11/1/04
24-4-08
30-4-10
27-3-16

Judicial (1895) Department.

ORDINARY MS.

G.O., No. 1460

Dated 11th July 1895

INDEXED.

[Despatch Abstract.]

NELLIKUPPAM FACTORY. ACCIDENT.

Communicating to Messrs. Parry and Co., the Chief Engineer's note on the----with request to report what arrangements they have made or propose to make to obviate the danger of further accidents in the aforesaid factory.

merits of the case, which

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	1340/		24/6/95				

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	3709		95				
	3987		95				

...tion. ...ppear and started i

With a load (Total) of 200 lbs and a spee

Nellikuppam 30th January 18

To

The Head Quarter Deputy Magistrate
Cuddalore

Sir,

I have the honour to acknowledge receipt of your letter Dis No. 5 / 28-1-95 and I may add that I am sensible of the spirit in which it is written, and most fully accept there was no intention on your part to do more than avoid what might prove unnecessary disturbance of the management of the factory, to the prejudice of the routine work of the factory. On the other hand, I cannot refrain from pointing out that the enquiry contemplated and presumably part effected at this date, is necessarily a partial one, and as such likely to be greatly misleading especially in the absence of the technical knowledge or guidance absolutely requisite to arriving at a just and intelligent conclusion. Any misleading is likely to result in a conclusion which may give serious trouble to the Factory Executive in controverting and such contingency must be my

...thing before you in writing

...merits of the case, which

...reed

The 2 machines, one of which is in question were put down in April 1889. The makers' Watson and Laidlaw of Glasgow, enter machines of this size, 30", in their Catalogue as designed for 1200–1500 revolutions per minute with a maximum load of 228 lbs. The Standing order in the factory was to run the engine 90–100 revol = 1240 to 1370 revolutions of the machines at top speed, supposing there was no slipping of the belts. The sugar, working at the time, was molasses brown into white, and filled ~~at~~ to its utmost capacity, the machine at the time it burst when the sugar had been run dry and washed, could not have held more than 200 lbs. Centrifugal force which is the bursting force to be considered varies with the squares of the speeds, and the general English formula for its estimation is

$$F = \cdot 000341\, W \cdot R \cdot N^2$$

Where F = centrifugal force developed in lbs.
W = weight of revolving body
R = radius in feet
N = revolutions per minute

which I may say is only another expression of the French formula used specially for centrifugals of :—

$$\frac{MC^2}{GR}$$

to show total pressure on the surface of the drum and in which, M

...tion. ...speed and started i

With a load (Total) of 200 lbs and a spee of 1200 revolutions per minute the first formula gives a total pressure of 54.8 Tons and the second 54.76 tons tending to rupture the sides of the drum.

As near as can be calculated and being guided in recognition of ~~the~~ line of least resistance, by the direction observed, of the actual rupture which took place, and putting down the steel plate of the basket as possessing the high tensile strength of 30 ~~times~~ tons per square inch, the bursting pressure of the machine when new was 330 tons. The plate of the burst basket in its thinnest part, where doubtless rupture started, was ·07" thick against ·125" originally, and bursting pressure consequently was only 184·8 tons, which would be generated by a speed of 2203 revolutions of centrifugal, requiring 161 revol. of Engine without slip of belt with a load of 200 lbs.

I am of opinion a speed at least equal to the above must have been attained before the basket burst, and calculation shows that to burst the monitor case, in which the basket was suspended, in the manner found, it is probable twice such speed was attained.

Before the ... ent, I had not looked in 4

speed

in these machines originally, as otherwise I would certainly have made very particular arrangements for the more certain controlling of the speeds attained than can be expected at all times from men. When new, I would calculate the bursting pressure of the machine, as before said, at 330 tons, and this pressure would be generated, with the makers maximum load of 228 lbs sugar, and allowing for the weight of wire gauge and of the perforated plate itself a total load of 280 lbs, at a speed of 2488 revol. of machine = 181 revolutions of engine; while with the 1500 revolutions maximum allowable, of the makers, 120 tons total pressure would be generated or $\frac{330}{120}$ = a coefficient of safety of only 2.8.

