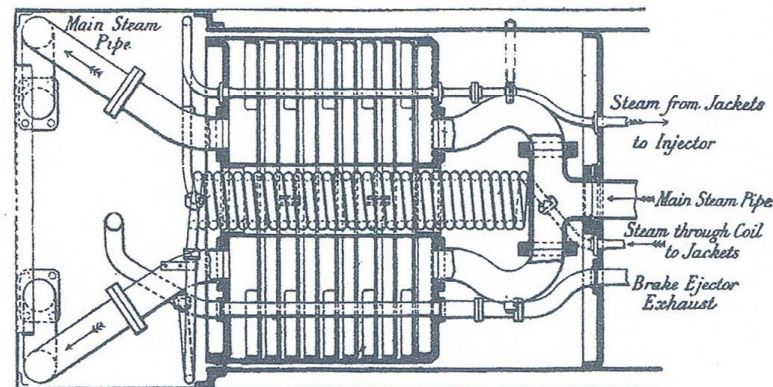
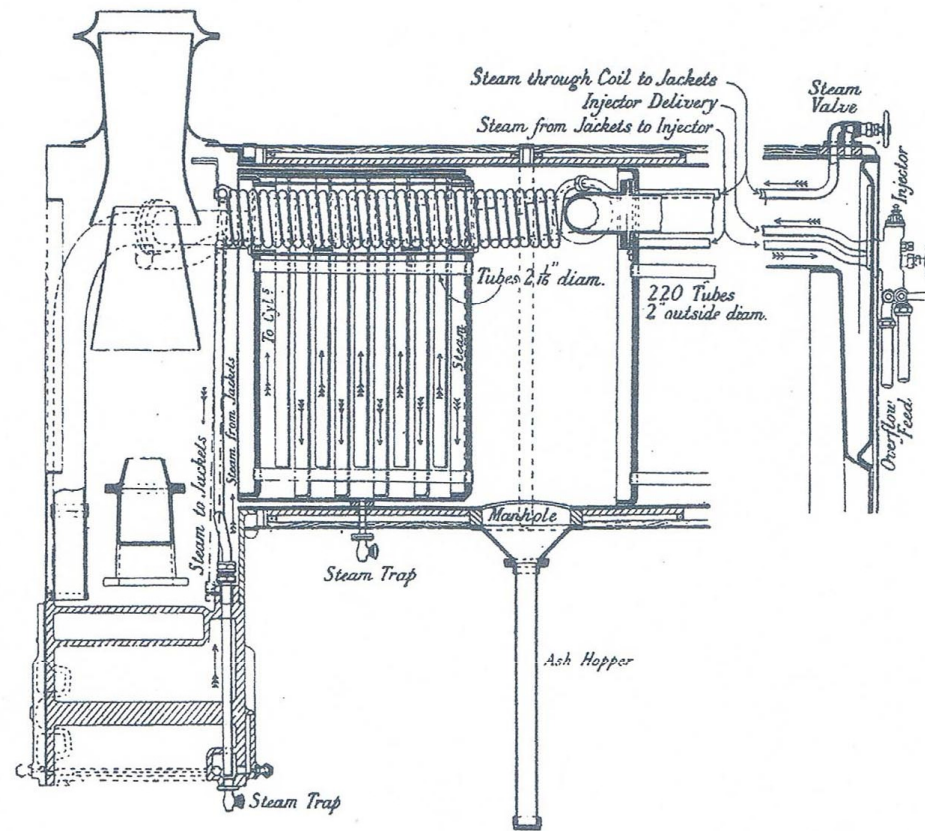
Même en marche complète à vapeur saturée, cet accroissement de consommation n'a varié que de 6 % pour 60 km/h à 13 % pour 20 km/h.

