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[Despatch Abstract.]

Sanitary Inspection.

Communicating, with remark, to the Collctor of Kurnool and the local boards concerned, the Sanitary Commissioner's notes on the inspection of rural areas in the Kurnool district.

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

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[Despatch Abstract.]

Sanitary Inspection

Communicating, with remarks, to the Collector of Kurnool and the local boards concerned the Sanitary Commissioners notes on the inspection of rural areas in the Kurnool District.

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10

Concise Notes on the Sanitary Inspection of rural areas in the Karnool District.

Laujapolur Inspected 19 December 1895.
Population 1846.

Latrine floors and drains are in want of repair. Dry earth should be used in all the latrines. This would be feasible, if light thatched or corrugated iron roofs were added to protect from rain. Both here and at Kulloor the toties are women, their husbands having been sent elsewhere. This renders abortive the principle that guided the placing of scavengers in villages in former days in Kurnool. These people were imported chiefly from Salem at some expense to the District Board, and it was the intention of the Board to do all in their power to make the people comfortable, by giving huts and keeping families together as much as possible. Failure to attend to this aspect of the matter will prevent the residence of this useful class in a district where their services are

[illegible] villages are out

are much required. The latrines at Lanyapoliur are not provided with anything with which to collect fiecal matter from the latrines. Small hand buckets with close fitting iron lids should be provided. In view of the proximity of this village to Kurnool, and the fact that the Hindree has been shown to be the medium for cholera infection, special care should be taken to keep the banks in a thoroughly cleanly condition. The cholera epidemic of 1889 was due to the infection of the Hindree at this village.

2. Birth and death registers are neatly kept and up to date.

3. Vaccination. Five cases were verified. 19 cases remained on the unprotected list.

Kulloor Inspected 18 December 1895
Population 1343

4. The remarks made as to the latrines at Lanyapoliur are applicable also here. The toty failed to show the trenches in which the night soil is buried, and, although it is true she does collect the fiecal matter, it is evident

evident that it is all eaten by the buffaloes. This is a matter that has been before represented to the Reddi, and there should be no difficulty in his seeing that this is carried out. In this village, there had been up to date of my visit 16 cases of smallpox and I discovered a man suffering from the disease. The Reddi maintains that he had reported the matter to the Tahsildar 21 days previously; but the Dy. Inspector of Vaccination declares that no report on the subject had reached him. Irrespective of the risk involved to the villagers, the proximity of this village to Kurnool affords a special danger of the risk of infectious diseases being promptly reported. I brought the matter before leaving semi-officially to the notice of the Chairman of the Kurnool Municipality, and the District Sanitary Officer, advising the former to push re-vaccination. The well close to a site long used as a latrine in this village should be closed. Much mortality was caused in this village during the cholera epidemic of 1889, until it was

found

found that the people used this well for so called "domestic purposes" in addition to the river Hindon.

5. Vaccination. Five cases were verified and found correct.

Santhipad Inspected 19th December 1895 Population 272

6. The inhabitants need a step well besides the river. This should be converted into a draw well. There were 14 cases of cholera in this village during 1894.

7. Vaccination. Four cases were verified and found correct.

Allur Inspected 21st December 1895. Population 760

8 The Kurnam's well has the platform erroneously placed inside the parapet wall. This should be changed, and thus increase the protection of the supply from the entrance of filth.

The Bichureddi bawri and Balakunta bawri are both neatly built masonry wells, that might be cheaply converted to the draw well type. To avoid repetition, I may here say that where the building up by masonry would involve great expense in the case of these wells, the alternative is open of sinking within them cylinders of iron or

of stoneware, or building rings of masonry with a good concrete backing, or of puddled clay - if nothing better could be afforded - the well rings made by country potters would suffice. One or more such cylinders might be sunk in the well, which should then be surrounded with stones, gravel, and lastly sand. Over the sand could be built a concrete platform, with cement plaster covering. The arrangement would be as shown in the accompanying diagram.

In this method, the villagers would, doubtless, at first object, on the ground that the total yield of the wells would be diminished. This however is not actually the case - the rate only could be affected by friction in passing through the stones; but this can always be met by increasing the number of cylinders sunk. Against this has to be placed the advantage of largely diminishing the loss by evaporation, and the very considerable gra[illegible] sanitary protection [illegible] villagers are put

sufficiently advanced to submit to this method, a still simple mode of meeting the requirement is to sink an iron water pipe perforated at the end as shown in figure 2, and then fill up as formerly described. Within the pipe could then be sunk the suction pipe of a pump. This is a method that has lately been pressed upon public attention by Koch. I attach for information of the District Board a translation of his statements on this point. The number of step wells in the Karnool district is very great, and it is obvious that as long as these are employed the risk of contamination is very great. From personal experience I am perfectly aware that villagers are liable to make a fuss about these wells being interfered with; but they are fully appreciative when actually of the sanitary results secured by effecting alteration—as exhibited by the cleanly supply of water.

Malayala- Inspected 23d Dec. 1895 Population 6

9. Ourhotauri

and cleansing. The canal affords a certain proportion only of the annual supply, as it dries up. The villagers have then to rely upon this well (which also dries up) and the Vellaputti bauvi. This has an indigo vat and a manure heap close to it—the latter being distinctly liable to contribute filth to the well on the occurrence of rain. Yet, this is the only well that yields water when the canal is dry.

10. Vaccination. 12 cases were verified. These were the work of the Protatinary vaccinator. He is stated to have duly verified the results after operation. The number of vessels were incorrectly stated.

11. The two preceding villages belong to the Union of Nundikottur. Although they contribute taxes per house exactly in the same proportion as the villagers of Nundikottur, the only benefit they seem to derive is that, at intervals of about one month, a certain number of sweepers are sent to make a general "clean up". This seems hardly a fair way

of managing the sanitary affairs of the Union. To prevent a repetition, I may state that I found the same conditions ~~Sate of affairs~~ at Vellapannur. It seems desirable that pains should be taken to make ryots understand that any taxes exacted from them on behalf of Unions shall be spent as much to the interest of the smaller villages as the larger, which happens to be the head quarters of the Union.

Nagalur - Inspected 23d Decr 1895 Population 1035.

12 The Tamapandi tauri might be modified with a "draw well" with advantage.

13. Vaccination. The unprotected list was found written up only as far as June 1895. 32 Cases were verified with satisfactory results as to the number of vesicles.

Pagidala - Inspected 23d Decr 1895 Population 1070

14 Vaccination. The unprotected list here showed 66 unprotected cases. This was the number up to June 1895. Yet, in August 1895, the Vaccinator Muzum Sahib having visited the village, reports on the list that he could not get a single case to vaccinate, because the Reddi declared that the children were all suffering from fever. It is obvious that the Reddi has not the slightest influence over the ryots, or

Gothur Inspected. 15th January 1896 Population 692

15. There is one drinking water well in this village that could easily be built up, so as to convert it into a draw well.

16. Vaccination - No unprotected list is maintained in this village. On the 12th of October 1895, the Vaccinator did 12 cases and had not done any other cases since 1893. One case of revaccination was entered falsely as having had six vesicles.

I verified 13 cases.

Bannur. Inspected 28th December 1895 Population 701

17. The village well is on the high road, and is much used by bandy drivers, who halt there on their way towards Kurnool. The water in this well was very filthy, as might be expected from so many dirty feet and hands passing to it daily. It may be hard to convince the Board District of Kurnool that all the wells I mention as requiring improvement should be looked to at once, but, I trust that this will be regarded as a specially urgent

urgent matter. The use of a well under the circumstances described by a large number of bandy drivers who subsequently pass through several villages on their way to a large town, involves general danger of cholera spread along the route. I trust, therefore, the District Board will convert this well in a manner that shall ensure its not being readily polluted, according to the suggestions given in the accompanying diagram

Jupaud. Inspected 24th December 1895 Population 701

18. Here 5 cases were verified. One child under six years of age was found to have been subjected to the operation of re-vaccination. This represents a waste of lymph unless under unusual circumstances of exposure during an epidemic. Not only so, but it is very misleading, as a record of cases being returned as re-vaccination, it is naturally understood that these imply operations on adults.

