BACK PAPERS.

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

FURTHER PAPERS.

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

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G.O., No. 289 M.

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[Despatch Abstract.]

Inspection Notes.

Recording with reference to the Sanitary Commissioners ——— on the Cocanada Mills.

BACK PAPERS.

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

FURTHER PAPERS.

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

Government {1897} of Madras.

LOCAL AND MUNICIPAL.

Recd. } 1897. *Enclosures*

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G.O., No. 289 M., 25th February 1897.

FEBRUARY.

Inspection Notes.

Recording, with remarks, the Sanitary Commissioner's — on the Cocanada Municipality.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper :—

From M.R.Ry. K. SESHACHALAPATIGAR, B.A., Chairman, Municipal Council, Cocanada, to the Secretary to Government, Local and Municipal Department (through the Collector, Gódávari), dated 23rd December 1896, No. 1262—226-Eng.

I have the honour to return herewith the Sanitary Commissioner's inspection notes on this municipality, together with the council's resolutions passed thereon at the meeting held on 12th December 1896.

ENCLOSURES.

INSPECTION NOTES of the Sanitary Commissioner, Madras.

GODAVARI DISTRICT.

COCANADA MUNICIPALITY.

Inspected 2nd to 7th September 1896.

Population as per census of 1891 40,553

Inspection Notes.	Chairman's Remarks.
Dwellings.—(*a*) In my last Inspection notes (G.O., No. 866 M., dated 20th May 1895), the very insanitary conditions following the crowded and irregular method of building huts in this town were fully entered into. This was a matter that had already secured much attention from the District Medical and Sanitary Officer, Surgeon-Captain Vickers. It would be now idle for me to go over this ground again, as the council is, I now believe, awakened to the importance of this question. After much delay and much discussion, a suitable site for new settlements has been obtained.	Council's resolutions passed at the meeting held on 12th December 1896. Recorded.

Inspection Notes.	Chairman's Remarks.
(*b*) It was arranged that this site should be built on, in accordance with designs furnished by the Sanitary Board. Unfortunately, however, on my inspection I found that the method of preparing the site was not such as would permit of the design being carried out, and such work as has been performed threatened to diminish the sanitary value of the future settlement. In my letter, No. 397, dated 19th September 1896, I drew the Chairman's attention to this matter, and suggested that he should secure the aid of an Engineer before he proceeded to undergo further expenditure.	The papers have been referred to the Local Fund Engineer, and his reply will be awaited.
(*c*) I personally pointed out to him the position I thought desirable for the sinking of wells. This would be suitable for the sinking of "tube wells." The council would find their use anything but costly whilst affording the maximum of sanitary protection (*vide* G.O., No. 2708 L., dated 21st October 1890).	One tube well with a pump will be obtained and its use tested. Other wells will be sunk on the high ground to the east of the new settlement as suggested by the Sanitary Commissioner.
(*d*) I understand the council's intention to be, not to turn out the "Turpee" people from their settlement *en masse*, but to buy up houses here and there, so as to permit of better perflation and correct road alignment. This of course will prove of great benefit; but I consider, both in their own financial interest and in the sanitary interest of the town, they should not apply this rule universally.	The land already acquired for the new settlement is mostly allotted for sites to Turpee people. Two hundred and thirty have already taken sites in the new settlement and they have no sites or houses of their own elsewhere. They were in rented huts.
(*e*) It would be of decided advantage to abolish these hutting grounds entirely from the better parts of the town where, incongruously, groups of huts with their surroundings in most insanitary condition stand side by side with a good class of houses. By their complete abolition in such instances and provision of suitable residences elsewhere, not only would both the poor and well-to-do classes be benefited sanitarily, but the council would profit financially. Sites would be acquired that would no doubt sell for good value, whilst the existing houses in the immediate neighbourhood would, as a result of "betterment," secure higher rentals.	Do. do. do.
2. *Roads.*—(*a*) Certain of the roads, as has always been the case in Cocanada, are in very poor condition. The council in this respect, no doubt, is saddled with difficulties as to transport of suitable material. Still, I think something better could be effected by strict supervision during the making of roads.	The roads are being repaired and restored so far as funds permit.

Inspection Notes.

(*b*) The council possesses a clock-tower in a suitable situation. The clock has a translucent face, but it is never lighted at nights. The small cost necessary might advantageously be met.

3. *Water-supply*—(*a*) *Jaggannaikpett Channel.*—As on my last inspection, no watchman was to be found looking after this channel; history repeated itself by my finding a man calmly washing himself in the drinking-water channel after defœcation on the bank. As cholera had appeared in the town following the outbreak at Pushkaram festival, the danger of leaving so important a source of supply close to inhabited areas without a watchman is obvious.

(*b*) *Cocanada Canal supply.*—At Simson's lock, I found boats moored close to the town supply off-take. There seems no good reason why this dangerous practice should be adhered to. It would cause no inconvenience if boats were moored below the lock.

(*c*) *The Market tank, Church and Balajee Rao's tanks*, permit entrance of surface flow. Very little labour spent in filling in worn surfaces would prevent serious sanitary evils. Considering that otherwise than during the morning and after four in the evening, the work of a tank watchman must be nearly *nil* as persons do not come much for drawing water in the interval, it ought to be a simple enough matter to secure that the tank bund, having once been put in correct repair, should be so retained by the labour of the watchman. He should be indeed held responsible for the condition of the bund under ordinary circumstances.

(*d*) *The Raja's Tank.*—This has been cleaned out by the council during the year without consulting the Sanitary Board. The supply reaches it by means of an open channel. In one part of its course the channel runs near Pariah huts, and it need not be said that the temptation to use its banks for defœcation is not resisted. As it is very unlikely under the best combination of circumstances that Cocanada will have a public water-supply under two years, it would be advisable that steps be taken to prevent this gross defilement. It seems to me that it would not cost a sum beyond the means of the council to lay a line of pipes between the

Chairman's Remarks.

The council considers it unnecessary at present.

The channel is three miles long and is being watched by a peon and a cooly. Arrangements will be made to have them close to the town in the early mornings.

At low water, there is not sufficient water to float boats below the lock.

The depressions in tank bunds have been filled in. Care will be taken to keep the bunds in order.

The work done at Raja's tank was only clearance of silt.

Inspection Notes.

last sump on the road from Simson's lock and this tank. The use of glazed stoneware pipes would be economical; but, in view of the fact that ultimately a public water-supply may be expected, it would be better economy to lay down iron pipes that could be taken up and used as part of the large scheme.

(*e*) *A public water-supply scheme for Cocanada.*—Taking into consideration the brackish condition of the water obtainable from shallow wells and the impurity of the soil from which it is derived, this town cannot obtain a safe supply from the subsoil water. The tanks and channels by which they are supplied are open to gross contamination. The necessity, therefore, for a correctly-protected public supply is evident. In my last report, I discussed the feasibility of sinking artesian wells here. The work performed by the East Coast Railway can only be regarded as experimental and ceased, as many other attempts in this country have done, with a break-down of the apparatus. Sufficient evidence had, however, been secured to show that artesian wells (or at any rate the obtaining of good water in deep wells) are feasible. Had the council a certain amount of money with which it could run the risk always attending the sinking of such wells, it might have paid it to have pursued experiments on its own account. But if this be not available, it is to be presumed the canal must be looked to as the only available source of supply after filtration. The Sanitary Engineer has already prepared a scheme using the canal as a source. I advise the council to represent to Government the fact reported to me that many of the richer townsmen are willing to subscribe. Cocanada has, I believe, the credit of being the first municipality where the citizens have come forward with liberal offers in support of a charity so thoroughly in accord with the best tenets of the Hindu religion.

(*f*) *The Pithápuram Rajah's Tank.*—This is in a foul condition, and it would consequently be advisable that it be filled in.

4. *Sewage removal.*—(*a*) There is no sewage system, with the result that pools of sewage are to be found soaking into the ground in juxtaposition with the under-ground pervious masonry conduits through which the water-supply passes.

Chairman's Remarks.

The final orders of Government on the report about the water scheme will be awaited. The council is not inclined to spend any more money on having either the masonry channels or iron piping until receipt of orders from Government about the water scheme.

Notice will be issued to the Zamindar of the Pithápuram estate to have the tank filled in within two months.

As there are, generally speaking, no drains to carry off the filtered sewage water, the council considers that the use of cesspools, constructed on the standard system, is more adapted to this town.

Inspection Notes.

I showed the Chairman the method of construction of the Vizianagram filter which should enable him to get a fair filtrate in place of the untreated sewage hitherto allowed to soak into the soil. At somewhat increased expenditure a form of filter lately devised by me, in which the idea of aëration which is now adopted for public sewage filters is made applicable to one suitable for household use, might be employed by the council with the surety of obtaining better results than with the cheaper Vizianagram filter. It might therefore be introduced with advantage in the houses of the well-to-do. The only disadvantage urged against it is that, as sent for trial by me, it was of a height that will not fit most basements; but the height can safely be reduced if the surface area be increased. I attach a report on its working, by certificated Sanitary Inspector Fairman, submitted to this office through the Chairman, Municipal Council, Bellary. The results as found by him in this small farm are such as are warranted by experience in large public sewage filters. A great advantage over the Vizianagram filter is that change of material is not requisite. The required aëration by forcing in air can easily be arranged for by the private or public scavenger using a common hand-bellows for one minute daily. The specimen as per plan attached cost Rs. 14, but I have no doubt municipalities could turn these out locally for a much smaller sum. The cost even at this sum is much less than usual for a well-built cesspool.