As a necessary addendum to the opinion above expressed, as to the immediate cause of the accident, I may say the machine was not sufficiently strong for the conditions under which it was worked, looking to the uncertain action of all engine governors, human or mechanical, and that it is now seen that it is not desirable to work these machines in a group of 1 or 2 only on an engine, and that it is necessary even when 3 or more machines are [illegible] the [illegible], from the the [illegible] [illegible] in [illegible],

[illegible] ppea and started i
[illegible]tion.

It only remains for me to add the two machines of this group u[illegible] discussion, will be run in futur[illegible] from the main centrifugal shaf[illegible] which is driven by an engine ru[illegible] 9 machines at the present time.

I have &c.
(Signed) F. N. G. Gill
Agent. Messrs. Parry & C
(True Copy)

for Ag Dt. Magte

CM

a dead body. I sent to the dispensa

4

feed

I have the honour to ack
receipt of your letter of the 7th Instant
No. 585/Ref. 95, and while pointing out that
though both the maistry and Engine boy
were paid only daily wages, the maistry
was a very experienced man of more
than 10 years service in the factory, the
last six years of which were passed
as maistry in charge of engines, boilers
and centrifugals. The engine boy was
not experienced, but was quite capable
of the simple duty of cotrolling the engine
under the orders of the maistry.

but the
[illegible]

A better class of man than the maistry
cannot be employed, since no better
training for the work in question is to be
had by any class of man than that
afforded by the factory in the course
of some years service in it. A better
class of learning engine-boy is not
available than the lad in question. A
lads have to begin to learn their wo

[illegible]

an

of you. I then ra

ad

a dead body. I sent to the dispensa

4

alue.

I have &c.
(Signed) F. W. G. Gill
Agent, Messrs. Parry & Co.

/True Copy/

for Ag. Dt. Magte.

(4)

Enclos. No. 4
C. No. 2630

To
The Agent
Messrs, Parry and Co.
Nellikuppam.

Sir,

With reference to your letter
26th Instant regarding my enquiry ab
the accident of November 27th, I have
the honour to inform you that nothing
can be more repugnant to me than to
hold anything other than an open and full
enquiry; if I did not invite the Agent
of the Factory to be represented, it was
because I did not think it necessary.
The object of my enquiry is to find out
if culpable negligence, which appears to
have brought about the accident, can
be brought home to any particular
individual with a view to his being
prosecuted under section 304 A of the
Indian Penal Code. I was quite satisf
at ~~the~~ my last inspection that the acci

a dead body.

... to d... all but the Engine- ...d up, but of those 4, only one is said to have been working near the machine that burst, and he says he did not notice if it was rotating at an unusual speed just before the accident. I am summoning the Engine boy again and also one Vadivelu who is said to have been present near the Engine at the time of accident and also one Vasudevan who is said to have been present near the machine that burst at the time of accident. I intend examining them on 2nd February and I should only be happy if any of your men be present to help me in the investigation of the matter. 5

I have &c.
(Signed) P. Krishna Rao.
Head Quarter Dy. Magistrate.

/True Copy/

for ag Dist. Magistrate.

CM

1895
Jud. Dep.
No. 5
2630

Case of 1894

Deposition of 4th Witness for

Name .. .. .. Arunachellam
Father's name .. .. Subroya Tumbiran
Village .. .. Keelpattambakam
Taluk .. .. Cuddalore
Caste .. .. Kannadian
Calling .. .. Cooly (store boy in the factory).
Religion .. .. Sivavite.
Age 20

Date 27-11-1894.

I went to oil the centrifugal machine which is quite close on the south to the machine which burst this morning. The smith Raghava Reddi also was there. He was standing near to hold the oil. I let in the oil. I was ready for oiling. Then a noise issued from the adjoining centrifugal machine as if there was a pop gun. I then ran

a dead body. I sent to the ...

4

omething struck my rig[illegible]and and one of the fingers having been bruised the blood congealed itself. It hit the right hand ring finger. I have applied the varnish oil to it and tied it up.– Since it was but a slight wound I did not go to the Hospital. My wages 3 1/2 annas a day. A man named Gramani who was lying down was lifted up.– That [illegible] all I know. I do not know why the machine burst.

(Sd) Arunachellam

Read over &ca.

(Sd) C. Krishnasawmi
2nd Class Magistrate.

(True Translation.)

for ag Collector and
Dt Magistrate.