Jarigoppula Inspected 27 Dec 1895 Population 1041

19. Vaccination - There are 21 cases on the unprotected list. The vaccinator visited the village on 30th May 1885 and 30th August 1895, but only managed to secure 9 operations. 11 cases were verified. The numbers of vesicles was incorrectly stated in two instances - other-wise results were correct. The Reddi here evidently requires to be reminded as to his duty as to advising the advance of vaccination.

Rajoli Inspected 15 January 1896 Population 1977

20. Vaccination - Only 12 children on the unprotected list. The vaccinator had not visited the village during two years.

Pamulpaud - Inspected 27th Dec 1895. Population 939

21. Vaccination. The unprotected list shows that 45 cases unprotected have existed since 1894; but on the visit of the vaccinator on 21st April 1895, he could only secure 2 cases. The Reddi is devoid of [illegible] in the villages. their children

hollow-cheeked, and could not be
persuaded to submit their
children to vaccination.

Kambattapalli Inspected 27th Decr 1895

22. Vaccination - Kurnam absent,
no list with the Reddi.

Velappanur Union - Inspected 28th Decr 1895. Population 1966

23. This is one of the towns that has
suffered severely from malaria since
the introduction of increased moisture
in the sub-soil from the Kurnool-
-Cuddapah canal. An examination
of 38 inhabitants showed that 16
per cent suffered from slight 70
per cent from considerable and 16
per cent from very severe forms of
enlargement of the spleen, exhibiting
high grades of malarial poisoning.
As an illustration of the extent to
which the sub-soil is under the in-
-fluence of the canal, I may state
that the Nalapolama tank
was level with the ground at time
of my visit. A patch of ground
on which about one dozen houses
are built, is in a continual state
of swamp. The only way in which

any radical improvement in the
state of this village could be effected,
would be by running a sub-soil
drain so as to intercept the water
on its passage through the soil from
the canal. If the District Board
be not in a position to afford this,
~~relief~~, then some measure with
regard to the patch just mentioned
would, at least, seem imperative
as a matter of common humanity.
Probably, the cheapest way to deal
with the matter would be to find
a piece of ground for these people
elsewhere in the village site, and
give them a grant towards build-
-ing their houses. If not, the wet
cultivation above the houses should
be stopped, or a correctly laid out
interception sub-drain should be
made above this particular portion

24 Conservancy. The efforts of this
Union at night soil conservancy
would seem confined to the making
of so-called latrines for females.
These are most filthy spaces which
are duly cleansed by buffaloes.
It would be much more com-
-fortable for the females could be

for

far better for the agricultural prosperity of this village if it could be arranged that temporary movable screens be placed in certain selected fields to which they could resort for the purposes of nature. Behind the screened space could be made small pits not exceeding 2 inches deep; beside each pit should be placed the excavated earth; close to each empty hole so prepared so as to identify its locality, should be inserted in the ground a small bamboo or other stick. Female "sweepers" could then be employed to proceed to the holes that have been utilized by the villagers, and by a motion of the foot cover the contents with the earth - thus carefully effecting deodorization. This duty demands that nothing defiling should be touched by the sweepers, and is therefore applicable to a class of labour that would refuse to handle excreta after the manner of ordinary Coolies. This method is far more cleanly and easily applicable than the "trench system". If, however, the Union is of opinion that

latrines within the inhabited area are necessary for the females of the village, certainly correct forms should be erected. Plans suitable for rural areas can be obtained from the Sanitary Board. The village already suffers from the effect of sub-soil water pressure Yet about 30 cents of ground have been put under wet cultivation near the house of one Karkomah - thus swamping the surroundings. This is due to the influence of the Special Duty Deputy Collector. I found in the village of Allagudu also a patch of ground within the village site. I hope the District Board will exert its influence in the opposite direction. Irrigation is a very good thing in its way; but, it certainly is out of place within the inhabited area of villages. Such petty patches of 30 cents here, and 20 cents there, cannot be of so great importance to the Canal prosperity that the health of the villagers should be risked in attaining a little increase of revenue.

25 Pedda Nagana Gauri, Shesharah

fa bauri and Kusi bauri require
f correctly formed platforms. In
ths the case of the Bomulawani bauri,
he the platform is built on the wrong
hi side of the parapet wall. There
fu are also beams across the well
s on which persons stand when
s drawing water. thus contributing
d to its defilement. These beams should
f be removed

26. In this village of Velippanur,
s the Union Chairman did his best
d to aid vaccination and during
d my stay the Dy. Inspector of vacci-
-nation, Kurnool Range, managed
to vaccinate a number of children
direct from the calf.

Bhojanum. Inspected 28th Decr 1895 Population 610

27. The banks of the stream near the
town are much resorted to for
purposes of nature. Shrubs, much
above the site used by the people
for removal of drinking water;
the village manure heaps are also
collected above this. It would
not, I believe, require much in-
-fluence from the Revenue Authorities
to alter this state of affairs. The

Communication of cholera from
village to village along this small
stream has occurred more than
once in the past, and, as long as
this condition of affairs exists
history must be expected to repeat
itself.

28. There are 52 children upon the
unprotected list. In 1895 only six
cases were performed. In excuse
the Deputy Inspector of Vaccination
states that in the course of 1894-95,
there were no less than four changes
of vaccinators. Five cases were
verified by me. The marks found
were very poor. This was apparently
due to the use by the vaccinators,
against orders, of lymph derived
from scabs.

Santajuturu. Inspected 29th Decr 1895
Population 858

29. No less than 129 cases were found
on the unprotected list in this
village. The vaccinator on the 25th
Octr 1895 performed only 5 cases,
and, of these, only 2 proved success-
-ful. The Reddi here seems to have
no influence over his people —
whatsoever.

Permanent. Inspected 30th Decr 1895 Population 537

30. This is an unusually dirty village. No efforts of any description being apparently made towards cleanliness.

31. I verified only 2 cases of vaccination here - the Reddi maintaining that all the rest had gone to the fields

Panicum - Inspected 4th & 5th January 1896 Population 3706

32. Vaccination 126 cases were found on the unprotected list. The Vaccinator Doraswami, who has apparently now left the District Board's service, vaccinated 59 cases of which however only 18 were successful. These were performed against orders with scab lymph. 38 cases were also operated upon with glycerine paste; but here only 9 were successful. Bad work of this sort should be put a stop to whenever detected; a man who goes over the country pricking children with a lancet for no earthly result, is likely to do the cause of Vaccination much harm.

33. The Ankamabauri is a neatly built specimen of a "step well". As the water level of this varies only about two feet throughout the year, it would be a simple matter to make a platform here even if the Board would not consent to fill the well up in the

will follow

manner advised in para 8. I attach a diagram of the nature of platform I mean.

34. A part of this village is subjected to considerable excess of subsoil water, on account of pressure from the Panicum tank. This could readily enough be drained off, by making rough so called "Irish subsoil drains". These consist of trenches dug down to the water level and then filled in pell-mell with large stones. There are plenty of stones that would suffice for this purpose in the old Fort. If the Board would afford coolly labour, it could readily be accomplished by the Union Chairman as the matter requires no skill. After much persuasion, I managed to make the Reddy who was acting as Chairman to have a small section of the proposed drain made. This acted well, and was sufficient to convince him of the efficacy of the method. If the surplus water were thus allowed to have an exit, it would be an easy enough matter to make permanent road over the drains and thus for ever shut out what has been for many a long day an eyesore and inconvenience in the village.

