

Public Works (1898) Department.

G.O. No. 2552 W

DATED

4th Oct 98

57 1/2 1/95

BACK PAPERS.

FURTHER PAPERS.

BUILDINGS AND ROADS.
CIVIL WORKS.

Government (1898) of Madras.
PUBLIC WORKS.

Recd.

Regd.

1898.

Enclosures

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G.O., No. 2552 W., 4th October 1898.

OCTOBER.

Steam-boilers and Prime-movers Act (III of 1893)

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads,
Civil Works.

READ—the following papers:—

G.O., No. 1712, Judicial, dated 24th August 1893.
" " 174, " " 25th January 1895.

ORDER—No. 2552 W., dated 4th October 1898.

His Excellency the Governor in Council has again had under consideration the question of extending to the mofussil the provisions of the Steam-boilers and Prime-movers Act (III of 1893).

2. In the first of the orders read above, all District Magistrates were called upon to report—

- (1) whether it was advisable to extend the Act by notification under section 1 (3) to their several districts; and
- (2) whether a notification under section 14, as to competency of persons in charge of boilers, should also be issued.

3. The following statement gives an abstract of the replies received:—

Name of district.	Number of boilers.	Whether it is advisable to extend the Act.	Whether a notification under section 14 should issue.
1	2	3	4
1. Kurnool	1	Not necessary to extend the Act ..	.....
2. Nellore	Nil.	Do. do. ..	.....
3. Chingleput	1	Do. do. ..	Not necessary.
4. Trichinopoly	Nil.	Do. do. ..	.....
5. Ganjam	Not given.	Not advisable ..	.....
6. Vizagapatam	5	Not expedient ..	Not expedient.
7. Gódvári	2	Hardly necessary ..	.....
8. South Arcot	3	Not necessary ..	Not necessary.
9. Tanjore	5	Not advisable ..	.....
10. Madura	3 or 4	Unnecessary ..	.....
11. Malabar	27	Do. ..	Not expedient.
12. South Canara	15	Do. ..	.....
13. Coimbatore	11	Do. ..	Not necessary.
14. Nilgiris	Not given.	Do. ..	.....
15. North Arcot	3	Do. ..	.....
16. Cuddapah	3	Do. ..	Issue of a notification recommended. This is illogical with reference to the remark in column 3.
17. Bellary	15	Extension to the towns of Bellary and Adóni recommended.	Recommended.
18. Tinnevely	29	Recommended ..	Do.
19. Salem	1	Do. ..	Not necessary for the present.
20. Kistna	13	Do. ..	Recommended.
21. Anantapur	5	Do. ..	Not necessary.
Total	142		

NOTE.—The number of boilers has since increased; 40 per cent. may, perhaps, have to be added for the increase, the increase in Madras for the same period being 60 per cent.

4. It is observed from the above statement that only five districts, viz., 17. Bellary, 18. Tinnevely, 19. Salem, 20. Kistna and 21. Anantapur, were in favour of the extension of the Act.

5. From the replies received it appeared that if the Act was to be extended to the mofussil at all, then the only districts in which it should be enforced were: 11. Malabar, 12. South Canara, 13. Coimbatore, 17. Bellary, 18. Tinnevely and 20. Kistna. It also appeared that these districts being so widely separated, the expenditure on the Boiler Inspector's travelling allowance would be considerable. It was accordingly decided that the operation of the Act should be confined in the first instance to the city of Madras where there were at that time 102 boilers.

6. These considerations were based on the number of boilers to be dealt with, but it is, in the opinion of His Excellency the Governor in Council, equally necessary to consider the importance of the boilers in use.

7. As regards the expense of touring, it is observed that the Boiler Inspector since appointed now tours over the greater portion of the Presidency to inspect municipal boilers for purposes of maintenance and repair. The extra expense of touring under the Act will not thus add much to his charges.

8. As regards the necessity for the inspection of boilers under the provisions of the Act, His Excellency the Governor in Council observes that it would appear from the recent report of the Boiler Inspector that there are many boilers now in use which cannot be regarded as safe. It is also understood that, in order to evade the provisions of the Act, cheap and second-hand boilers are now taken from Madras to the mofussil where they are worked at much too high a pressure. It thus seems desirable that the question of extending those provisions of the Act regarding the examination and licensing of boilers should be reconsidered. The opinions of District Magistrates will accordingly be again called for, existing conditions being taken into account, as well as the remarks of the Boiler Inspector recorded in G.O., No. 1741 W., dated 8th July 1898, a copy of which will be furnished to each District Magistrate.

9. The question of introducing the provisions of the Act in regard to the grant of certificates of competency of persons in charge of boilers is being separately considered.