1895
Jud. D.
Enclos. No 6
To
O. No 2630

In the Court of 2nd Class Magis[illegible]
Taluk. Cuddalore. Division Panruti

Deposition of 1st Witness for Prosecution

Name . . . . Raghavalu ~~Naidu~~ Reddy
Father's name . . . Runga reddy.
Village . . . . . . Solarcelly.
Taluk . . . . . Ve[illegible]
Caste . . . . . Re[illegible] Guyya'naidu
Calling . . . . . Factory smith
Religion . . . . . Vishnuvite.
Age . . . . . 30.

Date 27– 11– 1894

At 8 A.M. this morning I was repairing the centrifugal machine close to the one which burst out and pumping it on to oil the same. There was a loud crack noise issued from the adjoining centrifugal machine and the sugar in it at once fell on my eyes and threw m[illegible] down on the south. There was a cooly [illegible] the machine which burst. When I fell down, came and saw, after wi[illegible] my eyes and rising from the groun[illegible]

ore -
I saw one lying down dead by an iron
iece falling upon him. He was the person
who came to take the sugar upstairs. The
air case is only by the side of the ma-
chine which burst. 4 persons were wound-
ed and they were lying down. We raised
[illegible] n. All the others except the de-
who [illegible] the [illegible] saying. I
bursting. There was nothing wrong with
the machine which burst. That was a
machine which was doing well. It
burst out accidentally. My pay is 19 Rs a
month.

(Sd) Raghavalu Reddiar

Read over tea

(Sd) C. Krishnasawmi
2nd class magistrate.
27-11-94.

(True Translation)

1895
Jud.
Index 7
O. No. 2630.

T. Mundamorth
For ag Collector
and Dt. Magistrate.

In the Court of 2nd class Magistrate
Taluk: Cuddalore Division: Panruti

Deposition of 2nd witness for Prosecution

Name . Seenan
Father's na[illegible] Pe[illegible]mayya naidu
Village . . . [illegible] Morai
Taluk . . . Cuddalore
Caste . . . Kavarai
Calling . . . Employing Coolies in the Centri-fugal machine and taking work from them.
Religion . . . Vishnuvite
Age . . . 30

Date: 27-11-1894.

I am the maistry of the machine which burst this morning. 4 persons were employed upon it. I do not know their names. One of them received wounds and was taken to the Hospital. Others received no injury. On being called by the Writer I went to his room at 10 minutes to 8 O'clock on on that morning. The writer's name is - ajagopal naik. The machine burst - within 5 minutes of my going into the writer's room. I was not near when it st. I ran to it as soon as it burst. I ran the wounded were being nd my were wounded. The body also was ght. I came at 1.30. P. M. I should be reliev by another man at 8 O'clock. He did not come in due time. I was therefore doing duty till 8.10. The machine was doing very well. I do not know the reason why it burst. My daily wages are 6 annas.

Mark of - Seenan

Read over &ca

(Signed) C. Krishnasami
2nd Class Magistrate

1895
Jud.
Enclos. No. 8
O. No. 2630.

(True Translation)

Thurdumal
For ag Collector.
and Dt Magistrate.

In the court of 2nd Class magistrate of Cuddalore. Division: Panruti.

Deposition of 3rd Witness.

Name .. .. .. Manikkam
Father's name .. .. Subba
Village .. .. .. Cuddalore
Caste .. .. .. Vellalan
Calling .. .. .. Engine boy
Religion .. .. .. Smarvite
Age 18

Date 27-11-1894.

I look after the Engine of the centrifugal machine in the factory. That is the Engine both for the machine which burst this morning and that which is situated near it in south. I came to my duty at 1.30 P.M. I should have been relieved at 8 O'clock this morning. One Vadivelu should have come. He came at 8 o'clock He came after the clock struck 8. As soon as he came I brought the oil bottle in order to give it to him. Before this the machine burst with a loud noise. As soon as it burst, I shut the Engine door

or and ran away from it. As soon as
adivelu arrived we were talking together
r a half minute on the passage which
es by the side of the Engine. After I finish=
the conversation I went to fetch the oil
[illegible] burst before I brought and gave
[illegible] and [illegible] than three persons
o were wounded. [illegible]
take out any. My work is to open and shut the door of the Engine under instructions from the Sugar maistry. This is all my work. I was working the Engine properly. The maistry told me to work the Engine at 5.30. A.M. and so I did. It used to be shut when gathering sugar from the machine. The Engine will be worked if the machine moves. Sugar is collected from the machine at every quarter of an hour. My wages are 3 annas a day.

