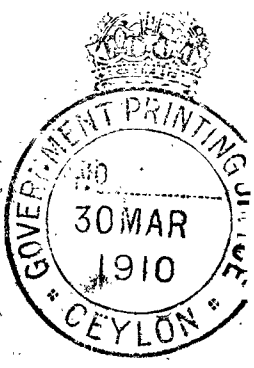
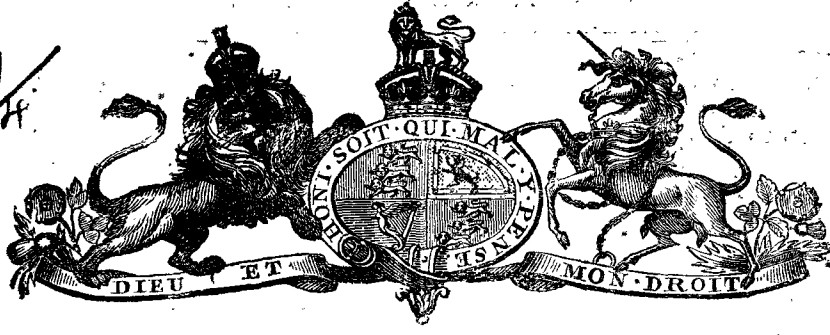


Yong...
 1910
 11/4
 AB



Ceylon Government Gazette

REGISTERED AS A NEWSPAPER IN CEYLON.

Published by Authority.

No. 6,361 — THURSDAY, MARCH 24, 1910.

PART I.—General: Minutes, Proclamations, Appointments, and General Government Notifications.
 PART II.—Legal and Judicial.
 PART III.—Provincial Administration.
 PART IV.—Land Settlement.
 PART V.—Mercantile, Marine, Municipal, Local, &c.

Separate paging is given to each Part in order that it may be filed separately.

Part I.—Minutes, Proclamations, Appointments, &c.

	PAGE		PAGE
Minutes by the Governor ..	—	Miscellaneous Departmental Notices ..	28
Proclamations by the Governor ..	—	Notices calling for Tenders ..	28
Appointments by the Governor ..	267	Contracts for Supplies of Stores ..	—
Appointments, &c., of Registrars ..	268	Sales of Unserviceable Articles ..	29
Government Notifications ..	269	Registrar-General's Vital Statistics ..	Suppl. & 20
Revenue and Expenditure Returns ..	—	Meteorological Returns ..	Suppl
Notices by the Currency Commissioners ..	—	Books registered under Ordinance No. 1 of 1888 ..	Suppl

SUPPLEMENT :

The INDEX to the Gazette for the second half of 1909.

APPOINTMENTS, &c., BY THE GOVERNOR.

No. 116 of 1910.

HIS EXCELLENCY THE GOVERNOR has been pleased to make the following appointments:—

The Hon. Mr. H. L. CRAWFORD, C.M.G., to act, in addition to his present duties, as a Director of the Widows' and Orphans' Pension Fund, with effect from March 14, 1910, during the absence of the Hon. Mr. L. W. BOOTH on sick leave or until further orders.

Mr. H. R. FREEMAN to the office of Government Agent, Northern Province; Fiscal, Collector of Customs, and Receiver of Wrecks for the Northern Province; Master Attendant for the several ports in the Northern Province; Superintendent of the Jaffna Prison; Local Authority under the Petroleum Ordinance for the Northern Province; and Member of the Board of Health, Northern Province, with effect from March 30, 1910, until further orders.

Mr. W. E. THORPE to act as Government Agent Southern Province; Fiscal, Collector of Customs and Receiver of Wrecks for the Southern Province; Superintendent of the Prison at Galle; Visitor of the Prison at Tangalla; Chairman, Municipal Council, Galle; Member of the Board of Health Galle; Local Authority under the Petroleum Ordinance within the limits of the Municipality of Galle; and Local Authority under the Petroleum Ordinance for the Southern Province, from March 30 to April 12, 1910, inclusive, during the absence of Mr. C. M. LUSHINGTON on leave or until further orders, in addition to his own duties.

Mr. JAMES VAN LANGENBERG to act as Solicitor-General, Visitor of the Prisons in the Western Province, and a Commissioner of the Loan Board, with effect from March 30, 1910, during the absence of Mr. WALTER PEREIRA, K.C., on leave or until further orders.

Mr. L. MAARTENSZ to be an Additional District Judge for Colombo from March 25 to April 8, 1910, inclusive, in addition to his own duties.

Mr. DOMINGO DE SILVA to be Additional District Judge, Kalutara, from March 24 to April 7, 1910, inclusive.

Mr. M. M. WEDDERBURN to be Additional District Judge, Kurunegala, from March 20 to April 2, 1910, inclusive, in addition to his own duties.

Mr. J. R. MOLLIGODA to be Additional District Judge, Kegalla, for March 24, 1910.

Mr. A. V. VAN LANGENBERG to act as Commissioner of Requests and Police Magistrate, Gampola, from March 25 to 29, 1910, inclusive, during the absence of Mr. W. DE LIVEIRA from the station or until further orders.

Messrs. D. J. BLYTHE and C. A. GRANT to be Visitors of the Gampola and Pussellawa hospitals respectively.

Mr. O. BALEAN to be a Visitor to the Nawalapitiya hospital.

Mr. H. W. GAVIN to be a Visitor to the Watawala dispensary.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary.

Colonial Secretary's Office,
Colombo, March 24, 1910.

No. 117 of 1910.

IT is hereby notified that in terms of the Minute of February 25, 1909, His Excellency the Governor has been pleased to appoint the following officers to officiate in the class named with effect from January 14, 1910:—

Class III.

Mr. G. F. FORREST.

Mr. W. W. SHYMOUR.

Mr. SHYMOUR will cease to officiate in Class III, with effect from January 14, 1910.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary.

Colonial Secretary's Office,
Colombo, March 21, 1910.

No. 118 of 1910.

IT is hereby notified that in terms of the Minute of February 25, 1909, His Excellency the Governor has been pleased to appoint the following officer to officiate in the class named with effect from January 14, 1910:—

Class III.

Mr. T. R. E. LOFTUS.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary's Office, Colonial Secretary,
Colombo, March 21, 1910.

No. 119 of 1910.

WITH reference to Notification No. 31 of 1910, published in the Gazette of January 21, 1910, it is hereby notified that the King's Exequatur empowering Mr. W. SHAKESPEARE to act as Consul of Japan at Colombo has received HIS MAJESTY'S signature, and that HIS EXCELLENCY THE GOVERNOR has been pleased to recognize Mr. SHAKESPEARE as Consul of Japan at Colombo.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary's Office, Colonial Secretary,
Colombo, March 24, 1910.

No. 120 of 1910.

HIS EXCELLENCY THE GOVERNOR has been pleased to recognize Mr. REINHARDT FREUDENBERG, provisionally, as Acting Imperial and Royal Austro-Hungarian Consul at Colombo, during the absence from Ceylon of Mr. PHILIPP FREUDENBERG.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary's Office, Colonial Secretary,
Colombo, March 23, 1910.

No. 121 of 1910.

HIS EXCELLENCY THE GOVERNOR has been pleased to recognize Mr. SIEGMUND FREUDENBERG, provisionally, as Acting Consul for Brazil at Colombo, during the absence of Mr. W. FREUDENBERG from the Island.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary's Office, Colonial Secretary,
Colombo, March 23, 1910.

APPOINTMENTS, &c., OF REGISTRARS.

HIS EXCELLENCY THE GOVERNOR has been pleased to make the following appointments:—

Mr. PONTIAN PIERIS to act as Registrar of Lands, Kandy, for two days from the 30th instant, during the absence of Mudaliyar J. G. DE SILVA, on leave.

Mr. M. A. YOUNG to be Additional Assistant Provincial Registrar of Births and Deaths and of Marriages (General) of the Colombo District of the Western Province, with effect from March 18, 1910, vice Mr. H. E. NEWNHAM. His office will be at the Colombo Kachcheri.

DON CAROLIS JAYATILAKA to act as Registrar of Births and Deaths of Udugampola division and of Marriages (General) of Dasiya pattu of Alutkuru

Korale North division, in the Colombo District of the Western Province, for thirty days, with effect from March 23, 1910. His office will be at Millagahawatta in Udugampola.

Mr. GUY STANLEY WOODMAN to be Additional Assistant Provincial Registrar of Births and Deaths and of Marriages (General) of the Kandy District of the Central Province, with effect from April 1, 1910. His office will be at the Kandy Kachcheri.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary's Office, Colonial Secretary,
Colombo, March 21, 1910.

THE following appointments under section 3 of Ordinance No. 23 of 1900 and section 7 of Ordinance No. 19 of 1907 are hereby notified :—

The Provincial Registrar, Northern Province, has appointed Mr. ARUNASALAM KANAKASAPAI to act as Registrar of Births and Deaths of Uduvil division and of Marriages (General) of Valikamam North division, in the Jaffna District of the Northern Province, for two weeks from March 16, 1910, during the absence of Registrar, G. H. LAWRENCE, on sick leave. His office will be at the residing garden of Registrar in Uduvil.

The Provincial Registrar, Eastern Province, has appointed Dr. SINNATAMBY SARAVANAMUTTU to act as Registrar of Births and Deaths of Batticaloa town, in the Batticaloa District of the Eastern Province, for March 14, 1910, during the absence of Dr. C. S. RATNAM on other duties. His office will be at the Civil Hospital, Batticaloa.

The Provincial Registrar, Badulla, has appointed DISSANAYAKE MUDIYANSELAGE PUNCHI BANDA to act as Registrar of Marriages (General) of Udukinda division, in the Badulla District of the Province of Uva, for four days from March 15, 1910, during the absence of R. M. SUDU BANDA on other duty. His office will be at Kirimatupola in Kahattewela.

The Provincial Registrar, Ratnapura, has appointed WANNAKURALLAYE PODIMAHATMAYA to act as Registrar of Births and Deaths of Elapata division and of Marriages (General) of Nawadun korale division, in the Ratnapura District of the Province of Sabaragamuwa, for twelve days from March 20, 1910, during the absence of Registrar, W. R. HEENMAHATMAYA, on leave. His office will be at Alutgedarawatta in Porahitagama.

The Assistant Provincial Registrar, Mannar, has appointed Mr. KUMARASINKA MUTALIYAR MARISAPILLAI to act as Registrar of Births and Deaths of Nanaddan West division and of Marriages (General) of Nanaddan division, in the Mannar District of the Northern Province, for two weeks from March 15, 1910,

during the absence of Registrar, P. LAWRENCEPILLAI, on leave. His office will be at Withanaivalavu in Nanaddan.

The Assistant Provincial Registrar, Galle, has appointed DON HENDRICK WIJEWICKREMA GUNAWARDANE to act as Registrar of Births and Deaths of Telikada division and of General Marriages of Ganga-boda pattu division, in the Galle District of the Southern Province, for two days from March 22, 1910, during the absence of J. A. WICKREMASINHA, on leave. His office will be at Ratmalakolawatta in Lelkada.

The Assistant Provincial Registrar, Hambantota, has appointed DON JAMES DE SILVA SUDUSINHA to act as Registrar of Births and Deaths of Western Walakada division and of Marriages (General) of Magam pattu division, in the Hambantota District of the Southern Province, for six days from March 14, 1910, during the absence of D. D. KULATUNGA, on leave. His office will be at Tennachchilawewuwatta at Wanduruppa.

The Assistant Provincial Registrar, Puttalam-Chilaw, has appointed Mr. D. D. DE ZOYSA of Chilaw to act as Deputy Medical Registrar of Births and Deaths of Chilaw town, in the Chilaw District of the North-Western Province, for sixteen days from March 16, 1910, during the absence of Mr. R. SIEBEL, transferred. His office will be at the Chilaw Civil Hospital.

The Assistant Provincial Registrar, Puttalam-Chilaw, has appointed W. ANTHONY FERNANDO JAYATILLEKE of Wennappuwa to act as Registrar of Births and Deaths of Kammal pattu and of Marriages (General) of Pitigal Korale South, in the Chilaw District of the North-Western Province, for three days from March 20, 1910, during the absence of K. JOHN FERNANDO, on leave. His office will be at the permanent Registrar's Office, Wennappuwa.

P. ARUNACHALAM,
Registrar-General.

Registrar-General's Office,
Colombo, March 23, 1910.

GOVERNMENT NOTIFICATIONS.

"THE CROWN LANDMARKS ORDINANCE, 1909."

HIS EXCELLENCY THE GOVERNOR, in exercise of the power vested in him by section 3 of the above-named Ordinance, has been pleased to prescribe that the Crown landmarks referred to in the said section shall be of the following materials and sizes, namely :—

1. Cement concrete blocks, either 6 in. by 6 in. on top and 8 in. by 8 in. at the bottom and 2 ft. deep, or 3 in. by 3 in. on top and 6 in. by 6 in. at the bottom and 1 ft. 6 in. deep, bearing a broad arrow and a hole at the centre ; or
2. Rough stone blocks with the upper 4 in. dressed, 6 in. by 6 in. and 1 ft. 6 in. deep, bearing a broad arrow and hole at the centre ; or
3. A dressed portion of live rock, 6 in. by 6 in. bearing a broad arrow.
4. In remote districts, and in soils where the above marks would not be sufficiently permanent, with the written authority of the Surveyor-General first had and obtained, three cuts on large trees, or charcoal pits 6 in. diameter and 18 in. deep may be substituted for the masonry blocks described above, or such other marks as may be found suitable to the special circumstances of the case.

N.B.—Specimens of the cement concrete blocks and of the stone blocks have been deposited at each Kachcheri for general information.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary.

Colonial Secretary's Office,
Colombo, March 23, 1910.

IT is hereby notified that an examination under the Regulations of February 25, 1909, for gentlemen in the Civil Service will be held in the Council Chamber on Monday, April 18, 1910, at 10.30 A.M., and following days, namely:—

Monday, April 18	.. Sinhalese	Thursday, April 21	.. Law
Tuesday, April 19	.. Law	Friday, April 22	.. Accounts
Wednesday, April 20	.. Law	Saturday, April 23	.. Tamil

The examination in the Criminal Procedure Code prescribed under the Minute of March 26, 1900, for officers in the Fourth Class of the Civil Service, will also be held on April 19, 1910, as well as at the Kandy Kacheheri.

