

GOVERNMENT NOTIFICATION.—No. 241.

The following Report of the Director of Public Works for 1897 is published.

By Command,

T. SERCOMBE SMITH,
Acting Colonial Secretary.

Colonial Secretary's Office, Hongkong, 28th May, 1898.

PUBLIC WORKS DEPARTMENT.
No. 214.

PUBLIC WORKS OFFICE,
HONGKONG, 26th April, 1898.

SIR,—I have the honour to forward my Annual Report for 1897.

I have the honour to be,

Sir,

Your most obedient Servant,

R. D. ORMSBY,
Director of Public Works.

The Honourable

THE ACTING COLONIAL SECRETARY.

ANNUAL REPORT OF THE DIRECTOR OF PUBLIC WORKS FOR 1897.

The expenditure of the Public Works Department is incurred under two heads, "Annually Recurrent" and "Extraordinary," the funds being obtained from General Revenue, and from the loan raised under Ordinance No. 2 of 1893. A certain portion of the expenditure is charged to the Special Revenue from Water.

The total expenditure under Annually Recurrent votes in 1897 was.....	\$207,174.70
Under Public Works Extraordinary.....	453,894.70
Total.....	\$661,069.40

Of this sum \$464,995.24 came from General Revenue and \$196,074.16 from the loan.

Of the expenditure a sum of \$169,558.19 was incurred on water works and was charged to the special item of revenue for water account.

Mr. CHATHAM, who was in charge of the Department as acting Director of Public Works for the greater part of the year, has submitted a report giving details of work done under the different headings and including Mr. MALSCH's report on Crown Lands and Mr. CROOK's report on water and drainage works, from which I quote as follows:—

ANNUALLY RECURRENT WORKS.

1. *Repairs to Buildings.*—The whole of the buildings have been maintained in a satisfactory condition except Crosby Store, which, though still utilized, is practically beyond repair. In several instances considerable renewals were rendered necessary owing to the ravages of white ants and wherever practicable these have been effected in such a manner as to avoid a repetition of the damage by these destructive insects in future. The Pavilions, which were in such a condition as to be unfit for occupation, have been let on a 3 years' lease for the purposes of the Peak Club.

2. *Maintenance of Telegraphs.*—New telephone lines have been run from No. 7 Police Station to the Chinese Detective Office in New Street and the house of one of the Assistant Surgeons in the Medical Department, and a third line has been run from the Victoria Gap Police Station to the Water Inspector's Bungalow at Victoria Peak, thus placing all three houses in connection with the Government Exchange at the Central Police Station.

The telephone lines in Kowloon have been re-arranged so as to establish a central exchange at the Water Police Station, Tsimshatsui; and this Exchange has been placed in direct communication with the Government Exchange in the City.

A special Fire Alarm service has been established by connecting the Central Police Station and those in the Eastern and Western Districts of the City with the principal fire station, from which in turn alarm bells can be rung in the Firemen's Dormitory, the Charge Room at the Central Station, and the Superintendent's bed room.

3. *Maintenance of Public Cemetery.*—The paths leading to the terraces laid out within recent years have been permanently formed with kerbs and concrete surfacing. One of the bridges crossing the stream which flows through the cemetery has been renewed with iron beams and concrete, the former wooden structure having become insecure owing to the decay of the beams.

4. *Maintenance of Praya Wall and Piers.*—No exceptional expenditure was called for under this vote.

5. *Maintenance of Lighthouses.*—The buildings have been maintained in good condition and the only exceptional damage caused by storms has been the carrying away of the timber jib of the landing derrick at Gap Rock. In order to provide for the landing of the reliefs and stores, the damage has been made good by fixing another timber jib, similar to the one carried away, but one of steel has now been constructed and will be fixed whenever an opportunity occurs of conveying it to the Rock.

6. *Dredging Foreshores.*—The dredger has been principally employed at Causeway Bay in connection with the Praya Reclamation Works. By arrangement with the Hongkong and Kowloon Wharf and Godown Company, the craft and machinery performed some dredging alongside their wharves at Kowloon for a period of 7 weeks.

7. *Miscellaneous Works.*—Under this vote, numerous minor works have been carried out and improvements effected, of which the following are the principal:—

- Balconies at married quarters, Central Police Station.
- Approach path and stair to Staff Quarters, Civil Hospital.
- Permanent scaffold at Victoria Gaol.
- Cook-house for Mahomedans at the Civil Hospital.
- Alterations, &c., for extension of Post Office.
- Latrine at Public Laundries, Kennedy Road.
- Cells at Hung Hom Police Station.
- Matsheds at Kennedytown Hospital.
- Troughs and tying-up rings in inspection shed, Pig and Sheep Depôts.
- Reconstructing roof of Powder Magazine, Stonecutter's Island.
- Reconstructing roof of Stanley Police Station.
- Laying on gas to Superintendent's Quarters, Botanical and Afforestation Department.
- Improvement of approaches to Government Offices.
- Temporary pier at Hung Hom.
- Alterations of Volunteer Head Quarters.

8. *Maintenance of Roads and Bridges in Victoria.*—In the case of several of the roads where the gradients are considerable, such as Queen Victoria and Jubilee Streets, portions of Caine Road, &c., concrete surfacing has been laid down to avoid the frequent repairs which were necessary with macadamized surfaces.

With the exception of some portions of the old Praya Roadway, which is undergoing considerable alterations both as regards width and level, the roads generally have been maintained in a satisfactory condition.

9. *Maintenance of Roads and Bridges out of Victoria.*—The two timber bridges on the Tytam Road above Wongneichong Village having fallen into a state of decay have been replaced with stone and brick arches, surmounted with iron railings. Many of the roads have been re-surfaced and a number of the most dangerous places in the Hill District have been protected by substantial iron railings.

10. *Maintenance of Roads and Bridges in Kowloon.*—A number of encroachments caused by the old garden lots, in Cameron, Carnarvon and Kimberley Roads have been removed during the past year, thus admitting of the formation of these roads to the proper lines. Portions of Cameron and Granville Roads have been macadamized and a part of Carnarvon Road, which is on a somewhat steep gradient, has been laid with concrete surfacing. The construction of good and well laid out roads in Kowloon is steadily progressing and each year sees some district, hitherto inaccessible except by rough footpaths, brought within reach of wheeled traffic.

11. *Maintenance of Waterworks, City of Victoria and Hill District.*—A constant supply of filtered water to the City and Hill District has been maintained throughout the year and the quality of the water as ascertained by analysis has been excellent. The total quantity supplied was 1,042,105,000 gallons, equal to an average daily consumption of 2,855,082 gallons, or 15.24 per head for a population of 187,408 for all purposes. Deducting trade supplies, which amount to 153,195,000 gallons, the average consumption per head per diem is reduced to 13 gallons. In addition to the above, 76,289,000 gallons of unfiltered water have been supplied.

The total quantity pumped to the Hill District was 15,318,000 gallons, equal to an average daily consumption of 41,967 gallons or 20.74 per head for a population of 2,023. The population taken includes 427 workmen employed in the erection of new buildings.

The number of meters now in use in the City is 273 and in the Hill District 119.

The waters of the streams intercepted by the new or west catchwater have been delivered into Tytam Reservoir since the 8th November.

The usual tabular statements showing the monthly consumption, rainfall, &c., are given in appendices A, B and C, and diagrams showing the hourly consumption during the course of the day in appendices D, E, F and G.

New services have been constructed and existing ones repaired to the number of 428.

The services of 2,417 houses were inspected during the year; 367 of these were found defective, but were repaired after the usual notices had been served.

Gas was introduced into the three Motor Houses in place of kerosene lamps in December.

