Appendix A. RAILS.

ENGLAND AND WALES.												SCOTLAND.			IRELAND.				
QUESTIONS.	CAMBRIAN.	PURNESS.	GREAT EASTERN.	GREAT NORTHERN.	GREAT WESTERN.	LANCASHIRE AND YORKSHIRE.	LONDON BRIGHTON AND SOUTH COAST.	LONDON AND NORTH WESTERN.	LONDON AND SOUTH- WESTERN	MANCHESTER SHEFFIELD AND LINCOLNSHIRE	MIDLAND.	NORTH BASTERN	SOUTH EASTERN.	CALEDONIAN	GLASGOW AND SOUTH WESTERN.	HIGHLAND.	NORTH BRITISH	GREAT NORTHERN OF INSLAND.	SOUTHERN AND WESTERN
Weight of Rail per yard	SU Da.	80) liv.	84 Ua.	85 lbs.	92 lla.	86 Ea.	84 Dec.	80-lbs: and 20 lbs.	ST lbs.	86 Ha.	85 Be.	.00 fbs.	Nã 35s.	(60.706)	90 ths. Only one cooling to new yout, but there are still differed sections it was which seek being replaced by that standard cooling when sents only	77 and 80 lbs. Doll-brested.		plant State Section, 95 Sec. Head Set Settlemed, 75 Sec.	Telah
Length	SO feet.	30 feel.	80 feet.	80 feet.	H2 Sect.	30 feet.	at feet.	80 fest and 60 fest.	80 feet.	80 feet.	30 fest.	Withfurt.	30 feet	12.04	50 bals	20 feet.	30 feet.	55 hos.	20 Sec.
Holes for Fish Bolts-	Fort.	Four.	Foor.	Four.	Year,	Four.	Fout.	Psur-	Fear	Four.	Fore	Foot.	Foor,	Yes.	Forc	Fear.	Post.	You	Fee
A. Shape	Lorent	Elementad.	Oral	Oral	Ural	Oral.	Ovel.	Greder.	Oral	Oval	Ovid.	Deal	out	Oral	Oval	lloand	Strafi	a timpted	016
" Distance spart from centre to centre of holes	4) leches.	1) inches	41 index.	A) lacker.	6 inches.	() todas.	1) tactice.	4) inches	4½ inches	45 lookes	1) inches.	& inshes.	4) inches.	100 links	42 limbar.	A) Jackson	1966	# Insides	I testes
(4) Distance from end of Rail to centre of nearest hole	94 inches	24 inches.	21 inches.	Byla Inches	We inches:	II) inches.	24 inches.	24 inshee.	2 izebes	Sy inches.	EA lockes.	Signinghes.	2/5 Inches	2½ hohor.	34 inches.	E)) larker.	20, leater	2() who	Syl more
Is the Line relaid when the Bails wear down to minimum weight per yard? If so, give weight Is lane relaid when Bails wear down to minimum thickness of top fings or minimum depth over all? B so, give thickness or depth	No estention is paid to this.	Relaying of Line is pried by the position, gradient, amount of trelle, &c.	Belaying is extried on year by year all ever the system at various points observed required. Judging by this it gives an average life of 14 to 24 years. On the Subsorbus Libes, and at evenual to London formics, where the feeling is very heavy, Raile bave been taken out at a much shorter life than this.	The second second second second	As a rule it may be taken that with from 15 to 80 years of average trails, a bad lose 15 to 20 per each of its reight, and is taken out and used in Relings or Goods Liben, the Fittings and Steepace being removed at the same time, and likewise used again.	yard, provided the other component parts of the Fer- manent War are in sufficiently good order to allow of them	Top Plange. When 4 look has been wern	the condition of eleptra and chairs, and the demand for second hand rails for repairs.	Ne such standard privalls. The temestry for relating any section of the Permanent Way in determined by the general condition of all the component pairs: coupled with the uponent and class of traffic which passed over it.	This top flange. Top flange were to thickness	The length of three which our locals has retunded in the read or locals of the read or some so beyond their in about timpostable to give any unicolocitory ballomation on the subject. The average life of filter Health in our Main Limes appears to be something like 20 to \$200.000.	te 70 bis per yand.	Ver Assenge, 20 lin, per yant. Ver 44 inches to 45 lockies.	aristrarily fined, but penarely sear down in 70 he per limit yard. If, broaver, state of Enthet and Plesyer require removal. On Haute world be taken your whether they are	The Like is related when the rails are course so that they are considered top wards to carry the brilling. The Rails whosh course and of the Mails Line clean relating special states 60 inc. to Te for, per yout and we consider that they should say by most only lighter than they	Steel ests valuationed for mon	These is so fined elements suggest per visual robust bias bias the minds. There is no fixed elements of the knowledges where has similar the salest.	All cod how have taken my when much improved, were, and conclude and relating with new stead Pages carried and as long	to see he when they should be
Rame you made use of Rails of unusual length, 60 feet or upwards?	Du Viaduela osly.	So.	No	No	No	No	No	60 feet is the standard length, shorter Rails are also used	No	No	No	Na	2,0	No	No.	No	No	No.	F6
If we state object and what result			en us		4777	weeks	119808	Fores Joints	and se	elgin			-		-				

