

(1) Number of pages _____

(2) Date of repair _____

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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	1958-59 (Hy)	Press
B.P. No.		Mis.
Dated	2-8	1876

Not to be folded or roughly handled

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE, 2nd August 1876.

No. 29.

No. 1,959.

FROM

MAJOR-GENERAL G. W. WALKER, R.E.,
Secretary to the Government of Madras,
Public Works Department,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
Public Works Department.

RAILWAY, No. 2.

SIR,—I am directed to acknowledge the receipt of your letter, No. 393 R., dated 10th February 1876, requesting to be furnished with a special report on the single buffers and couplings in use on the Metre Gauge Railways under the control of the Government of Madras.

2. The frequent derailments and uncoupling of trains on the South Indian Railway Metre Gauge line had previously attracted the attention of the Governor in Council, and reports explanatory of the arrangements had been called for with information as to the improvements required and carried out. The officers of the Company have now reported on the subject, and I am to forward the papers for the information of the Government of India.

I have the honor to be,

Sir,

Your most obedient servant,

Colonel,
Offg. Under Secy. to Govt., P.W.D.,
for Secretary to Government.

Exd. F. R. Bantleman.

Spare Copies

No. 1337

South Indian.
GREAT SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,

NEGAPATAM, 4 March 1866.

From

THE AGENT,
South Indian
Great Southern of India Railway,

To

The Consulting Engineer for Railways
Madras.

SIR,

In reply to paragraph 6 of your letter N^o 162 of the 18th Dec. I attach hereto copy of an explanation from the Locomotive Superintendent regarding a case of derailment caused in his opinion through the use of central buffing and draw gear.

I have the honour to be,
Sir,
Your most Obedt Servant

William B. B.

Agent

South Indian Railway. Letter from the Locomotive and
Carriage Superintendent, to the Agent, dated, Nagapattam
6th June 1876 N^o 1692. SP 50

Your N^o 3473
17/4/76

I do not observe any further development of evils in the central buffing and draw gear than those to which I have previously drawn attention. Drivers have been enjoined to exercise caution while shunting so as to avoid anything like violent concussion likely to result in derailment. Buffles have been fixed to each end of the major portion of the Goods stock on the open line and to all the Carriage stock. The draw pins were frequently lost owing to the rotatory motion imparted to the pin in transit twisting the chain round the pin and breaking it away from the fastening on the end of the vehicle, this I have counteracted by putting the end of the chain out of the hole in the end of the pin and putting it on to the collar of the pin thereby allowing rotation of the pin without twisting up the chain. I look upon this rotatory motion on the pin as an advantage to a certain extent in one way, but a decided objection in another. In one way it saves wear on the pins and tooth as if the pin was a fixture, the constant friction of the tooth would cut away either the pin or the tooth. The rotation of the pin is however a great objection as inducing unsoundness, as the pin rotates it brings the articulating joint on the pin and thereby allows end against the buffer head causing the joint to straighten and thereby allows the pin to work out. Upon one occasion when travelling South between Trichinopoly and Madurai no less than 5 instances occurred of this kind and but for the caution of the Guard the train would have become disconnected, I was on the carriage I was in (and I watched the process out of the end Saloon window) and upon 3 Goods vehicles. Vigilance on the part of the Guards by going along the train at each station alone prevents

SP 50

South Indian Railway. Letter from the Locomotive and
Carriage Superintendent, to the Agent, dated, Nagapattam
6th June 1876 N^o 1692.

Yours N^o $\frac{3473}{1744}$

I do not observe any further development of evils in the central buffing and draw gear than those to which I have previously drawn attention. Drivers have been enjoined to exercise caution while shunting so as to avoid any thing like violent concussion likely to result in derailment. Bolsters have been fixed to each end of the major portion of the Goods stock on the open line and to all the Carriage stock. The draw pins were frequently lost owing to the rotatory motion imparted to the pin in halting twisting the chain round the pin and breaking it away from the fastening on the end of the vehicle, this I have counteracted by having the end of the chain out of the hole in the end of the pin and putting it on to the collar of the pin thereby allowing rotation of the pin without twisting up the chain. I look upon this rotatory motion on the pin as an advantage to a certain extent in one way, but a decided objection in another. In one way it saves wear on the pins and hooks as if the pin was a fixture, the constant friction of the hook would cut away either the pin or the hook. The rotation of the pin is however a great objection as inducing uncompling, as the pin rotates it brings the articulating joint on the pin and thereby allows end against the buffer head causing the joint to straighten and thereby allows the pin to work out. Upon one occasion when travelling South between Trichinopoly and Madurai no less than 5 instances occurred of this kind and but for the caution of the Guard the train would have become disconnected, Twice this arose on the carriage I was in (and I watched the process out of the end of the window) and upon 3 Goods vehicles. Vigilance on the part of the Guards by going along the train at each station alone prevents