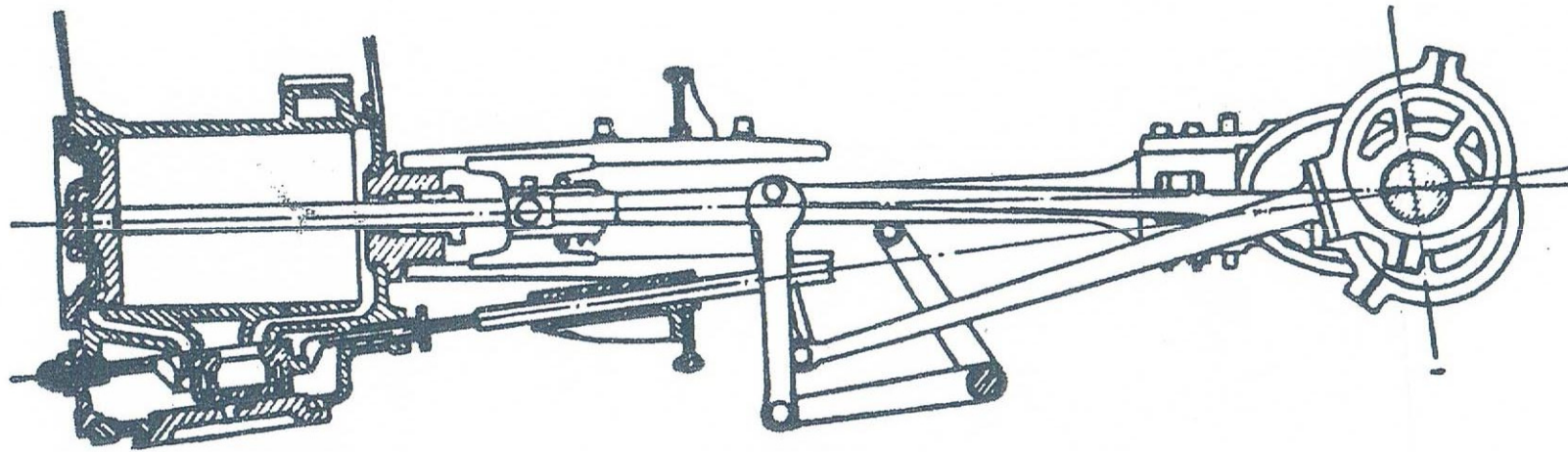
Quant à la puissance de la machine, elle ne s'est trouvée réduite en marche complète à vapeur saturée et pour les mêmes crans de marche que de 7 % environ, la différence provenant des calories transmises en moins par le surchauffeur.

En conclusion, les essais de la 160 AI ont montré que la machine idéale devrait être une compound admettant de la vapeur saturée dans ses cylindres HP munis d'enveloppes et de la vapeur surchauffée dans ses cylindres BP. On réaliserait ainsi des conditions de marche particulièrement avantageuses au point de vue entretien à cause des faibles températures mises en jeu avec des conditions d'établissement conduisant au minimum de complications tout en sauvegardant le maximum de rendement.

Vitesse km/h	Cran		Puissance aux cylindres Surchauffe HP et BP ou BP seule E	Vapeur saturée S	S — E
	HP %	BP %			
60	48	32	2600	2375	0,91
40	48	32	2120	1970	0,93
20	48	32	1260	1185	0,94
40	62,5	40	2590	2405	0,93

Les tableaux suivants donnent les dimensions principales de la plupart des machines examinées.





Dean's cylinder and valve arrangement as used on 7ft 8in singles, Atbaras, Cities, Bulldogs, Aberdares, etc.