(*b*) Considerable improvement has been effected, since my visit, in the drain passing through the market. It would be desirable to place at the top of this drain a moveable shutter, so that from the adjoining public water-supply conduit sufficient water should be stored to secure a complete and forcible flush of the whole drain contents on its withdrawal. The outlet of this drain does not reach low water, and is a cause of nuisance. To continue it the necessary length, if built of its present size, would be an expensive matter. But I think this might be met by arranging only to make the pipe large enough to receive the sewage, thus disregarding the upper section of the present conduit meant for the receipt of storm water.

Chairman's Remarks.

Two shutters will be fixed—one at the entrance into the market compound and the other above the post-office compound. Messrs. Burn & Co. have been addressed regarding the iron pipes to be fixed at the mouth of the main sewer into low water-mark.

Inspection Notes.

5. *Conservancy.*—(*a*) The following conservancy staff and plant are employed:—

Staff.	Toties.	Sweepers.	Number of Rubbish carts.	Quantity to be removed.	Number of night-soil carts.	Quantity to be removed.	Quantity left unremoved daily.
1 Inspector. 1 Overseer. 6 Peons.	36	49	12	C. FT. 2,160	Seven hand-carts and one bullock cart.	C. FT. 478	C. FT. 199

As above shown, the transport of night-soil cannot be correctly managed with so insufficient plant. To effect removal correctly, ten iron night-soil carts of 16 cubic feet capacity making three trips daily at least would be required. It is simply impossible for 36 toties to collect the night-soil of a population of 47,939 and drag conservancy buckets to a distance of nearly two miles outside the town. The buckets I saw at the night-soil depôt were only about half full. Disregarding the population now attended to under the private scavenging system, not less than 52 more toties are requisite.

(*b*) *Public Latrines.*—Only seventeen latrines are in use. Not less than forty-eight should be available.

(*c*) *Private Scavenging.*—Last year only 200 out of a total of 4,808 houses were attended to. Now there are 828. This is creditable to the Chairman and the subordinate by whose immediate efforts increase was obtained, namely, K. C. Sathya; but the total result ought not to be considered otherwise than a forerunner of better things to come.

(*d*) *Rubbish Collection.*—As shown in the above table, 28 more rubbish carts are required if the work is to be correctly effected. The fact that there exists great laxity in the matter of rubbish removal was forcibly illustrated by the uncleanly condition of the back dwellings, the finding of a clean backyard being an exception. In this matter, much more energy on the part of the municipal staff is essential. It is too apt to be forgotten that, granting the land on which this nuisance is accumulated is "private," it is not a whit less inimical to the public

Chairman's Remarks.

Two night-soil carts drawn by bullocks have been ordered. It has been found impossible to get more toties in Cocanada, but efforts are being made to get them from elsewhere.

In the current year, two latrines have been provided for and will be completed before the end of March next. As many as possible will be provided for in the next budget.

Recorded.

The question will be considered along with the budget.

Inspection Notes.

health than if on public ground. Full power in this matter is at the disposal of the council, and should be used by them.

(*e*) *Night-soil and Rubbish disposal.*—I am glad to be able to report that in this respect a decided advance has been made by this municipality since my last inspection. In default of purchasers, the council took up ground which was duly improved by the deposit of rubbish and was then leased out to a contractor; the resulting crop on very poor soil was so good as to excite the envy of the owner of the neighbouring fields, with the result that ground has been placed at disposal of the council for trenching with night-soil. As the area is large, instead of trenching the following method used at the Allahabad "grass farm," which ensures early change of the night-soil in the layer most rich in microbic life, might be employed:—

"For the contents of each filth cart, a rectangular space 4′×5′ is taken and the top soil scraped off to the edges to a depth of about 3″. The soil at the bottom of the space is then loosened and pulverized to a depth of 6″ or 7″. The shallow trench having been thus prepared, the contents of the filth cart (Cowley pattern) are tipped into it. If the bottom soil has been well pulverized, the filth portion soaks into it quickly, leaving a thin stratum of the solids on the top, which is now covered over with the 3″ of earth first removed."

Chairman's Remarks.

The land now used for the night-soil depôt belongs to a private owner, but has been placed at our disposal. He is not prepared to allow a large area to be utilized for trying the system of shallow trenching as suggested.

(*f*) In addition to the above efforts, a spot sufficiently removed from dwellings that was formerly a much frequented easement ground has been filled with rubbish, and an excellent garden has been started on the spot. Certain of the councillors have vigorously opposed the measure; but it is undoubtedly a most useful sanitary and economic "object lesson." Care should be taken to make it economically advantageous by growing crops of easily cultivated country vegetables, to the exclusion of flowers. The neighbouring latrine contents might advantageously be dumped here by the method above described.

Attempts will be made to make the garden profitable.

6. *Markets*—(*a*) *Jagannayakpur Market.*—This market was destroyed by fire. It is apparently the intention of the council to rebuild it on the same plan. I advise

The market in Jagannayakpur will be re-built on an approved plan.

Inspection Notes.

that the whole question be reconsidered. If the market is to be retained, a new structure should be formed in accordance with the plans of the Sanitary Board. The meat sold at this market was of a most inferior description.

(*b*) *Meat Market—Cocanada.*—The wooden pillars should be painted with white silicate paint so as to disclose dirt and enable it to be removed when disclosed. The walls should be plastered with Portland cement up to $4\frac{1}{2}$ feet from the ground level, and this also should be coated with white silicate paint. A drain should be added along the basement so as to catch the basement washings. The filthy old ropes and boxes now in use should be abolished. In lieu of the boxes a very good form of slab can be procured at Jaggayyapéta near Bezwada that might be polished. Instead of ropes, steel hooks and bars should alone be employed. The area round the market requires metalling. The straggling and untidy sun-shades erected by bazaarmen should be removed, and a verandah be added if shelter is really required.

Chairman's Remarks.

The suggestions of the Sanitary Commissioner will be adopted.

7. *Offensive Trades.*—The dhobies at Jagannayakpur wash partly in a tank and in dirty surface pools. There need be no difficulty here about water-supply from the sub-soil and suitable drying space. It would cost but very little, consequently, to make arrangements so as to have the washing of the clothing of inhabitants conducted in a thoroughly cleanly manner. The Sanitary Board could doubtless supply the requisite plans on application.

The plans for dhobies' wells will be obtained.

8. *Graveyards.*—The ground chosen for the new Muhammadan graveyard seems to me undesirably close to the new Turpee settlement. By choosing a field in close proximity to the site now selected, it would be possible to secure that the slope of the ground should be from the settlement. This would allow a distance of not less than 300 yards from the Turpee settlement.

A new site further from the new settlement has been selected and approved by the Civil Surgeon. It will be acquired under the Act.

9. *Vaccination.*—(*a*) This municipality has for a long period shown indisposition to enforce correctly the compulsory clauses. For some time difficulty was experienced in the matter of getting the Sub-Magistrate responsible to dispose of cases sent to him, but this difficulty was duly removed

The returns are prepared in the office, and not by the vaccinator; but they depend on information furnished by the vaccinator. The returns are being submitted punctually now.

Inspection Notes.

by the District Magistrate. Still, in the matter of punctual submission of the forms required under G.O., No. 1502 M., dated 19th October 1894, this municipality is distinguished by dilatoriness. As to how matters at present stand as to compulsory vaccination of infants, I am necessarily in great doubt, as the forms required under Government Order quoted above are not supplied notwithstanding reminders both from this office and from Government—*vide* G.O., No. 1325 M., dated 10th August 1896. Contrary to instructions on this matter, the preparation of the form is left to the vaccinator and is not effected in the office. In view of the fact that the municipality possess a paid Chairman, the absence of attention to an important branch of its administration in spite of reminders does not do it credit.

(*b*) Lymph is obtained at a very unnecessary expenditure. Lymph is kept up by calf-to-calf inoculation. Nevertheless, recourse is had to lymph preserved with glycerine. So long as the council chooses to go to the expense of having fresh lymph at disposal, it ought not to be necessary to use preserved preparations. On the day of "lymph turn" the subjects to be vaccinated should be duly assembled at the depôt, and fresh lymph direct from the calf should be employed. Otherwise, it would be cheaper for the council to obtain glycerine lymph from the local fund depôt.

(*c*) The vaccine calf-shed has been improved, but arrangement should be made to make stalls of such dimensions that the inoculated calves cannot do more than lie down comfortably, otherwise the vesicles are apt to be destroyed. Correct measurements can be obtained from the Sanitary Board's standard plans. The following statement shows the progress of infantile vaccination during the half-year ending June 1896 :—

Chairman's Remarks.

Note.—All returns up to and including April 1896 were submitted before I went away on leave on 4th June 1896. Those from May 1896 have been submitted after my return. The return for November 1896 was sent on 3rd December 1896.

The calf lymph alone will be used hereafter.

The Sanitary Board's standard plans for calf-shed will be applied for.

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Died.	Left the town.	Unaccounted for.	Ratio of successful vaccinations to total births per cent.
	Successfully.	Unsuccessfully for the 1st time.	Successful.	Unsuccessful.					
577	159	1	2	..	2	87	95	12	27·9

Inspection Notes.