It is also hereby notified that candidates will be given the option of using Codes in the examination in the Criminal Procedure Code and the Penal Code; they must, however, state when sending in their names what their decision is, as the character of the papers set for those who use Codes and those who do not will be different.

The General Rules and Instructions for Guidance in the Examination of Accounts (the Audit Regulations) have been removed from the list of text books prescribed for the Second Examination in Accounts.

The examination for officers in the Police Department, and the *vivá voce* examination in the native languages for officers in the Public Works Department, the Irrigation Department, the Forest Department, and the Railway Department will be held at the same time and place.

Candidates are required to send in their names not later than March 31, 1910.

Gentlemen in the Civil Service should state in their applications whether they are presenting themselves for the first or second examination, and whether they intend taking up Sinhalese or Tamil, and whether they wish to have the option of using Codes.

The hours of examination will be from 10.30 A.M. to 1.30 P.M. and from 2 P.M. to 5 P.M., exclusive of the *vivá voce* examinations, which will be specially arranged for.

By His Excellency's command,

Colonial Secretary's Office,
Colombo. February 25, 1910.

HUGH CLIFFORD,
Colonial Secretary.

ON the recommendation of the Principal Civil Medical Officer, His Excellency the Governor has been pleased to approve the under-mentioned scale of charges for the maintenance of lunatics, not being paupers, in the Government Lunatic Asylum at Colombo, with effect as from and after April 1, 1910, from which date the Notification dated November 26, 1885, published in the *Gazette* of November 27, 1885, is hereby cancelled:—

Under Clause 14 of Ordinance No. 1 of 1873.

1st Class.—One rupee a day for Europeans. This charge does not include medical comforts and extras when required, nor clothing, which will be provided when paid for.

2nd Class.—Cents seventy-five a day for Europeans and Burghers

3rd Class.—Cents fifty-five a day for natives.

4th Class.—Cents thirty a day for natives.

In the charges of the 2nd, 3rd, and 4th classes all necessary extras and clothing are included.

In all cases funeral expenses, if incurred, will be charged extra.

On the admission of private patients, a ticket, according to the form subjoined, guaranteeing the payment of the above charges, will be required, signed by some person of some respectability, who will be held responsible to Government for the due payment of the same.

By His Excellency's command,

Colonial Secretary's Office,
Colombo, March 17, 1910.

HUGH CLIFFORD,
Colonial Secretary.

To the Medical Superintendent of the Lunatic Asylum, Colombo.

Be pleased to admit _____ into the Government Lunatic Asylum, Colombo, as a patient of the _____ class, the undersigned guaranteeing the payment of _____ a day, and funeral expenses if incurred.

*The undersigned further guarantees the payment of all further sums of money which may be expended in procuring for the above-named any additional comforts and extras which it may be considered necessary to supply him with.

Date: _____, 19____.

Signature: _____.

Address: _____.

* This only applies in the case of patients of the first class.

It is hereby notified that His Excellency the Governor, in exercise of the power vested in him by section 4 of "The Mines and Machinery Protection Ordinance, 1896," and with the advice of the Executive Council, has been pleased to make the rules set forth in the schedule hereto, with effect from April 1, 1910.

By His Excellency's command,

Colonial Secretary's Office,
Colombo, February 25, 1910.

HUGH CLIFFORD,
Colonial Secretary.

SCHEDULE.

Rules framed under Section 4 of Ordinance No. 2 of 1896 to provide for the Regulation and Inspection of Mines and Machinery.

A.—PRELIMINARY.

1. These rules may be called the Boiler Examination Rules.
2. In these rules—
 - (a) "The Ordinance" means the Ordinance No. 2 of 1896.
 - (b) "Section" means a section of the said Ordinance.
 - (c) "Examination" means the examination of land boilers under the Ordinance.
 - (d) "Engineer Surveyor" means the person duly appointed from time to time by His Excellency the Governor to act as such for the purpose of these rules.
 - (e) "Certificate" means the Boiler Certificate (Form D) published in the *Government Gazette* No. 6,260 of September 11, 1908, under the rules relating to mines and factories under section 4 of Ordinance No. 2 of 1896.

B.—LICENSED ENGINEERS.

3. A licensed engineer is an engineer who has satisfied Government that he has had an engineer's training, holds the necessary qualifications, and whose name has been published in the *Government Gazette* as one holding a Government license to inspect and pass land boilers under the Ordinance.
4. Each licensed engineer shall keep the following records :—
 - (a) A book containing form of certificates in triplicate on Form D.
 - (b) A book containing a detailed account of every examination made by him.
 - (c) A register of boilers in the following form :—

Name of Owner or Agent.	Place where Boiler is situated.	Registry Number and Description of Boiler and Age.	Nominal Horse-power.	When, where, and by whom made.	When and where last repaired.	Date of Grant of License.	Maximum Pressure at which Boiler may be worked.	Time for which this License is to be in force.	Remarks.

C.—EXAMINATION.

5. A licensed engineer is required by the Ordinance to fix the pressure to be allowed on boilers. In performing this very responsible and onerous duty he must be very careful, as in the event of accident it will be necessary for him to prove clearly that he used due caution. On the one hand he must be careful as regards safety, and on the other hand he must not unduly reduce the pressure on a boiler.
6. A licensed engineer should fix the working pressure for boilers by a series of calculations of the strength of the various parts and according to the workmanship and material.
7. In the cases of new boilers made in Ceylon, the licensed engineer may receive and examine plans and particulars of boilers before the commencement of manufacture with the object of preventing questions arising after the boilers are finished; but in all such cases the plans and specifications, &c., must be previously sanctioned by the Government Engineer Surveyor, and no boiler must be passed by a licensed engineer unless such sanction has been obtained.
8. When the Government Engineer Surveyor has sanctioned plans of new boilers made in Ceylon and returned them to the licensed engineer who makes the inspection on behalf of the owners, it is the duty of the licensed engineer to be careful in making the examination when the boiler is ready, and before issuing a certificate to see that the whole work has been properly and efficiently carried out.
9. In all cases of alterations and repairs to old boilers which have been approved of by the licensed engineer, it is his duty to see that the same have been efficiently carried out before issuing his certificate.

10. If a licensed engineer is at any time doubtful as to the thickness of any of the plates of an old boiler in order to make the necessary calculations prior to testing the boiler by hydraulic pressure, he should satisfy himself by having either holes bored or rivets knocked out, but in such cases he should use his own discretion.

11. A licensed engineer shall not declare a boiler to be safe unless—

(a) He is fully informed as to its construction, material, and workmanship, or unless.

(b) He is furnished with a certificate from the Board of Trade or a Chief Engineer of a recognized British Boiler Insurance Company. He should therefore be very careful how he ventures to give a certificate.

D.—IRON BOILERS.

12. In case of new boilers the licensed engineer may allow a stress not exceeding 7,000 lb. per square inch of net section on solid iron screwed stays supporting flat surfaces, but the stress should not exceed 5,000 lb. when the stays have been welded or worked in the fire.

13. The area of diagonal stays are found in the following way :—

Find the area of a direct stay needed to support the surface, multiply this area by the length of the diagonal stay, and divide the product by the length of a line drawn at right angles to the surface supported by the end of diagonal stay ; the quotient will be area of the diagonal stay required.

14. When gusset stays are used, their area should be in excess of that found in the above way. A stress of 6,000 lb. may be allowed on the net section of iron stay tubes, providing that the net thickness is no case less than quarter inch.

15. When the threads of longitudinal stays are finer than six per inch, the depth of the external nuts should be at least $1\frac{1}{2}$ times the diameter of the stay.

16. When the tops of combustion boxes or other parts of a boiler are supported by solid rectangular girders, the following formula should be used for finding the working pressure to be allowed on the girders, assuming that they are not subjected to a greater temperature than the ordinary heat of steam, and in the case of combustion chambers that the ends are fitted to the edges of the tube plate and the back plate of the combustion box :—

$$\frac{C \times d^2 \times T}{(W - P) D \times L} = \text{Working pressure.}$$

W = Width of combustion box in inches.

P = Pitch of supporting bolts in inches.

D = Distance between the girders from centre to centre in inch.

L = Length of girder in feet.

d = Depth of girder in inches.

T = Thickness of girder in inches.

N = Number of supporting bolts.

$$C = \frac{N + 1,200}{N + 1} = \text{when the number of bolts is odd.}$$

$$C = \frac{(N + 1) 1,200}{N + 2} = \text{when the number of bolts is even.}$$

17. The working pressure for the supporting bolts and for the plate between them should be determined by the rules for ordinary stays and plates.

18. The pressure on plates forming flat surfaces is found by the following formula :—

$$\frac{C \times (T + 1)^2}{S - 6} = \text{working pressure.}$$

T = Thickness of the plate in sixteenths of an inch.

S = Surface supported in square inches.

C = Constant according to the following circumstances.

C = 192 when the plates are not exposed to the impact of heat or flame, and the stays are fitted with nuts on both sides of the plates, and doubling strips not less in width than two-thirds the pitch of the stays and of the thickness of the plates, are securely riveted to the outside of the plates they cover.

C = 168 when the plates are not exposed to the impact of heat or flame, and the stays are fitted with nuts on both sides of the plates, and with washers not less in diameter than two-thirds the pitch of the stays and of the same thickness as the plates, securely riveted to the outside of the plates they cover.

C = 132 when the plates are not exposed to the impact of heat or flame, and the stays are fitted with nuts on both sides of the plates, and with washers outside the plates at least three times the diameter of the stay, and two-thirds the thickness of the plates they cover.

C = 120 when the plates are not exposed to the impact of heat or flame and the stays are fitted with nuts on both sides of the plates.

C = 90 when the tube plates are not exposed to the direct impact of heat or flame and the stays are fitted with nuts.

- C = 70 when tube plates are not exposed to the direct impact or flame and the stay tubes are screwed and expanded.
- C = 70 when the plates are not exposed to the impact of heat or flame and the stays are screwed into the plates and riveted over.
- C = 60 when the plates are exposed to the impact of heat or flame with steam in contact with the plates, and the stays fitted with nuts and washers, of the latter being at least three times the diameter of the stay, and two-thirds the thickness of the plates they cover.
- C = 54 when the plates are exposed to the impact of heat or flame with steam in contact with the plates and the stays fitted with nuts only.
- C = 80 when the plates are exposed to the impact of heat or flame, with water in contact with the plates and the stays screwed into the plates and fitted with nuts.
- C = 60 when the plates are exposed to the impact of heat or flame with water in contact with the plates and the stays screwed into the plates, and having the ends riveted over to form substantial heads.
- C = 36 when the plates are exposed to the impact of heat or flame, with steam in contact with the plates, with the stays screwed into the plates, and having the ends riveted over to form substantial heads.

19. When the plates are not exposed to the impact of heat or flame, and doubling plates covering the whole of the flat surfaces are riveted to the plates, the working pressure may be found by the following formula :—

$$\frac{C(T + 1)^2 + C(T_1 + 1)^2}{S - 6} = \text{Working pressure.}$$

T = Thickness of the plate in sixteenths of an inch.

T₁ = Thickness of the doubling plate in sixteenths of an inch.

S = Surface supported in square inches.

C = Constant applicable to the case as given above.

20. When doubling plates do not cover the whole of the flat surfaces, but are fitted between the rows of supporting stays, the strength allowed for them should be two-thirds only of that which would be allowed for similar doubling plates extending beyond and embracing the supporting stays.

21. In calculating the working pressure of the portion of tube plates between the boxes of tubes, the value of S in the above formula should be found as follows :—

$$\frac{D^2 + d^2}{2} = S.$$

Where D = the horizontal pitch of the stay tubes in inches, and d = the vertical pitch of the stay tubes in inches. The pitches should be measured from centre to centre of the stay tubes, and no deduction should be made for any tubes in the contained surface.

In the body of tube plates the value of S may be found in the ordinary way, and the area of the tubes in the space bounded by the stay tubes may be deducted.

22. In cases where the plates are stiffened by T or L irons, and a greater pressure is required for the plates than is allowed by the use of the above constants, the case should be submitted for the consideration of the Government Engineer Surveyor.

23. When a circular flat end is bolted or riveted to an outside ring or flange of a cylindrical shell, S in the formula may be taken as the area of the square inscribed in the circle passing through the centres of the bolts or rivets securing the end, provided the ring or flange is of sufficient thickness.

24. When the riveted ends of screwed stays are much worn or when the nuts are burned, the constants should be reduced, but the licensed engineer must act according to the circumstances that present themselves at the time of inspection, and it is expected that in cases where the riveted ends of screwed stays in the combustion boxes and furnaces are found in this state, it will be often necessary to reduce the constants 60 to about 36.

25. A licensed engineer should not in any case allow a greater compressive stress on the edge of the tube plates than 11,000 lb. per square inch, which is that used in the following formula :—

$$\frac{(D - d) T \times 22,000}{W \times D} = \text{Working pressure.}$$

D = Least horizontal distance between centre of tubes in inches.

d = Inside diameter of ordinary tubes in inches.

T = Thickness of tube plate in inches.

W = Extreme width of combustion box in inches between the tube plate and back of fire box or distance between combustion box tube plates when boiler is double ended and the box common to the furnaces at both ends.

26. A licensed engineer shall take care that boilers, the outside of which cannot be seen, are cleared of all covering and fittings for inspection whenever the licensed engineer considers it necessary. It will often be found necessary to reduce the pressure, unless the boilers are partially cleared from their seats to enable the licensed engineer to judge of their condition. If the owners in any special case have any good reasons for not wishing to clear them when the licensed engineer

requires it, the licensed engineer should submit the whole case in detail to the Government Engineer Surveyor for his consideration. The licensed engineer must recollect that he is not to certify as efficient any boiler respecting which he cannot thoroughly satisfy himself.