– mark of Manikkam
Read over &ca.
(Sd) C. Krishnasawmi
2nd class Magistrate.
27-11-94.

(True Translation)

for ag Collector.
and Dt. Magistrate

5
Tell.
9
2830.

In the court of the 2nd class Magistrate Panruti Taluk. Cuddalore Division.

Deposition of 5th Witness.

Name ..	.. Ramayya naidu
Father's name ..	Dayanidi naidu.
Village	Morai
Taluk	Cuddalore
Caste	Balja
Calling ..	Manager of the Factory
Religion ..	Vishnuvite.
Age	42

Date 27-11-1894.

I was not near it when the centrifu-
gal machine burst this morning. I wa
checking the work upstairs. I looked do
from there. The people collected them=
selves in a crowd. I came down stair
I attended to the work of sending the
wounded to Dispensary. Of these one
a dead body. I sent to the Dispens

normal speed

4 persons who were wounded. I saw the machine which burst. It would burst like this only if it had been worked with great speed.

It is the business of the Engine boy Manikam to regulate the speed of the Engine with reference to the time and then work it. When he was examined he said that he was working the engine properly but that when he was giving over charge to the Engine boy who came to relieve him a noise issued and it burst. The sugar in the machine was white and in a fit state to be cleaned. At this time the Engine boy should lower the speed of the Engine. I think that it was his failure to do so which brought on this. It is a mere accident that one died. He was carrying sugar from another achine.

(Sd) D. Ramiah
Factory manager

Read

(Sd) C. Krishnaswami
2nd class magistrate.

rue Translation)

Ag Collector and Dt. Magistrate

5
Tup.
10
2630.

SOUTH ARCOT.

DISTRICT MAGISTRATE'S OFFICE,
Camp Villupuram
21st May 1895

NO.

CURRENT NO. 2630

FROM
A. E. Castlestuart Stuart Esquire
Ag DISTRICT MAGISTRATE OF SOUTH ARCOT.

TO
THE CHIEF SECRETARY,
TO GOVERNMENT
Judicial DEPARTMENT.
MADRAS.

SIR,

× Cnl. 1603/95

In continuation of para 6 of my report on the working of the Factories Act in this District dated 28th March last, No. 242 Magte, I have the honour to submit the following report on the fatal accident therein referred to.

2. On the 27th November 1894 a "Western Centrifugal machine" of the Sugar factory at Nellikuppam burst, resulting in the instantaneous death of one workman and in injuries to four others, the injuries according to the ~~Sub~~ Agent's report to the Sub Magistrate of Panruti being as noted on the margin.

1. Veerasami. Forehead, cheeks, right ribs on the stomach and left thigh—bruised and cut.
2. Devanayaga Chetti. Wound on the stomach, bruise on the testicles, light injury on forehead.
3. Tirucannu Reddi. Wound on the testicles and left shoulder.
4. Lchinnacunnoo. Wound on inside of left shoulder and thigh.

3. The Sub Magistrate being near at the time, hastened to the spot and hel an enquiry.

4.

ur normal speed

the first notice I had of the matter was through the occurrence report of the Superintendent of Police which I received on the 4th December 1894. Having regard to Government order No. 941 Judl dated 21-4-94, I endorsed it to the Head Quarters Deputy Magistrate, requesting him "to report fully" on the accident. He held an enquiry on the 28th January last.

5. It is clear from the records of the enquiries of the Sub Magistrate and the Head Quarters Deputy Magistrate (Submitted herewith for perusal) firstly, that the accident in question was brought about by undue speed which the Engine was allowed to attain and was due to the carelessness of the Engine Maistry— a cooly paid 6 annas a day— in leaving his post and allowing the Engine boy to do what he liked with the Engine and of the Engine boy— also a cooly paid 3 annas a day— in talking to his fellow-workman without caring to regulate the speed of the engine; and secondly, that the greatest indifference was displayed by those responsible or the proper working of the Factory in the matter of supervision of the olies employed in important and delicate duties.