10. *Registration.*—On this matter also there has been great want of attention on the part of the municipality—a fact sufficiently demonstrated by the following statistics :—

Years.	Ratio of births per mille of estimated population.	Ratio of deaths per mille of estimated population.	Percentage of deaths from					
			Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	Other causes.
1891	14·0	12·8	9·4	4·7	11·3	14·5	3·0	57·1
1892	28·5	33·8	20·6	2·5	14·9	16·1	1·6	44·3
1893	23·4	18·0	1·4	0·3	12·9	11·1	3·0	71·3
1894	26·3	21·0	0·7	0·2	16·7	9·8	1·6	71·0
1895	17·6	15·1	..	2·6	15·4	12 8	1·1	68·1
1896 up to August ..	19·9	13·0	..	0·2	15·6	11·5	2 4	70·3

The Chairman explains these results by stating that, against his wishes, the council abolished two assistant registrars, and that only after my remonstrance as to the falling off of statistics did the council again sanction their entertainment. But, even as it stands, the registration staff *is very unsatisfactory*. All registration takes place at the head office, where a single clerk on Rs. 10 per mensem undertakes the work in addition to other duties. The so-called assistant registrars are of the peon class. In the birth register, 901 cases were found without any entry in the vaccination column ! I consider that in so large a town, it is essential that at least two sub-offices be opened besides the head office. The sub-registrars should at least receive Rs. 15 per mensem and should have passed the late Middle School or the present Lower Secondary examination.

Chairman's Remarks.

Two sub-offices will be opened in Suryaraopeta and Jagannayakpur—Resolution, dated 12th December 1896.

The existing practice will be continued in the matter of registration of births and deaths. The council is of opinion that any extra cost on sub-offices is unnecessary. The registrar's pay may be raised from Rs. 10 to Rs. 12, to rise to Rs. 15 by annual increments of one rupee. The sub-registrar's pay need not be raised—Resolution, dated 16th December 1896.

Note.—The existing practice is to get information of births and deaths in the form of slips, and register the same on the authority of those slips signed or marked by the parties concerned.

(Signed) W. G. KING, Surgeon-Lieut.-Col.,
7th November 1896. *Sanitary Commissioner, Madras.*

From M.R.Ry. D. KRISHNAMA CHARLU Garu, Chairman, Municipal Council, Bellary, to the Sanitary Commissioner, Madras, dated 10th October 1896, No. 575.

With reference to your No. 1535-S., dated 15th August 1896, I have the honour to forward herewith the report from Mr. E. Fairman, Sanitary Inspector of this municipality, on the working of the sewage filters kindly handed over by you for trial, and to state that I fully endorse his views on the subject.

From Mr. E. FAIRMAN, Sanitary Inspector, Bellary Municipality, to the Sanitary Commissioner, Madras (through the Chairman, Municipal Council, Bellary), dated 8th October 1896, No. 5933.

I have the honour to report on the working of the filter which you handed to me for trial in this municipality somewhere about the latter end of May last.

This filter, which is an oblong, aërated one, was according to instructions charged with the usual filtering materials (broken granite $1\frac{1}{2}''$ in size as the bottom layer $4''$ in depth, gravel above it $3''$ and sand on the top $9''$), and was placed at the sewage drain of a Muhammadan house in Glass Bazaar street, ward No. I, at the beginning of June last and worked very satisfactorily up to the end of July last when, owing to the sludge forming a crust on the top of the sand retarded the free filtering process; on this stuff which was free from odour about $\frac{3}{4}''$ thick being removed the process of filtration commenced again.

At the latter end of August last some of the councillors formed into a committee to report on make-shifts for sewage drainage in this town, and I was called on by the Chairman to produce before them this filter as well as the Vizianagram one, which I accordingly did and explained to them their working, with which they were well satisfied. One of the councillors expressing his desire to see the Vizianagram one working, I had the tube and funnel which were broken replaced by new ones and set the same to work in his house at Cowl Bazaar. Apart from this the aërated one on being cleaned out for the purpose of being produced for inspection before the committee referred to above, it was surprising to see that after three months' working the filtering materials were just as clean as when they were first put in, no smell of any kind emanating from them; from this I infer that the filter will not require re-charging with fresh materials more than once a year except a little sand being replaced on the top from time to time when the sludge is removed.

When setting the filter to work at first, it never struck me at the time that the effluent passing out would collect under the filter without having the sun's action on it, but on re-charging and placing it again in the same spot, I placed a large granite slab in a sloping position under it, so that the effluent would not collect under the filter but run out on the ground and be under the direct action of the sun. It is now very near a month since it has been set to work, within which time I have pumped air according to instructions into it through the tube with a hand-bellows to supply the organisms in the sewage with oxygen for their rapid increase to break up the solid particles in it and removed the sludge about $\frac{1}{4}''$ thick of a brown colour from the surface about two days ago.

The effluent passing from the filter is clear, sparkling and inodorous, which running on the ground is absorbed very rapidly and evaporated by the action of the sun that there are no traces of the effluent having run on it.

The sludge, I consider, will be of little or no use whatever as a manure inasmuch as it is always exposed to the action of the sun; the manurial properties would be neutralised.

Some of the clerks of the Collector's office were taken by me to see the filter working; the effluent was collected as it passed from the filter in a vessel and shown to them, when they expressed their surprise at the clearness and inodorousness of the effluent, which in appearance was superior to some of the waters used for drinking in this town.

I am, therefore, of opinion that although this filter is in every respect superior to the Vizianagram one yet owing to its height, it cannot, with advantage be used in this municipality as the house drains are on a level with the road except in a few instances where they are a little higher. The Vizianagram one having an upward filtration can be embedded in the earth up to the discharge tube in front of the drains, whereas it cannot be done in the aërated one whose action of filtration is downwards.

Dis. on Cur. No. 1943-Eng.

Forwarded.

(Signed) R. H. SHIPLEY,
Acting Collector.

2nd January 1897.

Order—No. 289 M., dated 25th February 1897.

Recorded.

2. With reference to paragraph 3 (*d*) and (*e*) of the inspection notes and the Chairman's remarks thereon, it is observed that a water supply scheme for this town has since been sanctioned in G.O., No. 146 M., dated 3rd February 1897, and the Public Works Department has been asked to commence the work in the ensuing official year.

3. The delay in the submission of the vaccination returns, referred to in paragraph 9 (*a*) of the notes, is very unsatisfactory, and the Chairman should make such arrangements as may avoid its recurrence.

4. The municipal council should take steps to secure better results in the matter of vaccination and registration of vital statistics.

(True Extract.)

G. S. FORBES,
Secretary to Government.

To the Chairman, Municipal Council, Cocanada.
" Collector of Gódávari.
" Sanitary Board.
" Sanitary Commissioner.
" Sanitary Engineer.
Editors' Table.

Exd. A. Raitt.

Government {1897} of Madras.

LOCAL AND MUNICIPAL.

C.A.

Proof for approval.

Recd. } 1897. Enclosures

Regd. } Spare copies

G.O., No. 289 M., 25th February 1897.

FEBRUARY.

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Dwellings.—(*a*) In my last Inspection notes (G.O., No. 866 M., dated 20th May 1895), the very insanitary conditions following the crowded and irregular method of building huts in this town were fully entered into. This was a matter that had already secured much attention from the District Medical and Sanitary Officer, Surgeon-Captain Vickers. It would be now idle for me to go over this ground again, as the council is, I now believe, awakened to the importance of this question. After much delay and much discussion, a suitable site for new settlements has been obtained.	Council's resolutions passed at the meeting held on 12th December 1896. Recorded.

Inspection Notes.	Chairman's Remarks.
(*b*) It was arranged that this site should be built on, in accordance with designs furnished by the Sanitary Board. Unfortunately, however, on my inspection I found that the method of preparing the site was not such as would permit of the design being carried out, and such work as has been performed threatened to diminish the sanitary value of the future settlement. In my letter, No. 397, dated 19th September 1896, I drew the Chairman's attention to this matter, and suggested that he should secure the aid of an Engineer before he proceeded to undergo further expenditure.	The papers have been referred to the Local Fund Engineer, and his reply will be awaited.
(*c*) I personally pointed out to him the position I thought desirable for the sinking of wells. This would be suitable for the sinking of "tube wells." The council would find their use anything but costly whilst affording the maximum of sanitary protection (*vide* G.O., No. 2708 L., dated 21st October 1890).	One tube well with a pump will be obtained and its use tested. Other wells will be sunk on the high ground to the east of the new settlement as suggested by the Sanitary Commissioner.
(*d*) I understand the council's intention to be, not to turn out the "Turpee" people from their settlement *en masse*, but to buy up houses here and there, so as to permit of better perflation and correct road alignment. This of course will prove of great benefit; but I consider, both in their own financial interest and in the sanitary interest of the town, they should not apply this rule universally.	The land already acquired for the new settlement is mostly allotted for sites to Turpee people. Two hundred and thirty have already taken sites in the new settlement and they have no sites or houses of their own elsewhere. They were in rented huts.
(*e*) It would be of decided advantage to abolish these hutting grounds entirely from the better parts of the town where, incongruously, groups of huts with their surroundings in most insanitary condition stand side by side with a good class of houses. By their complete abolition in such instances and provision of suitable residences elsewhere, not only would both the poor and well-to-do classes be benefited sanitarily, but the council would profit financially. Sites would be acquired that would no doubt sell for good value, whilst the existing houses in the immediate neighbourhood would, as a result of "betterment," secure higher rentals.	Do. do. do.
2. *Roads.*—(*a*) Certain of the roads, as has always been the case in Cocanada, are in very poor condition. The council in this respect, no doubt, is saddled with difficulties as to transport of suitable material. Still, I think something better could be effected by strict supervision during the making of roads.	The roads are being repaired and restored so far as funds permit.