(True Extract.)

Under Secretary to Government.

To the Sanitary Engineer.
" the Local and Municipal Department.
" all District Magistrates, with a copy of G.O.,
No. 1741 W., dated 8th July 1898.

Exd. T. K. Narayana Aiyangar.

Papers to be read in Proceedings:—

Again G.O., dated 24th August 1893	189 , No. 172 Judicial.
Again G.O., dated 25th January 1895	189 , No. 174 Judicial.
Current No.	of 189 , dated , from
" "	" 189 , "
" "	" 189 , "

ORDER.

No. 2552 W 24.10.98

His Excellency the Governor in Council has again had under consideration the question of extending to the mofussil the provisions of the Steam-boilers and Prime-movers Act, III of 1893.

2. In the first of the orders read above, all District Magistrates were called upon to report

(1) Whether it was advisable to extend the Act by notification under section 1 (3) to their several districts, and

(2) whether a notification under section 14, as to competency of persons in charge of boilers, should also be issued.

3. The following statement gives an abstract of the replies

received:

1. Reminders issued 3.2.99

File retained at Alastan
for further action.
1/10/98

received:-

Name of District.	Number of boilers.	Whether it is advisable to extend the Act.	Whether a notification under sec. 14 should issue.
1. Kurnool.	1	Not necessary to extend the Act.	Not necessary.
2. Nellore.	Nil	-do-	-do-
3. Chingleput	1	-do-	-do-
4. Trichinopoly	Nil	-do-	-do-
5. Ganjam.	Not given	Not advisable.	Not necessary.
6. Vizagapatam	5	Not expedient	-do-
7. Godavari	2	Hardly necessary	Not expedient.
8. S. Arcot	3	Not necessary	-do-
9. Tanjore	5	Not advisable.	not necessary
10. Madura	3 or 4	Unnecessary	-do-
11. Malabar	27	-do-	-do-
12. S. Canara	15	-do-	Not expedient
13. Coimbatore	11	-do-	-do-
14. Nilgiris.	Not given	-do-	Not necessary
15. N. Arcot	3	-do-	-do-
16. Cuddapah	3	-do-	-do-
17. Bellary	15	Extension to the towns of Bellary and Adoni recommended.	Issue of a notification recommended. This is illogical with reference to the remark in col. 3.
18. Tinnevelly	29	Recommended	Recommended
19. Salem	1	-do-	-do-
20. Kistna	13	-do-	Not necessary for the present.
21. Anantapur	5	-do-	Recommended.
	142		Not necessary.

Note:- The number of boilers has since increased. 40% may perhaps have to be added for the increase. The increase in Madras for the same period being 60%.

4. It is observed from the above statement that only 5 districts, viz, 17. Bellary, 18 Tinnevelly, 19 Salem, 20 Kistna and 21 Anantapur were in favour

favour of the extension of the Act.

5. From the replies received it appeared that if the Act was to be extended to the mofussil at all, then the only districts in which it should be enforced were 11 Malabar, 12 South Canara, 13 Coimbatore, 17 Bellary, 18 Tinnevelly and 20 Kistna. It also appeared that these districts being so widely separated, the expenditure on the Boiler Inspector's travelling allowance would be considerable. It was accordingly decided that the operation of the Act should be confined in the first instance to the city of Madras where there were at that time 102 boilers.

6. These considerations were based on the number of boilers to be dealt with, but it is in the opinion of His Excellency the Governor in Council equally necessary to consider the importance of the boilers in use.

7. As ~~regard~~ regards the expense of touring, it is observed ^{that} the Boiler Inspector since appointed now tours over the greater portion of the Presidency to inspect Municipal boilers for purposes of maintenance and repair. The extra expense of touring under the Act will not thus add much to his charges.

8. As regards the necessity for the inspection of boilers under the provisions of the Act, His Excellency the Governor in Council observes that it would appear from the recent report of the Boiler Inspector that there are many boilers now in use which cannot be regarded as safe. It is also understood that, in order to evade the provisions of the Act, cheap and second-hand boilers are now taken from Madras to the mofussil where they are worked at much too high a pressure. It thus seems desirable that the question of extending those provisions of the Act regarding the examination and licensing of boilers should be reconsidered. The opinions of District Magistrates will accordingly be again called for, existing conditions being taken into account, as well as the remarks of the Boiler Inspector recorded in G.O. 1741 W. dated 8th July 1898, a copy of which will be furnished to each District Magistrate.

9. The question of introducing the provisions of the Act in regard to the grant of certificates of competency of persons in charge of boilers is being separately considered.