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QUESTIONS.	CAMBRIAN.	FURNESS.	GREAT EASTERN.	GREAT NORTHERN.	
Weight of Rail per yard	80 lbs.	80½ lbs.	85 lbs.	85 lbs.	
Length	30 feet.	30 feet.	30 feet.	30 feet.	
Holes for Fish Bolts— (a) Number	Four.	Four.	Four.	Four.	
(b) Shape	Round.	Elongated.	Oval.	Oval.	
(c) Distance apart from centre to centre of holes	4½ inches.	4½ inches.	4½ inches.	4½ inches.	
(d) Distance from end of Rail to centre of nearest hole	2½ inches.	2½ inches.	25 inches.	2 % inches.	
Is the Line relaid when the Rails wear down to minimum weight per yard? If so, give weight Is Line relaid when Rails wear down to minimum thickness of top flange or minimum depth over all? If so, give thickness or depth	No attention is paid to this, but renewed when required.	Relaying of Line is ruled by the position, gradient, amount of traffic, &c.	Relaying is carried on year by year all over the system at various points wherever required. Judging by this it gives an average life of 14 to 24 years. On the Suburban Lines, and at or near the London termini, where the traffic is very heavy, Rails have been taken out at a much shorter life than this.	Dependent on the amount of Traffic, and life of Rails.	
Have you made use of Rails of unusual length, 60 feet or upwards?	On Viaduets only.	No	No	No	
If so, state object and what result			*****	*****	

Appendix A. RAILS.

ENGLAND AND WALES.

GREAT NORTHERN.	GREAT WESTERN.	LANCASHIRE AND YORKSHIRE.	LONDON, BRIGHTON, AND SOUTH COAST.	LONDON AND NORTH WESTERN.	LONDON AND SOUTH- WESTERN.	MANCHESTER SHEFFIELD AND LINCOLNSHIRE.
85 lbs.	92 lbs.	86 lbs.	84 lbs.	80 lbs. and 90 lbs.	87 lbs.	86 lbs.
80 feet.	82 feet.	30 feet.	30 feet.	30 feet and 60 feet.	30 feet.	80 feet.
Four.	Four.	Four.	Four.	Four.	Four.	Four.
Oval.	Oval.	Oval.	Oval.	Circular,	Oval.	Oval.
4½ inches.	5 inches.	4½ inches.	4½ inches.	4½ inches.	4½ inches.	4½ inches.
23 inches.	2 ₁₆ inches.	27 inches.	2½ inches.	23 inches.	2 inches.	2§ inches.
Dependent on the amount of Traffic, and life of Rails.	As a rule it may be taken that with from 15 to 20 years of average traffic, a Rail loses 15 to 20 per cent. of its weight, and is taken out and used in Sidings or Goods Lines, the Fittings and Sleepers being removed at the same time, and likewise used again.	Approximate minimum weight 66 lbs. per lineal yard, provided the other component parts of the Permanent Way are in sufficiently good order to allow of them being so worn down, if not the whole road is taken out and the unworn Rails used for Sidings.	Top Flange. When ½ inch has been worn off.	No weight is arbitrarily fixed. The nature of traffic, the condition of sleepers and chairs, and the demand for second-hand rails for repairs, are taken into consideration, as well as the deformation and weight of the Rail.	No such standard prevails. The necessity for relaying any section of the Permanent Way is determined by the general condition of all its component parts, coupled with the amount and class of traffic which passes over it.	Yes 72 lbs. per yard.
No	No	No	No	60 feet is the standard length, shorter Rails are also used	No	No
*****	•••••	*****	*****	Fewer joints.	•••••	242114

SCOTLAND.