12. *Maintenance of Waterworks, Kowloon.*—A constant supply of water has also been maintained in the case of Kowloon and the results of analyses made from time to time have been entirely satisfactory. The mains were extended to Mongkoktsui in August last. Owing to the increasing consumption, it was found necessary towards the end of the year to provide additional boiler-power and this has been done provisionally by utilizing a portable boiler which had been used in connection with the construction of Tytam Waterworks. The total quantity of water supplied was 66,600,000 gallons, equal to an average daily consumption of 182,466 gallons or 7.57 per head for a population of 24,115 for all purposes. Deducting trade supplies, which amount to 13,435,000 gallons, the average consumption per head per diem is reduced to 6.04 gallons.

The number of meters now in use is 62, all supplies being metered except those obtainable from the public fountains. It has been considered prudent, in view of the limited nature of the supply, to provide for the requirements of the inhabitants of the Chinese villages by means of public fountains only, of which there are now 88 fixed throughout the Peninsula.

Particulars of the monthly consumption, &c. will be found in appendix H.

New services have been constructed, or existing services added to or repaired, to the number of 37.

Gas was laid on to the Pumping Station in December.

13. *Maintenance of Waterworks, Shauiwan.*—Though a supply of water had been laid on to some of the public fountains as early as June, 1896, it was not until the beginning of 1897 that the works were completed. A constant supply has been maintained since their inauguration. Under an arrangement with Messrs. Blackhead & Co. an extension of the water main has been carried out in order to bring the supply within reach of their Soap and Soda Factory.

Water has been laid on from the mains to the Police Station and the Market, both supplies being metered.

14. *Maintenance of Waterworks, Aberdeen.*—Filtration of the water supply to this village was begun in May, 1897, and has since been steadily maintained. The works existing prior to that date were of a very limited nature, consisting only of a main and two fountains, which were provided in 1893 when the reservoir for the Paper Mills was constructed.

Three services have been laid on in the village, viz., to the Paper Mills, the Police Station and the Docks; each supply is metered.

15. *Maintenance of Sewers.*—The various sewerage systems in the city and villages have been satisfactorily maintained and have not required any exceptional expenditure. With the advance of the Reclamation Works it has been possible to construct another of the outfalls for the western district of the city. There now remain but two of these outfalls to be constructed.

16. *Lighting, City of Victoria and Kowloon.*—The respective contracts with the Gas and Electric Companies have been satisfactorily fulfilled. The re-arrangement of gas lamps and introduction of incandescent burners throughout the districts of the city still lit by gas are making steady progress. On the 31st December for the lighting of the city there were in use 75 electric arc lamps, 373 gas lamps fitted with ordinary burners, 297 gas lamps fitted with incandescent burners and 10 special gas lamps on public wharves. A gas lamp fitted with two incandescent burners has been erected at the upper tramway terminus where its services are of considerable benefit on dark or foggy nights.

In Kowloon, the whole of the street lamps, numbering 164, have been fitted with incandescent burners and the lighting has been extended to the village of Mongkoktsui. The public wharves are lit by two special gas lamps.

A new contract, extending for a period of 5 years, was entered into with the Gas Company in July last.

17. *Maintenance of Public Recreation Ground.*—A considerable portion of the extension recently made to the Recreation Ground was turfed over during the rainy season and so rendered available for use towards the end of the year. The road which divided the extension from the original ground is in course of removal and will be supplanted by a narrow path formed at the level of the surrounding ground surface, thus making the whole area continuous as far as practicable on account of the Race Course.

18. *Maintenance of the Clock Tower.*—The clock and tower have been maintained in good order.

LAND SURVEY BRANCH.

19. *Land Sales.*—The lots sold by public auction during the year numbered 27, their aggregate area amounting to 1,450,329 square feet or 33.21 areas. The premia realized amounted to \$200,038 and the annual Crown rents to \$6,398. The sales included 6 lots in the Taipingshan Resumed Area, comprising in all 11,475 square feet, which realized \$53,570.

20. *Extensions of Lots.*—The areas of extensions granted totalled 292,584 square feet or 6.72 acres, the premia in respect of which amounted to \$27,321.33 and annual Crown rents to \$2,230.63.

21. *Land disposed of without public auction.*—An area of 2,450 square feet was granted to Messrs. Butterfield & Swire as an extension of Inland Lot No. 1,336, but was afterwards converted into a separate lot (Inland Lot No. 1,406). The premium paid was \$122.50 and the annual Crown rent is \$4.00. A piece of land on the northern slope of Mount Davis has been granted for the purposes of a cemetery for the Eurasian Community, subject to a nominal Crown rent of \$1.00 per annum.

An area of 16½ acres at Deep Water Bay has, with the consent of the Secretary of State for the Colonies, been leased to The Royal Hongkong Golf Club for the purposes of a Golf Links subject to an annual rental of \$100.

Two pieces of land of a combined area of 7,300 square feet near Mongkok, Kowloon, were let on a short lease at an annual rental of \$110 for the establishment of a cracker factory.

22. *Re-adjustment of Boundaries and Crown Rents.*—Principally owing to the expiry of the period during which Crown rent at a reduced rate was payable for certain lots in Kowloon, pending their development, an increased annual sum of \$457.11 will be received in future on account of the re-adjustment of boundaries and Crown rents.

23. *Conversion of Farm Lots into Inland Lots.*—By arrangement with the lessees, Kowloon Farm Lot No. 1 has been converted into Inland Lots, the areas required for the construction of public streets and lanes being surrendered to the Government. The total annual rent payable in respect of the conversion amounts to \$340, but a reduction of \$90 per annum has been allowed meanwhile pending the development of this somewhat extensive property.

24. *Lands in Military Occupation.*—Consequent on the purchase of the Mount Austin Hotel property by the Military Authorities, the annual rent hitherto payable has been capitalized and placed to the credit of the Colonial Government in the account kept of transactions concerning lands in Military occupation.

25. *Resumptions of land.*—Inland Lot No. 144 has been resumed for the purpose of erecting Quarters for the Warders at Victoria Gaol. A strip of land was also resumed from Kowloon Inland Lot No. 312 for the widening of a public lane.

26. *Squatters' Licences, &c.*—The number of licences issued was 1,225 and the fees received on account of same amounted to \$3,609.25. Licences have been written off or cancelled during the course of the year to the number of 41. A sum of \$4,645 was realized from the letting of sites for booths at the Race Meeting.

27. *Lease Plans, &c.*—Plans and particulars of 122 lots have been forwarded to the Land Office for the preparation of new leases; boundary stones have been fixed for 35 lots; and 77¾ acres of land have been surveyed in connection with land sales or the issue of leases.

WORK UNDER THE BUILDING ORDINANCE.

28. *Plans Deposited.*—Plans have been deposited to the number of 427; 10 for European dwellings, 78 for Chinese houses and 339 for miscellaneous structures.

29. *Certificates Granted.*—Certificates have been granted under section 53 of Ordinance 15 of 1889 for 355 houses, and permission has been given for the erection of 74 verandahs and 13 piers over Crown land or foreshore.

30. *Permits and Notices.*—Notices relating to structures in a dangerous condition have been served in 13 cases; 2,322 notices and permits of a miscellaneous nature have been issued; and 70 permits have been granted for the erection and repair of monuments and enclosures in the Colonial Cemetery. The fees received for the latter amount to \$125.82.

31. *Industrial Undertakings.*—Satisfactory evidence of the progress of the Colony as an industrial centre is afforded by the establishment of the new Kerosene Dépôt at North Point, the capacity of which is already being largely increased, and by the operations which are in active progress for the construction of a Cement Factory at Kowloon, Cotton Mills at East Point, and an extension of the Dock Company's premises at Kowloon.

32. *Miscellaneous*.—In consequence of representations made by the Superintendent of the Fire Brigade as to the obstacles presented in dealing with fires by the large fixed sunshades overhanging the footpaths in Jervois Street, a number of the leading shopkeepers there were interviewed and had the circumstances explained to them with the result that all the sunshades have now been made movable.