frequent disconnection. The saving in wear and tear is of course a secondary consideration to such a possibility as frequent disconnection of the train while running. I therefore proposed, when the need of urgency in erecting the new stock abates to put a feather on the pin and a recess in the side of the buffer head thereby preventing the turning of the pin. Such a contingency as uncoupling under the considerations I have described would at first sight appear almost impossible and I was myself sceptical on the subject, but actual demonstration convinced me on my journey to Madras. The cast iron buffer plates on the truck end are constantly being renewed as the driving home of buffer by careless Enginemen shatters them. I propose to renew these hereafter when prices of iron ceases with wrought iron plates. The pin of the buffer heads varies in the opening with the different makers, with some as much as $\frac{3}{4}$ of an inch, rendering derailment on curves more liable than if the maximum opening had been maintained by all makers according to the drawings they wanted to or ought to have worked to. The State Lines using this system are laboring under the same disadvantage so that we are not singular. I observed an account of a serious collision on a Northern State Line arising from disconnection on the top of an incline.

(True Copy)

William B. W.

Agent

Agents' Office
Negapatam
7 June 1876

No. 1844

South Indian
GREAT SOUTHERN OF INDIA RAILWAY. 7

AGENT'S OFFICE,

NEGAPATAM, 20th June 1876

From

THE AGENT,

South Indian
Great Southern of India Railway,

To

The Consulting Engineer for Railways
Madras.

SIR,

Your letter N. 339 of the 11th of April last I have now the pleasure to forward for the information of Government copy of reports from the Acting Chief Engineer, the Steamotive Superintendent, and the Traffic Manager, upon the advantages and disadvantages possessed by the single buffers and coupling in use on the metre gauge section of this Company's railway.

I have the honor to be
Sir

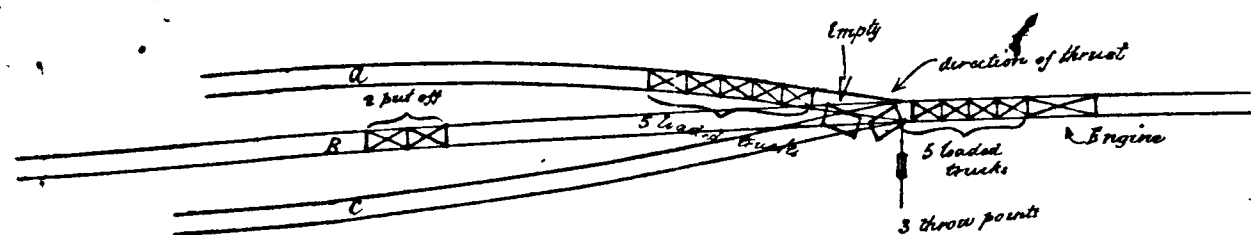
Your most obedient servant
William B. W.
Agent

56 11

South Indian Railway. Letter from the Locomotive and
Carriage Superintendent. Dated 23rd February 1876. No 576.9

Yours No 963 and 966.

In the matter of our central buffing and draw gear. I think derailment may often be looked for where an empty vehicle has to be propelled against a number of loaded ones on a Station siding curve. The position of the two trucks that got off in Tanjore yard clearly I think indicates the process of derailment. I attach sketch of their position - nothing but steady gentle pressure from the Engine (by no means an easy result to obtain from careless men) will prevent a repetition of such occurrence.



The engine ran along siding A with 11 trucks and passed over the 3 throw - put off two loaded on to siding B from the end of this train ran out again and put back 5 loaded on to siding A, ran ahead again and took on two trucks (one loaded and one empty) from siding C, ran out again and backed into the 5 standing on A. when coupled up the 5 on A required pushing back round the curve and the Driver suddenly opening his regulator the resistance made by the 5 on A, caused the empty in the middle to thrust off the outside of the curve on which the flanges were binding. the empty on going off dragged the next loaded truck off with it through the rigid nature of the drawhook in the jaw of the coupling. The inertia of the 5 loaded standing

on the curve of A was greater than the flange gap of the empty truck which latter gave way on the thrust coming diagonally as the buffer head.

(True Extract)

Agent's Office
Nagapattanam
4 March 1876

William B. B. 2
Agent

174867/96.

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, 4th July 1876.

No. 325.

From

LIEUT.-COLONEL J. H. M. SHAW-STEWART, R.E.,

Consulting Engineer for Railways,

To

MAJOR-GENERAL G. W. WALKER, R.E.,

Secretary to Government,

Public Works Department,

Fort Saint George.

The Government in their Order No. 3279 dated 16th November 1875, in commenting upon an accident on the South Indian Railway which was attributable to defective coupling arrangements, desired that the nature of the improvements required by, and carried out to, the coupling arrangements should be reported in detail.