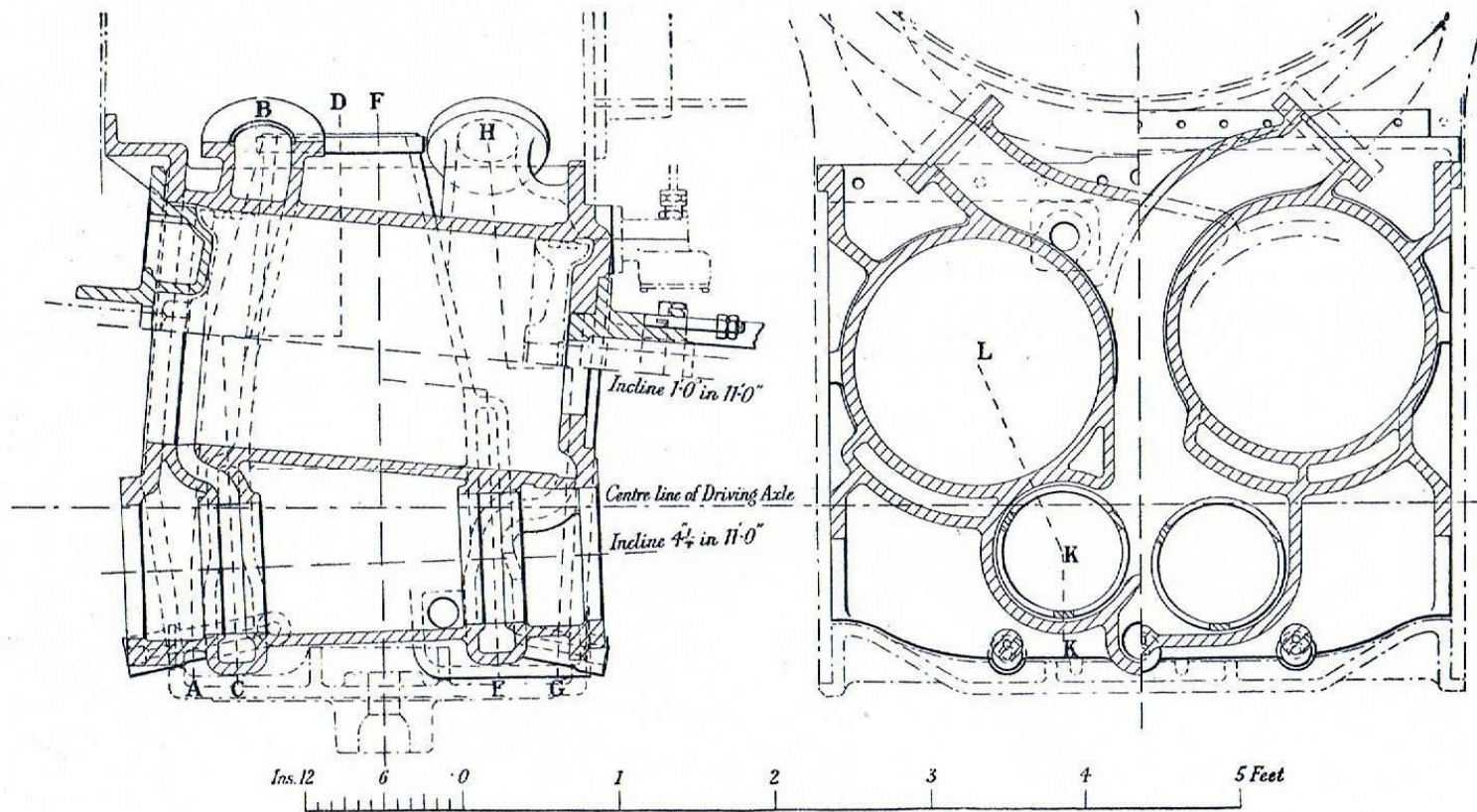


Fig. 53.

