

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	1264	(Ry)	Press
B.P. No.			Mis.
Dated	19.5.		1876.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
19th May 1876.*

No. 353. Read the following letter from Lieutenant-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, dated Madras, 11th May 1876, No. 234:—

I HAVE the honor to lay before Government the accompanying papers connected with the fracture of an axle on the Madras Railway upon the 3rd March 1876.

From Agent, No. 222,	4th March 1876.	
"	" 223, 6th "	"
"	" 256, 14th "	"
"	" 490, 9th May "	"

2. Double saloon carriage, No. 29, left Madras with the 6 P.M. train on the 2nd March, and upon reaching Pothanore the following morning was attached to the 8-25 A.M. train on the Nilgiri Branch. When about $2\frac{1}{2}$ miles from Karamady, one of the axles broke in two about one inch inside the journal. The first intimation of the accident was a jerk felt by the driver when passing over a 20-feet girder opening at 320—7 miles, but traces upon the ballast showed that the fracture must have taken place before the train reached that point. The train was pulled up at 320—10 miles, the line being on a gradient of 1 in 330, falling towards Karamady. The carriage must have run about quarter mile with the broken axle.

3. Fortunately the carriage did not leave the rails, or the results might have been most serious. There were four first-class passengers in it, but none was in any way injured. The Locomotive Foreman from Pothanore was on the spot shortly after the accident occurred, and the line was cleared within a few hours.

4. An inspection of the axle leaves no room for doubt that the Locomotive Superintendent is right in attributing the fracture to a defective weld. The practice on the Madras Railway in this respect is fully explained in Mr. Trevithick's letter, No. 242. I cannot see that the practice requires to be changed, but I am of opinion that it would be well to act upon Mr. Trevithick's recommendation, and to prohibit the use of all welded axles when the weld falls inside the journal.

From L. S. MOSS, Esq., Deputy Traffic Manager, to R. B. ELWIN, Esq., Agent and Manager of the Madras Railway Company, dated Madras, 3rd March 1876, No. C 13137.

First-class Carriage No. 29.

OVERLEAF I beg to forward copy of a telegram just received from the Guard of the 8-25 A.M. train from Pothanore to Mettapolliem of this date.

Telegram from the Guard of 8-25 A.M., Karamady, to the Traffic Manager, Madras, dated 3rd March 1876.

"First-class. No. 29. One journal twisted-off completely at the 320th mile, 10th telegraph post. Passengers all right. Advised Mr. Bailey."

No. 222.

To the Consulting Engineer for Railways for information.

MADRAS,
4th March 1876.

(Signed) R. B. ELWIN,
Agent and Manager,

Agent and Manager

*Proceedings of the Madras Government, Public Works Department,
19th May 1876.*

From R. B. ELWIN, Esq., Agent and Manager of the Madras Railway Company, to Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, dated Madras, 6th March 1876, No. 223.

In continuation of my endorsement, No. 222, of the 4th instant, I have the honor to inform you that the double saloon carriage, No. 29, had run through from Madras.

2. The Locomotive Foreman at Pothanore proceeded at once to the scene of accident with the necessary materials and assistance. The mails and passengers were transferred and taken on to Mettappolliem. The line was "clear" at 3-45 P.M. and the mail train left Mettappolliem at 4-35 P.M., 155 minutes late, and Salem at 10-25 P.M., 110 minutes late.

3. The damage to the permanent-way was seven sleepers smashed on bridge No. 85 at 320 miles, 7th telegraph post, Nilgiri branch line, and four pot-sleepers broken.

4. The Locomotive Superintendent has not had an opportunity as yet of inspecting the carriage in question with the view of ascertaining the cause of the fracture of the journal. As soon as I receive his report, I will lose no time in forwarding it to you.

From the same Officer, dated Madras, 14th March 1876, No. 256.

In continuation of my letter, No. 223, of the 6th instant, I have the honor to inform you that the Locomotive Superintendent has now inspected the broken axle, and reports that the cause of the accident was undoubtedly a defective weld in the axle, now plainly visible. Mr. Trevithick adds that there is also an extensive flaw in the iron, but not sufficient to account for the accident.