27. A licensed engineer shall record in his inspection book the dates on which boilers are inspected, when and to what extent cleared from brickwork, and whether the boilers were set or not when examined, and if not set, where they were examined. Boilers which have been cleared should in all cases be subjected to the hydraulic test before the brickwork is rebuilt.

28. Boilers well constructed, well designed, and made of good material should have an advantage in the matter of working pressure over boilers inferior in any of the above respects, as, unless this is done, the superior boiler is placed at a disadvantage, and good workmanship and material will be discouraged. The following rules are therefore prescribed.

29. When cylindrical boilers are made of the best material with all the rivet holes drilled in place and all the seams fitted with double butt straps, each of at least five-eighths the thickness of the plates they cover, and all the seams at least double riveted with rivets having an allowance of not more than 75 per cent. over the single shear, and provided that the boilers have been open to inspection during the whole period of construction, then 5 may be used as the factor of safety. The tensile strength of the iron is to be taken as equal to 47,000 lb. per square inch. with the grain and 40,000 lb. across the grain. But when the above conditions are not complied with, the additions in the following scale must be added to the factor 5, according to the circumstances of each case. If, however, the iron be tested, and the elongation measured in a length of 10 in. is not less than 14 per cent. with, and 8 per cent. across, the grain, and the licensed engineers are otherwise satisfied, as to the quality of the plates and rivets, 4.5 may be used as the factor of safety instead of 5, in which case the minimum actual tensile strength of the plates should be used in calculating the working pressure. When the above conditions are not complied with, the additions in the following scale should be made to the factor of safety, according to the circumstances of each case:—

- | | | |
|----|-----|--|
| A* | ·15 | To be added when all the holes are fair and good in longitudinal seams, but drilled out of place after bending. |
| B* | ·3 | To be added when all the holes are fair and good in the longitudinal seams, but drilled before bending. |
| C | ·3 | To be added when all the holes are fair and good in the longitudinal seams, but punched after bending. |
| D | ·5 | To be added when all the holes are fair and good in the longitudinal seams, but punched before bending. |
| E | ·75 | To be added when all the holes are not fair and good in the longitudinal seams. |
| F | ·1 | To be added if the holes are all fair and good in the circumferential seams, but drilled out of place after bending. |
| G* | ·15 | To be added if the holes are fair and good in the circumferential seams, but drilled before bending. |
| H | ·15 | To be added if the holes are fair and good in the circumferential seams, but punched after bending. |
| I* | ·2 | To be added if the holes are fair and good in the circumferential seams, but punched before bending. |
| J† | ·2 | To be added if the holes are not fair and good in the circumferential seams. |
| K | ·2 | To be added if double butt straps are not fitted to the longitudinal seams, and the said seams are lap and double riveted. |
| L | ·1 | To be added if double butt straps are not fitted to the longitudinal seams, and the said seams are lap and treble riveted. |
| M | ·3 | To be added if only single butt straps are fitted to the longitudinal seams, and the said seams are double riveted. |
| N | ·15 | To be added if only single butt straps are fitted to the longitudinal seams, and the said seams are treble riveted. |
| O | 1·0 | To be added when any description of joint in the longitudinal seams is single riveted. |
| P | ·1 | To be added if the circumferential seams are fitted with single butt straps and are double riveted. |
| Q | ·2 | To be added if the circumferential seams are fitted with single butt straps and are single riveted. |
| R | ·1 | To be added if the circumferential seams are fitted with double butt straps and are single riveted. |
| S* | ·1 | To be added if the circumferential seams are lap and are double riveted. |
| T | ·2 | To be added if the circumferential seams are lap and are single riveted. |

- U 25 To be added when the circumferential seams are lap and the strakes of plates are not entirely under or over.
- V† 3 To be added when the boiler is of such a length as to fire from both ends, or is of unusual length, as in the case of the flue boilers; and the circumferential seams fitted as described opposite P, R, and S, but when the circumferential seams are as described opposite Q, T, and U, 4 should be added.
- W† 4 To be added if the seams are not properly crossed.
- X† 4 To be added when the iron is in any way doubtful, and the licensed engineer is not satisfied that it is of the best quality.
- Y§ 1.65 To be added if no certificate is produced from Board of Trade, a Chief Engineer of a recognized British Boiler Insurance Company, or if the boiler was not open to inspection during the whole period of its construction by the Board of Trade or by the Inspectors of any recognized British Boiler Insurance Company.

* When the holes are to be rimmed or bored out in place, the case should be submitted to the Government Engineer Surveyor as to the reduction or omission of A, B, G, and I as heretofore.

When marked † the factor may be increased still further if the workmanship or material is such as in the licensed engineer's judgment renders such increase necessary.

‡ When the middle circumferential seams are double strapped and double riveted or lap and treble riveted, and the calculated strength not less than 65 per cent. of the solid plate S 1 and V 3 may be omitted. The end circumferential seams in such cases should be at least double riveted.

§ The recognition of a certificate under this rule is limited to new boilers when first licensed and to boilers not more than ten years old, provided they have not shown any defect during that period; should the plates of a boiler have become pitted or unduly scaled when exposed to the impact of flame, or should the material have become deteriorated, or if the boiler cannot be efficiently examined internally, it will be in the discretion of the licensed engineer to increase the factor of safety as above.

30. The strength of ordinary joints is found by the following method:—

$$\frac{(\text{Pitch} - \text{Diameter of rivet}) \times 100}{\text{Pitch}} = \text{Percentage of strength of plate at joint as compared with the solid plate.} \parallel$$

|| For the maximum pitch of rivets, see Appendix A, page 16.

$$31. \frac{(\text{Area of rivet} \times \text{No. of rows of rivets}) \times 100}{\text{Pitch} \times \text{thickness of plate}} = \text{Percentage of strength of rivets as compared with the solid plate.} \parallel$$

¶ If the rivets are exposed to double shear, multiply the percentage as found by 1.75.

32. Then take iron as equal to 47,000 lb. ** per square inch, and using the smaller of the two percentages as the strength as the joint, and adopting the factor of safety as found from the preceding scale, then:—

$$\frac{47,000 \times \text{least per cent. strength of joint} \times 2 \times \text{plate thickness in inches}}{\text{Inside diameter of the boiler in inches} \times \text{factor of safety} \times 100} =$$

Pressure to be allowed per square inch on the safety-valve. (See the formula as given in detail in Appendix A.)

** Or the minimum tensile strength if it has been tested.

33. In case of ordinary zigzag riveting, the strength through the plate diagonally between the rivets is equal to that horizontally between the rivets when diagonal pitch = $\frac{1}{2}$ horizontal pitch + $\frac{1}{3}$ diameter of rivet.

34. Plates that are drilled in place should be taken apart and the burr taken off and the holes slightly countersunk from from the outside.

35. Butt straps should be cut from plates and not from bars, and should be of as good a quality as the shell plates, and those for the longitudinal seams should be cut across the fibre. When the straps are drilled in place, they should be taken apart and the burr taken off and the holes slightly countersunk from the outside.

36. When single butt straps are used, they should be one-eighth thicker than the plates they cover.

37. The diameter of the rivet should in no case be less than the thickness of the plates of which the shell is made, but it will be found when the plates are thin, or when lap joints or single butt straps are adopted, that the diameter of the rivets should be in excess of the thickness of the plates.

38. Formulæ for the riveted joints and maximum pitches of rivets and also diagrams of different descriptions of riveted joints will be found in Appendix A.

39. Dished ends, unless of thickness required for a flat end, should be stayed; but when they are equal to the pressure needed, when considered as portions of spheres, the stays, when solid, may have a stress of 14,000 lb. per square inch of net section, but the stress should not exceed 10,000 lb. when the stays have been welded, and such stays should be properly distributed. If dished ends are not equal to the pressure needed when considered as portions of spheres, they should be stayed as flat surfaces.

40. Hemispherical ends subjected to internal pressure may be allowed double the pressure that is suitable for a cylinder of the same diameter and thickness. The ends should be formed of not less than four pieces.

41. Compensating rings of at least the same effective sectional area as the plate cut out should be fitted round all manholes and openings, and in no case should the rings be less in thickness than the plates to which they are attached. The openings in the shells of cylindrical boilers should have their shorter axes placed longitudinally. It is very desirable that the compensating rings round openings in flat surfaces should be made of L or T iron. Cast iron doors should not be passed.

42. The neutral part of the boiler shells under steam domes should be efficiently stiffened and stayed, as serious accidents have arisen from the want of such precautions.

43. New boilers should be tested by hydraulic pressure to twice the working pressure in the presence and to satisfaction of the licensed engineers.

44. In the case of old boilers the licensed engineer must use his own judgment as to the necessary pressure to be applied; but this must in no case be less than $1\frac{1}{2}$ times the working pressure he grants on his certificate.

45. Circular furnaces with the longitudinal joints welded or made with single butt straps double riveted or double butt straps single riveted—

$$\frac{90,000 \times \text{the square of the thickness of the plate in inches}}{(\text{Length in feet} + 1) \times \text{diameter in inches}} = \text{Working pressure}$$

per square inch, provided it does not exceed that found by the following formula:

$$\frac{9,000 \times \text{thickness in inches}}{\text{diameter in inches}} = \text{Working pressure per square inch.}$$

The second formula limits the crushing stress on the material to 4,500 lb. per square inch.

The length is to be measured between the rings if the furnace is made with rings.

If the longitudinal joints instead of being butted are lap-jointed in the ordinary way and double riveted, then 75,000 should be used instead of 90,000, but where the lap is bevelled and so made as to give the flues the form of a true circle, then 80,000 may be used.

When the material or the workmanship is not of the best quality, the constants given above should be reduced, that is to say, the 90,000 may become 80,000; the 80,000 may become 70,000; the 70,000 may become 60,000; when, however, the material and the workmanship are not of the best quality, such constants may require to be further reduced, according to circumstances and the judgment of the Government or licensed engineer. Some of the conditions of best workmanship are that the rivet holes shall be drilled after the bending is done and when the plates are in place and the plates afterwards taken apart, the burr on the holes taken off, and the holes slightly countersunk from the outside.

Notes.—The following examples serve to show the application of the constants for the different cases that may arise:—

Furnaces with butt joints and drilled rivet holes	90,000 where the longitudinal seams are welded.
	90,000 where the longitudinal seams are double riveted and fitted with single butt straps.
	80,000 where the longitudinal seams are single riveted and fitted with single butt straps.
Furnaces with butt joints and punched rivet holes	90,000 where the longitudinal seams are single riveted and fitted with double butt straps.
	85,000 where the longitudinal seams are double riveted and fitted with single butt straps.
	75,000 where the longitudinal seams are single riveted and fitted with single butt straps.
Furnaces with lapped joints and drilled rivet holes	85,000 where the longitudinal seams are single riveted and fitted with double butt straps.
	80,000 where the longitudinal seams are double riveted and bevelled.
	75,000 where the longitudinal seams are double riveted and not bevelled.
Furnaces with lapped joints and punched rivet holes	70,000 where the longitudinal seams are single riveted and bevelled.
	65,000 where the longitudinal seams are single riveted and not bevelled.
	75,000 where the longitudinal seams are double riveted and bevelled.
	70,000 where the longitudinal seams are double riveted and not bevelled.
	65,000 where the longitudinal seams are single riveted and bevelled.
	60,000 where the longitudinal seams are single riveted and not bevelled.

In the case of upright fire boxes of donkey or similar boilers, 10 per cent. should be deducted from the constant given above, applicable to the respective classes of work.

46. The working pressure for corrugated furnaces, practically circular and machine made, provided the plain parts at the ends do not exceed 6 inches in length, and the plates are not less than 5/16ths of an inch thick, should be not greater than found by the following formula :—

$$\frac{9,000 \times \text{thickness in inches}}{\text{Mean diameter in inches}} = \text{Working pressure per square inch.}$$

47. The strength of the joints of the cylindrical superheaters and the factor of safety are found in a similar manner as for cylindrical boilers and steam receivers, but instead of using 47,000 lb. as the tensile strength of iron 30,000 lb. is adopted, unless where the heat or flame impinges at or nearly at right angles to the plate, then 22,400 lb. is substituted.

48. When a superheater is constructed with a tube subjected to external pressure, the working pressure should be ascertained by the rules given for circular furnaces, but the constants should be reduced as 30 to 47.

49. In all cases the internal steam pipes should be so fitted that the steam in flowing to them will pass over all the plates which have steam in contact with them, and exposed to the impact of the heat or flame. Superheaters should, as regards survey, be deemed to be the most important part of the boilers, and must be inspected inside and outside ; those that cannot be entered on account of their size or arrangement must have a sufficient number of doors through which a thorough inspection of the whole of the interior can be made. Special attention should be paid to the survey of superheaters, as with high pressures the plates may become dangerously weak and not give any sound to indicate their state when tested with a hammer ; the plates should therefore be occasionally drilled. Drilling of furnaces and the lower parts of combustion box plates, shell plates, &c., should of course be done when considered necessary in order to ascertain their actual thickness. If flaming is found to be of frequent occurrence in any boiler, extra care must be taken in the survey and in fixing the pressure as to be allowed as the tensile strength of plate when heated is often reduced to about 4 tons per square inch. Drain pipes must in all cases be fitted to superheaters in which a collection of water in the bottom is possible. Superheaters that can be shut off from the main boiler should be fitted with a safety valve of sufficient size, but the least size passed without special sanction of the Government Engineer Surveyor should be 3 inches in diameter.

50. The flat ends, &c., of all boilers as far as the steam space extends and the ends of superheaters should be fitted with shield or baffle plates where exposed to the hot gases in the uptake.

51. As the uptakes of haystack boilers and others of similar type are especially liable to injury from overheating, unless careful precautions are taken while steam is being raised, the licensed engineer should in all cases endeavour to persuade makers and owners of such boilers to make the strength of the uptakes considerably in excess of that required for ordinary superheaters subject to external pressure.