1741 W 8 July 1898

1.10.98

To the Sanitary Engineer.
 ,, L & M Dept.
 All District Magistrates, with
 a copy of G.O. 1741 W. d/
 8th July 1898.

C. No. ---
 Note by the Hon. Sir Henry Bliss, K.C.I.E.,
 dated 23rd July 1898 on G.O. 1741 W d/
 8th July 1898. Sanitary Engr's No. 1369
 d/14th Sept. 98. SUBJECT.

Extension of Madras Act III
 of 1893 to the mofussil.

- (1) HIS EXCELLENCY THE GOVERNOR.
- (2) THE HON'BLE SIR HENRY BLISS, K.C.I.E.
- (3) THE HON'BLE MR. GROSE, C.I.E.

FOR ORDERS.

In this note the Hon. Member inquires why the Steam Boilers and Prime Movers Act should not be extended to the mofussil. It will be seen from G.O. 1712 Judicial dated 24th August 1893 that, after the passing of the Act, all District Magistrates were called upon to report

x Flag H.

This has been
 separately disposed
 of by a dispatch
 was being printed
 10 Oct 98
 2552 W 8.10.98

- (1) whether it was advisable to extend the Act by notification under Section 1(5) to their several districts, and
 - (2) whether a notification under Sec. 14, as to competency of persons in charge of boilers should also be issued.
2. The following statement gives an abstract of the replies received:

Name

Name of District.	Number of boilers	Whether it is advisable to extend the Act.	Whether a notification under section 14 should issue.
1	2	3	4
1. Kurnool.	Nil	Not necessary to extend the Act.	
2. Nellore.	Nil	-Do-	
3. Chingleput	Nil	-Do-	
4. Trichinopoly	Nil	-Do-	Not necessary.
5. Ganjam	Not given	Not advisable.	
6. Vizagapatam	5.	Not expedient.	
7. Godavari	2.	Hardly necessary	Not expedient.
8. S. Arcot	3	Not necessary	
9. Tanjore	5	Not advisable	Not necessary
10. Madura	3 or 4	Unnecessary	
11. Malabar	27	-Do-	Not expedient.
12. S. Canara	15	-Do-	
13. Coimbatore	11	-Do-	Not necessary.
14. Nilgiris.	Not given.	-Do-	
15. N. Arcot	3	-Do-	
16. Cuddapah	3	-Do-	
17. Bellary	15	Extension to the towns of Bellary and Adoni recommended.	Issue of a notification recommended. Note. This is illogical with reference to the remark in Col. 3
18. Tinnevelly.	29	Recommended.	Recommended.
19. Salem	1	-Do-	-Do-
20. Kistna	15	-Do-	Not necessary for the present.
21. Anantapur	5	-Do-	Recommended.
			Not necessary.

40 per cent may perhaps be increased.
 1. No. of boilers has since increased.
 2. Increase in Madras for same period

3. It will be seen from the above statement that only 5 districts, viz, 17. Bellary, 18. Tinnevelly, 19. Salem, 20. Kistna and 21. Anantapur were in favour of the extension of the Act.

4. In the Note for Orders attached to G.O. 174 Judicial dated 25th January 1895, it was stated that if the Act was to be extended to the mofussil at all, then it seemed -- pretty clear that the only districts in which it should be enforced were 11. Malabar, 12. South Canara, 13. Coimbatore, 17. Bellary, 18. Tinnevelly and 20. Kistna. It was at the same time pointed out that these districts are so widely separated that the expenditure on the Inspector's travelling allowance would be considerable; whereupon it was decided that the operation of the Act should be confined in the first instance to the City of Madras only, where there were at that time 102 boilers.

5. The recommendation referred to in para 4 above, which was made in the Judicial Department, seems to be based on the number of boilers to be dealt with. It is submitted that the importance of the boilers is -- also of consequence.

6. As regards the expense of -- touring, the Inspector, since appointed, now tours over the greater portion of the Presidency to inspect municipal boilers, for purposes of maintenance and repair and the extra expense

X 1213 M.

11/1/94

C. No.

SUBJECT.

HIS EXCELLENCY THE GOVERNOR.
THE HON'BLE SIR HENRY BLISS, K.C.I.E.
THE HON'BLE MR. GROSE, C.I.E.

FOR ORDERS.

11. Taking the number of boilers in the Mofussil in 1894 as 142, & adding 40 for subsequent increase, vide statement on page 2 of this note, we get 200 as the probable present number. The information as to the positions of the 142 boilers in existence in 1894 is not complete for all districts so it is not easy to say what time it would take an Inspector to visit them all. I have, however, shown the approximate time in the attached statement, giving 2 days as a rule, for boiler where its position

expense of touring under the Act ^{thus} will not add much to his charges.