Nandyal - Inspected, 2d January 1896
Population 10737

35. Several reports on the sanitary state of this town having been made by various officers, including myself, I presume the

District

District Board no longer requires to be told that its condition is highly unsatisfactory. some efforts were made in 1888/89 under my advice by the District Board towards ameliorating its state; but as the works were stopped after the accumulation of much material, considerable waste has resulted. Such work as was done however in the matter of improved sewerage has worn well, and is evidently sound work. The extensions of the drain made since that date however by the Board, with the object of giving the sewage an outlet - for, the work was stopped before this stage was reached - are very crude. The stoneware pipes have been alternated with portions of Bombay conservancy pans, so as to make a series of traps for sedimentation of the sewage. It was the intention in the original scheme to have taken the sewage to a portion of undrained land and to have allowed the effluent after purification through land to flow into the river. Under the extraordinary arrangement now made very little sewage really reaches the outlet; but rather than take up the late Chairman's work it would probably be cheaper to fill in the numerous catchpits so as to bring them to the same level as the drain invert. The sewage

36. Nothing perhaps could be more disheartening than the state of the

discharge should be utilized for cultivation on the river bank.

space behind the buildings known as the Tahsildar's latrine. Several buildings were here thrown down and the space was in the process of being regraded. It would have formed an admirable thoroughfare between the Behrumal street and the bazaar; but the Union has built a wall straight across the space, thus effectually barring the drainage from its surface. Further, it is used, as formerly, as a huge latrine. Nothing more utterly awful in the way of insanitary and filthy conditions, could well be found within a space inhabited by human beings. The wells are still incorrectly protected. The Makkan bawi, which was partially put in order, might at small expense be completed as to its platform and drains. I found this well surrounded with fœcal matter.

37. The proposal to cut off the subsoil drainage from the tank, conjoined with stoppage of wet cultivation between the tank and the town, is a matter of very great importance. This has been approved by the Sanitary Board, and I trust the District Board will loose no time in carrying it out. As soon as this work has been completed, or synchronously with it, I would advise that the District Boards Engineer should draw up plans for the complete improvement of Nandyal, in consultation with the District

Sanitary

Sanitary officer. Complete plans for sewerage, water supply, conservancy and improvement of streets and of inhabited areas generally should be entered into. The matter of water supply will presumably not offer any great difficulties, seeing that there is so close to the town a suitable storage tank. These plans, if approved of by the District Board, would in ordinary course be placed before the Sanitary Board for scrutiny. It would then be possible for the District Board to work year by year with these plans as its guide, in making improvements systematically. If necessary, a loan should be required from Government. After completion of the works, the District Board might well hand over its charge to the care of a Municipal Council.

Dibagunta - Inspected 10th January 1896. Population 744

38 No unprotected list was maintained in this village; but one was duly made on the date of my inspection. Last work by the Vaccinator was on the 31st July 1895, when 14 cases were operated upon. According to the newly made list of unprotected cases however, 54 cases remained unvaccinated. I verified 8 cases.

39 This village gets its supply of water partly from the canal - when this is

available - and partly from a well within the temple enclosure. At a very small expense, the parapet wall might be correctly built. The beams across it, should certainly be removed. As this well is much used by the public notwithstanding its private character presumably Section 99 of Act No V of 1884 could be made applicable.

Kanalapulli - Inspected 11th January 1896. Population 343

40. Here nine cases were verified, and found correctly reported. The Malas well in this village requires attention, as it is falling into ruins. At very little expense, the caste natives well could also be built up correctly. The beams across it should certainly be removed.

Gallivu - Inspected 12th January 1896. Population 1723

41. The vaccination work here was apparently performed with lymph derived from scabs; the marks are hardly recognizable as the result of Vaccination.

Pedda Chintagunta - Inspected 13th January 1896. Population 1480

42. The unprotected list shows 78 unprotected cases. Three cases were verified here. The probationary Vaccinator had worked here under orders with lymph from scabs - with the usual indifferent results.

The

43. The Konda reddi bauri supplies the whole village with water. It would cost but little to convert this into a draw well, and thus sanitarily protect it.

Elagudda - Inspected 14th January 1896. Population 515

44. This is the new head quarters of the Chagulmarri taluq. There is apparently some difference of opinion as to the site for the increased village, that may be expected as a result of its official occupation. I think there can be no possibility of doubt that the area opposite the Cutchery, and having its slope towards the river, is the site that should be selected. This will doubtless not only yield good water but will afford all the advantages derivable from site, viz - good soil, and facility of drainage and perflation. I understand this is the spot already selected by Mr. Mullaly, Collector of the District.

45. There are no tolties in this village. This is a serious matter with an intended increase of population. Efforts should be made to get tolties to settle there, with as little delay as possible.

46. The Cutchery well is open. It should be covered and be supplied with a pump. This pump should again supply a a cistern from which the water could be drawn. It is not safe even for prisoners to

draw water from a well open to contamination. This is, I know, no business of the District Boards but it might well contribute to yet any reasonable sum for the improvement of the well provided its use were allowed to the people.

Dhone - Inspected 16 December 1896
Population 2629

47. As this is a village that has been fully reported upon before, I need not here enter into details. I look with regret to the abandonment by the District Board of the scheme to allow the villagers to erect buildings on the high ground, which was specially bought for that purpose. The villagers represented to me that they were most anxious to take up the plots of ground, and I hope the Board will reconsider the position. The public purpose for which this land was acquired was definitely stated to Government at time of purchase, and I cannot see that the Railway, which it has been suggested to me restrains its use, has really any voice in the matter. This was never pronounced land. It seems but poor policy to keep the inhabitants in the present unhealthy site, on the mere chance that the Railway may want the particular portion.

48. Vaccination. Over one hundred cases were found upon the unprotected list - yet the Vaccinator had remarked in the village Vaccination list that he could effect no vaccination here, nor could he secure the

the aid of the Reddy in carrying it on. The conduct of this Reddy should be reported by the District Board to the Collector.

Statement showing the vital statistics of villages inspected in the Kurnool District in 1895

Names of places visited	Rate per mille of population	
	Births	Deaths
Lanjapolur	33.6	67.2
Kudlur	40.2	43.2
Panthipand	36.8	14.7
Allur	46.1	22.4
Malayala	40.4	29.5
Nagatur	30.0	19.3
Pagidala	39.3	35.5
Gotlur	13.1	19.6
Bunnur	-	-
Jupand	41.4	42.8
Thariyoppula	29.8	47.1
Rajoli	31.2	26.0
Pamulpand	39.4	17.0
Ramballapalli	-	-
Velleppanur Union	53.9	34.6
Bhojannum	50.8	29.5
Santajutur	60.6	30.3
Permatur	52.1	26.1
Paniyam	26.7	15.9
Nandyal	18.0	13.8
Dibaguntla	51.1	21.5
Ramalapalli	32.1	26.2
Yalluv	36.0	36.0
Pedda Chintaguntla	35.1	31.8
Allaguda	44.7	13.6

Condition of vaccination as found on examination of children haphazard

	No of vaccination cases inspected.			Number of unprotected cases
	under 1 year	1–5	5–10	
Lanjapolur	4	5	8	18
Kudlur	1	4	5	59
Panthipand	4	3	-	24
Allur	-	2	2	23
Malyala	8	3	2	23
Nagatur	3	16	9	12
Pagidala	5	3	2	66
Gotlur	1	9	5	-
Bunnur				
Jupand	-	-	-	16
Thariyoppula	4	9	2	21
Rajoli	1	7	-	13
Pamulpand	-	1	2	45
Rambalapalli	-	-	-	-
Velleppanur Union	3	7	8	134
Bhojannum	2	4	1	52
Santajutur	-	1	-	127
Permatur	-	4	1	21
Paniyam	-	1	2	126
Nandyal	1	5	4	-
Dibaguntla	-	5	11	54
Ramalapalli	-	11	2	36
Yalluv	-	1	-	192
Peddachintaguntla	-	3	-	78
Allaguda	1	4	3	38
Total	34	101	69	1178
	9	48.8	33.3	