EXTRAORDINARY PUBLIC WORKS.

33. *Improvements, Recreation Ground, Happy Valley*.—A considerable area of the extension of the Recreation Ground was turfed over and rendered available for use towards the end of the year. The delay in undertaking the diversion of the nullah where it crosses the extension has been due to the non-arrival of ironwork ordered from England in connection with the work, which is probably accounted for by the Engineers' strike.

34. *Slaughter House, Sheep and Pig Depôts, including Pier*.—The pier constructed for the landing of cattle, sheep and pigs, arriving at the depôts, has been completed.

35. *Gaol Extension*.—The alterations of the old gaol buildings have been begun by pulling down the Wing, (known as D. Wing), which projected in an oblique direction into the south-west yard. This will admit of the erection of a convenient workshop, containing two floors, where the manufacture of matting, &c. can be carried on by the prisoners. Good progress is being made with the conversion of the associated cells into single cells and other minor improvements, the work being performed as far as possible with prison labour. A system of mains and hydrants has been laid throughout the old and new gaol premises for the purposes of fire extinction.

36. *New Water Mains*.—Small extensions only have been made to the water mains in the City.

37. *Sewerage of Victoria*.—The connection of house drains to the public sewers and small extensions of the latter to provide for such connections have been carried out under this heading. An old storm-water drain in Wing Lok Street which had been rendered obsolete by recent works has been taken up.

38. *Water Supply, Kowloon*.—Consequent on the extension of Station Street to Mongkoktsui, a water main has been carried to that village and fountains have been fixed from which the inhabitants can obtain a supply of good water. All liabilities in connection with the erection of the Pumping Station Buildings have now been discharged, some delay having been caused with regard to the final payment in consequence of some legal proceedings against the Contractor.

39. *Taitam Waterworks Extension*.—The raising of the Bye-wash Dam for a total height of 10 feet above the original level of the overflow was brought to completion in the early part of the year. Small granite piers have been built on the top of the dam, with grooves cut in them for the reception of sluice-boards, by inserting which an additional depth of 2 feet 6 inches of water may be impounded. Without the boards, the capacity of the reservoir is now 388,000,000 gallons; and with the boards, 408,500,000 gallons.

40. *Road from Victoria Gap to Mount Kellett Road*.—The portion first undertaken,—from "Treverbyn" to "The Homestead,"—was opened to traffic in the beginning of September and the construction of the remaining portion,—from Victoria Gap to "Treverbyn,"—was begun towards the end of November, since which date substantial progress has been made with the work. In conjunction with the formation of the road, a suitable area is being levelled for the accommodation of chairs and it is proposed to erect a permanent structure on this site as a shelter for the chairs and bearers. The road will have a width of 23 feet from "The Gap" to "Treverbyn" where it bifurcates into roads 15 and 13 feet wide respectively, (the latter being the old road), and with the exception of a practically level portion opposite the Peak Hotel, will have a uniform gradient of 1 in 20 throughout its entire length.

41. *Water and Drainage Works, Miscellaneous*.—Numerous minor works have been carried out under this heading, the following being a brief summary of the more important:—

(i) *Taikoktsui and Fuk Tsun Heung Improvement Works*.—Both these villages have been laid out with properly kerbed and channelled streets, which undoubtedly constitute a great step towards converting them from insanitary rookeries into something approaching model villages. No proper communication with them exists at present, but it is hoped that the construction of a good road will be undertaken soon, to be followed by the introduction of a proper water supply obtained by extending the Kowloon Waterworks.

(ii) *Shaukiwan Waterworks*.—These works comprise intakes from three streams, the gathering grounds of which are free from buildings and other sources of pollution; a covered service reservoir, capable of containing 228,700 gallons; 1.40 miles of cast iron mains, varying in diameter from 5 inches to 3 inches; 19 public fountains, conveniently placed for the supply of the inhabitants; and an overseer's bungalow. They were completed early in the year.

(iii) *Aberdeen Waterworks*.—In 1893, some works of a very limited nature were constructed for the supply of water to certain parts of the village. These have now been greatly

extended and include provision for filtering the whole of the water supply. The works consist of an intake from the stream below the Paper Mills Reservoir; three filter beds having a combined area of 240 square yards; a covered service reservoir capable of containing 74,500 gallons; 0.95 mile of cast iron mains 3 inches in diameter; 8 public fountains, distributed throughout the village; and an overseer's bungalow. In accordance with the terms under which the Paper Mills Company were granted permission to construct their reservoir, a supply of 60,000 gallons per day may be drawn from this source for the public use free of cost.

(iv). *Sewers and Water Mains, Kennedy Road Sites.*—With the progress of building operations on Kennedy and MacDonnell Roads, it became necessary to extend the sewers and water mains to this district. This work was accordingly undertaken and completed before the end of the year, 0.47 mile of drain pipes and 0.67 mile of water pipes having been laid.

(v). *Drainage Works at Mongkoktsui.*—The property hitherto known as Kowloon Farm Lot 12 having been converted into Inland Lots, operations were undertaken for laying it out for building purposes and for extending Station Street from Yaumati to Mongkoktsui. Considerable drainage works were necessitated and have been provided with a view to the future requirements of the district.

(vi). *Drainage Works at Yaumati and Hung Hom.*—A great sanitary improvement has been effected by properly concreting and draining a number of public lanes in Yaumati and Hung Hom into which slops are frequently thrown from the kitchens of the Chinese houses abutting on them.

(vii). *Drainage Works at Tsim-Sha-Tsui.*—Provision has had to be made by the construction of new or the extension of existing sewers in various parts for the drainage from new houses. The drainage of Robinson, Kimberley, and Observatory Roads has also been much improved.

(viii). *Drainage Works, Hill District.*—By arrangement with the owner of Rural Building Lot No. 11, the drainage from the house recently erected on that lot has been diverted from the Pokfulam Drainage Area and connected to the sewer in the Peak Road. Small extensions of existing main sewers have been made where found necessary.

(ix). *Re-drainage of Public Buildings.*—The Markets at Hung Hom and Shaukiwan, the Police Stations at Stanley and Shaukiwan and Police Station No. 7 in the City have been re-drained. Similar work is now in progress at the Western Market.

(x). *Removal of Old Drains, &c.*—The old drains, which are being dispensed with in consequence of the Reclamation Works, are now in course of removal and, where necessary, new and improved drains are being constructed in their stead. In several instances, the old drains ran across private property, but, in the construction of new drains, this is avoided by following the public streets.

42. *Isolation Hospital.*—The buildings, consisting of the hospital block and detached coolie quarters, were handed over to the Medical Department on the 24th April. The hospital block contains 2 general wards (4 beds in each—119 square feet per bed) and 2 private wards (2 beds in each—119 square feet per bed) attendant's room, 4 bath-rooms, &c. and is surrounded by verandahs 8 feet wide. The coolie quarters, which are situated on a lower terrace adjoining Eastern Street and are connected with the main block by a covered way, contain accommodation for 10 attendants and coolies, besides kitchens, wash-house, drying-room, ironing-room, disinfecting-room and store. The buildings are of Canton red brick with granite dressings, the hospital having a base of stonework 2 feet 6 inches high. The site is enclosed with an iron railing, 6 feet high, with separate gates for access to the hospital and coolie quarters. Since its completion the hospital has been diverted from the purpose for which it was erected and used as a lying-in hospital.

43. *Extension of Station Street, Kowloon, &c.*—As already mentioned, the conversion of Kowloon Farm Lot 12 into Inland Lots admitted of the extension of Station Street to Mongkoktsui, and an excellent road has now been formed as far as the northern extremity of that village. Much yet remains to be done in bringing into shape the boat-building establishments in this neighbourhood; and it is hoped that it may be found possible to undertake this work in the near future.