52. The employment of bowling rings is beneficial by adding to the strength as well as allowing for expansion, but if there is a difficulty in getting these fitted, hoops riveted to the uptake, although not so desirable as bowling rings, may be employed to increase the resistance of the tubes against collapse. The use of bowling rings with a moderate thickness of plate is better than very thick plating. This applies to the uptakes of all boilers of this type, including ordinary vertical donkey boilers. When flaming coal is used, extra care is required and extra strength absolutely necessary.

53. Evaporators, generators, feed make-ups, &c., where the evaporation of water under pressure is an essential feature, should be regarded as steam boilers, whether the evaporation is affected by heat from coal gas, from steam, or from any other source, and the strength, quality of material, and method of construction of such apparatus should be in accordance with the regulations for steam boilers, and they should be examined by the licensed engineer annually.

54. The mountings, &c., should, as a general rule, be similar to those required for boilers.

55. When a reduction nozzle is fitted in the steam supply pipe, the contracted orifice should not in ordinary cases exceed that found by the following formula :—

$$\frac{A \times p}{6 \times P} = \text{Area of orifice.}$$

A = Combined area of safety valves fitted to the evaporator.

p = Absolute pressure at which the evaporator is worked.

P = Absolute pressure of entering steam.

56. The particulars of evaporators, their safety valves, &c., should be recorded on the certificate in the same manner as is done in the case of boilers.

E.—STEEL BOILERS.

57. If flanged plates and plates exposed to flame comply with the foregoing conditions, the constants in the rules for iron boilers may be increased as follows :—

The constants for flat surfaces when they are supported by stays screwed into the plate and riveted, 10 per cent. The constants for flat surfaces when they are supported by stays screwed into the plate and nutted, or when the stays are nutted

in the steam space, 25 per cent. This is also applicable to the constants for flat surfaces stiffened by riveted washers or doubling strips and supported by nutted stays. The constants for combustion box girders, 10 per cent. The constants for plain furnaces, 10 per cent.

58. In cases where the licensed engineer is satisfied from tests made on the steel from which the boiler has been constructed that it is of a certain tensile strength per square inch, that strength may be substituted for the 47,000 lb. (allowed for iron plates) in the formula given in rule No. 32, but in no case a greater strength than 32 tons (71,680 lb.) to be allowed. In other cases, provided there is sufficient proof that the boiler is of steel, a minimum of 26 tons may be used.

59. The tensile strength of stay bars should be from 27 to 32 tons per square inch, with an elongation of about 25 per cent. and not less than 20 per cent. in a length of 10 inches. Solid steel screwed stays may be allowed a working stress of 9,000 lb. per square inch of net section, provided the tensile strength and elongation are as stated. Steel stays which have been welded should not be passed. (This does not apply to stay tubes which are welded longitudinally.)

60. Solid steel stays for supporting dished ends, which are found to be equal to the pressure needed when considered as portions of spheres, may have a nominal stress of 18,000 per square inch of net section.

61. Machine-made furnaces of the Fox, Morison, or Deighton corrugated types, manufactured by The Leeds Forge Company, John Brown & Company, Sheffield, The Deighton Patent Flue & Tube Company, Leeds, and Wm. Beardmore & Company, Glasgow, of the Purve's ribbed and grooved type, or Brown's cambered type manufactured by John Brown & Company, Sheffield; and of the Fox or Morrison corrugated type manufactured by Thomas Piggot & Co., Birmingham, provided they are practically true circles and the plates are not less than $\frac{1}{8}$ inch thick, may be allowed the working pressure found by the following formula:—

$$\frac{C \times T}{D} = \text{Working pressure.}$$

C = 14,000.*

T = Thickness in inches, measured at the bottom of the corrugation or chamber.

D = Outside diameter in inches, measured at the bottom of the corrugations or chambers when the furnace is of the corrugated or cambered type, or over the plain parts when it is of the ribbed and grooved description.

* This constant only applies to furnaces of the type named when made by the firms given in the preceding part of this paragraph. The licensed engineers should continue to report full particulars of any case in which the owners or builders propose to use furnaces of any of these types if made by other makers.

In the Fox furnace the pitch of the corrugations should not exceed 6 inches, and in the Morison furnace and the Deighton furnace the pitch should not exceed 8 inches. In these descriptions of furnace the depth from top of corrugations outside to bottom of corrugations inside should not be less than 2 inches.

62. The ribs of ribbed and grooved furnaces should not be less than $1\frac{1}{8}$ inches above the plain parts, the depth of the grooves not more than $\frac{3}{4}$ inch, and the length between the centre of the ribs not over 9 inches. In Brown's cambered furnace the thickness of metal at the centre of the ribs should be at least $\frac{1}{8}$ inch greater than the thickness at the bottom of the camber, the tops of the ribs should be curved to radius of $1\frac{3}{4}$ inches and the grooves beneath ribs to a radius of $\frac{3}{4}$ inch, the height of the ribs above the bottom of the camber should not be less than $1\frac{3}{4}$ inches and the pitch of the ribs should not be more than 9 inches.

63. Machine-made furnaces of the bulb type manufactured by The Leeds Forge Company may be allowed the working pressure found by the following formula, provided they are practically circles, that the pitch of the bulbs does not exceed 8 inches, that the depth from the top of the bulbs to the plain parts at the centre of the pitch is not less than $2\frac{1}{4}$ inches, that the plates are not less than $\frac{5}{16}$ inch thick, and the plain parts between the bulbs are fairly uniform in thickness.

$$\frac{15,000 \times T}{D} = \text{Working pressure.}$$

T = Thickness of the plain parts between the bulbs in inches.

D = Outside diameter at the middle of the plain parts between the bulbs in inches.

In each of these descriptions of furnaces the plain part at the back ends should be so made that the length, measured from the waterside of the back tube plate to the centre of the back end corrugation or rib, does not exceed 9 inches. The plain parts at the front ends should also be so made that the length of the flat, measured from centre of the rivets by which the furnace is secured to the front end plate, does not exceed 9 inches. When the plain parts at the back end are made conical, and the flange by which the attachment is made to the back tube plate is continuous, a length of $10\frac{1}{2}$ inches may be allowed between the waterside of the back tube plate and the centre of the first corrugation or rib. When this method of construction is adopted, the vertical section through the neck-piece should be kept as circular as practicable, the set up at the bottom should not exceed 8 inches measured over the plates, and in no case should the vertical axis exceed the horizontal one by more than $14\frac{1}{2}$ per cent. The plates at the ends should not be unduly thinned in the flanging.

64. If the furnace is riveted in two or more lengths, the case should be submitted to the Government Engineer Surveyor for consideration.

65. When horizontal furnaces of ordinary diameter are constructed of a series of rings welded longitudinally, and the ends of each ring flanged and the rings riveted together and so forming the furnace, the working pressure is found by the following formula, provided the length in inches between the centres of the flanges of the rings is not greater than $(120 T - 12)$, and the flanging is performed at one heat by a suitable flanging machine, and also the conditions which follow the formula are complied with :—

$$\frac{9,000 \times T (5 - L + 12)}{3 \times D (60 \times T)} = \text{Working pressure.}$$

T = Thickness of plate in inches.

L = Length between centre of flanges in inches.

D = Outside diameter of furnace in inches.

66. The radii of the flanges on the fire side should be about $1\frac{1}{2}$ inch. The depth of the flanges from the fire side should be three times the diameter of the rivet plus $1\frac{1}{2}$ inch, and the thickness of the flanges should be as near the thickness of the body of the plate as practicable. The distance from the edge of the rivet holes to the edge of the flange should not be less than the diameter of the rivet, and the diameter of the rivets at least $\frac{3}{8}$ inch greater than the thickness of the plate. The depth of the ring between the flanges should not be less than three times the diameter of the rivets, the fire edge of the rings should be at about the termination of the curve of flange, and the thickness not less than half the thickness of the furnace plate. It is very desirable that these rings should be turned.

67. The holes in the flanges and rings should be drilled in place if practicable, but if not drilled in place they should be drilled smaller than the size required, and afterwards when in place rimmed out until the holes are quite fair, the holes should be slightly tapered and the heads of the rivets of moderate size.

68. After all the welding, flanging, and heating is completed, each ring should be efficiently annealed in one operation.

69. When the flanges of the back ends of the furnaces are not continuous, and the lower parts of the back rings are supported by substantial T bars securely riveted to the plates, the constant used for these rings should not exceed $\frac{5}{17}$ ths of that given in the formula.

70. A greater compressive stress should not be allowed on tube plates than 14,000 lb., which is that used in the following formula :—

$$\frac{(D - d) T \times 28,000}{W \times D} = \text{Working pressure.}$$

D = Least horizontal distance between centre of tubes in inches.

d = Inside diameter of ordinary tubes in inches.

T = Thickness of tubes plate in inches.

W = Width of combustion box in inches between the tube plate and back of the fire box, or distance between the combustion box tube plates when the boiler is double-ended and the box common to the furnaces at both ends.

71. When the minimum tensile strength of the shell plates is S tons and full allowance is wished, the rivet section, if iron, in the longitudinal seams of cylindrical shells should, when these seams are lapped, be at least $\frac{5}{17.5}$ times the net plate section, and if steel rivets are used their section should be at least $\frac{5}{23}$ of the net section of the plate, if the tensile strength of the rivets is not less than 27 tons and not more than 32 tons per square inch. In calculating the working pressure the percentage strength of the rivets may be found in the usual way by these rules, but in dealing with iron rivets the percentages found should be divided by $\frac{5}{17.5}$ and in the case of steel rivets by $\frac{5}{23}$, the results being the percentages required. If the percentage strength of the rivets is found by calculation to be less than calculated percentage strength of the plate, the working pressure should be calculated by both percentages. When using the percentage strength of the plate, 4.5 plus the additions suitable for the method of construction as these rules for iron boilers may be used as the nominal factor of safety, but when using the percentage strength of the rivets 4.5 may be used as the factor of safety. The less of the two pressures so found is the working pressure to be allowed for the cylindrical portion of the shell. (See also the formula in Appendix A.)

F.—BOILERS; GENERAL.

72. Under no circumstances must a licensed engineer grant a certificate for a longer period than twelve months, and if in his opinion he considers an inspection is imperative within that time, he should distinctly state his reasons on the face of his certificate for shortening the period of the same.

73. Small boilers must be inspected, have their working pressure found, and be fitted the same way as large boilers, and have a water and steam gauge and all other fittings complete, and as regards safety valves must comply with the same regulations as the large boilers.

74. No boiler or steam chamber should be constructed, fitted, or arranged that the escape of steam from it through the safety valve can be wholly or partially intercepted by the action of another valve.

75. A stop valve must always be fitted between the boiler and the steam pipe, and, where two or more boilers are connected with a steam receiver or superheater, also between each boiler and the superheater or steam receiver. The necks of the stop valves should be as short as practicable.

76. Each and every boiler should be fitted with at least one glass water gauge, two test cocks, and a steam gauge. Boilers that are fired from both ends and those of unusual width should have a glass water gauge and three test cocks at each end or side, as the case may be. An additional glass water gauge may, however, be substituted for three test cocks. When a factory or a mine under this Ordinance has more than one boiler, each boiler should be treated as a separate one, and have all the requisite fittings.

77. When the water-gauge cocks are not attached directly to the shell of the boiler but to a standpipe or column, cocks should, as a general rule, be fitted between the boiler and the standpipes, &c., and may be placed either on the boiler or at the standpipe. Such cocks need not, however, be insisted on in cases where the columns, stand pipes, &c., are of moderate length and of suitable strength, provided that the diameter of the bore at any part is not less than 3 inches. Valves placed between the boiler and the standpipe should not be allowed.

78. If the column, standpipes, &c., are of less diameter than 3 inches, and the pipes are bolted to the boiler without the intervention of cocks, the arrangement need not be objected to, if otherwise satisfactory, providing there is no difficulty in keeping the passages at the other ends clear, and ascertaining that they are so. To do this it will be necessary that the passage in the part of the column between the top and bottom gauge-glass cocks be cut off or closed, which may be done permanently or by the interposition of a cock at that part. The latter is a convenient and desirable arrangement even when cocks are fitted on the boiler.

79. In the case of high pressure boilers, it is desirable that the cocks in connection with the water gauges should be fitted with handles which can be expeditiously manipulated from a convenient position.

80. It is desirable in all cases that test cocks should be fitted directly to the skin of the boiler, and when the water-gauge is attached to a column, the opening through which is stopped or can be cut off, the test cocks must be fitted directly to the skin of the boiler.

81. The licensed engineers should satisfy themselves by actual examination whether the glass water gauges of the boilers they inspect are clear, and also whether they are fitted with automatic valves or fittings, as the existence of such fittings cannot always be ascertained by external examination.

82. The licensed engineer should carefully inspect the fusible plug or plugs, and see that the same are in order before granting his certificate.

83. On every inspection of steam boiler the licensed engineer shall, if the boiler is large enough, go inside it and make a thorough examination of it.

84. When boilers are not large enough for the licensed engineer to get into, he should see them tested by hydraulic pressure at every annual inspection should he so desire it. The hydraulic test should also be applied at every inspection if the licensed engineer considers it necessary.

85. Whenever it is only removable stays that prevent getting in, he must order their removal, and he must see them properly replaced before granting his certificate.

86. If any part of a boiler near the uptake, fire boxes or furnaces is so constructed that the licensed engineer cannot examine it, he is not to give a certificate, but shall report the case to the Engineer Surveyor, at the same time forwarding plan of dimensions.

87. If for special reasons, and for special reasons only, the licensed engineer cannot go inside a small boiler, he must distinctly state on the face of his certificate his reasons for not being able to do so.

88. If the boiler is too hot for the licensed engineer to examine inside efficiently and with safety and convenience, he should decline to examine the boiler, and absolutely refuse to grant a certificate, until he can make an efficient internal examination.

89. Before testing a boiler the licensed engineer shall examine it, take the necessary measurements, and calculate what the working pressure should be in accordance with the regulations, and only test it with reference to that pressure in accordance with rule 44. If the test is not satisfactory, the pressure must be proportionately reduced.

90. This course will enable any necessary alterations to be made by the owners and prevent delay or disappointment.

91. The licensed engineer who grants the certificate must examine the boilers thoroughly, and he will be held responsible for the pressure allowed.