7. The question of introducing Section 14 of the Act into mofussil has been submitted for orders separately.

8. Attention is also invited to my office Note to the Sanitary Engineer and his reply.

9. It will be seen that on the score of expense he does not recommend the extension to the Mofussil of the whole of the Act, but only of that portion which deals with the employment of properly qualified persons for the charge of boilers. If the Act is extended at all it should, he thinks, be made compulsory in all districts.

10. He further points out that 2 Assistant Inspectors would be necessary, and that there would probably be a loss on account of fees now received for services rendered by the Inspector without reference to the Act.

These fees are much lower now charging, I think, $\frac{3}{4}$ of higher than those which could be levied under the Act, & as the Act might change the maximum fees, which would still be lower (I think, but am not sure) than those charged in W. & A. as the Inspr. does much more for the municipalities than merely inspect the boilers, we might make them pay double a table fee. How would this work out?

Distinctions between them and the owners of private boilers.

Will be written on 29/11/90

is not known. This is
 hardly an excessive amount
 to judge from the time req^d
 to inspect the boilers in Malabar,
 whose position is known.
 The result is that it would
 take an Inspector 267 days
 to inspect the 142 boilers
 in existence in 1894 -

as there are 275 working
 days in the year, it is
 probable that if the Inspector
 had one Assistant, & not
 two as proposed by the
 San. Insp., he could, with
 energy, inspect them all.

12. The Inspector himself visited
 municipalities in the Imperial
 14 times last year, & spent
 99 days in doing so, or
 nearly a week his time, so
 he did not hurry himself.
 He, however, gave advice in other
 matters besides the condition
 of the boilers. If he is
 given an Assistant the Inspector
 might visit the boilers
 in the following Districts

Number & Position of Imperial boilers in 1894

District	Place	No. of boilers	Days Employed		Total	Remarks
			Inspecting	Travel- ling		
Kurnool	Kor. C	1	1	4	5	
Chingleput	Guindy	1	1	-	1	
Tiragapatam	Jeypore	1	1	4	5	
	Karasa	1	1	"	1	
	Tiragapatam	1	1	1	2	From San. Insp.
	Chittiralsa	1	1	1	2	
	Tirianagram	1	1	1	2	
Godawari	Not known	2	2	2	4	
South Arcot	Nellikuppam	1	1	1	2	
	Tiruvannamalur	1	1	1	2	
	Bandipalayam	1	1	1	2	
	Kumbakonam	1	1	1	2	
Tanjore	Negapatam	2	2	2	4	
	Tanjore	1	1	1	2	
	Nidamangalam	1	1	1	2	
Madura	Periyar	1	"	"	"	Govt. boiler, seldom used. not necessary to inspect.
	Madura	3	3	2	5	
Malabar	Tellicherry	5	5	2	7	
	Calicut	15	15	2	17	
	Ponani	1	1	2	3	
	Wynaad	4	4	6	10	
	Cochin	2	2	4	6	
					C.O. 86	

District	Place	No of Days Employed			Total	Remarks
		boilers	Inspecting	Travelling		
South Canara	not given	15	15	15	30	
Coimbatore	—do—	11	11	11	22	
North Arcot	Ranipet	3	3	2	5	
Cuddapah	Cuddapah	1	1	2	3	
	Proddatur	1	1	2	3	
	Jangalapalli	1	1	2	3	
Bellary	Bellary	11	11	2	13	
	Adoni	4	4	1	5	
Tinnevely	not given	29	29	29	58	
Salem	—do—	1	1	2	3	
Kistna	not given but probably Masulipatam, Berwadam & Guntur.	13	13	13	26	
Anantapur	Hindupur	1	1	2	3	
	Cooty	2	2	2	4	
	Ladpatri	2	2	1	3	
					267	

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C. No.

SUBJECT.

HIS EXCELLENCY THE GOVERNOR.
THE HON'BLE SIR HENRY BLISS, K.C.I.E.
THE HON'BLE MR. GROSE, C.I.E.

FOR ORDERS.

near Madras	No of Boilers
Chingleput	1
S. Arcot	3
N. Arcot	3
Salem	1
Tanjore	5
Comblatire	11

24

Learning his cost to do
the remainder, is 118
in 1894, plus such increase
as has occurred since.

If the total number of boilers
annually inspected is

Madras	162
Inspected	200
	362

the average per boiler is
Rs 20, the total receipts

under Rs 7240 - 2/6
 the pay of the Asst Inspector
 under his present at Rs 250
 & his pens at Rs 5. the
 mounting cost under budget
 be

Pay of Inspector	250
— Pen	5
Travelling allowance	100
	<u>355</u>

* Rs 2 daily allowance for Inspector
 & 2nd for him when not travelling
 by rail.

in Rs 4296 per annum.
 I do not know what amount
 of the present Inspector's
 pay Govt expects to
 be covered by fees. But
 it seems from the above
 figures that the annual
 deficit would not be a heavy
 price to pay for the greater
 security to life & property
 insured by extending the
 Act to the Municipal.