6. In his letter dated 30th January 1895 (Copy enclosed) the agent informed the Head Quarters Deputy Magistrate and Inspector of the Factory of "the technical merits of the case". After demonstrating to his own satisfaction how much speed must have been attained by the engine before it burst, he proceeded to sketch in the concluding portion of the letter the improvements he proposed to carry out. On reading the letter, I asked the Inspector to inspect the Factory and report whether the improvements had been carried out and whether they embraced the actual working of the engines by persons having adequate knowledge, common coolies paid by the day not being such persons. Having inspected the Facto on the 7th instant, he reported on the 9th Idem that the improvements as sketched by the agent in the last two paras of his letter had been carried o but that "the same sort of Coolies" a before worked the engines. He also wr to the agent asking him why men o better qualifications should not be employed. A copy of the agent's rep dated 11th instant is enclosed, from

the
will be seen that the Agent maintains that the Engine Maistry is a quite competent man and that the Engine boy's duties are quite simple and require no special training, as the boy works under the orders of the maistry. These arguments are not convincing, seeing that in the present case the Engine maistry abandoned his post altogether leaving the Engine boy in sole and independant charge of the Engine and that the Engine boy left the Engine to itself and whilst he talked to another man. On this point the Inspector remarks "I think there is a certain amount of responsibility involved which it is not desirable should be entrusted to a low paid cooly. I think the agent may be asked to employ permanently some men of a better class than the ordinary Cooly for regulating the Engines."

7. There can be little doubt regarding the importance, from the point of view f the safety of the lives of the workmen, f the proper management of the engines ed of such safeguards being adopted s will reduce the chances of similar cidents to the lowest possible limit. der present conditions, the chances do t appear to be in any appreciable degree

[illegible] rigid, and I ther submit the matter for the orders of Government.

8. I beg to invite attention to the tone of the agent's letter dated 26-1-95 to the Head Quarters Deputy Magistrate, which is herewith submitted in original for perusal and favour of return. The letter speaks for itself and it is unnecessary for me to touch upon it more than to add that from the copy (enclosed) of the Deputy Magistrate's reply dated 28th Idem it will be evident that I had nothing whatever to do with the enquiry made by him on the 28th January and the summo ing of certain workmen therefor. In my report on the Nellikuppam Abkar Case para 35, I adduced reasons fo my recommendation that Messrs. Parr and Co. be required to empower som approved person — other than Mr F. N. G Gill to represent them in all officia matters. I trust that Government w be pleased to pass such orders as w henceforth protect its local represen tives from the libellous attacks of M Parry and Co's accredited agent.

I have the honour to b
Sir
Your most obedient Se

1895. No. 2630

C. No 1603/95
G.O. 941/94 &c.

Judicial Department.

From

The District Magistrate of

South Arcot.

To

The Chief Secretary 28-3-95 No 24

to Government 941/94

Madras.

For orders.

CHIEF SECRETARY ✱ GOVERNMENT OF MADRAS ✱
27 MAY 1895

Dated 21st }
Despatched 25th } May 1895.
Received 27th }
Regd. 28th

No. 1202

Enclosure 10

Subject.

Submitting report on the fatal accident which occurred in the Factory at Nellikuppam.

28/5
28/5

Submitted to U.S.
Perhaps this may be included in the Factory review.
28/5

Cons

[G/25.]
6... 5-3-95.

C. No. 2630/95

FOR ORDERS.

This report shd have been sent in long ago

*: now in the press with Draft review

× I don't think that this is actually shown though inference points to this being the probable cause. It is true that the manager & native seemed to think that it was.

The Dist. Magte of South Arcot submits a report regarding a fatal accident in the Nellikuppam factory, which took place last November. A brief mention was made of the matter in the annual report* in which it was promised that a detailed special report would be submitted.

2. The detailed report shows that the accident arose× from the engine having been allowed to work at too high a spe
it was in charge of a maistry and a boy under his orders and at the time the accident the former had left his pos for a few minutes, leaving the boy in char & the latter was busy talking to anoth boy who was coming to take his plac
The factory manager deposed that it w the business of the engine boy to regula the speed of the engine, that at the time accident the sugar was white and w

Cl. No 16031

Judi

the Engine boy should have lowered the speed of the engine at this moment; to his failure to do this the manager attributes the accident.

The Engine boy (Manikkam) is 18 years old & receives wages 3 annas per diem; the maistry is 30 & is paid 6 annas a day.