47 From the foregoing lists, it will be
seen that the chances are that Registra-
tion of births and deaths is effected
with fair care in the villages concerned
50. In regard to vaccination, the re-
sults of inspection cannot be said
to be satisfactory, except in the
matter of falsification. The route
chosen by me was unluckily one
recently inspected by the District
Medical and Sanitary Officer,
so that the chances were against
any such instance appearing.
The question of imperfect organiza-
tion has been the subject of special
correspondence with the President
District Board. The organization
formerly existing had been added
to and changed in its personnel
and mode of administration
latterly, till the original outline
was not discernable. Instruments
are no longer demanded for
vaccinators' posts. A method
of paying had been introduced
which corresponded simply to
payment by results, therefore
a vaccinator when in want of
money performed a certain
number of cases, and, when this
was not the case, he remained at
home; and, according to the District
Medical and Sanitary Officer, —
added to his livelihood by following
other professions. Under these cir-
cumstances, it is not to be wonder-
ed at that results from this
district have of late been highly
unsatisfactory. It is hoped the
new arrangements which have been
excogitated by the District Medical
and Sanitary Officer will, without
delay, be put in force, as soon as the
sanctioned budget is received.
The question of lymph supply has
also been most unsatisfactory. The
district was originally worked solely
on the fresh lymph system, and
there appeared at one time no great
difficulty in the matter. It would,
however, appear that of late years
the villagers have shown increasing
indisposition to part with their
calves. In view of this difficulty,
it was advised by this Office that
glycerine paste should be issued,
but with the advent of the hot-
weather the whole process broke

49 From the foregoing lists, it will be seen that the chances are that Registration of births and deaths is effected with fair care in the villages concerned.

50. In regard to vaccination, the results of inspection cannot be said to be satisfactory, except in the matter of falsification. The absence of the route chosen by me was unluckily one recently inspected by the District Medical and Sanitary Officer, so that the chances were against any such instance appearing. The question of imperfect organization has been the subject of special correspondence with the President District Board. The organization formerly existing had been added to and changed in its personnel and mode of administration latterly, till the original outline was not discernable. Intermediates are no longer demanded for vaccinators posts. A method of paying had been introduced which corresponded nicely to payment by results, therefore a vaccinator when in want of money performed a certain

number of cases, and, when this was not the case, he remained at home; and, according to the District Medical and Sanitary Officer, — added to his livelihood by following other professions. Under these circumstances, it is not to be wondered at that results from this district have of late been highly unsatisfactory. It is hoped that new arrangements which have been excogitated by the District Medical and Sanitary Officer will, without delay, be put in force, as soon as the sanctioned budget is received.

The question of lymph supply has also been most unsatisfactory. The district was originally worked solely on the fresh lymph system, and there appeared at one time no great difficulty in the matter. It would, however, appear that of late years the villagers have shown increasing indisposition to part with their calves. In view of this difficulty it was advised by this Office that glycerine paste should be issued, but with the advent of the hot weather the whole process broke

down. Hence, a return to the fresh lymph method was the only — course open. Under these conditions, it would be unfair to criticize the resort by the vaccinators to the use of scabs. This, however, should in future be absolutely forbidden and punishment should be dealt to vaccinators who persist in using this method.

51. Provided that the new Budget places at disposal of the District Board a more numerous staff, I trust it will be remembered that each vaccinator should be efficiently trained and examined by the District Medical and — Sanitary Officer, before being allowed to join his appointment. This — having been accomplished, there ought to be no difficulty in so directing their work that full results are obtainable - provided the aid of the Revenue authorities be arranged for in the manner set forth in this Office circular No. 1238 dated 26th September 1894.

52. The point that [illegible]

that which required special attention is the want of energy on the part of the Village Reddis in the matter of vaccination. There might be large numbers of ~~unprotected~~ unprotected cases upon the list, yet the vaccinator would visit the village in vain. This may result from one of two causes; either the present class of salaried Reddis really have no power with the villagers, which I suspect, or they are not sufficiently supported in their efforts by the Tahsildars. In any case, if the instructions contained in the circular alluded to were carefully carried out, there would arise no necessity to discuss this matter. Any failure of duty either on the part of the vaccinators or of the village heads, would at once come to notice. It is hopeless to expect the vaccination Department in any district to perform its duty unless full details as to methods of working be attended to under a recognized system.

Fort St. George
15th May 1896

[signature]

and Municipal Department.

1449K

From

Surgn.-Lt.-Col. W. G. KING, M.B., C.M., D.P.H.

Sanitary Commissioner for Madras,

To

The Chief Secretary
to Government.
Local & Municipal

No. 986/S

Dated 15th
Despatched 19th } May 1896.
Received 18 MAY. 96

Enclosures. 2

No. L., June 1896.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—the following papers:—

Concise Notes on the Sanitary Inspection of rural areas in the

KURNOOL DISTRICT.

LANJAPOLUR.

Inspected 19*th December* 1895.

Population 1,846

Latrine floors and drains are in want of repair. Dry earth should be used in all the latrines. This would be feasible, if light thatched or corrugated iron roofs were added to protect from rain. Both here and at Kulloor the toties are women; their husbands having been sent elsewhere. This renders abortive the principle that guided the placing of scavengers in villages in former days in Kurnool. These people were imported chiefly from Salem at some expense to the district board, and it was the intention of the board to do all in their power to make these people comfortable by giving huts and keeping families together as much as possible. Failure to attend to this aspect of the matter will prevent the residence of this useful class in a district where their services are much required. The toties at Lanjapolur are not provided with any thing with which to collect fœcal matter from the latrines. Small hand buckets with close fitting iron lids should be provided. In view of the proximity of this village to Kurnool, and the fact that the Hindree has been shown to be the medium for cholera infection, special care should be taken to keep the banks in a thoroughly cleanly condition. The cholera epidemic of 1889 was due to the infection of the Hindree at this village.

2. Birth and death registers are neatly kept and up to date.

3. *Vaccination.*—Five cases were verified. Nineteen cases remained on the unprotected list.

KULLOOR.

Inspected 18*th December* 1895.

Population 1,343

4. The remarks made as to the latrines at Lanjapolur are applicable also here. The toty failed to show the trenches in which the night-soil is buried, and, although it is true she does collect the fœcal matter, it is evident that it is all eaten by the buffaloes. This is a matter that has been before represented to the Reddi, and there should be no difficulty in his seeing that this is carried out. In this village there had been, up to date of my visit, sixteen cases of small-pox, and I discovered a man suffering from the disease. The Reddi maintains that he had reported the matter to the Tahsildar 21 days previously; but the Deputy Inspector of Vaccination declares that no report on the subject had reached him. Irrespective of the risk involved to the villagers, the proximity of this village to Kurnool affords a special danger of the risk of infectious diseases being promptly reported. I brought the matter, before leaving, demi-officially to the notice of the Chairman of the Kurnool Municipality, and the District Sanitary Officer, advising the former to push re-vaccination. The well close to a site, long used

as a latrine in this village, should be closed. Much mortality was caused in this village during the cholera epidemic of 1889, until it was found that the people used this well for so-called "domestic purposes" in addition to the river Hindree.

5. *Vaccination.*—Five cases were verified and found correct.

PANTHIPAD.

Inspected 19*th December* 1895.

Population 272

6. The inhabitants used a step well besides the river. This should be converted into a draw-well. There were fourteen cases of cholera in this village during 1894.

7. *Vaccination.*—Four cases were verified and found correct.

ALLUR.

Inspected 21*st December* 1895.