This said that cheap & second
 hand boilers are now taken
 up coming from Madras, to
 avoid the Act there, & worked
 at much too high pressure.
 I think if we extend Sec
 14 to the Municipal, we

of course the fees ought to
 cover all expenses & should in
 time be made to do so — But Govt
 must submit to losing something
 at first over the establishment of a
 good system. BS

C. No.

SUBJECT.

HIS EXCELLENCY THE GOVERNOR.
 THE HON'BLE SIR HENRY BLISS, K.C.I.E.
 THE HON'BLE MR. GROSE, C.I.E.

FOR ORDERS.

should also extend the
 whole Act. It would be
 hard on a man to require
 a certificate from him before
 he is allowed to work
 an unsafe boiler!

I recommend that the Act
 be extended to the Municipal,
 & the staff of Inspectors
 increased to the extent
 required for working it.
 Under Sec 7 a licence can
 not remain in force for
 12 months. This period
 might be extended, as
 regards the Municipal, to
 18 or even 24 without
 serious risk

Before this is done, I would suggest that Collection
 be again considered. (See G.O. 25 Jan.
 1995, N° 174, Judicial).

H.S.H. 22.9.98

I think so. When cases were
 considered before we knew
 anything about the state of boilers,
 but I think a renewal of G.O. 1741 W
 which should be sent to them, will
 open their eyes as to the absolute
 necessity for the safety of the public
 of boiler inspection

BS

26/9/98

H.S.H. 27.9.98

BUILDINGS AND ROADS.
CIVIL WORKS.

Government {1898} of Madras.
PUBLIC WORKS.

Recd.

Regd.

} 1898.

Enclosures

Spare copies

G.O., No. 1741 W., 8th July 1898.

See.

This is a very satisfactory
report. The question now arises,
whether the Act should not be ex-
tended to the Imperial.

JULY.

As

23/7/98

Report of the Inspector of Steam-boilers and Prime-movers, Madras

Reviewing the — ^{first annual} for 1897-98 and ordering its publication in the Fort St. George
Gazette.

GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following paper :—

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Secretary to Government, Public Works Department, dated Fort St. George, 27th May 1898, No. 1013.

I have the honour to forward herewith the annual report of the Inspector of Steam-boilers and Prime-movers, accompanied by two statements in regard to boilers inspected and (1) licensed, (2) not licensed.

ENCLOSURE.

The first report of the Inspector of Steam-boilers and Prime-movers, Madras.

This is the first report since the organisation of the office, and as such it embraces the work of the office since 1st May 1895, the date of assumption of charge of office by the late Mr. J. A. A. Turner, M.I.M.E., who was appointed to be Inspector of Steam-boilers and Prime-movers, Madras, under the Madras Steam-boilers and Prime-movers Act III of 1893 and who continued to be in office till the 4th July 1895, when on account of his ill-health he was obliged to resign his appointment.

2. The work during Mr. Turner's term of office was initiative in character, but the Boiler Inspector has duties attached to his office other than those performed under Act III of 1893, viz., the inspection of machinery in connection with Municipal Water Works throughout the Presidency, and in this capacity Mr. Turner visited the works at Tanjore, Trichinopoly and Madura.

3. After Mr. Turner's death, Government suspended the Act until the 1st February 1897.

4. The undersigned was appointed on 5th December 1896 and took charge on the 18th January 1897.

5. Appended to this report is a statement of all boilers situated in the City of Madras which have been inspected by the Boiler Inspector during the years 1896-97 (a portion) and 1897-98; the fees collected up to 31st March 1898 amounted to Rs. 3,612.

6. Before any license was issued each boiler was subjected to hydraulic test; in many instances the Boiler Inspector had to make as many as three journeys before applying the test owing to the bad condition of boiler mountings; in a few instances, it was evident that the cones of the feed, safety and stop valves had never been ground in; boiler mounting joints and mud hole joints had been allowed to leak causing plates in some instances to corrode and wear away sooner than they should have done. It was pointed out to the owners that if such leaks and inattention to valves were continued the boilers would soon become obsolete; with attention such boilers would last twenty to twenty-six years; and that if boilers did not receive proper care, they could not be expected to last more than a few years. In cases of corrosion, in order to arrest it, metallic zinc was recommended to be suspended inside of boilers below water line.