The Dy. Magte. & the Dist. Magte. consider that in view of the responsible nature of the duties required a more highly paid class of man should be employed for regulating the engines.

Mr. Gill (Messrs. Parry & Co's Agent at Nellikuppam) however ~~contends~~ states that the maistry was "a very experienced man", & that the boy "though not experienced was quite capable of the simple duty of controlling the engine under the orders of the maistry, and contends that a better class of man could not be employed.

The fact remains that in this particular case the maistry was called away & that in his absence the boy was not capable of the duty of controlling the engine. What has happened once may happen again & it seems clear that precautions should be taken to minimize the possibility of the engines being left even for a minute in the control of a mere engine-boy

degree

FOR ORDERS.

[G. 25.] 8-3-95.

DEPARTMENT.

C. No.

FOR ORDERS.

Vide para 8 of his letter.

This was not to the Dm.

The Dist. Magte. complains of the tone of one of Mr. Gill's letters to the Dy. Magte. & with reason. Mr. Gill hints that a 'hole-in-a-corner' enquiry was being made. Mr. Gill, whom I know personally, is unusually ready to take offence & to quarrel, & the tone of his letter is probably due to his exasperation caused by the Nellikuppam Abkari case; which is, I understand, being dealt with by the Rev. Dept. It will therefore presumably suffice to communicate this portion of the Dist. Magte. letter to the Rev. Dept.

D
13-6-95.

2

Whatever was the cause of the accident — it was probably too high a speed combined with a very much worn centrifugal — it is clear that the engine should not have been left in the hands of a boy who is admittedly inexperienced. That this should be possible does not speak well for the management of the Attikuppam factory by Mr. Gill.

It does not signify if the man in charge of the engine had a hundred instead of ten years experience; he was not attending to his charge but was absent. Had he been looking after the engine it is quite possible that the accident would not have occurred.

Should not Messrs: Parry & Co be requested to make such arrangements as will ensure the engines of the factory being always under the care of a proper man and never left to the ~~care~~ tender mercies of inexperienced boys.

As regards Mr. Gill's letter Messrs. Parry & Co will no doubt if it is brought to their notice take care that Mr Gill who is always ready to quarrel with other public servants in future uses more moderate language.

15/6/95

Factory Act

FOR ORDERS.

I think this will be the best way. Ask them whether they have made any change & if so what. But before doing so ask the C.E. if he has any remarks to make on Mr. Gill's letter on the technique of the matter

I don't see there is much to complain of in Mr. G's letter.

18/6/95

C 17/6

Agree

Copy of Office note dated 19.6.95 from the Under Secy ~~to~~ Pub. Rev. Dept to the ~~[illegible]~~ Secy. P.W.D

Has the honour to forward Judicial ~~Ct~~ Current* No. 2630 with original notes in orders and to request that Mr Gill's letter of the 30th Jany (marked with red tape) may be forwarded to the Chief Engineer for remarks as desired by the Hon'ble Mr Bliss.

(Sd) L. Davidson
Ag. Under Secy
19-6-95

*: to be kindly returned

To the Secy to Govt
P.W.D.

gth of the plates at

CURRENT NO. 3110

Note by the Chief Engineer P. W. Department:—

429 D dated 24! June 1895

On reading the whole of the evidence and Mr. Gill's letters it seems to me that the accident was due at least as much to the fact of the machine being run when the plates of which it was composed were worn to a dangerous extent, as to any carelessness in running the engine, although the latter may possibly (there is absolutely no evidence on the point) have been a contributary cause.

2. It appears that the "basket" was composed of plates originally 1/8" thick but worn down to .07" or 1/14", little more than half the original thickness. Mr. Gill takes the tensile strength of the plates at

at their normal speed

30 tons per square inch, which is not unreasonable, and calculates that when new the bursting pressure of the machine was 330 tons, which would be reduced to 184.8 tons by the reduction in the thickness of the material.

3. He calculates the total load at 200 lbs and shews correctly that with this load the bursting strain of 184.8 tons would be developed by a speed of 2203 revolutions of the centrifugal; but it is quite possible that the load was really more than this, as the weight of the sugar alone may have been 200 lbs, in which case the total load would have been 252, and the eed required to produce e bursting pressure would e been only 1765 revolutions corresponding to 144 revolutions of the engine, or only 44 per cent in excess of the normal maximum of 100 revolutions.