Population 760

8. The karnam's well has the platform erroneously placed *inside* the parapet wall. This should be changed, and thus increase the protection of the supply from the entrance of filth. The Bechureddi's bauvi and Belakunta bauvi are both neatly built masonry wells that might be cheaply converted to the draw-well type. To avoid repetition, I may here say that where the building up by masonry would involve great expense in the case of these wells, the alternative is open of sinking within them cylinders of iron or of stoneware, or building rings of masonry. With a good concrete backing, or of puddled clay—if nothing better could be afforded—the well rings made by country potters would suffice. One or more such cylinders might be sunk in the well, which should then be surrounded with stones, gravel, and lastly sand. Over the sand could be built a concrete platform with cement plaster covering. The arrangement would be as shown in the accompanying diagram. To this method the villagers would, doubtless, at first object, on the ground that the total yield of the wells would be diminished. This, however, is not actually the case —the *rate* only could be affected by friction in passing through the stones; but this can always be met by increasing the number of cylinders sunk. Against this has to be placed the advantage of largely diminishing the loss by evaporation, and the very considerable grade of sanitary protection. Where villagers are sufficiently advanced to submit to this method, a still simple mode of meeting the requirement is to sink an iron water pipe perforated at the end as shown in figure 2 and then fill up as formerly described. Within the pipe could then be sunk the suction pipe of a pump. This is a method that has lately been pressed upon public attention by Koch. I attach, for information of the district board, a translation of his statements on this point. The number of step wells in the Kurnool district is very great, and it is obvious that as long as these are employed the risk of contamination is very great. From personal experience I am perfectly aware that villagers are liable to make a fuss about these wells being interfered with; but they are fully appreciative of the sanitary results when actually secured by effecting alteration—as exhibited by the cleanly supply of water.

ENCLOSURE.

Management of sub-soil water and wells.

The following extract from a paper by Professor Koch (translated by Albert Bull, B.A.,) is published for general information:—

For domestic filtration, *i.e.*, for the use of a family or of one house, there are small filters of a most varied construction at our disposal. Of these, there are not many which can keep back micro-organisms, and therefore infectious matters, from the water, and those which can do so, *e.g.*, those made of silicious marl, aluminous clay, asbestos and celluloid, remain only a few days impermeable to germs, and very soon fall off as regards the quantity of water they supply, and require a very careful handling. I am not aware of any small filters which suffice for practical wants for any length of time, and I should not advise depending upon small filters in times of cholera.

Far better are the results of natural filtration. Rain water, when it sinks into the ground and ultimately becomes sub-soil water, passes through far thicker layers and with far less rapidity than river water when passing by artificial filtration through sand filters. If the soil is only sufficiently granulated, we have in soil filtration a much more perfect process than is at our disposal in artificial filtration. As a rule, the soil is of a material much more finely granulated than the comparatively coarse-grained sand of the filter, and it is fair to expect that the sub soil water, after passing sufficiently thick layers of this finely-granulated soil, will be either very poor in micro-organisms, or quite free from them. This is confirmed by the investigations of C. Fraenkel, who has shown that sub-soil water, even in a soil which has been much and for a long period contaminated, as in the case of Berlin, is quite free from germs. In other places the same results have followed from investigations made on this point. We have therefore no reason to keep out of consumption the sub-soil water, which can be found nearly everywhere. On the contrary, we cannot find a better filtered water and one more protected against infection. The only difficulty is to bring this perfectly purified water into consumption without its being later on again contaminated and infected. In this respect great errors are still most inexplicably made everywhere.

If the sub-soil water is raised by means of an iron conduit pipe, the possibility of contamination is avoided. The soil is so close to the pipe that no real disturbance of the filtering layers of the soil are produced by the boring. All liquids, even those most strongly contaminated, must, before reaching the depth from which the water is raised, pass through thick and efficient filtering layers, by which they are rendered absolutely free from infectious matters. Especially is this the case if the boring goes through an upper impermeable layer into deeper sand or gravel layers containing the water. Water coming from such depths will certainly nearly always contain some iron, but this is, in the case of a single pump, as also in the case of large filters, no reason for rejecting the water. It will only be necessary to free the water from iron according to the methods above described, *i.e.*, by exposure to air and filtration, in order to obtain quite excellent water in no way inferior to the best spring water. For this purpose the method given by Piefke is to be recommended, as it has proved itself to be excellent at Hamburg in the case of a number of pumps giving water containing iron.

The most rational way of obtaining sub-soil water is undoubtedly by the use of iron pumps. There is, it is true, the objection against it that the pumps gradually bring up less and less water. But it has been observed that this has nearly always been due to the fact that the metal sieve, which is intended to protect the pipe at the lower punctured end against sand, has been stopped by mud and become encrustated. But it will be easy to find a means of avoiding this by giving such a construction to the lower end of the pipe as to enable the metal sieve when stopped up to be removed and to put a fresh one in its place.

Iron pumps are unfortunately still too little used. Almost everywhere the sub-soil water is obtained in the old fashioned, but most irrational, system of wells. The construction of the well is such that from underneath, *i.e.*, from the sub-soil water, if the bottom of the well is deep enough and is in a good filtering soil, only good filtered water can come into the well. But from above the well is nearly always exposed to very serious contamination. Very often the wells are quite open or insufficiently covered; but even if they are covered above by masonry, or by iron plates, nearly always in the uppermost layers of the soil surrounding the well, which in summer become quite dry and in winter are exposed to the frost, there are cracks and fissures which allow unfiltered water coming from these unfiltered layers to leak into the well. Even masonry or cement is, when subjected to these influences, so cracked and fissured as to be unable to prevent the water flowing from the surface of the soil to reach the well. But this very water can be very badly contaminated, for the water of the well is used at the well for laundry purposes and for the cleansing of domestic utensils. Contaminated in this way, and possibly infected, it finds its way through the cracks and fissures of the covering back into the well. Besides the wells are generally situated in the lowest part of a district. As a result they receive the filth of over-full dung-heaps, gutters, &c.; and often the rain washes towards the well filth from human dwellings even if situated at a considerable distance. The fact that epidemics having their source in well water are generally observed to occur after a heavy rainfall is to be ascribed to the above fact. A proof, that even cholera infection can have its source in a well contaminated in such a manner, is to be found in the case of a well in the neighbourhood of Altona, into which filth had been allowed to pass from the surface. As to this case I shall have to report in another paper.

Wells, constructed no matter how, should not be tolerated in future if they are exposed to contaminations of this character, even if there is only suspicion that such contamination might take place.

It will certainly not be easy to arrange that wells already in existence, even if badly constructed and dangerously situated, should be given up; but that is not always necessary. It will be comparatively easy in most cases so to alter the construction of the well as to remove all danger of contamination from above. It is only necessary to give to the well the same protection, or approximately the same protection, against contaminating percolations by means of filtering layers of soil such as exist in the case of a single pump. To achieve this, one should proceed by filling the well up to the highest water point with gravel, and over the gravel with

sand up to the very top. Here it is of course assumed that the well is already provided with an iron pipe, or, if this is not the case, that it will be provided with one before the gravel or sand are put in. In this way the well is turned into a pump, with the advantage over other ordinary pumps that its lower end dips into a layer which gives no resistance to the sub-soil water. If it is proposed to keep the water-supply of the well quantitatively intact in order that, for instance, for purposes of extinguishing fires, a certain quantity of water should be at hand, there should then be erected above the highest point reached by the well water a construction of masonry or of iron capable of lifting the protecting sand covering. But the last should never be less than two metres deep. It is also to be recommended that the pump should not be erected immediately over the well, but some distance from it, and that it should be put into communication with the well by a lead pipe. This would prevent the water of the well, which, when used for washing and other domestic purposes, becomes foul, from leaking into the soil around.

Wells protected in this or similar methods, by good filtering layers, give the same protection against the infection of water as is given by the sand filtration of the great water works. In fact they really give a greater protection, for they are not exposed to the many disturbances in the process of filtration referred to previously and are also not affected by frost.

So much attention is now being given to perfecting as much as possible the water-supply of the great water works, that it is important not to lose sight of the domestic water-supply by pumps and wells. By improving the wells in the manner explained above, the spread of cholera, in so far as it is due to water, can be restricted to a great extent. It is just in this respect that a great deal can yet be done.

Note.—The Acting Sanitary Commissioner would specially call attention to Koch's proposals as to the filling up with gravel and sand existing wells. It seems to him especially adapted for use in the case of so-called 'step wells' which are so common in certain of the districts. The expenditure necessary to convert them into draw-wells is frequently prohibitive on account of their enormous size; but under this system they could readily be filled in leaving a cylinder of iron, glazed stoneware, or other suitable material in communication with the body of water. Round this cylinder could then be built the ordinary parapet wall and basement of the 'draw-well;' although where prejudice against innovation can be sufficiently overcome, the use of a pump at a distant point as advised by Professor Koch would be far preferable.