						OULAR	MANDA		
	MANCHESTER SHEFFIELD AND LINCOLNSHIRE.	MIDLAND.	NORTH EASTERN	SOUTH EASTERN	CALEDONIAN.	GLASGOW AND SOUTH WESTERN.	HIGHLAND.	NORTH BRITISH	
	86 lbs.	85 lbs.	90 lbs.	82 lbs.	90 lbs.	90 lbs. Only one section is now used, but there are still different sections in use, which are being replaced by the standard section when worn out.	76½ lbs. Double-headed. 77 and 80 lbs. Bull-headed.	84 lbs.	
	30 feet.	30 feet.	30 feet.	30 feet.	32 feet.	30 feet.	30 feet.	30 feet.	
	Four.	Four	Four.	Four.	Four.	Four.	Four.	Four.	
	Oval.	Oval.	Oval.	Oval.	Oval.	Oval.	Round.	Oval.	
	$4\frac{1}{2}$ inches.	4½ inches.	5 inches.	45 inches.	410 inches.	45 inches.	4@ inches.	4 inches.	
	2å inches.	2 3 inches.	27 inches.	$2\frac{5}{16}$ inches.	$2\frac{5}{16}$ inches.	23 inches.	$2\frac{7}{32}$ inches.	$2\frac{7}{16}$ inches.	
ty nt nees	Yes 72 lbs. per yard. Thin top flange. Top flange worn to thickness of bottom flange.	The length of time which our Rails can remain in the road varies so largely that it is almost impossible to give any satisfactory information on the subject. The average life of Steel Rails in our Main Lines appears to be something like 20 to 21 years.	Yes 70 lbs. per yard.	Yes Average, 70 lbs. per yard. Yes 4% inches to 4% inches.	No weight is arbitrarily fixed, but generally wear down to 70 lbs. per lineal yard. If, however, state of Ballast and Sleepers require renewal, the Rails would be taken out whether they are worn down to 70 lbs. or not.	The Line is relaid when the rails are worn so that they are considered too weak to carry the traffic. The Rails which come out of the Main Line when relaying weigh from 68 lbs. to 72 lbs. per yard, and we consider that they should not be used any lighter than this.	Steel rails substituted for iron.	There is no fixed minimum weight per yard when line must be relaid. There is no fixed minimum thickness when line must be relaid.	Control designation of the control o
	No	No	No	No	No	No	No	No	
-	*****	*****	*****	•••••	*****	*****	•••••	*****	
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		5	SCOTLA	AND.		IRELA	ND.
RN	SOUTH EASTERN	CALEDONIAN.	GLASGOW AND SOUTH WESTERN.	HIGHLAND.	NORTH BRITISH.	GREAT NORTHERN OF IRELAND.	GREAT SOUTHERN AND WESTERN.
	82 lbs.	90 lbs.	90 lbs. Only one section is now used, but there are still different sections in use, which are being replaced by the standard section when worn out.	76½ lbs. Double-headed. 77 and 80 lbs. Bull-headed.	- 84 lbs.	Steel Bull-headed, 85 lbs. Steel flat-bottomed, 79 lbs.	74 lbs.
	30 feet.	32 feet.	30 feet.	30 feet.	30 feet.	26 feet.	30 feet.
	Four.	Four.	Four.	Four.	Four.	Four.	Four.
	Oval.	Oval.	Oval.	Round.	Oval.	Elongated.	Oval.
	45 inches.	410 inches.	45 inches.	4# inches.	4 inches.	4 inches.	4 inches.
	$2\frac{5}{10}$ inches.	$2\frac{5}{16}$ inches.	23 inches.	2 7 inches.	27 inches.	$2\frac{1}{1}\frac{5}{6}$ inches.	2 5 inches.
	Yes Average, 70 lbs. per yard. Yes 4% inches to 4% inches.	No weight is arbitrarily fixed, but generally wear down to 70 lbs. per lineal yard. If, however, state of Ballast and Sleepers require renewal, the Rails would be taken out whether they are worn down to 70 lbs. or not.	The Line is relaid when the rails are worn so that they are considered too weak to carry the traffic. The Rails which come out of the Main Line when relaying weigh from 68 lbs. to 72 lbs. per yard, and we consider that they should not be used any lighter than this.	Steel rails substituted for iron.	There is no fixed minimum weight per yard when line must be relaid. There is no fixed minimum thickness when line must be relaid.	All old iron Rails taken up when much laminated, worn, and cracked, and relaying with new steel Rails carried out in long continuous lengths.	We have no fixed rule as to when this should be done.
	No	No	No	No	No	No	No
	*****	*****	*****	*****	*****	,	*****