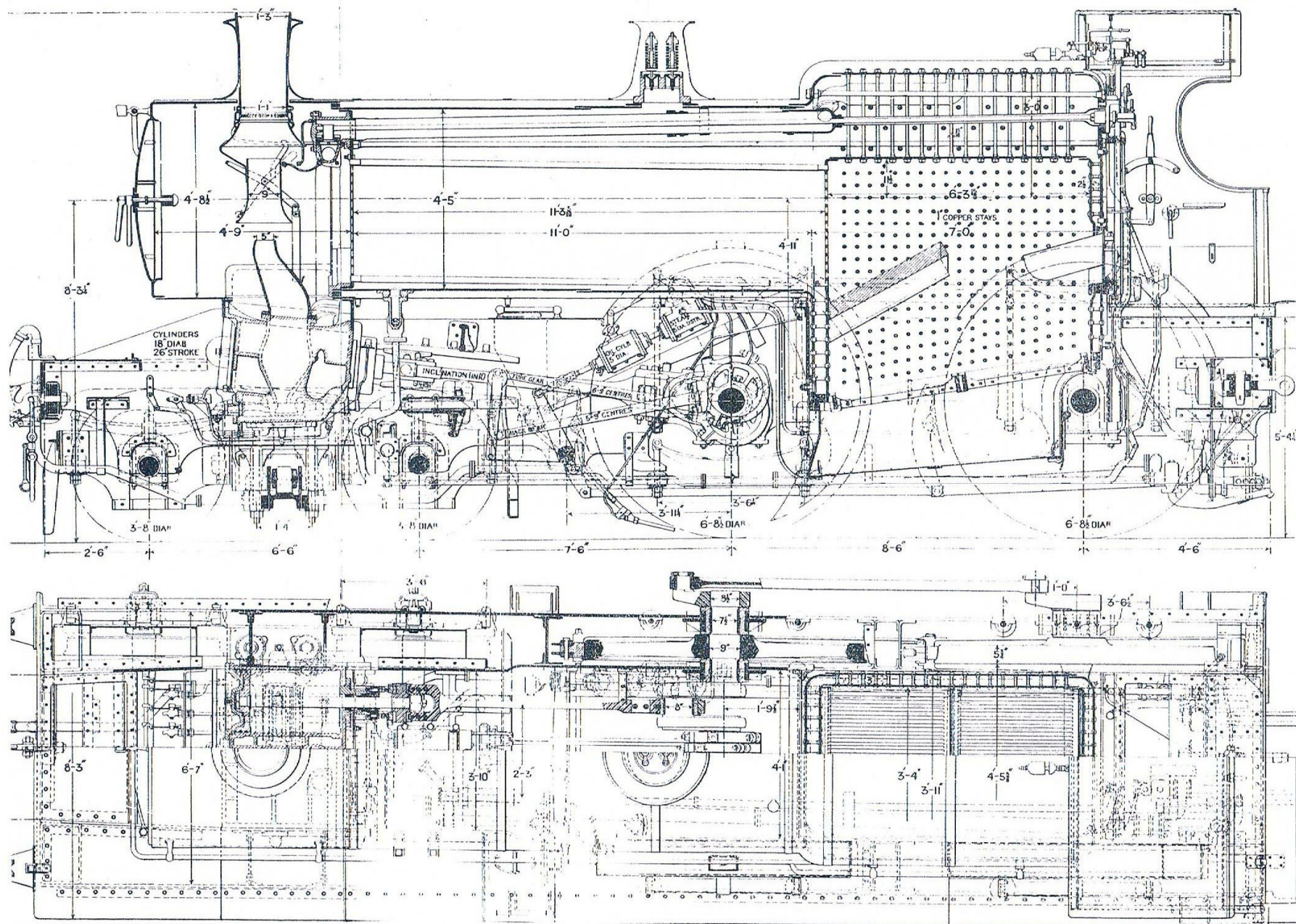
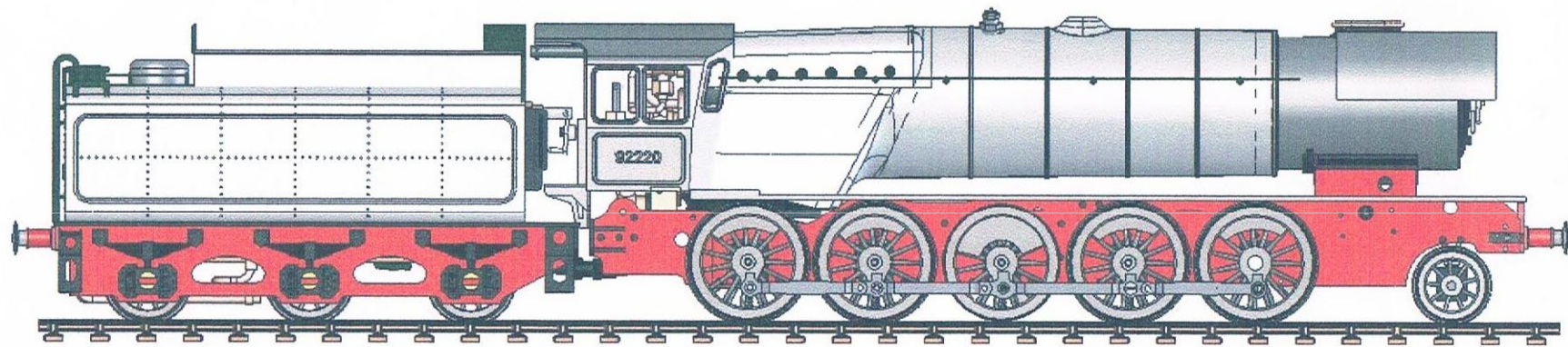