Inspection Notes.

(*b*) The council possesses a clock-tower in a suitable situation. The clock has a translucent face, but it is never lighted at nights. The small cost necessary might advantageously be met.

3. *Water-supply*—(*a*) *Jaggannaikpett Channel.*—As on my last inspection, no watchman was to be found looking after this channel; history repeated itself by my finding a man calmly washing himself in the drinking-water channel after defœcation on the bank. As cholera had appeared in the town following the outbreak at Pushkaram festival, the danger of leaving so important a source of supply close to inhabited areas without a watchman is obvious.

(*b*) *Cocanada Canal supply.*—At Simson's lock, I found boats moored close to the town supply off-take. There seems no good reason why this dangerous practice should be adhered to. It would cause no inconvenience if boats were moored below the lock.

(*c*) *The Market tank, Church and Balajee Rao's tanks*, permit entrance of surface flow. Very little labour spent in filling in worn surfaces would prevent serious sanitary evils. Considering that otherwise than during the morning and after four in the evening, the work of a tank watchman must be nearly *nil* as persons do not come much for drawing water in the interval, it ought to be a simple enough matter to secure that the tank bund, having once been put in correct repair, should be so retained by the labour of the watchman. He should be indeed held responsible for the condition of the bund under ordinary circumstances.

(*d*) *The Raja's Tank.*—This has been cleaned out by the council during the year without consulting the Sanitary Board. The supply reaches it by means of an open channel. In one part of its course the channel runs near Pariah huts, and it need not be said that the temptation to use its banks for defœcation is not resisted. As it is very unlikely under the best combination of circumstances that Cocanada will have a public water-supply under two years, it would be advisable that steps be taken to prevent this gross defilement. It seems to me that it would not cost a sum beyond the means of the council to lay a line of pipes between the

Chairman's Remarks.

The council considers it unnecessary at present.

The channel is three miles long and is being watched by a peon and a cooly. Arrangements will be made to have them close to the town in the early mornings.

At low water, there is not sufficient water to float boats below the lock.

The depressions in tank bunds have been filled in. Care will be taken to keep the bunds in order.

The work done at Raja's tank was only clearance of silt.

Inspection Notes.

last sump on the road from Simson's lock and this tank. The use of glazed stone-ware pipes would be economical; but, in view of the fact that ultimately a public water-supply may be expected, it would be better economy to lay down iron pipes that could be taken up and used as part of the large scheme.

(*e*) *A public water-supply scheme for Cocanada.*—Taking into consideration the brackish condition of the water obtainable from shallow wells and the impurity of the soil from which it is derived, this town cannot obtain a safe supply from the sub-soil water. The tanks and channels by which they are supplied are open to gross contamination. The necessity, therefore, for a correctly-protected public supply is evident. In my last report, I discussed the feasibility of sinking artesian wells here. The work performed by the East Coast Railway can only be regarded as experimental and ceased, as many other attempts in this country have done, with a break-down of the apparatus. Sufficient evidence had, however, been secured to show that artesian wells (or at any rate the obtaining of good water in deep wells) are feasible. Had the council a certain amount of money with which it could run the risk always attending the sinking of such wells, it might have paid it to have pursued experiments on its own account. But if this be not available, it is to be presumed the canal must be looked to as the only available source of supply after filtration. The Sanitary Engineer has already prepared a scheme using the canal as a source. I advise the council to represent to Government the fact reported to me that many of the richer townsmen are willing to subscribe. Cocanada has, I believe, the credit of being the first municipality where the citizens have come forward with liberal offers in support of a charity so thoroughly in accord with the best tenets of the Hindu religion.

(*f*) *The Pithápuram Rajah's Tank.*—This is in a foul condition, and it would consequently be advisable that it be filled in.

4. *Sewage removal.*—(*a*) There is no sewage system, with the result that pools of sewage are to be found soaking into the ground in juxtaposition with the under-ground pervious masonry conduits through which the water-supply passes.

Chairman's Remarks.

The final orders of Government on the report about the water scheme will be awaited. The council is not inclined to spend any more money on having either the masonry channels or iron piping until receipt of orders from Government about the water scheme.

Notice will be issued to the Zamindar of the Pithápuram estate to have the tank filled in within two months.

As there are, generally speaking, no drains to carry off the filtered sewage water, the council considers that the use of cesspools, constructed on the standard system, is more adapted to this town.

Inspection Notes.

I showed the Chairman the method of construction of the Vizianagram filter which should enable him to get a fair filtrate in place of the untreated sewage hitherto allowed to soak into the soil. At somewhat increased expenditure a form of filter lately devised by me, in which the idea of aëration which is now adopted for public sewage filters is made applicable to one suitable for household use, might be employed by the council with the surety of obtaining better results than with the cheaper Vizianagram filter. It might therefore be introduced with advantage in the houses of the well-to-do. The only disadvantage urged against it is that, as sent for trial by me, it was of a height that will not fit most basements; but the height can safely be reduced if the surface area be increased. I attach a report on its working, by certificated Sanitary Inspector Fairman, submitted to this office through the Chairman, Municipal Council, Bellary. The results as found by him in this small farm are such as are warranted by experience in large public sewage filters. A great advantage over the Vizianagram filter is that change of material is not requisite. The required aëration by forcing in air can easily be arranged for by the private or public scavenger using a common hand-bellows for one minute daily. The specimen as per plan attached cost Rs. 14, but I have no doubt municipalities could turn these out locally for a much smaller sum. The cost even at this sum is much less than usual for a well-built cesspool.

Chairman's Remarks.

(*b*) Considerable improvement has been effected, since my visit, in the drain passing through the market. It would be desirable to place at the top of this drain a moveable shutter, so that from the adjoining public water-supply conduit sufficient water should be stored to secure a complete and forcible flush of the whole drain contents on its withdrawal. The outlet of this drain does not reach low water, and is a cause of nuisance. To continue it the necessary length, if built of its present size, would be an expensive matter. But I think this might be met by arranging only to make the pipe large enough to receive the sewage, thus disregarding the upper section of the present conduit meant for the receipt of storm water.

Two shutters will be fixed—one at the entrance into the market compound and the other above the post-office compound. Messrs. Burn & Co. have been addressed regarding the iron pipes to be fixed at the mouth of the main sewer into low water mark.

Inspection Notes.

5. *Conservancy.*—(*a*) The following conservancy staff and plant are employed:—

Chairman's Remarks.

Two night-soil carts drawn by bullocks have been ordered. It has been found impossible to get more toties in Cocanada, but efforts are being made to get them from elsewhere.

Staff.	Toties.	Sweepers.	Number of Rubbish carts.	Quantity to be removed.	Number of night-soil carts.	Quantity to be removed.	Quantity left unremoved daily.
				C. FT.		C. FT.	C. FT.
1 Inspector. 1 Overseer. 6 Peons.	36	49	12	2,160	Seven hand-carts and one bullock cart.	473	199

As above shown, the transport of night-soil cannot be correctly managed with so insufficient plant. To effect removal correctly, ten iron night-soil carts of 16 cubic feet capacity making three trips daily at least would be required. It is simply impossible for 36 toties to collect the night-soil of a population of 47,939 and drag conservancy buckets to a distance of nearly two miles outside the town. The buckets I saw at the night-soil depôt were only about half full. Disregarding the population now attended to under the private scavenging system, not less than 52 more toties are requisite.

In the current year, two latrines have been provided for and will be completed before the end of March next. As many as possible will be provided for in the next budget.

(*b*) *Public Latrines.*—Only seventeen latrines are in use. Not less than forty-eight should be available.

Recorded.

(*c*) *Private Scavenging.*—Last year only 200 out of a total of 4,808 houses were attended to. Now there are 828. This is creditable to the Chairman and the subordinate by whose immediate efforts increase was obtained, namely, K. C. Sathya; but the total result ought not to be considered otherwise than a forerunner of better things to come.

(*d*) *Rubbish Collection.*—As shown in the above table, 28 more rubbish carts are required if the work is to be correctly effected. The fact that there exists great laxity in the matter of rubbish removal was forcibly illustrated by the uncleanly condition of the back dwellings, the finding of a clean backyard being an exception. In this matter, much more energy on the part of the municipal staff is essential. It is too apt to be forgotten that, granting the land on which this nuisance is accumulated is "private," it is not a whit less inimical to the public

The question will be considered along with the budget.

Inspection Notes.

health than if on public ground. Full power in this matter is at the disposal of the council, and should be used by them.

(*e*) *Night-soil and Rubbish disposal.*—I am glad to be able to report that in this respect a decided advance has been made by this municipality since my last inspection. In default of purchasers, the council took up ground which was duly improved by the deposit of rubbish and was then leased out to a contractor; the resulting crop on very poor soil was so good as to excite the envy of the owner of the neighbouring fields, with the result that ground has been placed at disposal of the council for trenching with night-soil. As the area is large, instead of trenching the following method used at the Allahabad "grass farm," which ensures early change of the night-soil in the layer most rich in microbic life, might be employed:—

"For the contents of each filth cart, a rectangular space 4′×5′ is taken and the top soil scraped off to the edges to a depth of about 3″. The soil at the bottom of the space is then loosened and pulverized to a depth of 6″ or 7″. The shallow trench having been thus prepared, the contents of the filth cart (Cowley pattern) are tipped into it. If the bottom soil has been well pulverized, the filth portion soaks into it quickly, leaving a thin stratum of the solids on the top, which is now covered over with the 3″ of earth first removed."