92. The licensed engineer shall see all new boilers, and boilers that have been cleaned for a thorough repair, tested by hydraulic pressure in accordance with rule 43 previous to the boilers being set and before they are covered in, to test the workmanship, &c.; but the working pressure is to be determined by the strength of stays, thickness of plates, and strength of riveting, &c., not by the hydraulic test.

93. The hydraulic test should in no case exceed twice the calculated working pressure of the boiler, and it is never to be applied until the boiler has been examined and until the strength has been calculated from the necessary measurements taken from the boiler itself.

94. When the boilers are set, the licensed engineer may at any time he thinks it necessary, before he gives a certificate, have them tested by hydraulic pressure to satisfy himself as to any doubtful part, or of places not easy of access, care being taken in the case of old boilers not to overstrain them; but the test must always exceed the working pressure by 50 per cent.

95. The hydraulic test should, before a certificate is granted, be applied to all boilers that have not previously had a working certificate.

96. After a boiler has been subjected to the hydraulic test, the licensed engineer should inspect it, as far as possible, both externally and internally.

97. If, while a boiler is being tested, there are any visible or audible indications of its being defective, the licensed engineer should at once advise those conducting the test to relieve the boiler of pressure, and take steps to ascertain the nature and extent of the defect. The licensed engineer's primary duty at a test is, however, to note the results and satisfy himself that it is properly made, the conduct of the test being left to the representatives of those who own the boiler. When a test is unsatisfactory, the defects should be made good and the boiler re-tested.

98. No test should be considered good in which the boiler has not borne satisfactorily the intended test pressure for at least ten consecutive minutes.

99. The amount of the test pressure and the date on which the test was last applied should in all cases be inserted in the licensed engineer's certificate and recorded in the office boiler book.

100. When a boiler is partially inspected by one licensed engineer and the inspection is completed and a certificate granted by another, if the licensed engineer who witnessed the test of the boiler by hydraulic pressure has an opportunity of examining it inside and outside after the test, such licensed engineer should determine the pressure to be allowed on the boiler in question, taking care to inform the makers, owners, or agents, and the licensed engineer who is ultimately to grant a certificate what pressure should in his opinion be allowed on it. In the event of the original licensed engineer having no opportunity to examine the boiler inside and out after the hydrostatic test, the licensed engineer must re-test the boiler by water and examine the boiler inside and out before determining the working pressure and granting a certificate.

101. Licensed engineers should pay particular attention to the examination and testing of steam pipes and economisers.

102. All new copper steam pipes should be tested by hydraulic pressure to not less than twice and not more than $2\frac{1}{2}$ times the working pressure. The higher test should be that usually employed. When, however, special considerations arise, the case should be fully submitted and instructions obtained before the licensed engineer proceeds with the hydraulic test.

103. Wrought iron lap-welded steam pipes should be tested by hydraulic pressure when new to at least three times the working pressure, but a higher test pressure need not be objected to, provide it does not exceed four times the pressure found by the rule in clause 108.

104. As regards old pipes, the licensed engineer may at any time he thinks it necessary, before he gives a certificate, require them to be tested by hydraulic pressure to satisfy himself as to any doubtful part, but they should be tested periodically, with the lagging removed for examination, to not less than double the working pressure. A record of the test should be kept in the office boiler book.

105. There should be efficient means provided for draining all steam pipes. Boiler stop valves cannot be regarded as suitable for that purpose. All drain cocks or valves should be accessible and so placed as to render it practicable to drain the water from any portion of the steam pipes or chests in connection therewith. Drain pipes should be fitted to drain cocks or valves when the latter are in such a position that the water or steam discharged therefrom would be likely to cause personal injury. It is desirable that the drains should be automatic in their action.

106. The working pressure of well-made copper pipes when the joints are brazed is found by the following formula :—

$$\frac{6,000 \times (T - \frac{1}{16})}{D} = \text{Working pressure.}$$

T = Thickness in inches.

D = Inside diameter in inches.

107. When the pipes are solid drawn and not over 10 inches diameter, substitute in the foregoing formula $\frac{1}{8}$ for $\frac{1}{16}$.

108. The internal pressure on wrought iron pipes made of good material and lap-welded may be determined by the following formula, provided that the minimum thickness is not less than $\frac{1}{4}$ inch, and the workmanship by hydraulic test, &c., satisfactory :—

$$\frac{6,000 \times T}{D} = \text{Working pressure.}$$

T = Thickness in inches.

D = Diameter inside in inches.

108. Feed pipes, feed heaters, filters, or other vessels through which the feed water passes on its way from the pump to the boilers should be made sufficient for a pressure 20 per cent. in excess of the boiler pressure.

109. In all cases in which a socket expansion joint is fitted to a bent steam pipe, the licensed engineer should require a fixed gland and bolts or other efficient means to be provided to prevent the end of the pipe being forced out of the socket. This regulation should be complied with in all cases of bent pipes fitted with socket expansion joints, and it is also desirable that fixed glands and bolts should be fitted to the expansion joints of straight steam pipes, as cases have occurred, particularly with small straight pipes, in which the ends have been forced out of sockets.

110. In all boilers in which the licensed engineer finds that cast iron is employed in such a manner as to be subject to the pressure of steam or water, he shall report the circumstances to the Government Engineer Surveyor in order that he may obtain instructions how to act. Cast iron must not be used for stays, and the licensed engineer should discourage the use of cast iron saddles for boilers.

111. In case the licensed engineer is of opinion that an increased pressure may with safety be allowed, he shall communicate with the licensed engineer who last inspected the boiler; and if on learning why the existing pressure was formerly allowed, the licensed engineer is still of opinion that it may be increased, he should communicate all the facts of the case to the Government Engineer Surveyor, but, as above stated, the pressure shall not in any case be increased until the question has been decided by him.

G.—SAFETY VALVES.

112. The licensed engineer is instructed that in all new boilers and whenever alterations can be easily made the safety valve and stop valve be placed directly on the boiler and the neck, or part between the valve and the flange which is bolted on to the boiler should be as short as possible.

113. The licensed engineer should note that it is not intended by this instruction that old boilers which have been previously passed with such an arrangement should be thrown out of work for the alterations to be carried out.

114. Of course in any case in which the licensed engineer is of opinion that it is positively dangerous to have a length of pipe between the boilers and the safety valve, it is his duty at once to insist on the requisite alterations being made before granting a certificate.

115. The licensed engineer shall declare, amongst other things, the limits of the weight to be placed on the safety valves, and that the safety valves are such and in such condition as the circumstances of the case demand.

116. The area of the safety valves per square foot of fire grate surface under natural draught or (when there is more than one safety valve on the boiler) the combined area of the safety valves should be not less than that given in the following tables opposite the boiler pressure intended, provided the valves are not less than two inches in diameter. This applies to new boilers which have not received a working certificate.

117. In the case of new small boilers it is wished to fit a single safety valve less than 2 inches in diameter, the case should be submitted for the consideration of the Government Engineer Surveyor.

118. In ascertaining the fire grate area, the length of the grate should be measured from the inner edge of the dead plate to the front of the bridge, and the width from side to side of the furnace on the top of the bars at the middle of their length.

119. In the case of small boilers, if it is wished to fit valves smaller than two inches in diameter, the case should be submitted for the consideration of the Government Engineer Surveyor.

Safety Valve Areas.

Boiler Pressure. Lb.	Area of Valve per Square Foot Fire Grate. Sq. in.	Boiler Pressure. Lb.	Area of Valve per Square Foot Fire Grate. Sq. in.	Boiler Pressure. Lb.	Area of Valve per Square Foot Fire Grate. Sq. in.
15	1.250	31	.815	47	.604
16	.290	32	.797	48	.595
17	.171	33	.781	49	.585
18	.136	34	.765	50	.576
19	1.102	35	.750	51	.568
20	1.071	36	.735	52	.559
21	1.041	37	.721	53	.551
22	1.013	38	.707	54	.543
23	.986	39	.694	55	.535
24	.961	40	.681	56	.528
25	.937	41	.669	57	.520
26	.914	42	.657	58	.513
27	.892	43	.646	59	.506
28	.872	44	.635	60	.500
29	.852	45	.625	61	.493
30	.833	46	.614	62	.487

Boiler Pressure.	Area of Valve per Square Foot Fire Grate. Sq. in.	Boiler Pressure.	Area of Valve per Square Foot Fire Grate. Sq. in.	Boiler Pressure.	Area of Valve per Square Foot Fire Grate. Sq. in.
63	480	109	302	155	220
64	474	110	300	156	219
65	468	111	297	157	218
66	462	112	295	158	216
67	457	113	292	159	215
68	451	114	290	160	214
69	446	115	288	161	213
70	441	116	286	162	211
71	436	117	284	163	210
72	431	118	281	164	209
73	426	119	297	165	208
74	421	120	277	166	207
75	416	121	275	167	206
76	412	122	273	168	204
77	407	123	271	169	203
78	403	124	269	170	202
79	398	125	267	171	201
80	394	126	265	172	200
81	390	127	264	173	199
82	386	128	262	174	198
83	382	129	260	175	197
84	378	130	258	176	196
85	375	131	256	177	195
86	371	132	255	178	194
87	367	133	253	179	193
88	364	134	251	180	192
89	360	135	250	181	191
90	357	136	248	182	190
91	353	137	246	183	189
92	350	138	245	184	188
93	347	139	243	185	187
94	344	140	241	186	186
95	340	141	240	187	185
96	337	142	238	188	184
97	334	143	237	189	183
98	331	144	235	190	182
99	328	145	234	191	181
100	326	146	232	192	181
101	323	147	231	193	180
102	320	148	230	194	179
103	317	149	228	195	178
104	315	150	227	196	177
105	312	151	225	197	176
106	309	152	224	198	176
107	307	153	223	199	175
108	304	154	221	200	174

120. The licensed engineer, in his examination of the boilers and appurtenances, is particularly to direct his attention to the safety valves, and whenever he considers it necessary he is to satisfy himself as to the pressure on the boiler by actual trial.

121. The licensed engineer is to fix the limits of the weight to be placed on the safety valves, and the responsibility of issuing a certificate before he is fully satisfied on the point is very grave. The licensed engineer is to examine the whole of the valves, weights, and springs at every inspection.

122. The responsibility of seeing to the efficiency of the mode by which the valves are fitted so as to be as much as practicable under the control of the engineer when steam is up rests with the licensed engineer.

123. The safety valve should if possible be fitted with lifting gear, which should in all cases be arranged so that it can be worked by hand.

124. Care should be taken that the safety valves have a lift equal to at least one-fourth their diameter; that the openings for the passage of steam to and from the valves, including the waste steam pipe, should each have an area not less than the area of valves required, and that each valve box has a drain pipe fitted at its lower part. In the case of lever valves, if the lever is not bushed with brass, the pins must be of brass; iron and iron working together must not be passed. Too much care cannot be devoted to seeing that there is proper lift and free means of escape of waste steam, as it is obvious that unless the lift and means for escape of waste steam are ample, the effect is the same as reducing the area of the valve or putting on an extra load. The valve seats should be secured by studs and nuts.

125. The licensed engineer shall, as far as is in his power, make these points generally known to the owners of steam boilers.

126. *Safety valves that are spring loaded.*—The size of the steel of which the springs are made must be in accordance with that found by the following formula :—

$$\sqrt[3]{\frac{S \times D}{C}} = d$$

S = The load of the spring in lb.

D = The diameter of the spring (from centre to centre of wire) in inches.

d = The diameter or side of square of the wire in inches.

C = 8,000 for round steel.

C = 11,000 for square steel.

127. The springs shall be protected from the steam and impurities issuing from the valves.

128. When valves are loaded by direct springs, the compressing screws shall butt against metal stops or washers when the loads sanctioned by the licensed engineer are on the valves.

129. The springs shall have a sufficient number of coils to allow a compression under the working load of at least one quarter the diameter of the valve.

130. The size of steel of springs of safety valves should not, as a rule, be less than $\frac{1}{4}$ inch.

131. When the licensed engineer has determined the amount of pressure, he is to see the valves weighted accordingly, and the weights or springs fixed in such a manner as to preclude the possibility of their shifting or in any way increasing the pressure. The limits of the weight on the valves is to be inserted in the certificate, and should it at any time come to the licensed engineer's knowledge that the weights or the loading of the valves have been shifted or otherwise altered, or that the valves have been in any way interfered with, so as to increase the pressure without his sanction, he is at once to report the facts to the Government Engineer Surveyor.

APPENDIX A.

(See last paragraph of Rules 71, &c.).

CYLINDRICAL BOILER SHELLS.

Joint with Drilled Holes.

Formulae for ordinary zigzag-riveted joints and for joints of these descriptions, when every alternative rivet in the outer or in the outer and inner rows has been omitted :—

Let E distance from edge of plate to centre of rivet in inches.

V = Distance between rows of rivets in inches.

$\frac{V}{2}$ = Distance between inner and middle row of rivets in inches for joints J and K. (Figs. 18 and 15).

B = Boiler pressure in lb. per square inch.

C = 1 for lap or single butt joints.

C = 1.75 for double butt joints.

d = Diameter of rivets in inches.

D = Inside diameter of boiler in inches.

F = Factor of safety for shell plates, as by rules 28, 29 (d), and 71 (e).

n = Number of rivets in one pitch.

$\frac{P_d}{2}$ = Diagonal pitch in inches.

$\frac{P_d}{d}$ = Diagonal pitch in inches between inner and middle rows of rivets in inches for joint J.

p = Greatest pitch of rivets in inches.

r = Percentages of plate left between holes in greatest pitch.

R = Percentage of value of rivet section.

R_1 = Percentage of combined plate and rivet section.

S = Tensile strength of material in lb. per square inch of section.

T = Thickness of plate in inches.

T_1 = Thickness of each butt strap in inches.

% least value of r. R. R_1 as the case may be, divided by 100.

When joints are used in boiler construction other than those shown in the attached sketches, or when any of the rivets are pitched less than two diameter apart, particulars of such joints should be submitted for the consideration of the Government Engineer Surveyor.

ORDINARY CHAIN AND ZIGZAG-RIVETED JOINTS.