44. *Taipingshan Improvement.*—Very satisfactory progress has been made with the laying out of the Resumed Area. Most of the lots are now available for the erection of buildings, and a contract has been entered into which provides for the formation of the whole of the remaining lots. It is hoped that the work will be completed by about the middle of 1898, with the exception of the surfacing of some of the streets and lanes, which it may be considered prudent to delay until after the houses have been built.

45. *Forming and Kerbing Streets.*—The work done in Kowloon includes kerbing and channelling in Kimberley, Observatory and Robinson Roads, and forming an extension of Market Street, Hung Hom. Considerable improvements have been made by concreting the footpaths and relaying the side channels in the villages of Yaumati and Hung Hom. The footpaths underneath verandahs had in many cases been allowed to fall into disrepair and, by arrangement with the various proprietors, the relaying of these footpaths was carried out by the Department at their expense.

In Hongkong, two new streets have been formed on Inland Lot No. 955 in order to divide it up into building lots; a pathway has been formed and concreted between Kennedy and MacDonnell Roads, giving convenient access to some of the building lots in this neighbourhood; and a portion of the Western Praya, beyond the termination of the Reclamation Scheme, has been formed and kerbed and concreted, this work having been rendered necessary in consequence of the raising of the Praya wall which had subsided considerably at this point. Some improvements have also been made in the approaches to the Government Offices, and a number of public lanes throughout the City have been properly formed and surfaced.

46. *Quarters for Gaol Staff.*—The resumption of the land required for the purpose of erecting these quarters was only completed towards the end of the year. It is hoped that before long a commencement may be made with the erection of the buildings.

47. *City of Victoria and Hill District Waterworks*—Substantial progress has been made with most of the works included under this head, some of them having reached completion.

The following summary gives an account of the progress made:—

(i). *Reservoir and Catchwater, Wongneichong Gap.*—The dam has been constructed to a sufficient height to admit of the fixing of the lowest draw-off valve, the culvert from the valve-well has been completed and the wash-out valve and pipes fixed in it. A large amount of excavation has been done inside the reservoir, which will have the effect of materially increasing its capacity. The catchwater and path adjoining the same have been completed for a distance of about three-quarters of a mile.

(ii). *Catchwater, West of Tytam Valley.*—This work has been completed, the water collected from the streams having been turned into Tytam Reservoir on the 8th November. The catchwater consists of an open channel, $1\frac{3}{4}$ miles long, of varying section, increasing ultimately to an area of 10 square feet before the reservoir is reached. The gradient, 1 in 100, is uniform throughout the whole length. The channel is constructed with lime concrete, the bottom pitched with stone and the sides plastered over with cement mortar. The valley immediately adjoining the reservoir is bridged by two steel pipes, each 18 inches in diameter, supported on granite pillars, and a bye-pass pipe has also been provided so that, when the water in the reservoir is muddy and the streams are running clear, the latter may be drawn off into the tunnel without entering the reservoir. Overflows have been formed at intervals in the length of the channel to permit of the escape of exceptional floods without injuring the work. A path, 3 feet wide, follows the catchwater the whole way and is continued for a distance of 1 mile beyond the end of it, where it joins the Wongneichong catchwater path. The two 18-inch pipes are capable of discharging into the reservoir over $1\frac{1}{2}$ million gallons per hour, a quantity for which the channel is amply adequate.

(iii). *Filter Beds and Service Reservoir.*—This work has nearly been completed. It includes the construction, on a terraced site below the Bowen Road, of 3 filter beds having a combined area of 1,661 square yards and a covered service reservoir capable of containing 720,000 gallons, together with the necessary connections to the Tytam aqueduct and the distribution system of the city. The filter beds are constructed of lime concrete faced with rubble masonry, and the service reservoir of lime concrete faced with brickwork in cement mortar. The reservoir has been almost entirely constructed below ground level and is covered with brick arching built in cement mortar supported on brick pillars and arches. It is proposed to erect quarters for an overseer on a site adjoining the filter-beds, and provision has been made for the establishment of a motor between the filter-beds and reservoir, which will be required in consequence of the large number of houses now being built along MacDonnell Road.

(iv). *Peak Service Reservoir.*—This work was completed early in December. Hitherto the Hill District has been supplied from small iron tanks which only contained about one day's supply and, in the event of any serious breakdown of the pumping machinery or main, the whole district would have been deprived of water, other than that obtainable from wells, until the necessary repairs could be effected. The service reservoir now completed is capable of containing 409,000 gallons, equal to about 10 days' supply for the present population. It is situated a little way below the Peak Signal Station, top water level being 1,751 feet above sea level, is covered over and is almost entirely below ground level. Cement concrete has been largely used in its construction, the walls being faced with rubble masonry, (for which an abundant supply of stone was obtained on the site), and the roof formed of brick arching built in cement mortar. Quarters for an inspector have been constructed near the reservoir, and communication by telephone has been established with the Government system.

(v). *New Mains in the City.*—The new water mains along Robiison, Caine, Bonham and Queen's Roads, and in Wyndham, Aberdeen, Staunton and Second Streets were completed in June last. They comprise a length of 2.2 miles of cast iron pipes, varying in diameter

from 6 to 3 inches. The old mains have been taken up, any serviceable pipes being cleaned and put into store.

(vi). *Extensions of Mains to North Point and Wongneichong.*—This work has also been completed and the districts named now come within the distribution system of the City. The extensions include a length of 1.63 miles of cast iron pipes, 3 inches in diameter, and the provision of 9 public fountains and 20 fire hydrants.

48. *Gardeners' Cottages.*—This block of buildings, which is situated at the junction of MacDonnell and Garden Roads and has been erected from the designs and under the superintendence of Messrs. DENISON and RAM, Architects, was completed and handed over to the Botanical and Afforestation Department in September last. It contains accommodation for 12 married men and their families and 30 single men, besides tool-houses and the usual offices. The outer walls are built of random rubble masonry with dressings of granite in exposed parts and of plaster in places where they are less liable to injury. The site is enclosed with a boundary wall of rubble masonry.

49. *Extension and Improvements of Gas Lighting.*—Particulars of the lighting of the City and Kowloon have already been given in paragraph 16 of this Report, from which it will be seen that substantial progress has been made with the substitution of incandescent for ordinary burners. At the end of the year there were in all 461 street lamps in use in the City and Kowloon fitted with incandescent burners as against 373 still using ordinary burners.

50. *Raising Praya Wall, Sheklongtsui.*—This work was undertaken in consequence of the subsidence of a portion of the Praya wall, immediately westwards of the termination of the Reclamation which is now in progress, and was completed in June last. It consisted of taking up the coping of the wall, building courses of masonry, of varying thickness according to the amount of settlement which had taken place, and re-setting the coping.

51. *Road from Plantation Road to Magazine Gap.*—Operations were begun early in October for the construction of this road, and substantial progress has already been made with the western half of it. It was deemed prudent to concentrate the contractor's energies on this portion during the dry season as it practically overhangs the Peak Tramway for some distance and, owing to the steepness of the hill-side, involves some heavy cutting and the construction of retaining walls. The road will be 15 feet wide and will have a gradient of about 1 in 40 for the greater part of its length, the steepest gradients being about 1 in 20 for comparatively short distances.

52. *Jubilee Celebrations.*—Numerous public buildings and structures, including the Clock Tower, Queen's Statue, Government House, Central Market, Queen's College and Tsimshatsui Police Station were illuminated on the night of the 22nd June. About 9,000 lanterns and 4,000 glass lamps, besides 1,325 incandescent electric lights were utilized for the purpose.

Stones to mark the commencement of the "Victoria Hospital" and "Victoria Road" were successfully laid by His Excellency the Governor on the 23rd June, in connection with the works to be undertaken by the Colony in commemoration of Her Majesty's completing the 60th year of Her Reign.