4. Whether as a matter of fact the engine did "run away" to this extent it is impossible to say as there is no evidence on the subject, but it is quite certain that to run a machine under conditions which even assuming perfect regulation as to speed allows a factor of safety of only $\frac{184.8}{120} = 1.54$ is a most reprehensible proceeding.

5. It is for this reason that I consider that the condition of the "basket" was a much more important factor in the matter than the attendance on the engine because even if the latter were perfect, there would,

at their normal spe

have been a most serious risk of an accident; but it is beyond a doubt that the attendance was not what it should have been.

6. It is conceivable, though with some difficulty, that the class of maistry who can be got for six annas a day might be capable of looking after the engine, if he had nothing else to do, but it is clear from the evidence that this maistry was liable to be called away at any moment, and as I understand the evidence, he was not specially in charge of the engine but exercised a general supervision over other works and the only erson distinctly attached t the engine was the oy on three annas a day.

Looking to the extreme fficulty of making curate measurements

of thickness so small as a fourteenth of an inch it is quite possible that the plate which gave way was even more worn out than Mr Gill supposes it to have been, and that the accident happened when the engine was working at little or nothing above its normal speed, and it is quite possible that a similar accident may happen to one of the other machines of the same kind at any moment, and will not be avoided by the precautions which Mr Gill announces his intention of taking.

8. It must be borne in mind that the machines when new, and running at th[illegible] speed

of only about 2.8, and that an excess of 25 per cent on the normal speed will reduce this to 1.8; under these conditions nothing but the most perfect watchfulness and incessant care can obviate all risk of accident, and it appears to me that three distinct precautions are required; first that the engine shall never for a moment be left without a competent and responsible attendant, second that the centrifugals themselves shall be examined at very short intervals, and third, that the working of any machine in which the plates in any part are worn down below two thirds of their

[illegible] measurements

agree

---

be absolutely prohibited

(Signed) John Pennycuick.
Col. R.E.,
Chief Engineer, P. W. Deptn.

Ootacamund.
24th June 1895

430 D. dated 24th June 1895

Transferred to the Judicial Deptn. with advertence to office note from that Department dated 19th June 1895.

Colonel R.E.,
Secretary to Govt. P. W. Deptn.

To,
The Judicial Deptn.
with original papers returned.

[illegible] 22/6/95

Judicial Deptt

CURRENT NO. 3110

From, P. W. Dept

No. 430 D.

Dated 24th June }
Recd 24th June } 1895.
Regd 18th July }

Enc: orig papers etc.

Subject.

Transferring notes by the chief Engineer, P. W. D. d/ 24-6-95, No. 429 D with adverture to Office Note d/ 19-6-95, regarding the Nellikuppam accident.

[G/9]
2,000—23-1-95.

Current No. 3111

Judicial DEPARTMENT.

From P. W. Dept.

O. N. No. 431 D

Dated 24th June }
Received 24th June } 1895
Regd 18th July }
Enclosures "

SUBJECT.

Stating that he will have to pass through Cuddalore on his way to the Periyar in July and if Govt. desires he will visit the Nellikuppam factory and see if any other suggestions can be made in regard to the safety of the machinery.

Judicial Deptt

CURRENT No. 3111

431 D.

Government of Madras.

PUBLIC WORKS DEPARTMENT.

OFFICE NOTE.

Ootacamund

24th June 1895

From

The Public Works Secy.

To

The Hon: the Chief Secy.

Although I have not alluded to it in my note transferred to the Judicial Department with endorsement No. 430 D of 24th June 1895, it is worth while to mention that I shall have to pass through Cuddalore on my way to the Periyar

the C.E.'s note . [illegible]

Judicial Deptt

in July, and if Government desires it I might visit the factory and see whether there are any other suggestions than those made in the note which would be of use in regard to the safety of the machinery; not having seen the latter I am not quite sure about the arrangement and connection of the various parts, but it is certain that the present arrangements involve serious risk of accident.

J. H. [illegible] Holmes R.E.,

Secretary to C. P. W. Dept.

CHIEF SECRETARY
24 JUN. 1895
GOVERNMENT OF MADRAS

CHB
22/6/95

NOTE FOR THE UNDER SECRETARY.