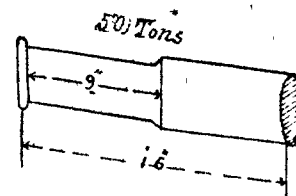
2. I have arranged for the broken piece to be here on Wednesday, the 22nd instant, so that you may have an opportunity of inspecting it.

From F. H. TREVITHICK, Esq., Locomotive Superintendent, to R. B. ELWIN, Esq., Agent and Manager of the Madras Railway Company, dated Perambore Works, 8th May 1876, No. 242.

Your endorsement to the Consulting Engineer's letter, No. 368, of 7th ultimo. Broken axle of carriage A., No. 29.

The following are the questions of the Consulting Engineer answered in the same order they were put:—

1. By whom was axle made and where? By the Ashbury Carriage and Iron Company, Manchester.
2. Where was axle welded? At Perambore Works.
3. Upon what date? About the middle of September 1875.
4. Number of miles it has run since? Six thousand two hundred and thirty miles.
5. Whether welding of axle is a common practice on the Madras Railway? Yes, and has been for about five years.
6. Whether the Locomotive Superintendent is of opinion that the practice should be continued? Yes.
7. Whether any, and what test was applied to the welded axles? A pressure of 50 tons was applied thus by hydraulic ram before the axle was turned up.



*Proceedings of the Madras Government, Public Works Department,
19th May 1876.*

8. Whether other axles which have been similarly welded are now in use? Yes, a great number.

9. Whether in the Locomotive Superintendent's opinion such axle should be used in future?

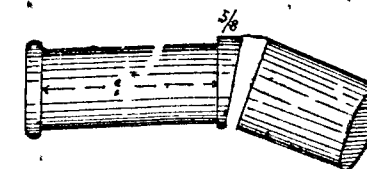
Yes. No record has been kept by which axles which have been thus welded could now be identified. The last one so treated was sent out of the works in December 1875, consequently all have now withstood the test of actual work for so long that there need be no apprehension of their failure.

Paragraph 3.—I request that the injury sustained by the rolling stock may be stated; also that the exact mileage where the fracture occurred, and that where the train was pulled up, may be reported.

The journal of one axle broken off and same axle bent, one axle box broken to pieces, one axle guard bent, one side sole badly bruised, and two or three flooring boards cracked and broken. The first intimation of the accident was a jerk which the driver felt at the 320th mile, 7th telegraph post, and the train was stopped at the 320th mile; 10th telegraph post; the carriage ran thus a distance of three telegraph posts after the accident.

It is customary when the journals of axles become worn down to the minimum safe dimensions to heat them and "jump them up" so that they may again be turned in the lathe to the normal size of new axles; this process, of course, shortens the axles and necessitates welding on a piece at each end to make up for the "jumping" process. A perfect weld would be as strong as any other part of the pieces welded, and, if one could always rely on perfect welds, there would be no harm in welding any part of an axle, but practice shows that welds may not always be implicitly relied on, for which reason I would not weld an axle in any part where its sudden fracture would be likely to cause a serious accident. Under ordinary circumstances, the worn journal of an axle may be "jumped up" sufficiently without shortening the axle more than about half the length of the journal at each end, to make up for which both journals would have to be welded about the middle of their length. If an axle broke in the journal, the carriage it supported would not come down, and I do not think, therefore, there can be any objection to repairing axles by welding in the manner described above, provided the weld be somewhere in the journal and not inside it.

The fractured axle was jumped up to finish one quarter of an inch longer in diameter than it had been when new, which so shortened it that the weld had to be made $\frac{5}{8}$ th inches inside the journal thus



where the fracture took place.

No. 490.

Copy forwarded to the Consulting Engineer for Railways for information, in continuation of my No. 256 of the 14th March last.

(Signed) R. B. ELWIN,
Agent and Manager.

9th May 1876.

Agent and Manager

Proceedings of the Madras Government, Public Works Department,
19th May 1876.

No. 354.

ORDER THEREON, 19th May 1876, No. 1,261.

RAILWAY, No. 40.

THE Madras Railway Company should take warning from this accident and adopt such precautions as may be necessary to prevent the welding of axles in a manner likely to prove a source of danger. And it would probably facilitate inquiries, and also indicate that the time for careful examination had arrived, if the date of welding and of any other important repair were stamped on the axle at the time by the Foreman Smith.