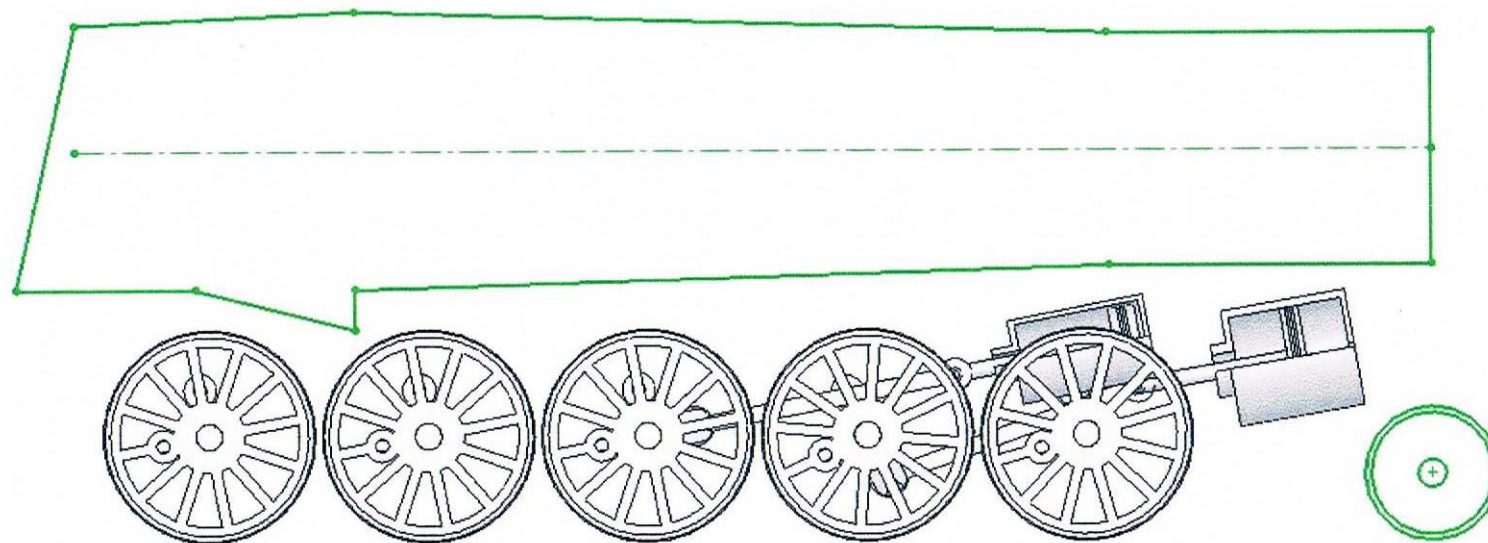