I have with per-
mission sent the
papers to the
[illegible]

[illegible]
26/6

C 517 Then the thing to do w'd
be to communicate
the C.E.'s note to Major P.

[G/9]
2,000—2-4-35.

D.O.

Current No. 380

DEPARTMENT.

From

W. A. Shaw Esq.

of Messrs. Parry & Co.

Madras.

No.

Dated 26th June 1895

Received 27th — " — "

~~Regd~~ 28th — " — "

Enclosures with C.N. 2630/95

SUBJECT.

Regarding Nellicuppam accident.

Please state the no of enclosures received with this D.O.

AS
1/7/95

Cotter

G.O. 1340/1. 24-6-95 (Ack)

Office Note to the Secy. P.W.D. of 17-6-95

do — pm P.W.D. of 24-6-95

C.N.s 2630, 3110, 3111 & D.O. 380/95

For orders.

The Chief Engineer's note & Mr. Shaw's D.O. are submitted ~~with reference to Hon. on C.N. 2630~~ for orders as to whether the former shd. be asked to inspect the factory.

4/7/95

D
3-7-95

(Thro' the Secy. to Govt. P.W.D. for perusal of Mr. Shaw's letter)

I did not keep a copy of my letter to Mr. Shaw as it merely said that with permission I sent the papers to him for perusal and mentioned that the C.E. had said in a note which he had written that if Messrs. Parry & Co. wished it he would visit the factory on his way to the Nilgiris

4/7/95

Under the circumstances I do not think there is any necessity for my visiting the factory.

Then the thing to do is to communicate the C.E.'s note to Messrs. P. & Co.

D. 5/7

C 517

D. O. No. 380

PARRY & Co., MADRAS.
London House:
70, Gracechurch Street, E. C.

Madras 26th June 95

CHIEF SECRETARY * GOVERNMENT OF MADRAS * 27 JUN. 1895

no copy kept.

My dear Price

Thanks for your letter of 26th inst enclosing papers relating to the Nellicoopum accident, which as requested I return herewith.

I don't think there is any necessity for Colonel Pennycuick to go down & examine the other centrifugals as we have already done so ourselves & found them all right. We have also made arrangements to prevent the Engine from being allowed to run beyond the requisite speed. Of course if Govt think Colonel Pennycuick should examine the centrifugals I need hardly say we shall be happy to render him whatever assistance he may require.

I would however point out that we take every precaution we can to prevent accidents, & considering we have 4 experienced Europeans constantly looking after the Factory I don't think it can be said that the supervision is inadequate.

Looking to the size of the Factory I think you will find that the accidents we have had in it have been very few as compared with similar Home Factories which are worked by much better workmen than we can get out here.

Yours sincerely
W. T. [illegible]

Hon'ble J. F. Price C.S.

[G. 24.]
600—8-3-95.

Papers to be read in proceedings:— Judicial DEPARTMENT.

Again G.O., dated 189 , No.

Again G.O., dated — — 21.5.1895, ~~No.~~ from the D.M. S. Arcot

Current 2630
Current No. 3110 of 1895, dated 24-6 from the P.W.D.

3111
D.O. 380 — (B)

Current No. of 189 , dated from

ORDER. d/ 11th July 1895 No. 1460

The Chief Engineer's note will be communicated to Messrs. Parry & Co with the request that they will be good enough to report what arrangements they have made or propose to make to obviate the danger of further accidents in their factory at Nellikuppam

2. The Dist. Magte's report should have been submitted to Govt. at a much earlier date

(For orders)
D
6-7-95

JD
10/7/95.

Cop'd 13/7

The Dist. Magte, South Arcot A of C. 3110/2 & O
Messrs Parry & Co., (A of C. 3110/2 & O) para 1 only
The P.W.D. (R & O)

Despd 17/7

Velikuppam Factory

Accident

C.S. -

(from orders)

E

H. C.

~~send up with fair plan.~~

J.L.A.
11/7

or copying
sed
ed
189 .

.O., No. DATED

Cu No.

ures to C. No

Order of Government .. .. .. A A A A A A A

itte f Government.

atement with ditto.

Papers not filed up, being meant for despatch in original.

N.B.—
A = Copy in full.
B = Not to be copied.
P = Copy abstract only.
Q = Copy heading only.