Malayala.

Inspected 23*rd December* 1895.

Population 643

9. Ourho bauvi requires deepening and cleansing. The canal affords a certain proportion only of the annual supply as it dries up. The villagers have then to rely upon this well (which also dries up) and the Vellaputti bauvi. This latter has an indigo vat and a manure heap close to it, the latter being distinctly liable to contribute filth to the well on the occurrence of rain. Yet this is the only well that yields water when the canal is dry.

10. *Vaccination.*—Twelve cases were verified. These were the work of the probationary vaccinator. He is stated to have duly verified the results after operation. The number of results were incorrectly stated.

11. The two preceding villages belong to the union of Nandikotkur. Although they contribute taxes per house exactly in the same proportion as the villagers of Nandikotkur, the only benefit they seem to derive is that, at intervals of about one month, a certain number of sweepers are sent to make a general "clean-up." This seems hardly a fair way of managing the sanitary affairs of the union. To prevent a repetition, I may state that I found the same conditions at Vellapanur. It seems desirable that pains should be taken to make ryots understand that any taxes exacted from them on behalf of unions shall be spent as much to the interest of the smaller villages as the larger, which happens to be the head-quarters of the union.

Nagatur.

Inspected 23*rd December* 1895.

Population 1,035

12. The Tamapauli bauvi might be modified into a "draw-well" with advantage.

13. *Vaccination.*—The unprotected list was found written up only as far as June 1895. Thirty-two cases were verified with satisfactory results as to the number of vesicles.

Pagidala.

Inspected 23*rd December* 1895.

Population 1,070

14. *Vaccination.*—The unprotected list here showed 66 unprotected cases. This was the number up to June 1895. Yet, in August 1895, the vaccinator, Masum Sahib, having visited the village, reports on the list that he could not get a single case to vaccinate, because the Reddi declared that the children were all suffering from fever. It is obvious that the Reddi has not the slightest influence over the villagers.

Gotlur.

Inspected 15*th January* 1896.

Population 612

15. There is one drinking-water well in this village that could easily be built up, so as to convert it into a draw well.

16. *Vaccination.*—No unprotected list is maintained in this village. On the 12th of October 1895 the vaccinator did twelve cases and had not done any other cases since 1893. One case of re-vaccination was entered falsely as having had six vesicles.

I verified thirteen cases.

Bunur.

Inspected 26*th December* 1895.

Population 701

17. The village well is on the high road, and is much used by the bandy drivers who halt there on their way towards Kurnool. The water in this well was very filthy, as might be expected from so many dirty feet and hands passing to it daily. It may be hard to convince the District Board of Kurnool that all the wells I mention as requiring improvement should be looked to *at once*; but, I trust, that this will be regarded as a specially urgent matter. The use of a well under the circumstances described by a large number of bandy drivers who subsequently pass through several villages on their way to a large town involves general danger of cholera spread along the route. I trust, therefore, the district board will convert this well in a manner that shall ensure its not being readily polluted, according to the suggestions given in the accompanying diagram.

Jupaud.

Inspected 24*th December* 1895.

Population 701

18. Here five cases were verified. One child under six years of age was found to have been subjected to the operation of re-vaccination. This represents a waste of lymph unless under unusual circumstances of exposure during an epidemic. Not only so, but it is very misleading; as a number of cases being returned as re-vaccination, it is naturally understood that these imply operations on adults.

Tarigoppula.

Inspected 27*th December* 1895.

Population 1,041

19. *Vaccination.*—There are 21 cases on the unprotected list. The vaccinator visited the village on 30th May 1885 and 30th August 1895, but only managed to secure nine operations. Eleven cases were verified. The number of vesicles was incorrectly stated in two instances; otherwise results were correct. The Reddi here evidently requires to be reminded as to his duty as to aiding the advance of vaccination.

RAJOLI.

Inspected 15th January 1896.

Population 192

20. *Vaccination.*—Only twelve children on the unprotected list. The vaccinator had not visited the village during two years.

PAMULPAUD.

Inspected 27th December 1895.

Population 939

21. *Vaccination.*—The unprotected list shows that 45 cases unprotected have existed since 1894; but, on the visit of the vaccinator on 21st April 1895, he could only secure two cases. The Reddi is devoid of influence with the villagers. They bolted with their children helter-skelter, and could not be persuaded to submit their children to vaccination.

KAMBALLAPALLI.

Inspected 27th Dcember 1895.

22. *Vaccination.*—Kurnam absent; no list with the Reddi.

VELEPPANUR UNION.

Inspected 28th December 1895.

Population 1,966

23. This is one of the towns that has suffered severely from malaria since the introduction of increased moisture in the sub-soil from the Kurnool-Cuddapah canal. An examination of 38 inhabitants showed that 16 per cent. suffered from slight, 70 per cent. from considerable, and 16 per cent. from very severe, forms of enlargement of the spleen, exhibiting high grades of malarial poisoning. As an illustration of the extent to which the sub-soil is under the influence of the canal, I may state that the Nalapolana bauvi water was level with the ground at time of my visit. A patch of ground, on which about one dozen houses are built, is in a continual state of swamp. The only way in which any radical improvement in the state of this village could be effected would be by running a sub-soil drain so as to intercept the water on its passage through the soil from the canal. If the district board be not in a position to afford this, then some measure with regard to the patch just mentioned would, at least, seem imperative, as a matter of common humanity. Probably, the cheapest way to deal with the matter would be to find a piece of ground for these people elsewhere in the village-site, and give them a grant towards building their houses. If not, the wet cultivation above the houses should be stopped, or a correctly laid out interception sub-drain should be made above this particular portion.

24. *Conservancy.*—The efforts of this union at night-soil conservancy would seem confined to the making of so-called latrines for females. These are most filthy spaces, which are duly cleansed by buffaloes. It would be much more comfortable for the females, and be far better for the agricultural prosperity of this village, if it could be arranged that temporary movable screens be placed in certain selected fields to which they could resort for the purposes of nature. Behind the screened space could be made small pits not exceeding 8 inches deep; beside each pit should be placed the excavated earth; close to each empty hole so prepared so as to identify its locality, should be inserted on the ground a small bamboo or other stick. Female "sweepers" could then be employed to proceed to the holes that have been utilized by the villagers and by a motion of the foot cover the contents with the earth—thus carefully effecting deodorization. This duty demands that nothing defiling should be touched by the sweepers, and is therefore applicable to a class of labour that would refuse to handle excreta after the manner of ordinary toties. This method is far more cleanly and

easily applicable than the "trench system." If, however, the union is of opinion that latrines *within* the inhabited area are necessary for the females of the village, certainly correct forms should be erected. Plans suitable for rural areas can be obtained from the Sanitary Board. The village already suffers from the effect of sub-soil water pressure. Yet about 30 cents of ground have been put under wet cultivation near the house of one Karkomah—thus swamping the surroundings. This is due to the influence of the Special Duty Deputy Collector. I found in the village of Allaguda also a patch of ground within the village-sites. I hope the district board will exert its influence in the opposite direction. Irrigation is a very good thing in its way; but it certainly is out of place within the inhabited area of villages. Such petty patches of 30 cents here, and 20 cents there, cannot be of so great importance to the canal prosperity that the health of the villagers should be risked in attaining a little increase of revenue.

25. Peddanagana bauvi, Seshanah bauvi and Bussi bauvi require correctly formed platforms. In the case of the Boomlawani bauvi, the platform is built on the wrong side of the parapet wall. There are also beams across the well on which persons stand when drawing water—thus contributing to its defilement. These beams should be removed.

26. In this village of Veleppanur, the Union Chairman did his best to aid vaccination, and during my stay the Deputy Inspector of Vaccination, Kurnool Range, managed to vaccinate a number of children direct from the calf.