In a subsequent Order dated 1st February 1876, No. 374, the Government desired that it should be clearly explained how the contact

1.11

buffer

buffer arrangements cause derail-
ment of vehicles; and in a later
Order still, No. 28 dated 17th February
1876, the Government communicated
to this office for report a letter
from the Deputy Secretary to the
Government of India Public Works
Department / Railway in which a
special report was requested in
the advantages and disadvantages
possessed by the single buffers
and couplings in use on the Rail-
ways on the metre gauge under
the control of the Government of
Madras. Attention was again
invited to this Order in the Order
of Government No. 28 dated 17th Feb.
1876.

2. I regret the delay in
that

13 12
that has occurred, but it was only
on the 7th April 1876 that I
received from the Agent the drawing
and explanatory report asked
for in November 1875; and, with
a letter dated 20th June 1876, the
Agent has since placed at my
disposal reports by the Engineering
and Locomotive Departments on
the same subject.

3. It will be seen
from a perusal of the several
reports that, while some of the
minor and more conspicuous de-
fects in the central buffering me-
chanism have been remedied, there
yet remain certain others to be met
in future, and others again in-
herent in the principle of the
system for which no remedy has
been suggested.

4. The

4. The defects brought to light in the coupling arrangements in use on the South Indian Railway may be thus stated:-

(1.) Liability of the several parts to work loose, fall out, or be stolen.

(2.) Need for great caution on the part of the subordinate Traffic staff.

(3.) Want of strength in certain parts.

(4.) Want of uniformity in construction.

(5.) Difficulty of coupling and uncoupling on curves.

(6.) Difficulty of coupling and uncoupling unequally loaded trucks.

(7.) Danger of derailments, owing

owing to the angle of the thrust applied at the centre of a truck on a curve.

(8.) Liability to uncoupling, in the event of the bridle rising clear of the hook head, as the latter is jerked clear of the coupling pin.

see plans enclosed.

5. The central coupling apparatus consists, as originally designed, of a "Buffer," "Coupling hook," and "Bridle." Each vehicle originally carried upon its buffers, at one end a coupling hook, at the other end a bridle. The shank of the buffer passes through a cast iron drawbar plate attached to the face of the headstock, and may be regarded as a fixture. The coupling hook, removable at will, works on a pin passing through the

the jaw or slot in the buffer head. This pin is attached by a chain to the headstock, and has an articulated end to prevent its working out of the pin holes. It serves either as a coupling pin for the hook of the adjoining truck to grapple, or to carry its own hook, if the other truck carries the bridle.

The bridle is a strap of iron also removable at pleasure, working on a pin which passes through the buffer shank. This bridle falls over the head of the coupling hook when down, and serves to prevent it from rising clear of the coupling pin.

These arrangements contemplated the turning of vehicles, and the consequent necessity for shifting

First defect.

Locomotive Superintendent's letter
in regard to
No. 1497-7th April
1876.

17 4
shifting, as occasion required, the bridle on the coupling hook, in order that every buffer carrying a bridle might be opposed to a buffer carrying a coupling hook.

It was soon however found that the necessity for shifting briddles, which was a source of anxiety to the Traffic Department, would be alleviated if each buffer carried a bridle permanently affixed to it, thus removing the danger of the nut working loose and of the bridle being stolen or lost.

Every buffer was accordingly fitted with a bridle permanently fixed on a pin having its head rivetted. - Of the forward two buffers were presented for coupling, each carrying a coupling hook, it

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Locomotive Superintendents letter
in report.
Nov 14 1897 - 7th April
1896.

17 4 7
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two buffers were prevented for
coupling, each carrying a coupling hook,
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it was only necessary to remove one of the hooks, and to shift the pin to its position as a coupling pin. It had however since been found that the motion imparted to the articulated pins caused them to rotate; one result of which is to twist and ultimately wrench off the small chains by which they are secured to the vehicle; and the other and more important result is that the chain produces perhaps some little drag upon the pin while rotating, and the articulated end is straightened against the side of the buffer shank, and the pin drawn into and through the pin hole, thus disengaging the coupling hook.

The twisting of the chain has been met by attaching it to a

Locomotive Superintendent's Report
1892-6 June 1896.

Second defect.

a collar working loosely on the pin, instead of to the pin head; but it is proposed in future to add a feather or projection to the pin to prevent it from turning in the hole. The strain however brought to bear upon this pin is so heavy, its functions are so important, and the wear and tear so great, that some further modification will probably be found necessary.

9. The permanent fixing of the bridges has to a great extent simplified the duties of the subordinate staff, and partially therefore relieved them from the need for excessive caution.

Third defect.

Sp. Chief Engineer's letter 13640-16 June 1896.
Locomotive Superintendent's letter 1892-6 June 1896.