53. *Plague Account.*—Practically the only expenditure incurred by this Department under this head was for the erection of two matsheds in the Taipingshan Resumed Area to accommodate the occupants of houses in which cases of plague had occurred, whilst the disinfection of the premises was in progress.

EXPENDITURE.

54. The usual statements of expenditure under the various votes will be found in Appendices J and K.

PRAYA RECLAMATION WORKS.

Fair progress was made with these works during the year under review. From the Special Engineer's detailed report, the following particulars of the work section by section are taken:—

Section No. 1.—No work was done on this section during the year beyond the laying of water and gas mains while the erection of buildings in the reclaimed land as authorized by C.S.O. 1895 proceeded. In December tenders were received for the completion of the roadways by concreting and macadamizing the surface. The work on the western portion of this section, being the extreme western end of the Reclamation, remained in abeyance, owing to the refusal of the Marine Lot holders to join in the scheme.

Section No. 2.—The completion of the roadways on this section, which had been in abeyance for some time during the erection of new buildings and the laying of gas and water mains, was resumed on the 11th June under contract with Mr. TSANG KENG, and the work of concreting the roadways and footpaths, and macadamizing of other roads was almost completed on December 31st, the actual date of completion being January 11th, 1898. The work was satisfactorily done.

Section No. 3.—Work on this section proceeded very satisfactorily especially during the latter half of the year, under contract No. 23 dated 4th March, 1895, entered into with Mr. TSANG KENG. 52,051 cubic yards of earth were filled into the reclamation, 19,605 cubic feet of granite ashlar was set in cement on the sea wall, 415 cubic yards of cement concrete put in as backing to the same, 1,151 cubic yards of rubble stone hand packing, 275 cubic yards of lime concrete laid in counterforts and foundations of Praya road, 657 cubic yards of granite ashlar in cement built in storm water drains.

Pipe drains were laid in this section and the roadways, footpaths, curbing, &c., well advanced towards completion. Three manholes were built, 219 gullies and gratings set, 14 ring bolts in new sea wall fixed complete. 1,298 cubic feet of granite from the old sea wall was taken up, cleaned and stacked on the Government land in front of the Sailors' Home.

Section No. 4.—Work on this section during the year was chiefly departmental and consisted in levelling the foundations of sea wall, and laying of concrete blocks of which about 237 lineal feet containing 8,243 cubic feet and weighing over 500 tons were set, some rubble stone backing was done and about 1,894 cubic yards of mud raised by the Dredger and dropped at sea outside Green Island. On the evening of the 7th March, a portion of the rubble stone foundations for a length of over 300 feet, while being weighted with 5,328 tons of concrete blocks, suddenly subsided to a depth of about 28 feet. This, though not the first accident of the sort that has occurred, was the most serious during the progress of the works. Some interesting photographs were taken the next morning, and from the appearance of the weighting blocks above water, it would seem that the rubble mound had slipped forward and down into a sub-marine ravine. Nothing further was done here during the year beyond lifting the weighting blocks, nearly all of which were recovered; a few were broken and are left below. The first course of blocks forming the sea wall had been set in position; it has not been possible to recover them; they are so broken up as to be useless. It is believed that the mound has now reached a firm bottom where it can slip no further, and this year rubble will be deposited until the level is again brought up to the proper point.

Section No. 5.—The work on this section during the year consisted in the completion of the rubble mound. This work was done by Mr. TSANG KENG under contract No. 36 of 1896 and completed in June. 45,828 cubic yards of rubble was deposited, and the upper surface formed and levelled for the concrete blocks, a single course of which, extending over a length of 895 feet and weighing about 2,012 tons were set and backed up with hand packed rubble; a length of nearly 500 feet was then weighted in the usual manner departmentally.

Sections Nos. 6 and 7.—Work on these sections has proceeded very satisfactorily during the year. The rubble mound opposite the Hotel, through which a gap had been left for boats, was completed to the proper level, levelled and weighted, and the first two courses of concrete blocks set in position. 24,110 cubic feet of granite ashlar in cement were built in the sea wall, landing piers, and storm-water drains. The temporary pitched embankment from the old Praya to Pottinger Street Pier was completed.

The total quantity of earth deposited during the year in the Reclamation, obtained from Kowloon, Causeway Bay and dredgings, was 274,103 cubic yards.

Murray Pier.—Of solid granite ashlar masonry was completed and opened for use on the 16th September. Shortly afterwards a storm occurred, not quite of typhoon force, and it was found that seas broke over this pier to such an extent as to render it unapproachable by launches or boats, which was not the case with the open timber pier opposite Ice House Street.

A memorial on the subject signed by all the leading merchants in the city, as well as by those most intimately acquainted with shipping work in the harbour, protesting against the construction of solid piers and advocating the adoption of open steel or iron structures, was presented to His Excellency the Governor. After full consideration, and in accordance with professional advice, it was decided that work on the solid stone Government piers should be stopped and where possible open piers substituted. At the request of the Director of Public Works a representative Committee of those who had signed the memorial was appointed to consider with him and advise Government as to the position, form and dimension of Government piers from the New Praya.

This Committee met twice in 1897, and by their advice Pottinger Street Pier, which was in an advanced state of construction of a similar design to Murray Pier, was for good reasons proceeded with, and before the end of December was completed except the last course of granite and the coping. The design for Pedder's Street Pier was entirely altered, a solid stone base of considerable width recommended, and an open steel or iron pier 200 feet long by 40 feet wide ordered from England.

The completion of these two piers will absorb all the funds available for such work in 1898.

The following is a list of Public Works which must be considered and if possible provided for within the next few years:—

Buildings.—The New Law Courts, the New Post Office and Treasury, a residence for the Governor at the Peak, improved and increased accommodation for the Police both at the East and West ends of the city, and a New Harbour Master's Office will absorb all available funds for building purposes for many years to come. It is therefore unnecessary to mention other minor wants. The above are undoubtedly the most pressing.

Roads.—The completion of MacDonnell Road to its junction with Kennedy Road should be taken in hand next year. The plans for it are ready. A road from Wanchai Gap round the south side of Mounts Nicholson and Cameron to Wongneichong Gap would be a very desirable addition to the roads in the Peak District, and would open up a beautiful part of the country, making access to Taitam and the eastern parts of the island from the higher levels easy. The comparatively level road from Plantation Road Station to Magazine Gap, to be completed in 1898, will much improve the latter locality as affording easier means of reaching Victoria by ricksha and tram, and may possibly lead to further building of European residences beyond Wanchai Gap to which this road will give access.

The possibility of constructing a road from Victoria Gap, level, or at an easy gradient, to the saddle between Victoria Peak and High West, and then down by the north face of the mountain to a point on the Peak Road, should be ascertained. Such a road would give access to splendid building sites.

The Victoria Jubilee Road round the Island will soon be in progress and its completion in a few years will prove an immense boon to the whole population of the Colony, European and native. If followed, as no doubt it will be in time, by a road side tramway, the overcrowding of Victoria will probably be relieved by many of the better class of Chinese and Eurasians moving out to the suburbs.

The roads in Kowloon are being pushed on, and should be liberally provided for annually, until the Yaumati Road on the West, and the Hung Hom Road on the East respectively reach the boundary; while the cross road from Yaumati by the wells is carried on to the road on the East.

Water Works.—Mr. COOPER's able and exhaustive report of 1896 on the Water Supply goes very fully into the works that may be necessary to meet future requirements. On the completion of Wongneichong reservoir, the additional reservoirs described in paragraphs 155 to 159 of Mr. COOPER's report should be undertaken, in view of the rapidly increasing population of the city.