(*f*) In addition to the above efforts, a spot sufficiently removed from dwellings that was formerly a much frequented easement ground has been filled with rubbish, and an excellent garden has been started on the spot. Certain of the councillors have vigorously opposed the measure; but it is undoubtedly a most useful sanitary and economic "object lesson." Care should be taken to make it economically advantageous by growing crops of easily cultivated country vegetables, to the exclusion of flowers. The neighbouring latrine contents might advantageously be dumped here by the method above described.

6. *Markets*—(*a*) *Jagannayakpur Market.*—This market was destroyed by fire. It is apparently the intention of the council to rebuild it on the same plan. I advise

Chairman's Remarks.

The land now used for the night-soil depôt belongs to a private owner, but has been placed at our disposal. He is not prepared to allow a large area to be utilized for trying the system of shallow trenching as suggested.

Attempts will be made to make the garden profitable.

The market in Jagannayakpur will be re-built on an approved plan.

Inspection Notes.

that the whole question be reconsidered. If the market is to be retained, a new structure should be formed in accordance with the plans of the Sanitary Board. The meat sold at this market was of a most inferior description.

(*b*) *Meat Market—Cocanada.*—The wooden pillars should be painted with white silicate paint so as to disclose dirt and enable it to be removed when disclosed. The walls should be plastered with Portland cement up to 4½ feet from the ground level, and this also should be coated with white silicate paint. A drain should be added along the basement so as to catch the basement washings. The filthy old ropes and boxes now in use should be abolished. In lieu of the boxes a very good form of slab can be procured at Jaggayyapéta near Bezwada that might be polished. Instead of ropes, steel hooks and bars should alone be employed. The area round the market requires metalling. The straggling and untidy sun-shades erected by bazaarmen should be removed, and a verandah be added if shelter is really required.

7. *Offensive Trades.*—The dhobies at Jagannayakpur wash partly in a tank and in dirty surface pools. There need be no difficulty here about water-supply from the sub-soil and suitable drying space. It would cost but very little, consequently, to make arrangements so as to have the washing of the clothing of inhabitants conducted in a thoroughly cleanly manner. The Sanitary Board could doubtless supply the requisite plans on application.

8. *Graveyards.*—The ground chosen for the new Muhammadan graveyard seems to me undesirably close to the new Turpee settlement. By choosing a field in close proximity to the site now selected, it would be possible to secure that the slope of the ground should be from the settlement. This would allow a distance of not less than 300 yards from the Turpee settlement.

9. *Vaccination.*—(*a*) This municipality has for a long period shown indisposition to enforce correctly the compulsory clauses. For some time difficulty was experienced in the matter of getting the Sub-Magistrate responsible to dispose of cases sent to him, but this difficulty was duly removed

Chairman's Remarks.

The suggestions of the Sanitary Commissioner will be adopted.

The plans for dhobies' wells will be obtained.

A new site further from the new settlement has been selected and approved by the Civil Surgeon. It will be acquired under the Act.

The returns are prepared in the office, and not by the vaccinator; but they depend on information furnished by the vaccinator. The returns are being submitted punctually now.

Inspection Notes.

by the District Magistrate. Still, in the matter of punctual submission of the forms required under G.O., No. 1502 M., dated 19th October 1894, this municipality is distinguished by dilatoriness. As to how matters at present stand as to compulsory vaccination of infants, I am necessarily in great doubt, as the forms required under Government Order quoted above are not supplied notwithstanding reminders both from this office and from Government—*vide* G.O., No. 1325 M., dated 10th August 1896. Contrary to instructions on this matter, the preparation of the form is left to the vaccinator and is not effected in the office. In view of the fact that the municipality possess a paid Chairman, the absence of attention to an important branch of its administration in spite of reminders does not do it credit.

(*b*) Lymph is obtained at a very unnecessary expenditure. Lymph is kept up by calf-to-calf inoculation. Nevertheless, recourse is had to lymph preserved with glycerine. So long as the council chooses to go to the expense of having fresh lymph at disposal, it ought not to be necessary to use preserved preparations. On the day of "lymph turn" the subjects to be vaccinated should be duly assembled at the depôt, and fresh lymph direct from the calf should be employed. Otherwise, it would be cheaper for the council to obtain glycerine lymph from the local fund depôt.

(*c*) The vaccine calf-shed has been improved, but arrangement should be made to make stalls of such dimensions that the inoculated calves cannot do more than lie down comfortably, otherwise the vesicles are apt to be destroyed. Correct measurements can be obtained from the Sanitary Board's standard plans. The following statement shows the progress of infantile vaccination during the half-year ending June 1896 :—

Chairman's Remarks.

Note.—All returns up to and including April 1896 were submitted before I went away on leave on 4th June 1896. Those from May 1896 have been submitted after my return. The return for November 1896 was sent on 3rd December 1896.

The calf lymph alone will be used hereafter.

The Sanitary Board's standard plans for calf-shed will be applied for.

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Died.	Left the town.	Unaccounted for.	Ratio of successful vaccinations to total births per cent.
	Successfully.	Unsuccessfully for the 1st time.	Successful.	Unsuccessful.					
577	159	1	2	..	2	87	95	12	27·9

Inspection Notes.

10. *Registration.*—On this matter also there has been great want of attention on the part of the municipality—a fact sufficiently demonstrated by the following statistics :—

Years.	Ratio of births per mille of estimated population.	Ratio of deaths per mille of estimated population.	Percentage of deaths from					
			Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	Other causes.
1891	14·0	12·8	9·4	4·7	11·3	14·5	3·0	57·1
1892	28·5	33·8	20·6	2·5	14·9	16·1	1·6	44·3
1893	23·4	18·0	1·4	0·3	12·9	11·1	3·0	71·3
1894	26·3	21·0	0·7	0·2	16·7	9·8	1·6	71·0
1895	17·6	15·1	..	2·6	15·4	12 8	1·1	68·1
1896 up to August ..	19·9	13·0	..	0·2	15·6	11·5	2 4	70·3

The Chairman explains these results by stating that, against his wishes, the council abolished two assistant registrars, and that only after my remonstrance as to the falling off of statistics did the council again sanction their entertainment. But, even as it stands, the registration staff *is very unsatisfactory*. All registration takes place at the head office, where a single clerk on Rs. 10 per mensem undertakes the work in addition to other duties. The so-called assistant registrars are of the peon class. In the birth register, 901 cases were found without any entry in the vaccination column ! I consider that in so large a town, it is essential that at least two sub-offices be opened besides the head office. The sub-registrars should at least receive Rs. 15 per mensem and should have passed the late Middle School or the present Lower Secondary examination.

Chairman's Remarks.

Two sub-offices will be opened in Suryaraopeta and Jagannayakpur—Resolution, dated 12th December 1896.

The existing practice will be continued in the matter of registration of births and deaths. The council is of opinion that any extra cost on sub-offices is unnecessary. The registrar's pay may be raised from Rs. 10 to Rs. 12, to rise to Rs. 15 by annual increments of one rupee. The sub-registrar's pay need not be raised—Resolution, dated 16th December 1896.

Note.—The existing practice is to get information of births and deaths in the form of slips, and register the same on the authority of those slips signed or marked by the parties concerned.

(Signed) W. G. KING, Surgeon-Lieut.-Col.,
Sanitary Commissioner, Madras.

7th November 1896.

From M.R.Ry. D. KRISHNAMA CHARLU Garu, Chairman, Municipal Council, Bellary, to the Sanitary Commissioner, Madras, dated 10th October 1896, No. 575.

With reference to your No. 1535-S., dated 15th August 1896, I have the honour to forward herewith the report from Mr. E. Fairman, Sanitary Inspector of this municipality, on the working of the sewage filters kindly handed over by you for trial, and to state that I fully endorse his views on the subject.

From Mr. E. FAIRMAN, Sanitary Inspector, Bellary Municipality, to the Sanitary Commissioner, Madras (through the Chairman, Municipal Council, Bellary), dated 8th October 1896, No. 5933.

I have the honour to report on the working of the filter which you handed to me for trial in this municipality somewhere about the latter end of May last.

This filter, which is an oblong, aërated one, was according to instructions charged with the usual filtering materials (broken granite $1\frac{1}{2}''$ in size as the bottom layer $4''$ in depth, gravel above it $5''$ and sand on the top $9''$), and was placed at the sewage drain of a Muhammadan house in Glass Bazaar street, ward No. I, at the beginning of June last and worked very satisfactorily up to the end of July last when, owing to the sludge forming a crust on the top of the sand retarded the free filtering process; on this stuff which was free from odour about $\frac{3}{4}''$ thick being removed the process of filtration commenced again.