Iron plates and iron rivets or steel plates and steel rivets :—

$$\frac{100(p - d)}{p} = r$$

Iron plates and iron rivets :—

$$\frac{100 \times d^2 \times .7854 \times n \times C}{p \times T} = R$$

Steel plates and steel rivets :—

$$\frac{100 \times 23 d^2 \times .7854 \times n \times C \times F}{4.5 \times S_1 \times p \times T} = R$$

Given C, d, F, n, T, to find p, so that r and R are equal.

Iron plates and iron rivets :—

$$\frac{d^2 \times .7854 \times n \times C}{T} + d = p$$

Steel plates and steel rivets :—

$$\frac{23 \times d^2 \times .7854 \times n \times C \times F}{4.5 \times S_1 \times T} + d = p$$

Given C, F, n, T, r, to find p and d.

Iron plates and iron rivets :—

$$\frac{r \times T}{(100 - r) \times .7854 \times n \times C} = d$$

$$\frac{100 \times r \times T}{(100 - r)^2 \times .7854 \times n \times C} = p$$

Steel plates and steel rivets :—

$$4.5 \times S_1 \times r \times T$$

$$\frac{23 \times (100 - r) \times .7854 \times n \times C \times F}{100 \times 4.5 \times S_1 \times r \times T} = d$$

$$\frac{23 \times (100 - r)^2 \times .7854 \times n \times C \times F}{100 \times 4.5 \times S_1 \times r \times T} = p$$

Iron plates and iron rivets, or steel plates and steel rivets when d is found first, then :—

$$\frac{100d}{100 - r} = p$$

BUTT STRAPS.

Iron plates and iron butt straps or steel plates and steel butt straps.

Double butt straps.

$$\frac{5 \times T}{8} = T_1$$

Single butt straps :—

$$\frac{9 \times T}{8} = T_1$$

FOR DISTANCE BETWEEN ROWS OF RIVETS, &C

Iron and steel :—

$$\frac{3 \times d}{2} = E$$

Chain-riveted joints, Figs. 2, 4, 6, 9, 11, not less than :—

$$2 \times d = V.$$

Zigzag-riveted joints, Figs. 3, 5, 7, 10, 12 :—

$$\frac{\sqrt{(11p + 4d)(p + 4d)}}{10} = V$$

Diagonal pitch, Figs. 3, 5, 7, 10, 12 :—

$$\frac{6p + 4d}{10} = p$$

TO DETERMINE THE WORKING PRESSURE.

$$\frac{S \times \% \times 2T}{F \times D} = B$$

CHAIN AND ZIGZAG-RIVETED JOINTS IN WHICH EVERY ALTERNATE RIVET HAS BEEN OMITTED IN THE OUTER ROW, OR IN THE OUTER AND THE INNER ROWS SUCH AS ARE SHOWN BY THE SKETCHES.

Iron plates and iron rivets or steel plates and steel rivets :—

$$\frac{100(p-d)}{p} = r$$

Iron plates and iron rivets :—

$$\frac{100 \times d^2 \times .7854 \times n \times C}{p \times T} = R$$

Steel plates and steel rivets :—

$$\frac{100 \times 23 \times d^2 \times .7854 \times n \times C \times F}{4.5 \times S \times p \times T} = R$$

Iron plates and iron rivets or steel plates and steel rivets :—

$$\frac{100(p-2d)}{n} = \frac{R}{n} = R_1$$

BUTT STRAPS.

Where the number of rivets in the inner row is double the number in the outer row
Iron plates and iron butt straps or steel plates and steel butt straps.

Double butt straps :—

$$\frac{5 \times T(p-d)}{8 \times (p-2d)} = T_1$$

Single butt straps :—

$$\frac{9 \times T(p-d)}{8 \times (p-2d)} = T_1$$

When the number of rivets in the inner row is the same as in the outer row.

Double butt straps :—

$$\frac{5 \times T}{8} = T_1$$

Single butt straps :—

$$\frac{9 \times T}{8} = T_1$$

FOR DISTANCE BETWEEN ROWS OF RIVETS, &

Iron and steel :—

$$\frac{3 \times d}{2} = E$$

Chain-riveted joints (Figs. 13, 14, 15, 19) :—

$$\sqrt{\frac{(11p+4d)(p+4d)}{10}} = V. \quad \text{The greater of these two values of } V \text{ to be used. See note below.}$$

$$\text{Or } 2 \times d = V.$$

For joint K (Fig. 15) :—

$$2 \times d = V. \quad \text{See note below.}$$

Zigzag-riveted joints (Figs. 16, 17, 18, 20) :—

$$\sqrt{\frac{(11p+d)(1p+d)}{20}} = v$$

Diagonal pitch (Figs. 16, 17, 18, 20) :—

$$\frac{3p+d}{10} = P_d$$

For joint J (Fig. 18) :—

$$\sqrt{\frac{(11p+8d)(p+8d)}{20}} =$$

Diagonal pitch (Fig. 18) :—

$$\frac{3p+4d}{10} = P_d$$

$$\frac{S \times \% \times 2T}{F \times D} = B \quad \text{TO DETERMINE THE WORKING PRESSURE.}$$

Note.—The minimum value of V or V_1 for chain-riveted joints is given as $2d$, but $\frac{4d + 1}{2}$ is more desirable.

MAXIMUM PITCHES FOR RIVETED JOINTS.

T = Thickness of plate in inches.

p = Maximum pitch of rivets in inches, provided it does not exceed 10 inches.

C = Constant applicable from the following table:—

Number of Rivets in one Pitch.	Constants for Lap Joints.	Constants for Double Butt-strap Joints.
1 ..	1.31 ..	1.75
2 ..	2.62 ..	3.50
3 ..	3.47 ..	4.63
4 ..	4.14 ..	5.52
5 ..	— ..	6.00

$$(C \times T) 1\frac{1}{2} = p.$$

When the work is first class, such pitches may be adopted so far as safety is concerned, yet in some cases it may be well not to adopt the greatest pitch found by the formula. The maximum pitch should not, however, exceed 10 inches with the thickest plates for boiler shells. If in any case the pitch is found to exceed that arrived at by the foregoing formula for the particular description of joint and thickness of plate, such pitches should not be passed, but all such cases should be reported.

THE MINES AND MACHINERY PROTECTION ORDINANCE, No. 2 OF 1896.

IT is hereby notified that His Excellency the Governor, in exercise of the power vested in him by section 4 of the above-named Ordinance and with the advice of the Executive Council, has been pleased to cancel Rules Nos. 38, 39, 41, 42, 48, and Forms A and D relating to factories notified on August 13, 1908, and published in the *Government Gazette* of September 11, 1908, and to substitute therefor the rules and forms set forth in the schedule hereto, with effect from April 1, 1910.

By His Excellency's command,

Colonial Secretary's Office,
Colombo, February 25, 1910.

HUGH CLIFFORD,
Colonial Secretary.

SCHEDULE.

38. No superintendent or manager of a factory shall allow any boiler to be used for generating steam for the purpose of driving machinery, unless he can produce a boiler certificate in the annexed Form D from an engineer specially licensed by Government to issue certificates as to fitness of boilers and competency of persons in charge thereof.

Once in every twelve months it shall be the duty of all superintendents and managers of factories in which boilers are used as aforesaid to report in writing to the Government Agent of the Province the names and situations of the factories in their charge, together with a copy of certificate in Form D of an engineer specially licensed by Government to issue certificates as to fitness of boilers and competency of persons in charge thereof for each boiler, and the Government Agent shall cause the same to be registered and numbered, informing the manager or superintendent of the number assigned to each factory. When any new factory in which a boiler is used as aforesaid is opened, or whenever a new boiler is erected in a factory after the said date, the superintendent or manager shall forthwith report the same, with copy of boiler certificate in manner aforesaid, and at the same time report the opening of the new factory or the erection of a new boiler to the Inspector of Factories.

The certificate in Form D must be obtained annually from a licensed engineer, who shall inspect such boiler before the issue of each certificate. Form D to be kept in triplicate: one copy to be kept in the factory for the information of the Inspector of Factories, one to be sent to the Government Agent, and the third to be retained by the licensing engineer.

All original certificates of boilers to be kept in the factory for the information of the Inspector of Factories. No superintendent or manager shall allow any boiler to be used as aforesaid beyond the period specified or in excess of the time stated in the boiler certificate in Form D. It shall be lawful of all superintendents and managers to report in writing to the Government Agent of the Province and to the Inspector of Factories when any new factory is opened in which mechanical motive power is made use of.

39. No superintendent or manager shall allow any person to have, nor shall any person have, control over a boiler used as aforesaid, unless he can produce a certificate of competency in the annexed Form A from the Inspecting Engineer appointed by Government, or from an engineer specially licensed by Government to issue certificates as to fitness of boilers and competency of persons in charge thereof.

Superintendents and managers shall on or before January 31 in each year forward to the Government Agent of their Province the copies of the certificates of competency of all persons in their employment, and shall also forward to the Government Agent the copies of certificates of all persons whom they may subsequently allow to have control of any boiler.

The original or copy of certificate of competency to be kept in the factory for the information of the Inspector of Factories.

41. The manager or the engineer in charge of a factory in which mechanical motive power and connected machinery are made use of shall send once a year, at the same time that Form D under rule 38 is forwarded to the Government Agent of the Province in which the factory is situated, a certificate in the annexed Form C that these rules have been complied with. Where the rules have not been complied with in all respects, the manager or engineer shall name the particulars in which the rules have not been complied with, and shall state the reason for such non-compliance.

It shall be the duty of all superintendents or managers of factories to cause to be delivered to the Government Agent of the Province and to the Inspector of Factories, within one month of the cessation of work, a notice, substantially in the Form E annexed, intimating that work in the factory has been stopped.

42. Upon receipt of the certificate referred to in rule 39, the Government Agent shall forward a copy thereof to the person with regard to whom the certificate is given. Where a copy of the certificate has been received, the Government Agent shall forward a duplicate thereof.

48. The owner, superintendent, manager, or person in charge of a factory shall cause to be sent by telegram or by registered post to the Government Agent information of the occurrence of any accident to any employé resulting in death or serious injury within twenty-four hours of such occurrence.

Form A.—Certificate of Competency.

I, the undersigned (being an engineer specially licensed under the provisions of Ordinance No. 2 of 1896), do hereby certify that _____, whose description is on the back of this certificate, and who is now in charge of the boilers in factory No. _____, known as _____, in the village _____, in _____ korale, of the _____ Province, is to the best of my knowledge and belief a suitable and capable person to have control of boilers in which steam is generated for the purpose of driving machinery.

On the other side of the certificate the following particulars shall be inserted:—

Name in full: _____.

Birthplace: _____.

Age: _____.

Nationality: _____.

Complexion: _____.

Height: _____.

Thumb and finger marks of both hands: _____.

Date: _____, 1910

Signature: _____.

The copy of, or original, certificate of competency to be kept in the factory for the information of the Inspector of Factories.

Form D.—Boiler Certificate.

Name of factory: _____.

No. _____.

Village: _____.

Name of Manager: _____.

Type of boiler: _____.

Approximate horse-power: _____.

Condition of boiler externally: _____.

Condition of boiler internally: _____.

Condition of boiler mountings: _____.

Condition of boiler safety valve: _____.

Condition of boiler stop valve: _____.

Condition of boiler fusible plug: _____.

Condition of boiler feed pump or injector: _____.

Maker's name: _____.

I, _____, being a duly qualified engineer licensed under the provisions of Ordinance No. 2 of 1896, certify that on the _____ day of _____ 1910, I personally inspected the above boiler and found it as above stated. The boiler, in my opinion, is safe with ordinary care for a working pressure of _____ pounds per square inch for a period of _____ months from this date, and that the pressure at which the safety valve is set to blow off, _____ pounds per square inch must not on any account be exceeded.

Date: _____, 1910

Signature: _____.

This certificate, Form D, to be kept in the factory for the information of the Inspector of Factories.

IT is hereby notified that His Excellency the Governor, with the advice of the Executive Council, has, by virtue of the powers by section 5, sub-section (1) (c), of "The Stamp Ordinance, 1909," on him conferred, authorized the following Joint Stock Company incorporated under "The Joint Stock Companies' Ordinances, 1861 to 1907," to compound for the payment of stamp duty on share certificates specified in Schedule B to the said Stamp Ordinance, on the conditions set out in section 5 aforesaid, sub-section (1) (c), (II.), and (IV.).

Colonial Secretary's Office,
Colombo, March 19, 1910.

By His Excellency's command,

HUGH CLIFFORD,
Colonial Secretary.

Company referred to.
Messrs. Von Possner, Limited.

MISCELLANEOUS DEPARTMENTAL NOTICES.

NOTICE is hereby given that applications have been received for grants in aid of the following schools:—

Mr. V. Valayuthampillai	Alvay South Vernacular Mixed School, which is situated in Vadamaratchy of the Jaffna District of the Northern Province.
Mr. P. A. Williams	Lynford Estate Vernacular Mixed School, which is situated in the Bogawantalawa District of the Central Province.

Observations will be received not later than April 20, 1910.

Department of Public Instruction,
Colombo, March 24, 1910.

J. HARWARD,
Director.

NOTICE is hereby given that, under section 16 of "The Rural Schools Ordinance, 1907," applications have been received from the Chairmen of the District School Committees for the opening of the following Government schools:—

At Epatawala, which is situated in Kuruwita korale of the Ratnapura District.
At Narawelpitiya, which is situated in Kandaboda pattu of Matara District.

Observations will be received not later than April 22, 1910.

Department of Public Instruction,
Colombo, March 21, 1910.

J. HARWARD,
Director.

THE ferry at Halpatota on the 6th mile Dodanduwa-Baddegama road, Southern Province, will be closed to vehicular traffic from May 6 to 20, 1910, both days inclusive, during the repairing of the ferry boat.

Public Works Office,
Colombo, March 17, 1910.

T. H. CHAPMAN,
for Director.

NOTICES CALLING FOR TENDERS.