7. Several boilers were found with a large amount of scale on the plates internally; this can to a great extent be avoided, especially, in the larger type, as they can be opened out and cleaned by scaling hammers every month in those districts where the water is bad. A boiler that is kept free from scale is much more economical and safe than a dirty one and boilers that become scaled especially if thickly so, are dangerous owing to the water not being able to reach the plates; because, with fire on one side of a plate and no water in contact with it on the other, the flame

draws the plate down towards the fire and is likely to cause the plates to open out at seams, &c. As regards the smaller type of boiler which it is impossible to enter and clean with chipping hammers a good plan to maintain them free from scale is to fill the boiler at mid-day each day until the glass is full, and then blow off until the water shows itself at the centre of the glass gauge; if owners would only allow sufficient time for the above process, it would materially assist in keeping boilers of the smaller sizes clean. Owners were advised to apply the aforesaid method. In many cases half a gallon of kerosine oil and in some other instances eucalyptus oil was recommended to be injected into the boiler with the usual feed water daily for the purpose of removing scale that had become thickly deposited; this was attended with good results.

8. Fusible plugs do not seem to be recognised as an important item of boiler equipment because a large number of plugs were found scaled over as much as $1/32$ " in thickness. Owners were informed that such an amount of scale on plugs of this description was dangerous. From plugs that were found in the above-mentioned condition scale was removed and the fusible metal renewed in the presence of the Inspector.

9. It will be noticed from the statement attached that a large number of boilers have had their pressure reduced; this was in a large measure due to the fact that the boiler so reduced had not been open to inspection by recognised Boiler Insurance Companies during the period of construction; the boilers generally were found weak in tube plates, rectangular bars and furnaces; shells as a rule are constructed by most makers with a good margin of strength to allow for wear and tear, and in cases where pressure was reduced because of the shells it was chiefly owing to reduction of material and general wear and tear. The reduction of pressure in such a large number of boilers alone proves the great necessity there was for all boilers to be periodically inspected.

10. If owners, when ordering new boilers, will require them to be constructed in accordance with the rules, they will be assured that the boilers would be capable of working at the pressure asked for.

11. Several boilers were required to have their safety valve area increased, additional stop valves fitted and wrought iron manhole covers fitted in lieu of the then existing cast iron covers and bridges. A few of the owners were refused licenses owing to their boilers requiring strengthening such as diagonal vertical and gusset stays fitting to steam domes and end plates of shells, likewise strengthening rings fitting to furnaces of boilers and shells patching.

12. It is desirable to state that the patching of boilers in Madras hitherto has been incorrectly carried out. When plates became corroded new plates were found placed on the outside of the boiler instead of the inside, the defective plate still being retained; if the defective plate had been cut away patches could then have been placed on the inside or outside with safety, but with a new cover plate outside over the defective plate it follows that the action is still at first on the old plate and then between the old plate and the patch as in time the old plate would become worn through owing to the corrosive action; on any sudden strain caused by expansion or contraction, patches of this description might be blown off; such a system of patching has been objected to by the undersigned and in several instances where he considered those patches dangerous the defective plates were ordered to be cut away and new plates or in other words lap patches placed on.

13. From this experience the Boiler Inspector agrees with many of the qualified Engineers in charge of Madras boilers that it would be advantageous to put clause 23 (d) of Act III of 1893 in force.

14. These remarks have been made to show the reasons which guided the Inspector in making recommendations when such defects were found.

15. It is satisfactory to report that wherever additions and alterations were considered necessary such were promptly carried out by the owners concerned, and there is reason to believe that the periodical inspection of boilers will ensure that boilers will be safer, work more economically and last longer than hitherto. It would be more satisfactory if all owners would retain the services of none but competent men to take charge of their boilers because it is absolutely essential that boilers should have the best of supervision, and it is regretted that this is not always the case. A number of the drivers were questioned as to the mode of procedure supposing the water in their boilers ran low; in some instances they stated that they did not know what should be done, and in one case which came to notice a driver lit the fire of his boiler with no water showing in the gauge glass column; it hardly reached the crown of combustion chamber, it followed that the crown plate became overheated but fortunately the fusible plug emitted its lead and saved an explosion of the boiler. It is presumed that the man did not know to what height the water should be in the glass gauge, otherwise he would not have lit the fire so as to have endangered his own life and the lives of the people surrounding him.

16. To the best of the undersigned's knowledge there is no boiler now working in the City of Madras above atmospheric pressure which has not been duly examined, tested and licensed.