(True Extract.)

Colonel,
Offg. Under Secy. to Govt., P.W.D.

To the Consulting Engineer for Railways.

N^o 6/13157

Madras Railway
Traffic Manager's Office
Madras 3^d March 1876.

The Agent and Manager
Royapooram

Dear Sir,

First class carriage N^o 29.

Overleaf I beg to forward copy of
a Telegram just received from the Guard
of the 8.25 a.m. Train from Pothanore to
Mettapallicem of this date.

Yours faithfully
Edw. Louis P. Moss
Deputy Traffic Manager

Date 3^d March 1876.

From

Guard of 8.25 a.m.
Karamady

To

Traffic Manager
Madras

"First class N^o 29, one journal
twisted off completely at the 320 mile 10th Tele-
graph post Passengers all right - Advised
Mr. Bailey."

True copies,

W. H. W. W.
Agent and Manager

No 222

The Consulting Engineer for Railways
for information

Madras
4 March 1876 }

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer
for Railways.

Dated
Recd.

187

No.

No. 223

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 11th March 1876.

From

Robt. B. Elwin Esq.
Agent and Manager of the M.R.

To

Stratford J. Mac Shaw Stewart
Consulting Engineer for Railways. RB

Sir,

In continuation of my
endorsement No 222 of the 4th
instant I have the honour to inform
you that the Double Saloon Carriage
(No 29) had just through from Madras.

The locomotive traction
at Pottanore proceeded at once to the
scene of accident with the necessary
materials and assistance. The
Mail and Passengers were transferred
and taken on to Mettupalayam. The
Train was "clear" at 3.45 P.M. and the
Mail Train left Mettupalayam at 4.35
P.M., 15 minutes late, and Salem at
10.25 P.M., 110 minutes late.

M. 2441/76
2/76

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Filed 4th March 1876.
Recd. 6th 1876

No. 222

Regarding accident
to 1st class carriage
No 29 attached to 20
am train from Madras
to Mettupalayam on
the 3rd instant.

Vide No 223
d/16/3/76

The damage to the
Permanent Way was 7 sleepers
squashed on Bridge #85 at 320
mils of Set. Post. Steeling Branch
line, and 4 Box Sleepers broken.

The Locomotive Superintendent
has not had an opportunity as yet
of inspecting the Carriage in question,
with the view of ascertaining the
cause of the fracture of the Journal -
As soon as Green's report will
have no time in forwarding it to you.

I have the honor to be

Yr
most obedt Servt.

J. H. Mellis.

Joint Agent and Manager

1. W. 3448/26.

Submitting further
particulars with reference
to the accident to the
Double Saloon Carriage
at 3.20 mile 10.11.1876,
Cheltenham Branch.

Recd 6th March 1876
Recd 7th March 1876
No 223.

From
The Agent and Manager.
To
The Consulting Engineer
for Railways.

MADRAS RAILWAY.

Recd 256 d/10/76

Keep till after meeting
on 22nd

SA 7

No. 256

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 14th March 1876

From Robert B. Elwin Esq.
Agent and Manager. M.R.C.

To Lieut. Col. J. H. M. Shaw Stewart, R.E.
Consulting Engineer for Railways.

SIR,

In continuation of my letter No. 223
of the 6th Instant, I have the honour to inform
you that the Locomotive Superintendent has
now inspected the broken axle and reports
that the cause of the accident was undoubtedly
a defective weld in the axle, now plainly visible.
Mr Drevithick adds that there is also an
extensive flaw in the iron, but not sufficient
to account for the accident.

I have arranged for the broken
piece to be here on Wednesday the 22nd Instant,
so that you may have an opportunity of
inspecting it.

I have the honor to be
Sir

Your most obedient servant
W. B. Elwin
Agent and Manager.

M. 3446/96.
4

Reporting upon the
state of the axle
of carriage No. 29
attached to the 8.25 am
train from Madras
to Mettupattanam.

Dated 14th March 1876
Recd. 15. M.

No. 258

for Railways.

The Consulting Engineer

The Agent and Manager.

From

MADRAS RAILWAY.

N^o 242.

Madras Railway
Locomotive Superintendent's Office
Perambore Works
8th May 1876.