TENDERS are hereby invited for the supply of bricks on the Northern Line of the Railway from persons willing to contract from date of acceptance of tender to June 30, 1911, to be delivered at any railway station between Polgahawela and Kankasanturai, and to be as per under-mentioned specification, viz. :—

Bricks.—To be the best stock bricks, size 8½ in. by 4½ in. by 3 in.; sound, clean cut, hard, and well burned, of uniform size and shape.

Each tender must specify the rate per 1,000, and samples of same must be forwarded to the General Manager of the Railway.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue, or be sent through the post.

4. Tenders should be marked "Tender for the supply of Bricks on the Northern Line of the Railway" in the left hand corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on Tuesday, April 19, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Office of the General Manager of the Railway, and no tender will be considered unless it is on the recognized form. Tender forms will be issued till April 15, 1910.

6. A deposit of Rs. 50 will be required to be made either at the Treasury or Kachcheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond, or fail to furnish approved

security, within ten days of receiving notice in writing from the Head of the Department or his duly authorized representative that his tender has been accepted, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses must be given engaging to become security for the due fulfilment of the contract.

8. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of security required will be Rs. 1,000. All other necessary information can be ascertained upon application at the office referred to in section 5.

9. The security should be furnished within ten days of acceptance of tender being notified.

10. All alterations or erasures in tenders should bear the initials of the tenderers, otherwise the tenders will be treated as informal and rejected.

11. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

12. Fines will be inflicted for delays in complying with orders.

13. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

14. Before tender forms are supplied to persons wishing to tender, they will have to satisfy the General Manager or person delegated by him that they are in a position to execute the contract in a satisfactory manner, and for this purpose they must be prepared to produce documentary or other evidence if called for.

General Manager's Office, G. P. GREENE,
Colombo, March 22, 1910. General Manager.

TENDERS are hereby invited for washing blankets, mattresses, kit bags, haversacks, hospital linen, &c., at Colombo, Kandy, and Diyatalawa on the termination of the Volunteer Camp in June, 1910.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tender for washing bedding, &c., of the C. V. Force" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on March 30, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Volunteer Headquarters, Slave Island, Colombo, and no tender will be considered unless it is on the recognized form.

6. A deposit of Rs. 50 only will be required to be made either at the Treasury or Kacheheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond after he has tendered or fail to furnish approved security, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses must be given, engaging to become security for the due fulfilment of the contract.

8. If required, samples must be deposited.

9. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of each bond, and all other necessary information, can be ascertained upon application at the offices referred to in section 5.

10. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

11. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

A. A. MERCER, Captain,
Staff Officer, Ceylon Volunteer Force.

Colombo, March 4, 1910.

TENDERS are hereby invited for supplying provisions, including bread, meat, vegetables, &c., to the Ceylon Volunteers, to be delivered at the Camp of Exercise, Diyatalawa, to be held from June 16 to 25, 1910, also horse food, transport, cooly labour, cleaning of latrines, kerosine oil, scavenging of camp, &c.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tender for Provisioning C. V. Camp, 1910" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on March 30, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Volunteer Headquarters, Slave Island, Colombo, and no tender will be considered unless it is on the recognized form.

6. A deposit of Rs. 150 will be required to be made either at the Treasury or Kacheheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond after he has tendered, or fail to furnish approved security, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses must be given, engaging to become security for the due fulfilment of the contract.

8. Samples must be deposited at the Volunteer Headquarters before March 30, 1910, or tenders will not be considered.

9. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of each bond, and all other necessary information, can be ascertained upon application at the offices referred to in section 5.

10. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

11. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

A. A. MERCER, Captain,
Staff Officer, Ceylon Volunteer Force.

Colombo, March 4, 1910.

TENDERS are hereby invited for the removal and usual stacking of 9,000 broad gauge and 4,000 narrow gauge railway sleepers, more or less, from Iranaimadu tank to Iranaimadu Railway Siding, a distance of about two miles over a surface road.

2. All tenders should be in duplicate, the original being sent under seal cover to the Assistant Conservator of Forests, Jaffna, and the duplicate to the Conservator of Forests, Kandy.

3. Tenders should either be deposited in the tender boxes in the offices concerned or be sent through the post.

4. Tenders should be marked "Tender for removal of Iranaimadu Sleepers" in the left hand top corner of the envelope, and should reach the Office of the Assistant Conservator of Forests, Jaffna, not later than midday on Friday, April 1, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Forest Office, Jaffna, and no tender will be considered unless it is on the recognized form.

6. A deposit of Rs. 20 will be required to be made either at the Treasury or Kachcheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond, or fail to furnish approved security, within ten days of receiving notice in writing from the Head of the Department, or his duly authorized representative that his tender has been accepted, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses must be given, engaging to become security for the due fulfilment of the contract.

8. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of security required will be 5 per cent. of the cost of the work. All other necessary information can be ascertained upon application at the offices referred to in section 5. The sureties will be required to produce a certificate of competency signed by a Chief Headman before signing the bond.

9. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

10. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

11. Sleepers must be removed at the rate of 2,000 per month of thirty days from the date of signing the contract, or a penalty of ten cents per sleeper short of this number must be paid each month.

12. Tenders should quote both in words and figures a rate per broad gauge and a rate per narrow gauge sleeper delivered properly stacked at Iranaimadu Siding.

FRED. J. S. TURNER,

Forest Office, Assistant Conservator of Forests,
Jaffna, March 3, 1910. Jaffna Division.

TENDERS are hereby invited for the service described in the schedule annexed, and for convenience divided into three parts: (a), (b), (c).

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tender for Jaffna Depot Firewood" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on Tuesday, April 5, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Forest Office, Jaffna, and no tender will be considered unless it is on the recognized form.

6. A deposit of Rs. 20 will be required to be made either at the Treasury or Kachcheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond after he has tendered, or fail to furnish approved security, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses

must be given, engaging to become security for the due fulfilment of the contract.

8. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of each bond, and other necessary information, can be ascertained upon application at the offices referred to in section 5. The sureties will be required to produce a certificate of competency signed by a Chief Headman before signing the bond.

9. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

10. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

11. Rates per ton delivered in the depot must be quoted both in words and figures.

12. The contractor is expected to load and unload firewood trucks and to weigh the firewood on the depot scales.

FRED. J. S. TURNER,
Assistant Conservator of Forests,
Jaffna Division.

Forest Office,
Jaffna, March 5, 1910.

SCHEDULE.

(a) To supply to the Jaffna Depot from irrigable areas under the Karachchi scheme and within two miles of Kilinochchi 3,000 tons, more or less, of common firewood, less such part as will have been supplied when contract is entered into.

All trees cut for this purpose must be cut within a foot of the ground.

The supply must be completed before the close of May, 1911, and not less than 176 tons should be delivered monthly.

Tenders must quote rates for delivery in Russel Square, written both in words and figures.

The Forest Department will be responsible for carriage by rail from Kilinochchi to Jaffna.

(b) To supply to the Jaffna Depot from Iranaimadu tank sawing depot 750 tons, more or less, of refuse wood from sleeper works, less such part as will have been supplied when contract is entered into. Wood to be loaded into railway wagons at Kilinochchi.

The supply must be completed before the close of May, 1911, and not less than 43 tons should be delivered monthly.

Tenders must quote rates for delivering the wood in Russel Square, written both in words and figures.

The Forest Department will be responsible for carriage by rail.

(c) To supply to the Jaffna Depot from Mandalar forests 750 tons, more or less, of dead firewood, less such part as will have been supplied when contract is entered into.

The supply must be completed before the close of May, 1911, and not less than 43 tons should be delivered monthly.

Tenders must quote rates for delivery in Russel Square, written both in words and figures.

The Forest Department will not be responsible for any carriage.

TENDERS are hereby invited for building new office, laboratory, &c., Veterinary Surgeon, Colombo.

2. All tenders must be in duplicate, both copies being sealed in the same envelope, and addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders must be marked "Tender for building New Office, Veterinary Surgeon," in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on April 12, 1910.

4. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent to him through the post.

5. Tenders must be on forms which may be obtained at the Office of the Provincial Engineer, Western Province, Colombo, and no tender will be considered unless it is furnished on the recognized form thus obtained. Any alterations made in tenders should bear the initials of the tenderer, and all tenders containing alterations not so initialled will be treated as informal and rejected.

6. Parties applying for form of tender will be required to deposit the sum of Rs. 50 either at the Treasury of the Kachcheri and produce a receipt for the same. Should the party fail to submit in accordance with the terms of the specification a *bona fide* tender, or to enter into the necessary contract, the sum of Rs. 50 deposited will be forfeited by way of ascertained and liquidated damages. Upon a contract being entered into, the deposits of unsuccessful *bona fide* tenderers will be returned.

7. Plans and specifications may be seen, and further information obtained, on application at the Office of the Provincial Engineer, Western Province, Colombo.

8. Before any tender is accepted the contractor will be required to sign a contract to execute and perform the works in accordance with the specification and the general conditions therein set forth, and to deposit a sum of Rs. 1,000 for the due and faithful performance of the contract, within ten days of receiving notice in writing signed by the Provincial Engineer, Western Province, Colombo, that the Government is prepared to accept his tender.

9. The Government does not bind itself to accept the lowest or any tender, and reserves to itself the right of accepting any portion of a tender.

T. H. CHAPMAN,
for Director of Public Works.

Public Works Office,
Colombo, March 16, 1910.

TENDERS are hereby invited for supplying the under-mentioned materials from July 1, 1910, to June 30, 1911, for Mannar District in the Northern Province:—

List of Materials.

- Baskets, naar, round, 12 in. by 12 in. by 8 in., each.
- Baskets, ola, 12 in. by 12 in. by 8 in., each.
- Baskets, ola, water, each.
- Bricks, best, burnt, country, 8½ in. by 4¼ in. by 2½ in., per 1,000.
- Bricks, best, burnt, country, 9 in. by 4½ in. by 3 in., per 1,000.
- Coral stones, rough, not less than 1 ft. by 1 ft. by 6 in., per cube.
- Coral stones, dressed, not less than 9 in. by 1 ft. by 6 in., per cube.
- Lime, slaked, burnt, from coral chips, per bushel.
- Lime, unslaked, burnt, from coral chips, per bushel.
- Lime, boiled, best, shell, per bushel.
- Sand pit, per bushel.
- Palmyra rafters, 3 of a tree, dressed, per lineal foot.
- Palmyra reepers, 2 in. by 1 in., dressed, per 100 of 12 ft.
- Palmyra reepers, 1 in. by 1 in., dressed, per 100 of 12 ft.
- Palmyra reepers, 2 in. by 1 in., undressed, per 100 of 12 ft.
- Palmyra reepers, 1 in. by 1 in., undressed, per 100 of 12 ft.
- Palmyra stalks, or maddies, per 100.
- Palmyra olas with stalks, per 100.
- Palmyra, dressed, bridge planks, 3 of a tree, not less than 14 ft., per lineal foot.
- Palmyra dressed, bridge planks, 2 of a tree, not less than 14 ft., per lineal foot.

Mango planks, ½ in. finished thickness, per superficial foot.

Mango planks, 1 in. finished thickness, per superficial foot.

Mango planks, 1¼ in. finished thickness, per superficial foot.

Mango planks, 1½ in. finished thickness, per superficial foot.

Jak planks, ½ in. finished thickness, per superficial foot.

Jak planks, 1 in. finished thickness, per superficial foot.

Jak planks, 1¼ in. finished thickness, per superficial foot.

Jak planks, 1½ in. finished thickness, per superficial foot.

Jakwood scantlings, 2 in. by 2 in. up to 7 in. by 8 in., 15 ft. long, per cubic foot.

Palu or other hard wood, 2 in. by 2 in. up to 7 in. by 8 in., 15 ft. long, per cubic foot.

2. All tenders must be in duplicate, the original being forwarded to the Provincial Engineer, Northern Province, Jaffna, and duplicate direct to the Director of Public Works, Colombo.

3. Tenders must be marked "Tender for supply of Materials, Public Works Department, Northern Province, 1910-1911," in the left hand top corner of the envelope, and should reach the Office of the Provincial Engineer, Northern Province, and the Director of Public Works not later than midday on April 12, 1910.

4. Tenders should either be deposited in the tender box in the Office of the Provincial Engineer or be sent to him through the post.

5. Samples of the following articles tendered for are to be deposited in sealed packets or bottles at the Office of the Provincial Engineer, Northern Province, not later than midday on April 12, 1910:—

Baskets, naar, not under 12 in. by 12 in. by 8 in.

Baskets, ola, not under 12 in. by 12 in. by 8 in.

Baskets, ola, water.

Lime made from coral chips.

Lime, shell.

6. To each sample must be firmly attached a label on which is stated the name of the tenderer, the Gazette number of the notice calling for the tender, and the description of the article adopted in his tender.

7. Tenders must be on forms which may be obtained at the Office of the Provincial Engineer, Northern Province, and no tender will be considered unless it is furnished on the recognized form thus obtained. Any alterations made in tenders should bear the initials of the tenderer, and all tenders containing alterations not so initialled will be treated as informal and rejected.

8. Parties applying for form of tender will be required to deposit the sum of Rs. 50 either at the Treasury or the Kachcheri and produce a receipt for the same. Should the party fail to submit in accordance with the terms of the specification a *bona fide* tender, or to enter into the necessary contract, the sum of Rs. 50 deposited will be forfeited by way of ascertained and liquidated damages. Upon a contract being entered into, the deposits of unsuccessful *bona fide* tenderers will be returned.

9. Further information may be obtained on application at the Office of the Provincial Engineer, Northern Province, Jaffna.

10. Before any tender is accepted the contractor will be required to sign a contract to execute and perform the works in accordance with the specification and the general conditions therein set forth, and to deposit a sum of Rs. 100 for the due and faithful performance of the contract, within ten days of receiving notice in writing signed by the Provincial Engineer, Northern Province, Jaffna, that the Government is prepared to accept his tender.

11. The Government does not bind itself to accept the lowest or any tender, and reserves to itself the right of accepting any portion of a tender.

T. H. CHAPMAN,
for Director of Public Works.

Public Works Office,
Colombo, March 15, 1910.