At the latter end of August last some of the councillors formed into a committee to report on make-shifts for sewage drainage in this town, and I was called on by the Chairman to produce before them this filter as well as the Vizianagram one, which I accordingly did and explained to them their working, with which they were well satisfied. One of the councillors expressing his desire to see the Vizianagram one working, I had the tube and funnel which were broken replaced by new ones and set the same to work in his house at Cowl Bazaar. Apart from this the aërated one on being cleaned out for the purpose of being produced for inspection before the committee referred to above, it was surprising to see that after three months' working the filtering materials were just as clean as when they were first put in, no smell of any kind emanating from them; from this I infer that the filter will not require re-charging with fresh materials more than once a year except a little sand being replaced on the top from time to time when the sludge is removed.

When setting the filter to work at first, it never struck me at the time that the effluent passing out would collect under the filter without having the sun's action on it, but on re-charging and placing it again in the same spot, I placed a large granite slab in a sloping position under it, so that the effluent would not collect under the filter but run out on the ground and be under the direct action of the sun. It is now very near a month since it has been set to work, within which time I have pumped air according to instructions into it through the tube with a hand-bellows to supply the organisms in the sewage with oxygen for their rapid increase to break up the solid particles in it and removed the sludge about $\frac{1}{4}''$ thick of a brown colour from the surface about two days ago.

The effluent passing from the filter is clear, sparkling and inodorous, which running on the ground is absorbed very rapidly and evaporated by the action of the sun that there are no traces of the effluent having run on it.

The sludge, I consider, will be of little or no use whatever as a manure inasmuch as it is always exposed to the action of the sun; the manurial properties would be neutralised.

Some of the clerks of the Collector's office were taken by me to see the filter working; the effluent was collected as it passed from the filter in a vessel and shown to them, when they expressed their surprise at the clearness and inodorousness of the effluent, which in appearance was superior to some of the waters used for drinking in this town.

I am, therefore, of opinion that although this filter is in every respect superior to the Vizianagram one yet owing to its height, it cannot, with advantage be used in this municipality as the house drains are on a level with the road except in a few instances where they are a little higher. The Vizianagram one having an upward filtration can be embedded in the earth up to the discharge tube in front of the drains, whereas it cannot be done in the aërated one whose action of filtration is downwards.

Dis. on Cur. No. 1943-Eng.

Forwarded.

(Signed) R. H. SHIPLEY,
Acting Collector.

2nd January 1897.

ORDER—No. 289 M., dated 25th February 1897.

Recorded.

2. With reference to paragraph 3 (*d*) and (*e*) of the inspection notes and the Chairman's remarks thereon, it is observed that a water-supply scheme for this town has since been sanctioned in G.O., No. 146 M., dated 3rd February 1897, and the Public Works Department has been asked to commence the work in the ensuing official year.

3. The delay in the submission of the vaccination returns, referred to in paragraph 9 (*a*) of the notes, is very unsatisfactory, and the Chairman should make such arrangements as may avoid its recurrence.

4. The municipal council should take steps to secure better results in the matter of vaccination and registration of vital statistics.

(True Extract.)

Secretary to Government.

To the Chairman, Municipal Council, Cocanada.
" Collector of Gódávari.
" Sanitary Board.
" Sanitary Commissioner.
" Sanitary Engineer.
Editors' Table.

Exd. A. Raitt.

No. M., JANUARY 1897.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

From M.R.Ry. K. SESHACHALAPATIGAR, B.A., Chairman, Municipal Council, Cocanada, to the Secretary to Government, Local and Municipal Department (through the Collector, Gódávari), dated 23rd December 1896, No. 1262—226-Eng.

I have the honour to return herewith the Sanitary Commissioner's inspection notes on this municipality, together with the council's resolutions passed thereon at the meeting held on 12th December 1896.

ENCLOSURES.

INSPECTION NOTES of the Sanitary Commissioner, Madras.

GODAVARI DISTRICT.

COCANADA MUNICIPALITY.

Inspected 2nd to 7th September 1896.

Population as per census of 1891 40,553

Inspection Notes.	Chairman's Remarks.
Dwellings.—(*a*) In my last Inspection notes (G.O., No. 866 M., dated 20th May 1895), the very insanitary conditions following the crowded and irregular method of building huts in this town were fully entered into. This was a matter that had already secured much attention from the District Medical and Sanitary Officer, Surgeon-Captain Vickers. It would be now idle for me to go over this ground again, as the council is, I now believe, awakened to the importance of this question. After much delay and much discussion, a suitable site for new settlements has been obtained.	Council's resolutions passed at the meeting held on 12th December 1896. Recorded.

Inspection Notes.	Chairman's Remarks.
(*b*) It was arranged that this site should be built on, in accordance with designs furnished by the Sanitary Board. Unfortunately, however, on my inspection I found that the method of preparing the site was not such as would permit of the design being carried out, and such work as has been performed threatened to diminish the sanitary value of the future settlement. In my letter, No. 397, dated 19th September 1896, I drew the Chairman's attention to this matter, and suggested that he should secure the aid of an Engineer before he proceeded to undergo further expenditure.	The papers have been referred to the Local Fund Engineer, and his reply will be awaited.
(*c*) I personally pointed out to him the position I thought desirable for the sinking of wells. This would be suitable for the sinking of "tube wells." The council would find their use anything but costly whilst affording the maximum of sanitary protection (*vide* G.O., No. 2708 L., dated 21st October 1890).	One tube well with a pump will be obtained and its use tested. Other wells will be sunk on the high ground to the east of the new settlement as suggested by the Sanitary Commissioner.
(*d*) I understand the council's intention to be, not to turn out the "Turpee" people from their settlement *en masse*, but to buy up houses here and there, so as to permit of better perflation and correct road alignment. This of course will prove of great benefit; but I consider, both in their own financial interest and in the sanitary interest of the town, they should not apply this rule universally.	The land already acquired for the new settlement is mostly allotted for sites to Turpee people. Two hundred and thirty have already taken sites in the new settlement and they have no sites or houses of their own elsewhere. They were in rented huts.
(*e*) It would be of decided advantage to abolish these hutting grounds entirely from the better parts of the town where, incongruously, groups of huts with their surroundings in most insanitary condition stand side by side with a good class of houses. By their complete abolition in such instances and provision of suitable residences elsewhere, not only would both the poor and well-to-do classes be benefited sanitarily, but the council would profit financially. Sites would be acquired that would no doubt sell for good value, whilst the existing houses in the immediate neighbourhood would, as a result of "betterment," secure higher rentals.	Do. do. do.
2. *Roads.*—(*a*) Certain of the roads, as has always been the case in Cocanada, are in very poor condition. The council in this respect, no doubt, is saddled with difficulties as to transport of suitable material. Still, I think something better could be effected by strict supervision during the making of roads.	The roads are being repaired and restored so far as funds permit.

Inspection Notes.	Chairman's Remarks.
(*b*) The council possesses a clock-tower in a suitable situation. The clock has a translucent face, but it is never lighted at nights. The small cost necessary might advantageously be met.	The council considers it unnecessary at present.
3. *Water-supply*—(*a*) *Jaggannaikpett Channel.*—As on my last inspection, no watchman was to be found looking after this channel; history repeated itself by my finding a man calmly washing himself in the drinking-water channel after defœcation on the bank. As cholera had appeared in the town following the outbreak at Pushkeram festival, the danger of leaving so important a source of supply close to inhabited areas without a watchman is obvious.	The channel is three miles long and is being watched by a peon and a cooly. Arrangements will be made to have them close to the town in the early mornings.
(*b*) *Cocanada Canal supply.*—At Simson's lock, I found boats moored close to the town supply off-take. There seems no good reason why this dangerous practice should be adhered to. It would cause no inconvenience if boats were moored below the lock.	At low water, there is not sufficient water to float boats below the lock.
(*c*) *The Market tank, Church and Balajee Row's tanks*, permit entrance of surface flow. Very little labour spent in filling in worn surfaces would prevent serious sanitary evils. Considering that otherwise than during the morning and after four in the evening, the work of a tank watchman must be nearly *nil* as persons do not come much for drawing water in the interval, it ought to be a simple enough matter to secure that the tank bund, having once been put in correct repair, should be so retained by the labour of the watchman. He should be indeed held responsible for the condition of the bund under ordinary circumstances.	The depressions in tank bunds have been filled in. Care will be taken to keep the bunds in order.
(*d*) *The Raja's Tank.*—This has been cleaned out by the council during the year without consulting the Sanitary Board. The supply reaches it by means of an open channel. In one part of its course the channel runs near Pariah huts, and it need not be said that the temptation to use its banks for defœcation is not resisted. As it is very unlikely under the best combination of circumstances that Cocanada will have a public water-supply under two years, it would be advisable that steps be taken to prevent this gross defilement. It seems to me that it would not cost a sum beyond the means of the council to lay a line of pipes between the	The work done at Raja's tank was only clearance of silt.

Inspection Notes.

last sump on the road from Simson's lock and this tank. The use of glazed stone-ware pipes would be economical; but, in view of the fact that ultimately a public water-supply may be expected, it would be better economy to lay down iron pipes that could be taken up and used as part of the large scheme.