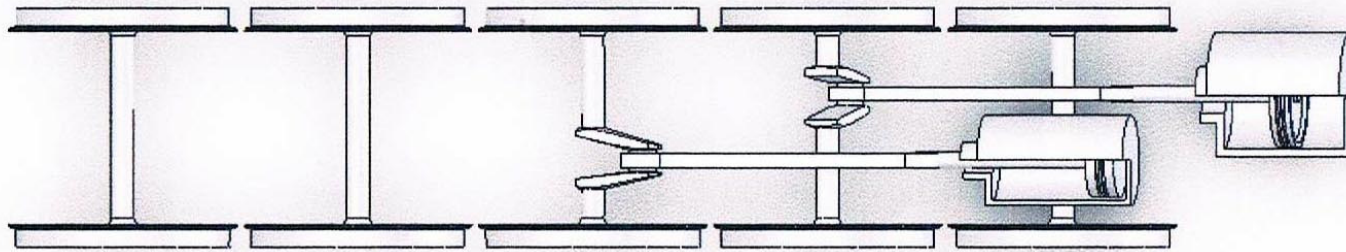
FIG. 110. G. W. R. FOUR COUPLED BOGIE EXPRESS PASSENGER ENGINE.

Mainlining 9Fs | Model Engineering Clearing House



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Mainlining 9Fs Feb 5, 2017 at 6:56pm

Post by niels on Feb 5, 2017 at 6:56pm

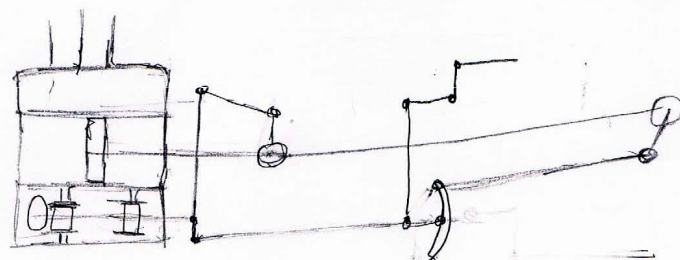
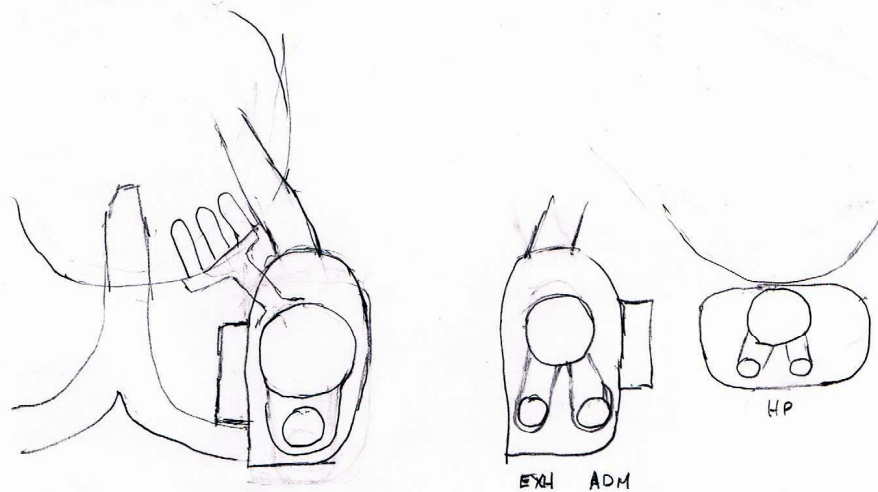
A better picture of Viktoria.