17. In addition to discharging the duties as Inspector of Steam-boilers in the City of Madras the Boiler Inspector visited during 1897-'98 the following pumping stations for the purpose of making complete survey of the engines, boilers and pumps that are situated at the respective municipal pumping stations:—

Madura visited twice.
Dindigul visited thrice.
Trichinopoly visited thrice.
Tanjore visited twice.

Conjeeveram visited twice.
Kurnool visited once.
Cuddapah visited once.

18. After the Boiler Inspector made a survey of the several stations, complete reports on the condition of the machinery were forwarded to the respective municipal chairmen for their information and guidance with a request that wherever repairs were mentioned as required such ought to be carried out as early as practicable. The Inspector found on his second visits that the repairs, in most cases, were complete and others were in course of execution.

19. Wherever possible, indicator diagrams of the engines were taken for the purpose of determining the indicated horse power of the engines during the hours of harder work.

20. Several points were suggested by the Boiler Inspector for the better management and safer and more economical working of the machinery; these were adopted with satisfactory results. Fuel trials were also conducted for the purpose of ascertaining the amount of fuel expended per pump horse power for an ordinary day's work with the result that reductions were found to be possible in the consumption of both fuel and oil.

21. The undersigned is of opinion that the periodical inspection of the machinery at the municipal pumping stations will keep a check on the consumption of fuel and oil, and further more that the machinery will be maintained in a far better state of repair whereby municipalities will save more than the fees prescribed to be paid by G.O., No. 833 of 15th May 1895.

22. *Concluding Remarks.*—Inventories of valuable stock were maintained in this office during the year under report.

23. The staff has given entire satisfaction in the discharge of its duties.

FORT ST. GEORGE,
27th May 1898.

(Signed) H. T. WALTERS,
Inspector of Steam-boilers and Prime-movers.

ORDER—No. 1741 W., dated 8th July 1898.

Ordered to be published in the *Fort St. George Gazette* for general information.

2. His Excellency the Governor in Council is of opinion that much useful work has been done during the period under review and that private owners of boilers as well as the public generally may be expected to derive advantage from the suggestions made and precautions taken by the Inspector to ensure the economical and safe working of steam-boilers and prime-movers in the City of Madras.

3. The periodical survey of the engines, boilers and pumps belonging to mofussil municipalities is also likely to prove of the greatest utility, and municipal councils should be instructed to give effect, as far as practicable, to the Inspector's recommendations in regard to the repair and economical working of machinery.

4. The question of giving effect to section 14 of Act III of 1893, in regard to certificates of competency, will be considered separately.

(True Extract.)

(Signed) W. B. DEWINTON,
Secretary to Government.

To the Superintendent, Government Press.
" Sanitary Engineer.
" Local and Municipal Department,

Exd. Shaik Karim.

PUBLIC WORKS DEPARTMENT.

Ootacamund, 6th Sept 1898.

OFFICE NOTE.

From W.

To
The Sanitary Engineer
(unofficially)

with file to be returned Please see the accompanying draft note for orders on the subject of the proposed extension of Madras Act III of 1893 to the mofussil and favour me with your views on the following points:—

- (1) Whether the figures given represent, so far as you know, the present number of boilers in the various districts of the mofussil they are 4 years old almost.
- (2) Whether the Inspector of Boilers could inspect them all during year.
- (3) How you would propose to ensure that all men in charge of boilers in the mofussil should hold certificates, as suggested in your letter No. 1277 dated 19th August.

16
August 1898, if the Act is
not extended.

(4) Whether you recommend
its extension, irrespective of the
number of sailors in a district

(5) Whether you have any
proposals to make:

(ed) W. B. de W.

W

sd/ 6/9/98

19
P.W. (1898) Department.

CURRENT No.

From

The Sanitary Engineer
to Govt

No. 1369.

Dated 14th September 1898

Received 16th — do —

Registered

Enclosures 1 file.

Spare copies

SUBJECT.

Extension of Madras Act III

of 1893 to the mofussil

furnishing the particulars

called for in regard to the —

sd/
103

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

* Returned to Judicial Dept on 27-6-98

8. 100-15-3-97.
33.

No. 1369

GOVERNMENT OF MADRAS,
Office of Sanitary Engineer to Govt.,
Fort St. George, 14th September, 1898.

OFFICE NOTE.

From

THE SANITARY ENGINEER, to Govt.

To

The Secretary to Govt.,
Public Works Department.
(Un-officially).

His No 926 D of 6.9.98.

Query No 1 - From personal knowledge & from the Boiler Inspector's knowledge of many places, the figures are less than what they should be. The number of Boilers in Madras during the same interim has increased 60% - the increase is likely to be as much in the Mofussil, so that there will be about $142 + 60\%$ or say 227 boilers - again it must be noted that if the Act is brought into force in the Mofussil all the Municipal Boilers would appear in this list & the total figure be increased; the figures above quoted however would be about the additional number of boilers to be inspected in the Mofussil.