BHOJANUM.

Inspected 28th December 1895.

Population 610

27. The banks of the stream near the town are much resorted to for purposes of nature. Dhobies wash above the site used by the people for removal of drinking water; the village manure heaps are also collected above this. It would not, I believe, require much influence from the revenue authorities to alter this state of affairs. The communication of cholera from village to village along this small stream has occurred more than once in the past, and, so long as this condition of affairs exists, history must be expected to repeat itself.

28. There are 52 children upon the unprotected list. In 1895 only six cases were performed. In excuse the Deputy Inspector of Vaccination states that in the course of 1894–95 there were no less than four changes of vaccinators. Five cases were verified by me. The marks found were very poor. This was apparently due to the use by the vaccinators, against orders, of lymph derived from scabs.

SANTAJUTUR.

Inspected 29th December 1895.

Population 858

29. No less than 127 cases were found in the unprotected list in this village. The vaccinator on the 25th October 1895 performed only five cases, and of these, only two proved successful. The Reddi here seems to have no influence over his people whatsoever.

PERMATUR.

Inspected 30th December 1895.

Population 537

30. This is an unusually dirty village. No efforts of any description being apparently made towards its cleanliness.

31. I verified only two cases of vaccination here, the Reddi maintaining that all the rest had gone to the fields.

Paniem.

Inspected 4th and 5th January 1896.

Population 3,706

32. *Vaccination.*—One hundred and twenty-six cases were found on the unprotected list. The vaccinator, Doraswami, who has apparently now left the district board's service, vaccinated 59 cases, of which, however, only 18 were successful. These were performed against orders with scab lymph. Thirty-eight cases were also operated upon with glycerine paste; but here only nine were successful. Bad work of this sort should be put a stop to whenever detected; a man who goes over the country pricking children with a lancet for no earthly result is likely to do the cause of vaccination much harm.

33. The Ankamah bauvi is a neatly built specimen of a "step well". As the water level of this varies only about two feet throughout the year, it would be a simple matter to make a platform here even if the board would not consent to fill the well up in the manner advised in paragraph 8. I attach a diagram ~~(will follow)~~ of the nature of platform I mean.

34. A part of this village is subjected to considerable excess of sub-soil water on account of pressure from the Paniem tank. This could readily enough be drained off, by making rough so-called "Irish sub-soil drains." These consist of trenches dug down to the water level and then filled in pell-mell with large stones. There are plenty of stones that would suffice for this purpose in the old fort. If the board would afford cooly labour, it could readily be accomplished by the Union Chairman as the matter requires no skill. After much persuasion, I managed to make the Reddi who was acting as Chairman to have a small section of the proposed drain made. This acted well, and was sufficient to convince him of the efficacy of the method. If the surplus water were thus allowed to have an exit, it would be an easy enough matter to make permanent road over the drains and thus for ever shut out what has been for many a long day an eyesore and inconvenience in the village.

Nandyal.

Inspected 2nd January 1896.

Population 10,737

35. Several reports on the sanitary state of this town having been made by various officers, including myself, I presume the district board no longer requires to be told that its condition is highly unsatisfactory. Some efforts were made in 1888–89 under my advice by the district board towards ameliorating its state; but as the works were stopped after the accumulation of much material, considerable waste has resulted. Such work as was done, however, in the matter of improved sewerage has worn well, and is evidently sand work. The extensions of the drain made since that date however by the board, with the object of giving the sewage an outlet for the work was stopped before this stage was reached,—are very crude. The stoneware pipes have been alternated with portions of Bombay conservancy pans, so as to make a series of traps for sedimentation of the sewage. It was the intention in the original scheme to have taken the sewage to a portion of undrained land and to have allowed the effluent after purification through land to flow into the river. Under the extraordinary arrangement now made very little sewage really reaches the outlet; but rather than take up the late Chairman's work it would probably be cheaper to fill in the numerous catchpits so as to bring them to the same level as the drain invert. The sewage discharge should be utilized for cultivation on the river bank.

36. Nothing perhaps could be more disheartening than the state of the space behind the buildings known as the Tahsildar's latrine. Several buildings were here thrown down and the space was in the process of being re-graded. It would have formed an admirable thoroughfare between the Behrumal street and the bazaar; but the union has built a wall straight across the space; thus effectually barring the drainage from its surface. Further, it is used, as formerly, as a huge latrine.

Nothing more utterly awful in the way of insanitary and filthy conditions could well be found within a space inhabited by human beings. The wells are still incorrectly protected. The Makkan bauvi, which was partially put in order, might, at small expense, be completed as to its platform and drains. I found this well surrounded with fœcal matter.

37. The proposal to cut off the sub-soil drainage from the tank, conjoined with stoppage of wet cultivation between the tank and the town, is a matter of very great importance. This has been approved by the sanitary board, and I trust the district board will lose no time in carrying it out. As soon as this work has been completed, or synchronously with it, I would advise that the District Board Engineer should draw up plans for the complete improvement of Nandyal, in consultation with the District Sanitary Officer. Complete plans for sewage, water-supply, conservancy and improvement of streets and of inhabited areas generally should be entered into. The matter of water-supply will presumably not offer any great difficulties, seeing that there is so close to the town a suitable storage tank. These plans, if approved by the district board, would in ordinary course be placed before the Sanitary Board for scrutiny. It would then be possible for the district board to work year by year with these plans as its guide in making improvements *systematically*. If necessary, a loan should be required from Government. After completion of the works, the district board might well hand over its charge to the care of a municipal council.

Dibaguntla.

Inspected 10th January 1896.

Population 744

38. No unprotected list was maintained in this village; but one was duly made up to the date of my inspection. Last work by the vaccinator was on the 31st July 1895, when fourteen cases were operated upon. According to the newly made list of unprotected cases, however, 54 cases remained unvaccinated. I verified eight cases.

39. This village gets its supply of water partly from the canal—when this is available—and partly from a well within the temple enclosure. At a very small expense, the parapet wall might be correctly built. The beams across it should certainly be removed. As this well is much used by the public, notwithstanding its private character, presumably section 99 of Act No. V of 1884 could be made applicable.

Kanalapulli.

Inspected 11th January 1896.

Population 343

40. Here nine cases were verified, and found correctly reported. The Malas' well in this village requires attention, as it is falling into ruins. At very little expense, the caste natives' well could also be built up correctly. The beams across it should certainly be removed.

Yallur.

Inspected 12th January 1896.

Population 1,723

41. The vaccination work here was apparently performed with lymph derived from scabs; the marks are hardly recognizable as the result of vaccination.

Pedda Chintagunta.

Inspected 13th January 1896.

Population 1,480

42. The unprotected list shows 78 unprotected cases. Three cases were verified here. The probationary vaccinator had worked here under orders with lymph from scabs, with the usual indifferent results.

43. The Konda Reddi bauvi supplies the whole village with water. It would cost but little to convert this into a draw well, and thus sanitarily protect it.

Alagudda.

Inspected 14*th January* 1896.

Population 515

44. This is the new head-quarters of the Chagulmarri taluk. There is apparently some difference of opinion as to the site for the increased village that may be expected as a result of its official occupation. I think there can be no possibility of doubt that the area opposite the cutcherry, and having its slope towards the river, is the site that should be selected. This will doubtless not only yield good water, but will afford all the advantages derivable from site,—good soil, and facility of drainage and perflation. I understand this is the spot already selected by Mr. Mullaly, Collector of the district.

45. There are no toties in this village. This is a serious matter with an intended increase of population. Efforts should be made to get toties to settle there, with as little delay as possible.

46. The cutcherry well is open. It should be covered and be supplied with a pump. This pump should again supply a cistern from which the water could be drawn. It is not safe even for prisoners to draw water from a well open to contamination. This is, I know, no business of the district boards, but it might well contribute to any reasonable sum for improvement of the well, provided its use were allowed to the people.

Dhone.