(*e*) *A public water-supply scheme for Cocanada.*—Taking into consideration the brackish condition of the water obtainable from shallow wells and the impurity of the soil from which it is derived, this town cannot obtain a safe supply from the sub-soil water. The tanks and channels by which they are supplied are open to gross contamination. The necessity, therefore, for a correctly-protected public supply is evident. In my last report, I discussed the feasibility of sinking artesian wells here. The work performed by the East Coast Railway can only be regarded as experimental and ceased, as many other attempts in this country have done, with a break-down of the apparatus. Sufficient evidence had, however, been secured to show that artesian wells (or at any rate the obtaining of good water in deep wells) are feasible. Had the council a certain amount of money with which it could run the risk always attending the sinking of such wells, it might have paid it to have pursued experiments on its own account. But if this be not available, it is to be presumed the canal must be looked to as the only available source of supply after filtration. The Sanitary Engineer has already prepared a scheme using the canal as a source. I advise the council to represent to Government the fact reported to me that many of the richer townsmen are willing to subscribe. Cocanada has, I believe, the credit of being the first municipality where the citizens have come forward with liberal offers in support of a charity so thoroughly in accord with the best tenets of the Hindu religion.

Chairman's Remarks.

The final orders of Government on the report about the water scheme will be awaited. The council is not inclined to spend any more money on having either the masonary channels or iron piping until receipt of orders from Government about the water scheme.

G.O. 1650 3-2-97

(*f*) *The Pithápuram Rajah's Tank.*—This is in a foul condition, and it would consequently be advisable that it be filled in.

Notice will be issued to the Zamindar of the Pithápuram estate to have the tank filled in within two months.

4. *Sewage removal* (*a*).—There is no sewage system, with the result that pools of sewage are to be found soaking into the ground in juxtaposition with the under-ground pervious masonry conduits through which the water-supply passes.

As there are, generally speaking, no drains to carry off the filtered sewage water, the council considers that the use of cesspools, constructed on the standard system, is more adapted to this town.

Inspection Notes.

I showed the Chairman the method of construction of the Vizianagram filter which should enable him to get a fair filtrate in place of the untreated sewage hitherto allowed to soak into the soil. At somewhat increased expenditure a form of filter lately devised by me, in which the idea of aëration which is now adopted for public sewage filters is made applicable to one suitable for household use, might be employed by the council with the surety of obtaining better results than with the cheaper Vizianagram filter. It might therefore be introduced with advantage in the houses of the well-to-do. The only disadvantage urged against it is that, as sent for trial by me, it was of a height that will not fit most basements; but the height can safely be reduced if the surface area be increased. I attach a report on its working, by certificated Sanitary Inspector Fairman, submitted to this office through the Chairman, Municipal Council, Bellary. The results as found by him in this small farm are such as are warranted by experience in large public sewage filters. A great advantage over the Vizianagram filter is that change of material is not requisite. The required aëration by forcing in air can easily be arranged for by the private or public scavenger using a common hand-bellows for one minute daily. The specimen as per plan attached cost Rs. 14, but I have no doubt municipalities could turn these out locally for a much smaller sum. The cost even at this sum is much less than usual for a well-built cesspool.

(*b*) Considerable improvement has been effected, since my visit, in the drain passing through the market. It would be desirable to place at the top of this drain a moveable shutter, so that from the adjoining public water-supply conduit sufficient water should be stored to secure a complete and forcible flush of the whole drain contents on its withdrawal. The outlet of this drain does not reach low water, and is a cause of nuisance. To continue it the necessary length, if built of its present size, would be an expensive matter. But I think this might be met by arranging only to make the pipe large enough to receive the sewage, thus disregarding the upper section of the present conduit meant for the receipt of storm water.

Chairman's Remarks.

Two shutters will be fixed—one at the entrance into the market compound and the other above the post-office compound. Messrs. Burn & Co. have been addressed regarding the iron pipes to be fixed at the mouth of the main sewer into low water mark.

Inspection Notes.

5. *Conservancy.*—(*a*) The following conservancy staff and plant are employed :—

Staff.	Toties.	Sweepers.	Number of Rubbish carts.	Quantity to be removed.	Number of night-soil carts.	Quantity to be removed.	Quantity left unremoved daily.
1 Inspector. 1 Overseer. 6 Peons.	36	49	12	C. FT. 2,160	Seven hand-carts and one bullock cart.	C. FT. 478	C. FT. 199

As above shown, the transport of night-soil cannot be correctly managed with so insufficient plant. To effect removal correctly, ten iron night-soil carts of 16 cubic feet capacity making three trips daily at least would be required. It is simply impossible for 36 toties to collect the night-soil of a population of 47,939 and drag conservancy buckets to a distance of nearly two miles outside the town. The buckets I saw at the night-soil depôt were only about half full. Disregarding the population now attended to under the private scavenging system, not less than 52 more toties are requisite.

Chairman's Remarks.

Two night-soil carts drawn by bullocks have been ordered. It has been found impossible to get more toties in Cocanada, but efforts are being made to get them from elsewhere.

(*b*) *Public Latrines.*—Only seventeen latrines are in use. Not less than forty-eight should be available.

In the current year, two latrines have been provided for and will be completed before the end of March next. As many as possible will be provided for in the next budget.

(*c*) *Private Scavenging.*—Last year only 200 out of a total of 4,808 houses were attended to. Now there are 828. This is creditable to the Chairman and the subordinate by whose immediate efforts increase was obtained, namely, K. C. Sathya ; but the total result ought not to be considered otherwise than a forerunner of better things to come.

Recorded.

(*d*) *Rubbish Collection.*—As shown in the above table, 28 more rubbish carts are required if the work is to be correctly effected. The fact that there exists great laxity in the matter of rubbish removal was forcibly illustrated by the uncleanly condition of the back dwellings, the finding of a clean backyard being an exception. In this matter, much more energy on the part of the municipal staff is essential. It is too apt to be forgotten that, granting the land on which this nuisance is accumulated is "private," it is not a whit less inimical to the public

The question will be considered along with the budget.

Inspection Notes.

health than if on public ground. Full power in this matter is at the disposal of the council, and should be used by them.

(*e*) *Night-soil and Rubbish disposal.*—I am glad to be able to report that in this respect a decided advance has been made by this municipality since my last inspection. In default of purchasers, the council took up ground which was duly improved by the deposit of rubbish and was then leased out to a contractor; the resulting crop on very poor soil was so good as to excite the envy of the owner of the neighbouring fields, with the result that ground has been placed at disposal of the council for trenching with night-soil. As the area is large, instead of trenching the following method used at the Allahabad "grass farm," which ensures early change of the night-soil in the layer most rich in microbic life, might be employed:—

"For the contents of each filth cart, a rectangular space 4′×5′ is taken and the top soil scraped off to the edges to a depth of about 3″. The soil at the bottom of the space is then loosened and pulverized to a depth of 6″ or 7″. The shallow trench having been thus prepared, the contents of the filth cart (Cowley pattern) are tipped into it. If the bottom soil has been well pulverized, the filth portion soaks into it quickly, leaving a thin stratum of the solids on the top, which is now covered over with the 3″ of earth first removed."

(*f*) In addition to the above efforts, a spot sufficiently removed from dwellings that was formerly a much frequented easement ground has been filled with rubbish, and an excellent garden has been started on the spot. Certain of the councillors have vigorously opposed the measure; but it is undoubtedly a most useful sanitary and economic "object lesson." Care should be taken to make it economically advantageous by growing crops of easily cultivated country vegetables, to the exclusion of flowers. The neighbouring latrine contents might advantageously be dumped here by the method above described.

6. *Markets*—(*a*) *Jagannayakpur Market.*—This market was destroyed by fire. It is apparently the intention of the council to rebuild it on the same plan. I advise

Chairman's Remarks.

The land now used for the night-soil depôt belongs to a private owner, but has been placed at our disposal. He is not prepared to allow a large area to be utilized for trying the system of shallow trenching as suggested.

Attempts will be made to make the garden profitable.

The market in Jagannayakpur will be re-built on an approved plan.

Inspection Notes.	Chairman's Remarks.
that the whole question be reconsidered. If the market is to be retained, a new structure should be formed in accordance with the plans of the Sanitary Board. The meat sold at this market was of a most inferior description.	
(*b*) *Meat Market—Cocanada.*—The wooden pillars should be painted with white silicate paint so as to disclose dirt and enable it to be removed when disclosed. The walls should be plastered with Portland cement up to 4½ feet from the ground level, and this also should be coated with white silicate paint. A drain should be added along the basement so as to catch the basement washings. The filthy old ropes and boxes now in use should be abolished. In lieu of the boxes a very good form of slab can be procured at Jaggayyapéta near Bezwada that might be polished. Instead of ropes, steel hooks and bars should alone be employed. The area round the market requires metalling. The straggling and untidy sun-shades erected by bazaarmen should be removed, and a verandah be added if shelter is really required.	The suggestions of the Sanitary Commissioner will be adopted.
7. *Offensive Trades.*—The dhobies at Jagannayakpur wash partly in a tank and in dirty surface pools. There need be no difficulty here about water-supply from the sub-soil and suitable drying space. It would cost but very little, consequently, to make arrangements so as to have the washing of the clothing of inhabitants conducted in a thoroughly cleanly manner. The Sanitary Board could doubtless supply the requisite plans on application.	The plans for dhobies' wells will be obtained.
8. *Graveyards.*—The ground chosen for the new Muhammadan graveyard seems to me undesirably close to the new Turpee settlement. By choosing a field in close proximity to the site now selected, it would be possible to secure that the slope of the ground should be from the settlement. This would allow a distance of not less than 300 yards from the Turpee settlement.	A new site further from the new settlement has been selected and approved by the Civil Surgeon. It will be acquired under the Act.
9. *Vaccination.*—(*a*) This municipality has for a long period shown indisposition to enforce correctly the compulsory clauses. For some time difficully was experienced in the matter of getting the Sub-Magistrate responsible to dispose of cases sent to him, but this difficulty was duly removed	The returns are prepared in the office, and not by the vaccinator; but they depend on information furnished by the vaccinator. The returns are being submitted punctually now.