Query No 2 - The Inspector could not do so - His work last year -

shows thus	
No of Boilers examined in Madras	162
No of days occupied in examination	136
No of days occupied in examination of Municipal (Mofussil) Boilers	99
No of days in office	54
No of Holidays including Sundays	90
deduct 14 Holidays on which Inspector worked	379
	14
	365

It will be noted that each boiler required nearly one day - Some boilers can be examined in less time but where there are ranges of boilers they take much more as one boiler has to be cooled ^{down} at a time & the Inspector must wait; in the interval in some cases he arranges to inspect another boiler somewhere else - He has also to inspect repairs executed & boilers under steam and safety valves, &c. If there were private boilers to inspect in the towns where there are Municipal Boilers, it is possible for the reasons stated above that he could inspect the private boilers & the Municipal boilers in the same time because he could do ^{the former} in the time he has to wait. Such towns however are only seven; five of these are in the Southern Districts - He spent only one day in office per week on an average & this could not be reduced and it will be noticed that he has worked 14 holidays - There is therefore no doubt but that he could not inspect the Mofussil ^(Private) Boilers in addition to those he now does & if Madras goes on increasing its number, it is doubtful if he will long be able to do without assistance - Inspecting boilers is very hot tiring work and cannot be carried on at very high pressure.

Query No 3 - This could be ensured by the Factory Inspectors who inspect factories once a year seeing that each driver possesses a certificate & that it is sent through him (the Factory Inspector) for renewal annually - One preliminary inspection by the Boiler Inspector would have to be made to determine the Horse Power of the machinery, as this is stated in a very loose sort of way in the Factory Inspectors' Reports (see G.O. No 945, Judicial, dated 3rd July 1897). The rules proposed in my No 1277 of 19.8.98 would, of course, require to be modified if certificates are to be required for all drivers in the Presidency, City & Mofussil.

Query No 4 - If the act is to be extended it ought to be so to all districts; indeed some of the boiler owners in Madras complain that this is not done, because cheap & second-hand boilers are taken up & worked at much too high pressures while the superintendence is less effective - The number of boilers in a district is no criterion of

23
need for inspection - Some factories may have only one boiler & that a very large one - again the extension of railways in the Presidency will undoubtedly lead to an extension of the use of steam power in the various districts because of the facilities given for carriage of machinery & the greater facility for repairs. The extension of the whole act is not recommended because of the expense & because of certificates are required to be obtained by the drivers in the Mofussil a large amount of security will be secured.

One result of extending the act would be to include all boilers & thus Municipal Boilers under the act and therefore Municipalities instead of paying Rs 300 to Rs 600 each would pay Rs 24 to 36 each. The loss would be about Rs 3,000. It might be urged that the Boiler Inspector does ^{more} move at Municipal Station than inspect the boilers, and this is true, and therefore the difference between the amount now paid & the fees under the Boiler Act might continue to be exacted.

If the act is to be extended in full two more junior inspectors at least would be required, because one inspector could not inspect as many boilers as one man does in Madras, ^(in the Mofussil) they being scattered over large areas & sometimes only one boiler in a town, in other towns the inspector would have to wait until each boiler of a range one after the other was ready so that 113 or 114 boilers would be the limit - Two junior inspectors at say Rs 250 to Rs 350 each would cost Rs 7,200 per annum or with travelling allowances &c = say Rs 10,000, while the fees recoverable would be about Rs 3,000 and there would be the probable loss in regard to Municipalities as pointed out above. There would also be additional charges at Head Quarters because the responsibilities would be much enlarged & the duties in connection with the act considerably increased.

Query No 5- The undersigned has no proposals to make in regard to the matter under reference but would sum up the above remarks thus, viz:-

- (1). that it is inexpedient on account of the expense involved to extend the operation of the Act as a whole to the Mofussil but that if it is extended it should be so to all districts;
- (2) that it is expedient to extend the examination for certificates to the Mofussil as the expense would probably be covered by the fees and considerable security would be afforded to those connected with steam machinery and boilers.

H. M. S.

Sanitary Engineer to Govt.

BUILDINGS AND ROADS.
CIVIL WORKS.

Government {1898} of Madras.
PUBLIC WORKS.

Recd.

Regd.

1898.

Enclosures

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G.O., No. 2552 W., 4th October 1898.

OCTOBER.

Steam-boilers and Prime-movers Act (III of 1893)

Observing that it seems desirable to reconsider the question of extending the provisions of the — regarding the examination and licensing of boilers, and calling on the District Magistrates to give a further expression of opinion.