TENDERS are hereby invited for supplying the under-mentioned materials from July 1, 1910, to June 30, 1911, for the following districts: Jaffna, Pallai, and Vavuniya, in the Northern Province:—

List of Materials.

- Baskets, naar, not under 12 in. by 12 in. by 8 in., per 100.
- Baskets, ola, not under 12 in. by 12 in. by 8 in., per 100.
- Baskets, ola, water, each.
- Lime made from coral chips, per bushel.
- Lime, shell, per bushel.
- Charcoal, per bushel.
- Mango planks, 1 in., 1½ in., and 1¾ in. finished thickness.
- Margosa planks, 1½ in. and 1¾ in. finished thickness.
- Jak planks, 1½ and 1¾ in. finished thickness.
- Palmyra rafters, 3 of a tree, dressed, per lineal foot.
- Palmyra reepers, 2 in. by 1 in., dressed, per 100 of 12 ft.
- Palmyra reepers, 2 in. by 1 in., undressed, per 100 of 12 ft.
- Palu reepers, 2 in. by 1 in., per 100 of 12 ft.

2. All tenders must be in duplicate, the original being forwarded to the Provincial Engineer, Northern Province, Jaffna, and duplicate direct to the Director of Public Works, Colombo.

3. Tendere must be marked "Tender for supply of Materials, Public Works Department, Northern Province, 1910-1911," in the left hand top corner of the envelope, and should reach the Office of the Provincial Engineer, Northern Province, Jaffna, and the Director of Public Works not later than midday on April 12, 1910.

4. Tendere should either be deposited in the tender box in the Office of the Provincial Engineer or be sent to him through the post.

5. Samples of the following articles tendered for are to be deposited in sealed packets or bottles at the Office of the Provincial Engineer, Northern Province, not later than midday on April 12, 1910:—

- Baskets, naar, not under 12 in. by 12 in. by 8 in.
- Baskets, ola, not under 12 in. by 12 in. by 8 in.
- Baskets, ola, water.
- Lime made from coral chips.
- Lime, shell.

6. To each sample must be firmly attached a label on which is stated the name of the tenderer, the *Gazette* number of the notice calling for the tender, and the description of the article adopted in his tender.

7. Tendere must be on forms which may be obtained at the Office of the Provincial Engineer, Northern Province, and no tender will be considered unless it is furnished on the recognized form thus obtained. Any alterations made in tendere should bear the initials of the tenderer, and all tendere containing alterations not so initialled will be treated as informal and rejected.

8. Parties applying for form of tender will be required to deposit the sum of Rs. 50 either at the Treasury or the Kachcheri and produce a receipt for the same. Should the party fail to submit in accordance with the terms of the specification a *bona fide* tender, or to enter into the necessary contract, the

sum of Rs. 50 deposited will be forfeited by way of ascertained and liquidated damages. Upon a contract being entered into, the deposits of unsuccessful *bona fide* tenderers will be returned.

9. Further information may be obtained on application at the Office of the Provincial Engineer, Northern Province, Jaffna.

10. Before any tender is accepted the contractor will be required to sign a contract to execute and perform the works in accordance with the specification and the general conditions therein set forth, and to deposit a sum of Rs. 100 for the due and faithful performance of the contract, within ten days of receiving notice in writing signed by the Provincial Engineer, Northern Province, Jaffna, that the Government is prepared to accept his tender.

11. The Government does not bind itself to accept the lowest or any tender, and reserves to itself the right of accepting any portion of a tender.

T. H. CHAPMAN,
for Director of Public Works.

Public Works Office,
Colombo, March 15, 1910.

TENDERS are hereby invited for the purchase and removal of grass from about 35 acres along bank of river on the Experiment Station, Peradeniya, from May 1, 1910, to June 30, 1911.

2. All tendere should be in duplicate and sealed under one cover, and should be addressed to the Director, Royal Botanic Gardens, Peradeniya.

3. Tendere should be marked "Tender for Grass, Experiment Station, Peradeniya," in the left hand top corner of the envelope, and should reach the Office of the Director, Royal Botanic Gardens, Peradeniya, not later than midday on April 11, 1910.

4. A deposit of Rs. 20 will be required to be made either at the Kachcheri or Treasury, and the receipt should be attached to the original tender. Should any person decline to enter into the contract and bond, or fail to furnish security, within ten days of receiving notice in writing from the Head of the Department, or his duly authorized representative, that his tender has been accepted, such deposit forfeited to the Crown. All other deposits will be returned upon signature of a contract.

5. Cash security to the extent of Rs. 100 will be required for the fulfilment of the contract.

6. The contractor shall allow to be cut 150 bundles of grass per day required for the use of the Government cattle. Should the contractor fail to allow of the supply of 150 bundles of grass per day demanded of him within the period specified, the Superintendent shall be at liberty to purchase the same elsewhere and at whatever cost, and the contractor shall pay the full amount of such cost and all expenses attending the purchasing and procuring of the same.

7. The weeding and manuring of the grass plots will be done by the Superintendent, Experiment Station, Peradeniya.

8. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

9. The Government reserves to itself the right, without question, of rejecting any or all tendere, and the right of accepting any portion of a tender.

JOHN C. WILLIS,
Director.

Royal Botanic Gardens,
Peradeniya, March 8, 1910.

TENDERS are hereby invited for the supply of coconut oil from the date of signing the contract up to June 30, 1911.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tender for Coconut Oil" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on April 5, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Office of the Colonial Storekeeper, and no tender will be considered unless it is on the recognized form.

6. A deposit of Rs. 100 will be required to be made either at the Treasury or Kacheheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond, or fail to furnish approved security, within ten days of receiving notice in writing from the Head of the Department or his duly authorized representative that his tender has been accepted, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of a contract.

7. Each tender must be accompanied by a letter signed by two responsible persons, whose addresses must be given, engaging to become security for the due fulfilment of the contract.

8. Quarter gallon samples in duplicate must be deposited with the Colonial Storekeeper.

9. Sufficient sureties will be required to join in a bond for the due fulfilment of each contract. The amount of security required will be Rs. 2,000. All other necessary information can be ascertained upon application at the office referred to in section 5.

10. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

11. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

W. A. TAYLOR,
Colonial Storekeeper.

March 9, 1910.

TENDERS are hereby invited for the purchase of coconuts with husks plucked from the trees of the Leper Asylum grounds at Hendala for the period of one year, commencing from July 1, 1910, and terminating on June 30, 1911.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tenders for the purchase of Coconuts at the Leper Asylum" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on April 5, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Office of the Principal Civil Medical Officer and Inspector-General of Hospitals, Colombo, and no tender will be considered unless it is on the recognized form. Alterations must be initialled, otherwise the tenders may be treated as informal and rejected.

6. A cash deposit of Rs. 50 will be required to be made at any Kacheheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond after he has tendered, or fail to furnish the approved security, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of the contract.

7. The successful tenderer will be required to furnish cash security to the extent of Rs. 100, and to sign the bond given in the tender for the due fulfilment of the contract. The amount deposited for tender forms will form part of the security.

8. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

9. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

10. Any further information can be obtained on application to the Principal Civil Medical Officer and Inspector-General of Hospitals, Colombo.

C. T. GRIFFIN,
for Principal Civil Medical Officer and
Inspector-General of Hospitals.

Colombo, March 15, 1910.

SEPARATE Tenders are hereby invited for the supply of provisions to the hospitals named in the schedule hereunder for the period of one year commencing from July 1, 1910, and terminating on June 30, 1911.

2. All tenders should be in duplicate and sealed under one cover, and should be addressed to the Chairman of the Tender Board, Office of the Controller of Revenue, Colombo.

3. Tenders should either be deposited in the tender box in the Office of the Controller of Revenue or be sent through the post.

4. Tenders should be marked "Tender for the supply of provisions to the ——— Hospital" in the left hand top corner of the envelope, and should reach the Office of the Controller of Revenue not later than midday on April 5, 1910.

5. The tenders are to be made upon forms which will be supplied upon application at the Office of the Principal Civil Medical Officer and Inspector-General of Hospitals, Colombo, and no tender will be considered unless it is on the recognized form. Alterations must be initialled, otherwise the tenders may be treated as informal and rejected.

6. A cash deposit according to the schedule below will be required to be made at any Kacheheri, and a receipt produced for the same before any form of tender is issued. Should any person decline to enter into the contract and bond after he has tendered, or fail to furnish the approved security, such deposit will be forfeited to the Crown. All other deposits will be returned upon signature of the contract.

7. If required samples must be deposited.

8. The successful tenderer will be required to furnish cash security according to the schedule below, and to sign the bond given in the tender for the due fulfilment of the contract. The amount deposited for tender forms will form part of the security.

9. No tender will be considered unless in respect of it all the conditions above laid down have been strictly fulfilled.

10. The Government reserves to itself the right, without question, of rejecting any or all tenders, and the right of accepting any portion of a tender.

11. Any further information can be obtained on application to the Principal Civil Medical Officer and Inspector-General of Hospitals, Colombo.

Colombo, March 14, 1910.

C. T. GRIFFIN,
for Principal Civil Medical Officer and
Inspector-General of Hospitals.

SCHEDULE.

Institution.	Nature of Diets to be supplied.	Amount of	Amount of
		Tender Deposit (see Para. 6).	Security (see Para. 8).
		Rs.	Rs.
Avisawella Hospital	.. Cooked with milk	200	400
Katugastota Hospital	.. do.	50	100

SALES OF UNSERVICEABLE ARTICLES.

NOTICE is hereby given that the following unserviceable articles will be sold by public auction at the Government Printing Office at 1 P.M. on Monday, April 4, 1910 :—

- 24 bags, coir
- 5 baskets
- 11 brushes
- 19 cases, compositor's
- 5 pulleys, iron, driving
- A quantity of earthenware jars, tin cans, old iron, &c.

H. C. COTTLE,
Government Printer.

Government Printing Office,
March 23, 1910.

A QUANTITY of zinc lining, hoop iron, empty barrels, bale cloth, &c., will be sold by public auction at these Stores on Monday, April 4, 1910, at 12 noon.

W. A. TAYLOR,
Colonial Storekeeper.

Government Stores,
Colombo, March 22, 1910.

NOTICE is hereby given that the under-mentioned unclaimed and confiscated articles will be sold by public auction on Saturday, April 9, 1910, at 2 P.M., at the Police Court, Kalutara :—

- | | |
|---------------------|-------------------|
| 9 iron rods | 1 white cloth |
| 1 axe | 1 gauze banian |
| 4 tumblers | 8 coconut plants |
| 1 hatchet | 7 bags plumbago |
| 25 coconuts | 1 sarong |
| 30 earthen pots | 2 cups |
| 2 wooden tubs | 1 coconut scraper |
| 1 roll barb wire | 10 mats |
| 1 glass decanter | 1 bottle soda |
| 4 lamps | 3 pieces of lead |
| 2 umbrellas | 12 bottles gin |
| 1 handkerchief | 14 pints gin |
| 1 enamel plate | 7 gemming baskets |
| 1 Cannanore cloth | 3 mamoties |
| 2 weighing balances | 3 zinc buckets |
| 1 cash box | |

JOHN E. DE SILVA,
Police Magistrate.

Minor Courts,
Kalutara, March 22, 1910.

VITAL STATISTICS:

Registrar-General's Weekly Health Report of the City of Colombo for the Week ended March 19, 1910.

Births.—The total births registered were 98 (1 European, 9 Burghers, 55 Sinhalese, 11 Tamils, 13 Moors, 8 Malays, and 1 Other). The birth-rate per 1,000 per annum (calculated on the estimated population on January 1, 1910, viz., 185,704) was 27.5, as against 29.2 in the preceding week, 25.3 in the corresponding week of last year, and 25.1 the weekly average for last year.

Deaths.—The total deaths registered were 102 (1 European, 5 Burghers, 50 Sinhalese, 27 Tamils, 16 Moors, 1 Malay, and 2 Others), including the death of a town resident, who died in the Enteric Hospital at Kanatta. The death-rate per 1,000 per annum was 28.6, as against 26.1 in the previous week, 29.7 in the corresponding week of last year, and 33.7 the weekly average for last year.

Infantile Deaths.—Of the 102 total deaths, 21 were of infants under one year of age, as against 22 in the preceding week, 27 in the corresponding week of the previous year, and the average for last year.

Still Births.—The number of still births registered during the week was 6.

Selected Causes of Death.—Thirteen deaths were registered from *Phthisis* (against 11 in the previous week and 15 the weekly average for last year), of which 6 were in Maradana (exclusive of hospitals), 3 in Slave Island, and 1 each in St. Paul's, New Bazaar, Maradana hospitals, and Kollupitiya.

2. Twelve deaths were registered from *Pneumonia* (against 8 in the previous week and 15 the weekly average for last year), of which 5 were in Kotahena, 2 in Maradana (exclusive of hospitals), and 1 each in Pettah, San Sebastian, St. Paul's, Maradana hospitals, and Slave Island. Eight deaths were registered from *Bronchitis*.

3. Eight deaths were registered from *Infantile Convulsions*, 6 from *Dysentery*, 5 *Old Age*, 4 *Diarrhoea*, 4 *Tetanus* (3 infants), 4 *Debility* (2 infants), and 34 from *Other Causes*.

4. Four deaths were registered from *Enteric Fever* (against 5 in the previous week and 6 the weekly average for last year), 2 each in New Bazaar and Maradana hospitals. There were 9 cases reported during the week, as in the previous week.

5. Five cases of *Measles* were reported, against 4 in the previous week; and 58 of *Chickenpox*, against 47 in the previous week.

State of the Weather.—The mean temperature of air was 79.8° , as in the preceding week, against 81.7° in the corresponding week of the previous year. The mean atmospheric pressure was 29.985 in., against 29.959 in. in the preceding week and 29.964 in. in the corresponding week of the previous year. The total rainfall in the week was 0.03 in., against nil in the preceding week and 0.75 in. in the corresponding week of the previous year.

Registrar-General's Office,
Colombo, March 22, 1910.

N. W. MORGAPPAH,
for Registrar-General.