Inspection Notes.	Chairman's Remarks.
by the District Magistrate. Still, in the matter of punctual submission of the forms required under G.O., No. 1502 M., dated 19th October 1894, this municipality is distinguished by dilatoriness. As to how matters at present stand as to compulsory vaccination of infants, I am necessarily in great doubt, as the forms required under Government Order quoted above are not supplied notwithstanding reminders both from this office and from Government—*vide* G.O., No. 1325 M., dated 10th August 1896. Contrary to instructions on this matter, the preparation of the form is left to the vaccinator and is not effected in the office. In view of the fact that the municipality possess a paid Chairman, the absence of attention to an important branch of its administration in spite of reminders does not do it credit.	*Note.*—All returns up to and including April 1896 were submitted before I went away on leave on 4th June 1896. Those from May 1896 have been submitted after my return. The return for November 1896 was sent on 3rd December 1896.
(*b*) Lymph is obtained at a very unnecessary expenditure. Lymph is kept up by calf-to-calf inoculation. Nevertheless, recourse is had to lymph preserved with glycerine. So long as the council chooses to go to the expense of having fresh lymph at disposal, it ought not to be necessary to use preserved preparations. On the day of "lymph turn" the subjects to be vaccinated should be duly assembled at the depôt, and fresh lymph direct from the calf should be employed. Otherwise, it would be cheaper for the council to obtain glycerine lymph from the local fund depôt.	The calf lymph alone will be used hereafter.
(*c*) The vaccine calf-shed has been improved, but arrangement should be made to make stalls of such dimensions that the inoculated calves cannot do more than lie down comfortably, otherwise the vesicles are apt to be destroyed. Correct measurements can be obtained from the Sanitary Board's standard plans. The following statement shows the progress of infantile vaccination during the half-year ending June 1896 :—	The Sanitary Board's standard plans for calf-shed will be applied for.

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Died.	Left the town.	Unaccounted for.	Ratio of successful vaccinations to total births per cent.
	Successfully.	Unsuccessfully for the 1st time.	Successful.	Unsuccessful.					
577	159	1	2	..	2	87	95	12	27·9

Inspection Notes.

10. *Registration.*—On this matter also there has been great want of attention on the part of the municipality—a fact sufficiently demonstrated by the following statistics :—

Years.	Ratio of births per mille of estimated population.	Ratio of deaths per mille of estimated population.	Percentage of deaths from					
			Cholera.	Small-pox.	Fevers.	Dysentery and diarrhœa.	Injuries.	Other causes.
1891	14·0	12·8	9·4	4·7	11·3	14·5	3·0	57·1
1892	28·5	33·8	20·6	2·5	14·9	16·1	1·6	44·3
1893	23·4	18·0	1·4	0·3	12·9	11·1	3·0	71·3
1894	26·3	21·0	0·7	0·2	16·7	9·8	1·6	71·0
1895	17·6	15·1	..	2·6	15·4	12·8	1·1	68·1
1896 up to August ..	19·9	13·0	..	0·2	15·6	11·5	2 4	70·3

The Chairman explains these results by stating that, against his wishes, the council abolished two assistant registrars, and that only after my remonstrance as to the falling off of statistics did the council again sanction their entertainment. But, even as it stands, the registration staff *is very unsatisfactory*. All registration takes place at the head office, where a single clerk on Rs. 10 per mensem undertakes the work in addition to other duties. The so-called assistant registrars are of the peon class. In the birth register, 901 cases were found without any entry in the vaccination column ! I consider that in so large a town, it is essential that at least two sub-offices be opened besides the head office. The sub-registrars should at least receive Rs. 15 per mensem and should have passed the late Middle School or the present Lower Secondary examination.

Chairman's Remarks.

Two sub-offices will be opened in Suryaraopeta and Jagannaickpur—Resolution dated 12th December 1896.

The existing practice will be continued in the matter of registration of births and deaths. The council is of opinion that any extra cost on sub-offices is unnecessary. The registrar's pay may be raised from Rs. 10 to Rs. 12, to rise to Rs. 15 by annual increments of one rupee. The sub-registrar's pay need not be raised—Resolution, dated 16th December 1896.

Note.—The existing practice is to get information of births and deaths in the form of slips, and register the same on the authority of those slips signed or marked by the parties concerned.

(Signed) W. G. KING, Surgeon-Lieut.-Col.,
Sanitary Commissioner, Madras.

7th November 1896.

From M.R.Ry. D. KRISHNAMA CHARLU Garu, Chairman, Municipal Council, Bellary, to the Sanitary Commissioner, Madras, dated 10th October 1896, No. 575.

With reference to your No. 1535-S., dated 15th August 1896, I have the honour to forward herewith the report from Mr. E. Fairman, Sanitary Inspector of this municipality, on the working of the sewage filters kindly handed over by you for trial, and to state that I fully endorse his views on the subject.

From Mr. E. FAIRMAN, Sanitary Inspector, Bellary Municipality, to the Sanitary Commissioner, Madras (through the Chairman, Municipal Council, Bellary), dated 8th October 1896, No. 5933.

I have the honour to report on the working of the filter which you handed to me for trial in this municipality somewhere about the latter end of May last.

This filter, which is an oblong, aërated one, was according to instructions charged with the usual filtering materials (broken granite $1\frac{1}{2}''$ in size as the bottom layer $4''$ in depth, gravel above it $9''$ and sand on the top $9''$), and was placed at the sewage drain of a Muhammadan house in Glass Bazaar street, ward No. I, at the beginning of June last and worked very satisfactorily up to the end of July last when, owing to the sludge forming a crust on the top of the sand retarded the free filtering process; on this stuff which was free from odour about $\frac{3}{4}''$ thick being removed the process of filtration commenced again.

At the latter end of August last some of the councillors formed into a committee to report on make-shifts for sewage drainage in this town, and I was called on by the Chairman to produce before them this filter as well as the Vizianagram one, which I accordingly did and explained to them their working, with which they were well satisfied. One of the councillors expressing his desire to see the Vizianagram one working, I had the tube and funnel which were broken replaced by new ones and set the same to work in his house at Cowl Bazaar. Apart from this the aërated one on being cleaned out for the purpose of being produced for inspection before the committee referred to above, it was surprising to see that after three months' working the filtering materials were just as clean as when they were first put in, no smell of any kind emanating from them; from this I infer that the filter will not require re-charging with fresh materials more than once a year except a little sand being replaced on the top from time to time when the sludge is removed.

When setting the filter to work at first, it never struck me at the time that the effluent passing out would collect under the filter without having the sun's action on it, but on re-charging and placing it again in the same spot, I placed a large granite slab in a sloping position under it, so that the effluent would not collect under the filter but run out on the ground and be under the direct action of the sun. It is now very near a month since it has been set to work, within which time I have pumped air according to instructions into it through the tube with a hand-bellows to supply the organisms in the sewage with oxygen for their rapid increase to break up the solid particles in it and removed the sludge about $\frac{1}{4}''$ thick of a brown colour from the surface about two days ago.

The effluent passing from the filter is clear, sparkling and inodorous, which running on the ground is absorbed very rapidly and evaporated by the action of the sun that there are no traces of the effluent having run on it.

The sludge, I consider, will be of little or no use whatever as a manure inasmuch as it is always exposed to the action of the sun; the manurial properties would be neutralised.

Some of the clerks of the Collector's office were taken by me to see the filter working; the effluent was collected as it passed from the filter in a vessel and shown to them, when they expressed their surprise at the clearness and inodorousness of the effluent, which in appearance was superior to some of the waters used for drinking in this town.

I am, therefore, of opinion that although this filter is in every respect superior to the Vizianagram one yet owing to its height, it cannot, with advantage be used in this municipality as the house drains are on a level with the road except in a few instances where they are a little higher. The Vizianagram one having an upward filtration can be embedded in the earth up to the discharge tube in front of the drains, whereas it cannot be done in the aërated one whose action of filtration is downwards.

Dis. on Cur. No. 1943-Eng.

Forwarded.

2*nd January* 1897.

(Signed) R. H. SHIPLEY,
Acting Collector.

128. Refer C. No. 41-M

Press.

Order No. 289 M.D./25.2.97 Cocanada Despatches

Recorded.

2. With reference to para. 3.(d) and (e) of the inspection notes and the chairman's remarks thereon, it is observed that a water supply scheme for this town has since been sanctioned in G.O. No. 146. M. dated 3rd February 1897 and the Public Works Department has been asked to commence the work in the ensuing official year.

3. The delay in the submission of the vaccination returns referred to in para. 9(a) of the notes is very unsatisfactory, and the chairman should ~~see that it does not recur~~ make such arrangements as may avoid its recurrence.

4. The municipal council should take steps to secure better results in the matter of vaccination and registration of vital statistics.

PR 25/2/97

24/2/97

Date 18/3/97

To the Chairman, M. C. Cocanada
" Collector of Gotamari
" Sanitary Board Commissioner
" Executive Engineer
" Table

Date 21/1/97

sent to Press. 25-2-97

for signature. 11-3-97

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MAIN G.O., No. DATED 189

Letter to Collector

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13.

Refer to G. No.

PR 25/2/97

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