The Agent and Manager

My dear Sir,

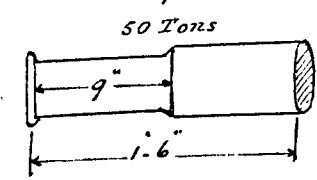
Your endorsement to the consulting
Engineer's letter N^o 368 of 7th ultimo. Broken axle
of carriage A N^o 29.

The following are the questions of the con-
sulting Engineer answered in the same order
they were put.

1. By whom was axle made and where } By the Ashbury carriage and
Iron Company, Manchester
At Perambore Works
2. Where was axle welded } About the middle of September/75
3. Upon what date
4. Number of miles it has run since } 6230 miles.
5. Whether welding of axle is a common practice on the Madras Railway } Yes, and has been for about
5 years
6. Whether the Locomotive Superintendent is of opinion that the practice should be continued. } Yes.

7. Whether any and what test was applied to the welded axles

A pressure of 50 tons was applied ~~thus~~ by hydraulic ram before the axle was turned up.



8. Whether other axles which have been similarly welded are now in use.

Yes, a great number

9. Whether in the Locomotive, Superintendent's opinion such axle should be used in future.

Yes! No record has been kept by which axles which have been thus welded could now be identified. The last one so treated was sent out of the works in December 1875 consequently all have now withstood the test of actual work for so long that there need be no apprehension of their failure.

They should be marked with date

Para. 3. I request that the injury sustained by the Rolling Stock may be stated; also that the exact mileage where the fracture occurred, and that where the train was pulled up may be reported.

The journal of one axle broken off, and same axle bent; one axle box broken to pieces; one axle guard bent; one side sole badly bruised; and two or three flooring boards cracked and broken. The first intimation of the accident was a jerk which the driver felt at the 320th mile, 7th Tel. post, and the

MADRAS RAILWAY.

From
The Agent and Manager.

To
The Consulting Engineer
for Railways.

Dated
Recd.
No.
187

the train was stopped at
the 320 mile 10th Tel. post.
the carriage ran thus a
distance of 3 telegraph posts
after the accident.

It is customary when the journals of axles
become worn down to the minimum safe
dimensions, to heat them and "jump them up";
so that they may again be turned in the lathe
to the normal size of new axles. this process of
course shortens the axles and necessitates weld-
ing on a piece at each end to make up for the
"jumping" process. A perfect weld would be
as strong as any other part of the pieces welded.
and if one could always rely on perfect welds
there would be no harm in welding any part
of an axle, but practice shows that welds may
not always be implicitly relied on, for which
reason I would not weld an axle in any part
where its sudden fracture would be likely to
cause a serious accident. Under ordinary circum-
stances the worn journal of an axle may be
"jumped up" sufficiently without shortening
the axle more than about half the length of the
journal at each end, to make up for which both
journals would have to be welded about the middle
of their length. If an axle broke in the journal
the carriage it supported would not come down,
and I do not think therefore there can be any

MADRAS RAILWAY.
From
To
The Agent and Manager.
The Consulting Engineer
for Railways.
Dated 187
Recd. No.

objection to repairing axles by welding in the manner described above, provided the weld be somewhere in the journal and not inside it.

The fractured axle was jumped up to finish one quarter of an inch longer in diameter than it had been when new which so shortened it that the weld had to be made $\frac{5}{8}$ inches inside the journal, thus where the fracture took place.



Yours faithfully
 W. H. Trevethick
 Locomotive Superintendent.

N^o 490

Copy forwarded to the Consulting Engineer for Railways for information, in continuation of my N^o 256 of the 14th March last.

W. H. Brown
 Agent Vellamager
 9th May 1876.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

1st

Recd.

No.

Mr. 9426/96-

*Referring to the line
between the two
stations at 3.15 hours
reference to the broken
axis of carriage A 119*

Dated 19th May 1875
Recd. 10th May
No. 492.

From
To
The Agent and Manager.
The Consulting Engineer
for Railways.
MADRAS RAILWAY.

396

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, 11th May - 1876.

No. 234.

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.