Reclamation Works.—The first work of this description to be provided for in the early future is at Taikoktsui. Surveys have not yet been made, but a mere inspection of the locality makes it plain that such a work would not only be easy of execution but very beneficial, and probably extremely remunerative owing to the large extent of land to be reclaimed for a comparatively small expenditure. Stone and earth for the work are close at hand, while the levelling of the hills immediately above the Taikoktsui village would make it possible to lay out that locality in the way that Yaumati and Mongkoktsui have been treated, and satisfactorily provide for the boat-building population of the Colony, hitherto frequently shifted from place to place, and occupying foreshore as squatters wherever it has been permitted. If a large proportion of the working coolie population of Hongkong can find quarters and inducements to live at the Kowloon side, in well laid out, well drained, airy streets, built as they are being built with modern ideas of sanitation, and with the experience of the errors of the past before our eyes, instead of in the dangerously overcrowded rookeries of China-town in Victoria, the benefits to the majority of the population of the Colony will be great. The reclamation of the foreshore beyond Arsenal Street to East Point is a work bound to follow on the completion of the present works to the West, say, in three years' time. Owing to the shallowness of the water, the cost would be much less than the cost of the reclamation to the West, and the work is certain to prove remunerative, but it is a large question and how it should be undertaken and financed requires much consideration. In connection with the construction of the Victoria Jubilee Road, a very useful and profitable work can be done near Aberdeen, namely, the reclamation of the tidal flat adjoining the existing road to Little Hongkong. This salt water marsh or tidal flat is credited, without much reason, with causing fever in the locality, and even in somewhat distant parts of the Peak District. However this may be, it will certainly be an advantage to reclaim it, to keep out the tides, and after it has been sweetened by being kept for a time as a fresh water lake, turning it into rice fields. This work can be done as part of the new road at little or no additional expense. The area that can be reclaimed is from 30 to 40 acres.

Among miscellaneous works to be done, when funds are available, may be mentioned the erection of a Clock Tower at the base of the New Pedder's Wharf, and the removal of the existing structure in Queen's Road, where it is of little or no use and a serious impediment to traffic. In the position proposed and approved for the New Tower, it would be useful to the whole population and to the shipping in the harbour, especially if well lit up at night. It is therefore to be hoped the necessary funds will soon be forthcoming. The cost is estimated approximately at \$30,000. For such an object possibly some of the wealthy citizens of the Colony may come forward and provide the means, and while perpetuating their names earn the gratitude of not only this but of coming generations.

Something should be done towards providing a pure water supply for villages outside the system in Hongkong and Kowloon. This can be done by sinking new wells at some distance from the dwellings, and lining them with concrete or masonry in cement for a certain depth, and then closing the existing wells which are usually close to the houses or pig-sties, unlined and receiving all the surface washings and sewage.

An estimate and plan for washing tanks in the Nullah at Tai Hang will be submitted for consideration. It is roughly estimated that an expenditure of \$4,000 to \$5,000 will provide means for 25 washermen at a time to wash clothes in clean water.

DEPARTMENTAL AND PERSONAL.

The following officers proceeded to Europe on leave during the year:—

Mr. H. P. TOOKER, Executive Engineer, 12 months' leave commencing on 19th March.

Mr. L. GIBBS, Assistant Engineer, 12 months commencing 27th April.

Mr. C. H. GALE, Chief Draftsman, 12 months, commencing 27th April.

Mr. J. L. PROSSER, Surveyor, 6 months commencing 18th May.

Mr. G. J. W. KING, Land Bailiff, had ten weeks' leave to the North to recruit his health and was absent from 27th September to 5th December.

The following Officers returned from leave during the year:—

Mr. W. CHATHAM, Executive Engineer, on the 7th April.

Mr. J. L. PROSSER, Surveyor, on 13th December.

Mr. A. H. HOLLINGSWORTH joined the Department from the 31st January, being appointed by the Right Honourable The Secretary of State. Mr. W. H. CUMSTON joined the Department as Draftsman on the 5th June; appointed by His Excellency the Governor. Mr. R. D. ORMSBY assumed duties as Director of Public Works on the 20th October, his appointment on transfer from Ceylon dating from 13th September. Mr. T. G. HUGHES, from the Royal Engineers, was appointed on probation as temporary surveyor on the 8th November.

Mr. W. F. BAMSEY resigned his appointment as Draftsman from the 1st July.

The Honourable F. A. COOPER, after about 10 years' service in Hongkong was transferred to Ceylon as Director of Public Works in that Colony from the 6th May.

During the period that elapsed between the departure of Mr. COOPER and Mr. ORMSBY's arrival, Mr. W. CHATHAM, Senior Executive Engineer, acted as Director of Public Works, and on him fell the arduous duties connected with the Jubilee Celebration. His service during the six months he held the appointment met with the high approval of His Excellency Sir WILLIAM ROBINSON, and his connection with the Jubilee Celebrations was deservedly recognised by the presentation of a gold medal.

R. D. ORMSBY,
Director of Public Works.

Hongkong, 26th April, 1898.

Appendix A.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS, 1897.

Monthly Consumption, Contents of Reservoirs, &c.

MONTH.	POKFULAM.		TYTAM.		Collected from Streams intercepted by Conduits.	Total Consumption, (Filtered).	Blue Pool and Mint Dam, (Unfiltered).	Rainfall.	REMARKS.
	In Reservoir, 1st of Month.	Discharged into Tunnel.	In Reservoir, 1st of Month.	Discharged into Tunnel.					
January,	gallons. 56,695,000	gallons. 17,757,000	gallons. 341,000,000	gallons. 50,879,000	gallons. 8,360,000	gallons. 76,996,000	gallons. 4,210,000	inches. 2.26	
February,	46,645,000	16,038,000	315,087,000	46,340,000	4,279,000	66,657,000	3,919,000	1.82	
March,	38,398,000	17,757,000	284,488,000	60,513,000	1,598,000	79,868,000	6,366,000	.82	
April,	24,809,000	9,450,000	237,000,000	63,881,000	2,905,000	76,236,000	5,976,000	3.24	
May,	20,079,000	24,617,000	229,200,000	45,061,000	21,132,000	90,810,000	5,710,000	14.86	
June,	63,343,000	29,445,000	306,083,000	39,934,000	26,157,000	95,536,000	5,053,000	23.35	
July,	66,330,000	24,800,000	388,000,000	55,996,000	18,249,000	99,045,000	9,559,000	5.57	
August,	66,330,000	16,003,000	372,400,000	56,980,000	18,646,000	91,629,000	12,633,000	25.55	
September,	66,330,000	29,785,000	388,000,000	51,107,000	13,297,000	94,189,000	3,264,000	8.34	
October,	68,161,000	31,975,000	398,250,000	46,271,000	20,176,000	98,422,000	5,445,000	6.42	Boards inserted in bye-wash, both at Tytam and Pokfulam.
November,	63,440,000	18,038,000	408,500,000	56,998,000	13,831,000	88,867,000	7,348,000	7.32	West catchwater commenced to discharge into Tytam Reservoir on 8th November.
December,	68,113,000	9,050,000	401,667,000	68,593,000	6,207,000	83,850,000	6,806,000	.48	
Total, .....	.....	244,715,000	.....	642,553,000	154,837,000	1,042,105,000	76,289,000	100.03	

Appendix B.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS, 1897.

Water pumped to Hill District and High Levels of the City (Theoretical displacement of Pumps).