Mid coupled wheelset have flanges and front coupled wheelset in a Krauss-Helmholtz truck giving tracking not worse than a Pacific.

If made in 1935 most future design was superfluous.

The knowledge that two cylinder compound cannot be bettered at speed was known 1938(fig 7 page 6).

journals.sagepub.com/doi/abs/10.1243/PIME_PROC_1947_156_058_02



Second Law Steam Locomotive.

Saturated steam

Steam jackets.

Smokebox conductor ribs, to heat cylinder liners

Feed Heater

Moisture separator, knitmesh

Piston valves below cylinders

Separate inlet and exhaust valves

Inverted Walschaerts gear, Allan straight Link

3 cyl compound version with LP moisture separator and st

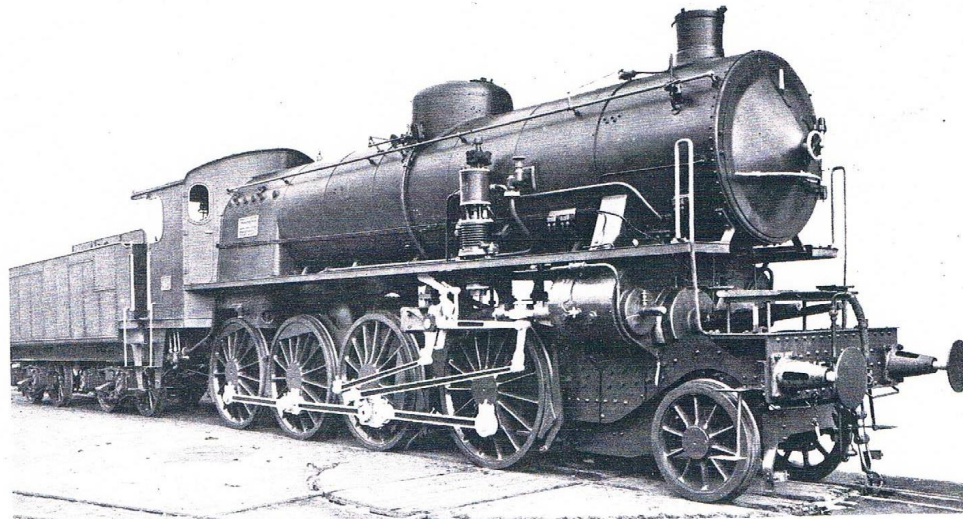


Plate 64 Class 745. Works photograph of 745.071, built in 1923 (Photo P M Kalla-Bishop collection)

CLASS 745 (Plates 64 & 65)

No 74501-12 (1918: 745.001-012), 745.013-073
2-8-0 DW 1630mm Cyl 580×720mm
BP 12kgf/cm²

This mixed traffic superheated 2-8-0 type with an Italian bogie was built to meet the need for a low axle-load locomotive for the then track on the Salerno-Reggio Calabria main line. Maximum axle load was 14.4 tonnes.

Cylinders were inside with Walschaert's valve gear outside. Standard bogie tenders were fitted, but the water capacity was reduced to 18m³ (3960 gallons) to meet the need for a low axle load. In later years when the track had been brought up to the usual Italian standard to meet a 16.7 tonnes axle load, the water capacity of the tenders was increased to the usual 22m³

(4842 gallons). The original 12 locomotives of 1914 had the driver's position on the right of the footplate. Later this was changed to the left-hand side and Papa multiple valves, combining cylinder cocks and pressure relief duties, were fitted (but not to all the locomotives) to correspond with the rest of the locomotives in the class. In 1930 the class was stationed at:

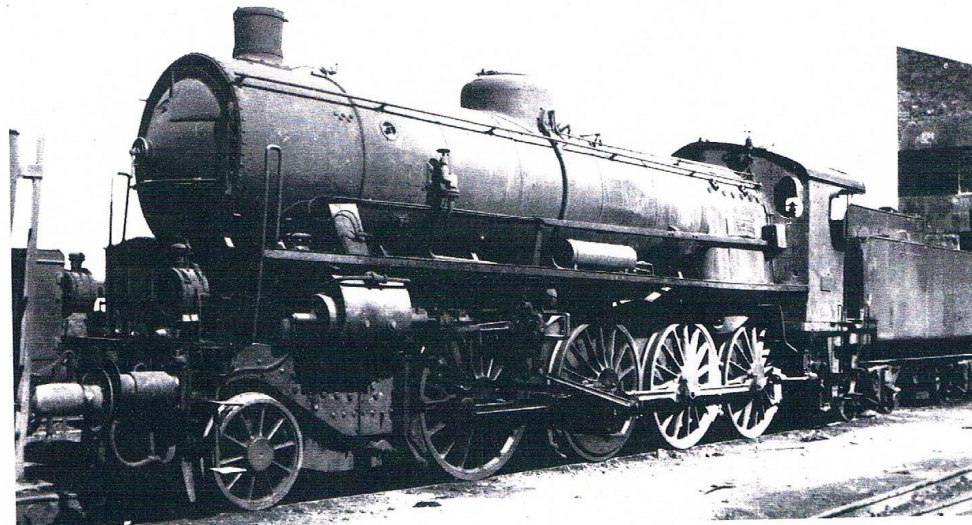


Plate 65 Class 745. No 745.022, built in 1919 (Photo P M Kalla-Bishop)

61. The Expansion Curve to be assumed in estimating the probable Indicated Horse-Power of Steam Engines.—

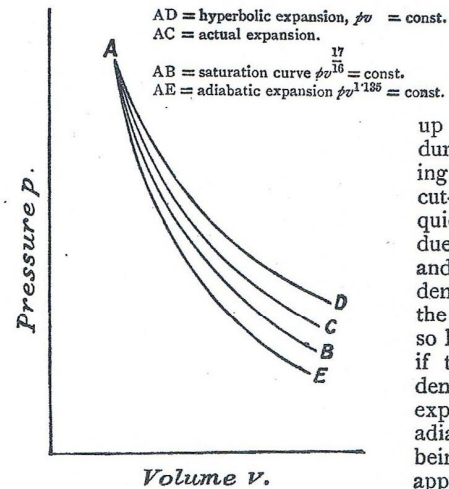


FIG. 44.

Fig. 44 shows approximately the shapes of these three curves. The

expansion curve, which is always taken for approximate calculations on the probable indicated horse-power, is the hyperbola, hyperbolic expansion ($pv = \text{constant}$) being assumed. Fig. 45 shows the assumed theoretical indicator diagram.

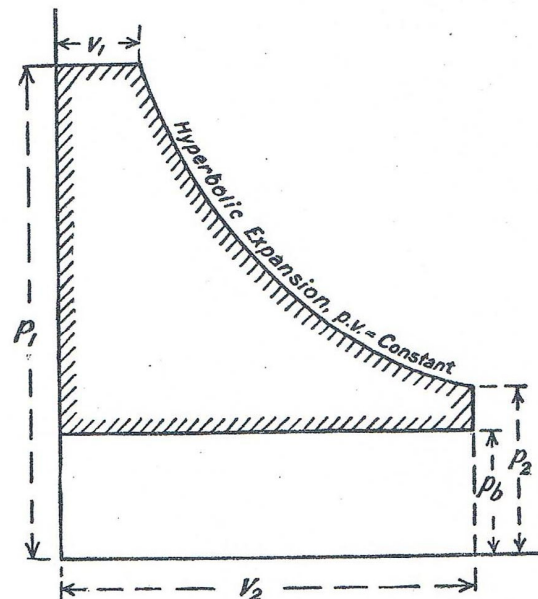


FIG. 45.—Theoretical indicator diagram.

— initial pressure in lbs. per square inch absolute.