Sir,

*I have the honour to
lay before Government the accom-
panying papers connected with
the fracture of an axle on the
Madras Railway upon the 3rd
March 1876.*

*From Agent
N^o 223 - 4th March 1876
223 - 6th "
256 - 14th "
490 - 9th May*

*2. Double saloon carriage
N^o 29, left Madras with the
6 p.m. train on the 2nd March,
and upon reaching Pothanore
the following morning, was at-
tached to the 8-25 a.m. train
on*

on the Nilgiri Branch. When
about $2\frac{1}{2}$ miles from Karamadly,
one of the axles broke in two,
about one inch inside the journal.
The first intimation of the ac-
cident was a jerk felt by the
driver when passing over a 20 feet
girder opening at $\frac{320}{7}$ miles; but
traces upon the ballast showed
that the fracture must have taken
place before the train reached
that point. The train was pulled
up at $\frac{320}{10}$ miles, the line being
on a gradient of 1 in 330, falling
towards Karamadly. The carriage
must have run about $\frac{1}{4}$ mile with
the broken axle.

3. Fortunately the carriage
did not leave the rails, or the results
might

2
might have been most serious. There
were four first class passengers in
it, but none was in any way injured.
The Locomotive foreman from Potho-
mare was on the spot shortly after
the accident occurred, and the line
was cleared within a few hours.

4. An inspection of the axle
leaves no room for doubt that the
Locomotive Superintendent is right
in attributing the fracture to a de-
fective weld. The practice on the
Madras Railway in this respect is
fully explained in Mr. Trevithick's
letter N. 242. It cannot be that
the practice requires to be changed,
but I am of opinion that it
would be well to act upon Mr.
Trevithick's recommendation, and
to prohibit the use of all welded
axles

axles, when the weld falls inside
the journal.

P.W. 1876 Sept.
C.No: 3446-

I have the honour to be

Sir

Your most obedient servant

Munthout

Lieut. Col. R.

Cons. Engineer for Railways

No. 234
Dated 11th
Recd. 13th } May 1876.

Encls 4.

No. 353/4
Cis. 16.5.76
March 1876
Substituting
the axle
giving the machine
No. 234.

Dated 11th May 1876.
Received 1st May 1876.

To
The Secretary to Government,
P. W. Department,
Fort Saint George.

From
The Consulting Engineer
for Railways,

RAILWAY DEPARTMENT.

Public Works Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

UNDER date the

Read the following:—

From

The Cons. Eng. for
Railways

No. 234 dtd 11th May 1876

Isd for the responsibility on
the Cons. Eng. rather than indicate a
particular rule. B.C.

Ordered to be recorded.

The Cons. Eng. Co. should
take warning from these
accidents and adopt such
precautions as may be
necessary to prevent the welding
of axles in a locomotive
which is giving so much
danger and it would
facilitate repairs. and
also indicate that the time
for careful examination should
be noted. if the date of welding
and of any other important repairs
were stamped on the axle at the
time by the Foreman Smith as this
practice is common & when an axle
is taken out for cleaning the stamp
is once & is not attended to the
Cons. Eng. for Rys.

The views of the Locomotive
Superintendent in regard to
the use of welded axles
should be acted on.

16/5

properly sorted part

No 1264

Public Works Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 19th May/76

Read the following:—

Comd. Eng. for
Railways

(G.O. No 234 of 11th May 1876)

The Madras Railway
Company should take warning
from this accident and adopt
such precautions as may be
necessary to prevent the welding
of axles in a manner likely
to prove a source of danger.
And it would probably
facilitate enquiries, and
also indicate that the time
for careful examination
had arrived, if the date
of welding and of any other
important repair were
stamped

[Faint handwritten notes in Tamil script, likely bleed-through from the reverse side of the page.]

stamped on the axle at the
time by the Foreman Smith.

CMH

No 353/52

Cons. Eng. for Rep.
Done 5/6/6

X^{at}

3446

Gobt. of 1876 Madras.

PUBLIC WORKS.

To

The Commr. of Public Works.

Dated

Issued

Recd.

Encl.

G. O., 19th May 1876, No. 1264

Nos. 353/4

Axle - & Carriages

Passing orders on letter
from the Comr. of Public Works
submitting with remarks
papers regarding the
fracture of an axle on
3rd March 1876

For the
Comr. of Public Works

20/1/76