MONTH.	HILL DISTRICT.		HIGH LEVELS OF THE CITY.				COMBINED TOTAL HILL DISTRICT AND HIGH LEVELS OF CITY.
	Pumped by Motor.	Pumped by Engine.	Total.	Reservoir on Peak Road.	Reservoir South of Bellios Terrace.	Reservoir South of Pokfulam Filter Beds.		Total.
January,	gallons. 836,000	gallons. 279,000	gallons. 1,115,000	gallons. 467,000	gallons. 891,000	gallons.	gallons. 1,358,000
February,	809,000	64,000	873,000	395,000	705,000	.....	1,100,000
March,	842,000	296,000	1,138,000	451,000	901,000	.....	1,352,000
April,	372,000	721,000	1,093,000	467,000	969,000	.....	1,436,000
May,	912,000	404,000	1,316,000	528,000	1,118,000	.....	1,646,000
June,	1,279,000	130,000	1,409,000	505,000	968,000	.....	1,473,000
July,	1,264,000	296,000	1,560,000	634,000	982,000	16,000	1,632,000
August,	1,240,000	258,000	1,498,000	547,000	1,091,000	.....	1,638,000
September,	1,172,000	249,000	1,421,000	515,000	1,085,000	.....	1,600,000
October,	1,208,000	89,000	1,297,000	557,000	1,096,000	.....	1,653,000
November,	855,000	279,000	1,134,000	521,000	1,005,000	.....	1,526,000
December,	109,000	1,355,000	1,464,000*	483,000	885,000	63,000	1,481,000
Total,	10,898,000	4,420,000	15,318,000	6,070,000	11,696,000	79,000	17,845,000

* The increase in December was caused by the filling of the new Service Reservoir, which is capable of containing 409,000 gallons.

Appendix C.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS, 1897.

Particulars of Metered and Unmetered Supplies, &c.

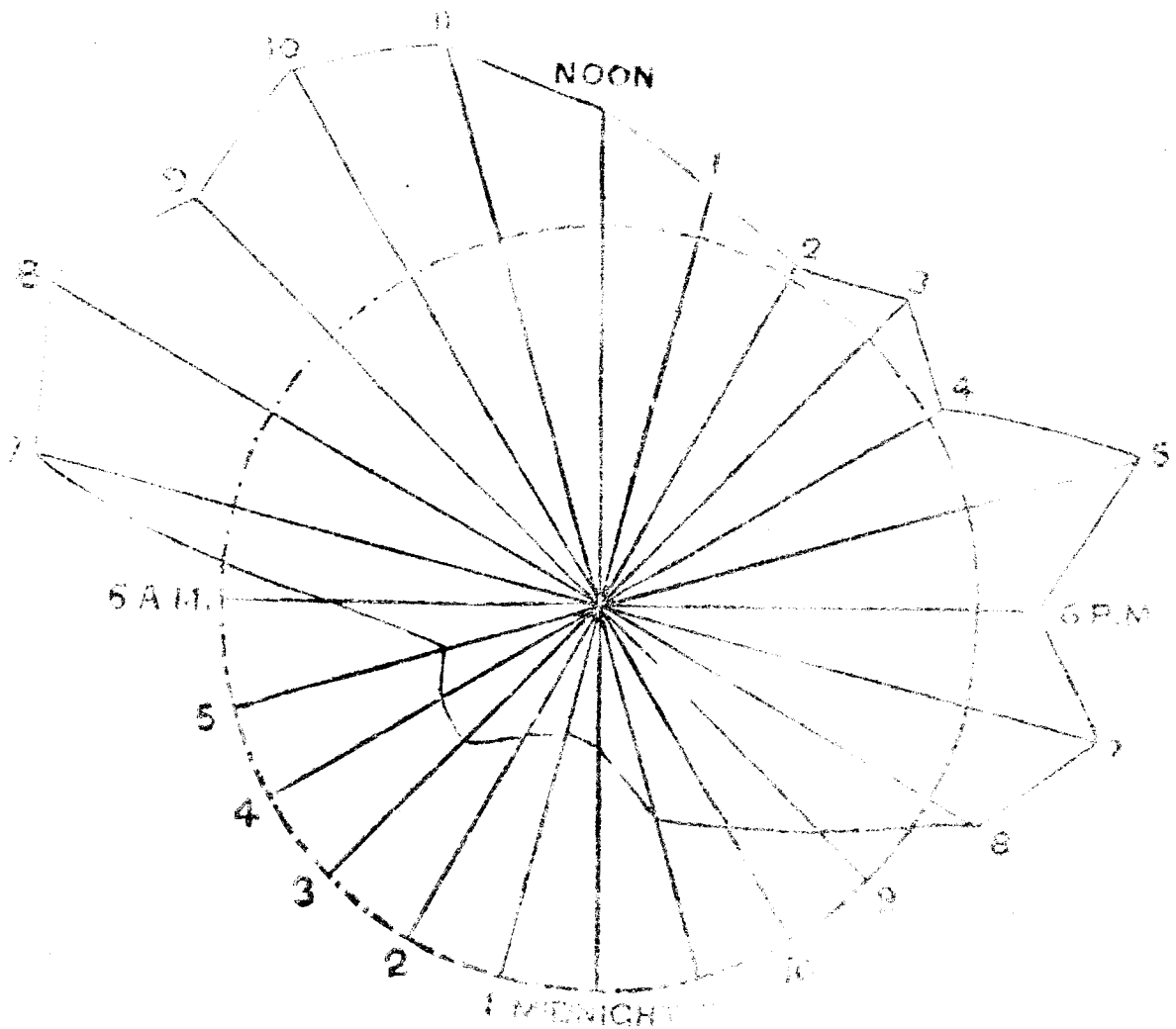
MONTH.	SUPPLY TO CITY AND HILL DISTRICT (FILTERED).			Wongkeichong and Mint Dam Reservoir, (Unfiltered) Metered.	TOTAL SUPPLY (FILTERED AND UNFILTERED).		GRAND TOTAL.
	City Unmetered.	Hill District Metered.	City Metered.		Unmetered.	Metered.	
January,	gallons. 66,368,000	gallons. 1,115,000	gallons. 9,513,000	gallons. 4,210,000	gallons. 66,368,000	gallons. 14,838,000	gallons. 81,206,000
February,	54,813,000	873,000	10,971,000	3,919,000	54,813,000	15,763,000	70,576,000
March,	66,353,000	1,138,000	12,371,000	6,366,000	66,353,000	19,875,000	86,228,000
April,	64,481,000	1,093,000	10,662,000	5,976,000	64,481,000	17,731,000	82,212,000
May,	79,224,000	1,316,000	10,270,000	5,710,000	79,224,000	17,296,000	96,520,000
June,	79,898,000	1,409,000	14,229,000	5,053,000	79,898,000	20,691,000	100,589,000
July,	83,824,000	1,560,000	13,661,000	9,552,000	83,824,000	24,789,000	108,613,000
August,	75,818,000	1,498,000	14,283,000	12,633,000	75,818,000	28,414,000	104,232,000
September,	78,254,000	1,421,000	14,514,000	3,264,000	78,254,000	19,199,000	97,453,000
October,	84,306,000	1,297,000	12,819,000	5,445,000	84,306,000	19,561,000	103,867,000
November,	71,621,000	1,134,000	16,112,000	7,348,000	71,621,000	24,594,000	96,215,000
December,	68,596,000	1,464,000	13,790,000	6,806,000	68,596,000	22,060,000	90,656,000
Total,	873,592,000	15,318,000	153,195,000	76,289,000	873,592,000	244,802,000	1,118,394,000

Appendix D.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS.

Diagram shewing hourly Consumption of Water.

March 29th, 1897.



SCALE.

1 inch = 60,000 Gallons.

NOTE.—Consumption each hour is plotted radially from centre.

Total Consumption = 2,923,011 Gallons.

