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[Despatch Abstract.]

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

Communicating to the Meml. Councils of
Madura, Sindigul, Trichinopoly, Tanjore, ~~Chongee~~
veram, Kurnool and Cuddapah, with remarks
G.O. No. 1469 M.
reviewing the first annual — and ordering
its publication in the Fort Saint George
Gazette.

V. C. M.

BACK PAPERS.

O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

Government {1898} of Madras. LOCAL AND MUNICIPAL.

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} 1898.

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G.O., No. 1469 M., 17th August 1898.

AUGUST.

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

Communicating to the Municipal Councils of Madura, Dindigul, Trichinopoly, Tanjore, Conjeeveram, Kurnool and Cuddapah, with remarks, G.O., Public Works Department, reviewing the first annual — and ordering its publication in the Fort St. George Gazette.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—the following paper :—

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

Read—the following paper :—

From J. A. JONES, Esq., M.F.M. 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 organization 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) A. S. RUSSELL,
Under Secretary to Government.

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

ORDER—No. 1469 M., dated 17th August 1898.

Communicated to the Municipal Councils of Madura, Dindigul, Trichinopoly, Tanjore, Conjeeveram, Kurnool and Cuddapah, who are requested to give effect, as far as practicable, to the Inspector's recommendations in regard to the repair and economical working of machinery.

(True Extract.)

for Secretary to Government.

To the Chairman, Municipal Council, Madura,	} through the Collectors concerned.
" " " Dindigul,	
" " " Trichinopoly,	
" " " Tanjore,	
" " " Conjeeveram,	
" " " Kurnool,	
" " " Cuddapah,	

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BUILDINGS AND ROADS.
CIVIL WORKS.

Government (1898) of Madras.
PUBLIC WORKS.

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

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order No 1469 Md 17/8/98

JULY.

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Tanjore, Coimbatore, Kurnool and Cuddalore, who are requested
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as far as practicable.

12/5/98

H T S D

To the Chairman, Madras Municipal Council
Dindigul Municipal Council
Trichinopoly Municipal Council
Tanjore Municipal Council
Coimbatore Municipal Council
Kurnool Municipal Council
Cuddalore Municipal Council

Report of the Inspector of Steam-boilers and Prime-movers, Madras
Reviewing the ^{for Annual} for 1897-98 and ordering its publication in the Fort St. George
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3/9/98

12/5/98

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PUBLIC WORKS DEPARTMENT.

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Civil Works.

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(True Extract.)

A. K. M. S.

Under Secretary to Government.

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

Exd. Shaik Karim,

First sent to Press.

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