10. The want of strength is indicated by the breaking of the bridge pin under heavy shocks, and by the constant renewals of the

the cast iron draw bar plates. The
bridle pins will probably be replaced,
if more accidents occur, by stronger
ones, and the draw bar plates are
now being replaced by others of
wrought iron.

11. The want of uniformity Smith's defect.
in construction of the buffer jaws has
been condemned; but the accident re-
ferred to by the Traffic Manager, viz,
the falling of the hook of one buffer
outside instead of inside the jaws of the buffer.
the other buffer, may indicate too
much play on the coupling pin, as well
as too great a width of buffer jaw.

12. The difficulty of coupling Smith and Smith's
and uncoupling on curves, or when ad-
jacent vehicles are unequally down
on their springs, could only be
remedied by some modification of
the

Seventh defect. 13.

* Enclosed with
Agent's letter
No 1337 dated
4th March 1896.

Eighth defect.

21 0
the existing design, so as to afford
the drawbar some lateral play and
thus reduce the reaction which it sub-
jects to the locomotive.
The effect of central thrust,
as illustrated in the locomotive
illustrations, is a serious one, and
the accident mentioned above is a
recently occurred instance of it.
It is a defect which is clearly
indicated by the central thrusting
of the drawbar when the locomotive
is in motion. This defect is, like
the others, a serious one, and it is
established that the fact that it
is possible that uncoupling may
occur should the hook happen to rise,
and the danger of the coupling
pin, at the time that the buffer is
jerked up, is a serious one.
Altogether eight acci-
dents have happened on the South
Indian Railway since September
1895, which may be attributed to
the

acknowledged

the central coupling system.

Four derailments, apparently due to pins falling out or being absent.

Two derailments on sidings, due apparently to the central thrust, peculiar to the system; and two other derailments which, the line being in perfect order, and the wheels in gauge, may presumably be considered due to the same cause.

16. The working out of the pins in consequence of their rotation seems clearly established by the Locomotive Superintendent's report.

17. The difficulty of coupling and uncoupling under certain conditions is established by the reports of the Traffic Manager and the Acting Chief Engineer.

18. The

8791
18.
4:21

The only advantage attaching to this system of coupling, where the curves are moderate, would seem to be economy in first cost, and greater immunity from danger for the subordinate Traffic staff; but, in my opinion, more modification of the present pattern will be necessary before the system can be considered safe and efficient.

I have the honour to be

Sir

Your most obedient servant

Mantworth

Lieut. Col. R. G.

Genl. Engineer for Railways.

8016-11-75 No 3279
 - 11-2-76 - 374
 - 17-2-76 - 452

1895 Sept.

No: 4867

[Faint, mostly illegible handwritten text, possibly a letter or report.]

No 27-

Recd. 22.7.76 P.M. 2.8.76
 Recd. 28.7.76 P.M. 3.1.76
 Cui. 13.7.76 P.M. 28.7.76
 Despatch of 8-7-76 12.1-8-76

[Handwritten notes and signatures, including "The Secretary to Government, Department, F. Saint George."]

RAILWAY DEPARTMENT.
 The Consulting Engineer
 for Railways,
 The Secretary to Government,
 Department,
 F. Saint George.

Letter from the Consulting Engineer for
 Railways, No. 32574 July/76.

FOR ORDERS.

Circulated for
 Orders.

Major General
 Secy to Govt P.W.D.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 2^d August 1876.

Read the following:—

From
The Consulting Engineer
for Railways } (H.C. No 325 d/4th July 1876)

Ordered that
these reports be forwarded
ed for the information
of the Government of
India.

(H.C. No 1959 d/2^d Aug 76)

To No 1959.
The Secretary to the
Government of India
Public Works Dept.

Sup. Engineer,
for Railways
24/8/76
Sir,
I am directed to
acknowledge

acknowledge the receipt
of your letter No. 398K
dated 10th February 1876
requesting to be furnish-
ed with a special report
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and couplings in use
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Railways under the
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2. The frequent de-
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-tion of the Governor
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explanatory of the
arrangement

29 18
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information as to the
improvements required
and carried out. The
Officers of the Company
have now reported on
the subject, and I am
to forward the paper
for the information
of the Government of
India.

Desp 24/8/76

4867

Gobt. of Madras.

PUBLIC WORKS.

information of the
of India —

To

The Comr. Genl. for M.

Forwarding for the
information of the
Govt. of India re: info.
on the advantages
& disadvantages
possessed by the
single buffers and
couplings in use on
the metre gauge
Railways of the
Madras Presidency

Dated

Under

Recd

Encl.

G. O. No. 158-1759

No. 27 @ 29

Int. to M. P. &
25-8-1899

Single buffers and
couplings in use on the
metre gauge Railways
under the control of the
Government of Madras.

Report submitted by
the Comr. Genl. for P. & P. on
the advantages & disad-
vantages possessed by the
to be forwarded for the