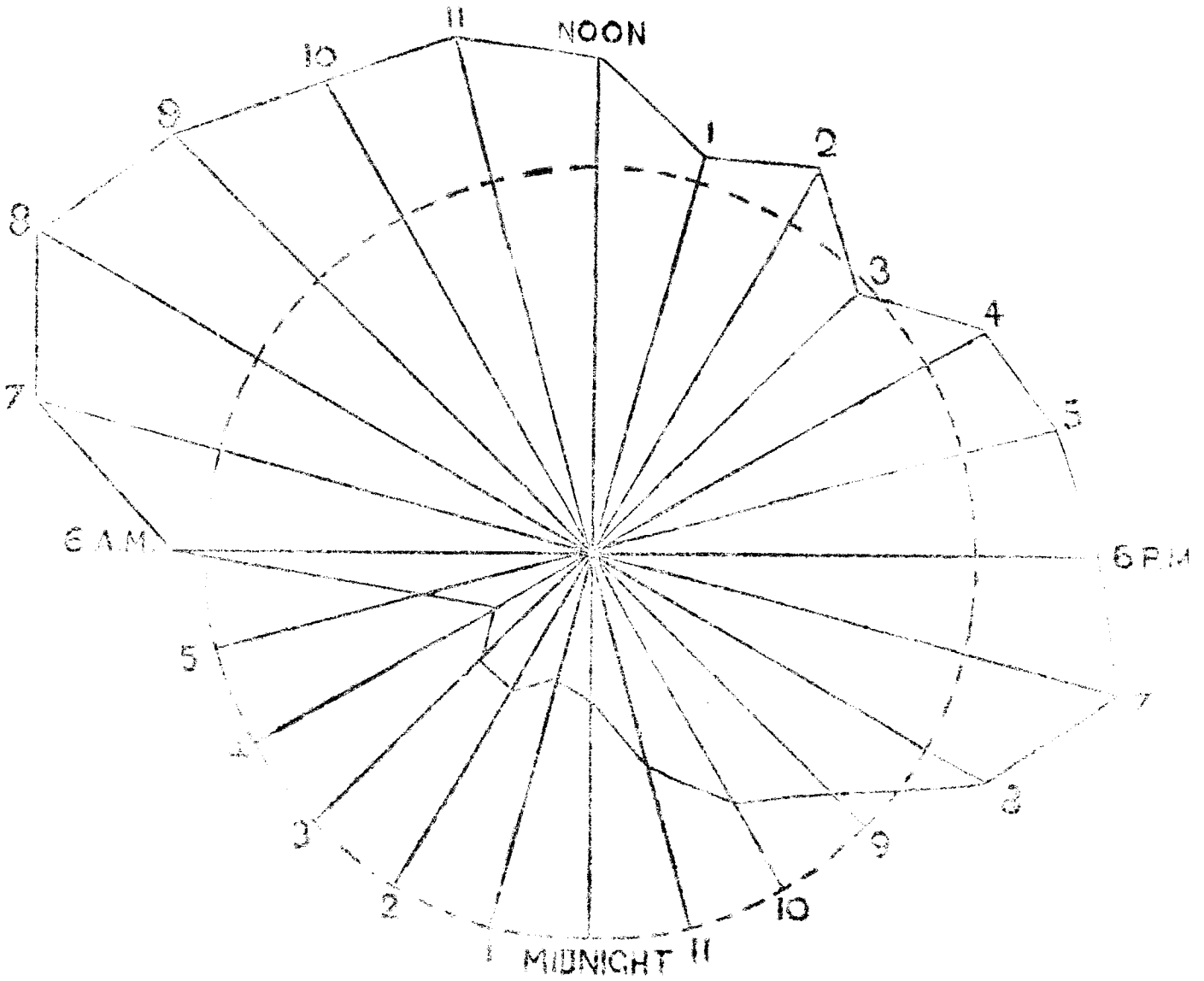
Average hourly = 121,792 „

Appendix E.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS.

Diagram shewing hourly Consumption of Water.

July 27th, 1897.



SCALE.

1 inch = 60,000 Gallons.

NOTE.—Consumption each hour is plotted radially from centre.

Total Consumption = 3,401,128 Gallons.

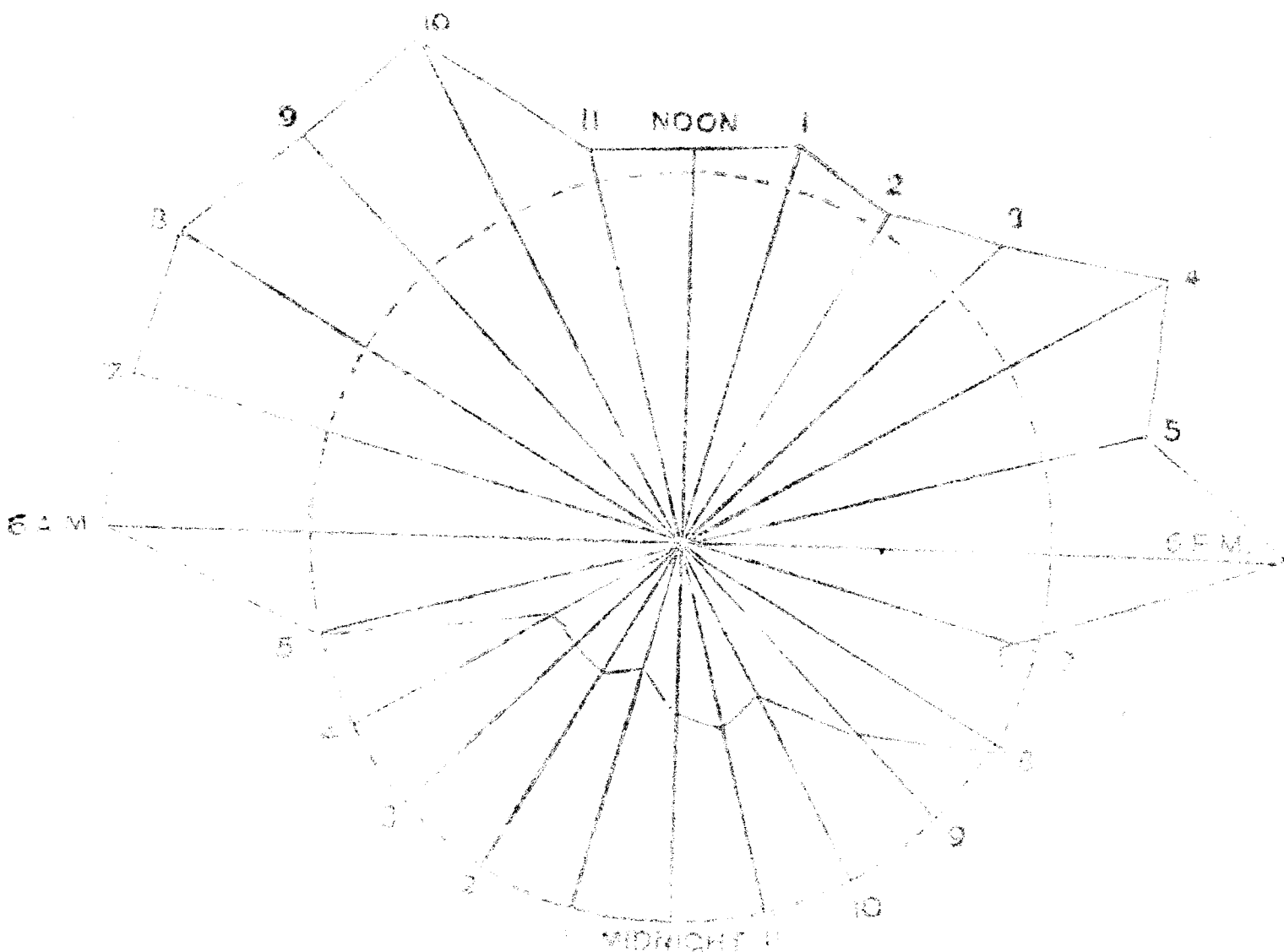
Average hourly = 141,714 „

Appendix F.

CITY OF VICTORIA AND HILL DISTRICT WATER WORKS.

Diagram shewing hourly Consumption of Water.

September 27th, 1897.



SCALE.

1 inch = 60,000 Gallons.

NOTE.—Consumption each hour is plotted radially from centre.

Total Consumption = 3,384,858 Gallons.

Average hourly = 141,035 „