Inspected 16*th December* 1896.

Population 2,620

47. As this is a village that has been fully reported upon before, I need not here enter into details. I look with regret to the abandonment by the district board of the scheme to allow the villagers to erect buildings on the high ground, which was specially bought for that purpose. The villagers represented to me that they were most anxious to take up the plots of ground, and I hope the board will reconsider the position. The public purpose for which this land was acquired was definitely stated to Government at time of purchase, and I cannot see that the railway, which it has been suggested to me restrains its use, has really any voice in the matter. This was never poramboke land. It seems but poor policy to keep the inhabitants in the present unhealthy site, on the mere chance that the railway may want the particular portion.

48. *Vaccination.*—Over one hundred cases were found upon the unprotected list, yet the vaccinator had remarked in the village vaccination list that he could effect no vaccination here, nor could he secure the aid of the Reddy in carrying it on. The conduct of this Reddy should be reported by the district board to the Collector.

Statement showing the vital statistics of villages inspected in the Kurnool district in 1895 :—

Names of places visited.	Rate per mille of population.	
	Births.	Deaths.
Lanjapolur	33·6	67·2
Kullur	40·2	43·2
Panthipaud	36·8	14·7
Allur	46·1	22·4
Malayala	40·4	29·5
Nagatur	30·0	19·3
Pagidala	39·3	35·5
Gotlur	13·1	19·6
Bunnur	41·4	42·8
Jupaud		

42·8 45·6

Names of places visited.	Rate per mille of population.	
	Births.	Deaths.
Tharigoppula	29·8	47·1
Rajoli	31·2	26·0
Pamulpaud	39·4	17·0
Kamballapalli	..	..
Veleppanur union	53·9	34·6
Bhojanum	50·8	29·5
Santajutur	60·6	30·3
Permatur	52·1	26·1
Paniyam	26·7	15·9
Nandyal	18·0	13·8
Dibaguntla	51·1	21·5
Kanalapalli	32 1	26·2
Yallur	36·0	36·0
Peddachintagunta	35·1	31·8
Allaguda	44·7	13·6

Condition of vaccination as found on examination of children haphazard—

—	Number of vaccination cases inspected.			Number of unprotected cases.
	Under one year.	One to five years.	Five to ten years.	
Lanjapolur	4	5	8	18
Kullur	1	4	5	59
Panthipaud	4	3	..	24
Allur	..	2	2	23
Malayala	8	3	2	23
Nagatur	3	16	9	12
Pagidala	5	3	2	66
Gotlur	1	9	5	..
Bunnur	..	..	..	..
Jupaud	..	..	..	16
Tharigoppula	4	9	2	21
Rajoli	..	..	..	13
Pamulpaud	..	1	2	45
Kamballapalli	..	..	..	..
Veleppanur union	3	7	8	134
Bhojanum	2	4	1	52
Santajutur	..	1	..	127
Permatur	..	4	1	21
Paniyam	..	1	2	126
Nandyal	1	5	4	..
Dibaguntla	..	5	11	54
Kanalapalli	..	11	2	36
Yallur	..	1	..	192
Peddachintagunta	..	3	..	78
Allaguda	1	4	3	38
Total ..	37	101	69	1,178
Percentage of those under each age to total inspected.	17·9	48·8	33·3	..

49. From the foregoing lists it will be seen that the chances are that registration of births and deaths is effected with fair care in the villages concerned.

50. In regard to vaccination, the results of inspection cannot be said to be satisfactory, except in the matter of absence of falsification. The route chosen by me was unluckily one recently inspected by the District Medical and Sanitary Officer, so that the chances were against any such instance appearing. The question of imperfect organization has been the subject of special correspondence with the President, District Board. The organization formerly existing had been added to and changed in its *personnel* and mode of administration latterly, till the original outline was not discoverable. Matriculates are no longer demanded for vaccinators' posts. A method of paying had been introduced which corresponded simply to payment by results; therefore a vaccinator, when in want of money, performed a certain number of cases, and, when this was not the case, he remained at home; and, according to the District Medical and Sanitary Officer, added to his livelihood by following other professions. Under these circumstances, it is not to be wondered at that results from this district have of late been highly unsatisfactory. It is hoped the new arrangements, which

Sanitary Inspection of Rural areas in the Kurnool district

have been excogitated by the District Medical and Sanitary Officer will, without delay, be put in force, as soon as the sanctioned budget is received. The question of lymph supply has also been most unsatisfactory. The district was originally worked solely on the fresh lymph system, and there appeared at one time no great difficulty in the matter. It would, however, appear that of late years, the villagers have shown increasing indisposition to part with their calves. In view of this difficulty, it was advised by this office that glycerine paste should be issued; but with the advent of the hot weather the whole process broke down. Hence, a return to the fresh lymph method was the only course open. Under ~~these~~ this combination of unfavourable circumstances, it would be unfair to criticize the resort by the vaccinators to the use of scabs. This, however, should in future be *absolutely forbidden* and punishment should be dealt to vaccinators who persist in using this method.

51. Provided that the new budget places at disposal of the district board a more numerous staff, I trust it will be remembered that each vaccinator should be efficiently trained and examined by the District Medical and Sanitary Officer *before* being allowed to join his appointment. This having been accomplished, there ought to be no difficulty in so directing their work that full results are obtainable, provided the aid of the revenue authorities be arranged for in the manner set forth in this office Circular No. 1238-V., dated 26th September 1894.

52. The point that struck me as that which required special attention is the want of energy on the part of the village Reddis in the matter of vaccination. There might be large numbers of unprotected cases upon the list, yet the vaccinator would visit the village in vain. This may result from one of two causes—either the present class of salaried Reddis really have no power with the villagers, which I suspect, or they are not sufficiently supported in their efforts by the Tahsildars. In any case, if the instructions contained in the circular alluded to were carefully carried out, there would arise no necessity to discuss this matter. Any failure of duty either on the part of the vaccinators or of the village heads would at once come to notice. It is hopeless to expect the vaccination department in any district to perform its duty, unless full *details* as to methods of working be attended to under a recognized system.

FORT ST. GEORGE,
15*th May* 1896.

(Signed) W. G. KING, Surgn.-Lt.-Col.,
Sanitary Commissioner for Madras.

28

CS/PS Order No. 1266 dt 13/7/96

Communicated to the Local Boards concerned and the Collector of Kurnool for attention.

2° The diagrams referred to in paras 8, 17 and 33 of the notes were received from the Sanitary Commissioner on the 3rd July 1896 or after a month and a half after the receipt of the notes. Such delays should not be allowed to recur.

Rlgs 4.7.96. WWD 6.7.96 Secd 10/7/96

hope
No formal reminder was sent to the Sanitary Commr for the diagrams as the Secretary thought they had been forwarding to send them as early as possible

To The Secy Dt Bd. Kurnool with three diagrams
" Collector of Kurnool
" Sanitary Commissioner
Editors Table Depd 20/7/96

No. 1266 L., 13TH JULY 1896.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

CONCISE NOTES on the Sanitary Inspection of rural areas in the

KURNOOL DISTRICT.

LANJAPOLUR.

Inspected 19*th December* 1895.

Population 1,846

Latrine floors and drains are in want of repair. Dry earth should be used in all the latrines. This would be feasible, if light thatched or corrugated iron roofs were added to protect from rain. Both here and at Kulloor the toties are women; their husbands having been sent elsewhere. This renders abortive the principle that guided the placing of scavengers in villages in former days in Kurnool. These people were imported chiefly from Salem at some expense to the district board, and it was the intention of the board to do all in their power to make these people comfortable by giving huts and keeping families together as much as possible. Failure to attend to this aspect of the matter will prevent the residence of this useful class in a district where their services are much required. The toties at Lanjapolur are not provided with any thing with which to collect fœcal matter from the latrines. Small hand buckets with close fitting iron lids should be provided. In view of the proximity of this village to Kurnool, and the fact that the Hindree has been shown to be the medium for cholera infection, special care should be taken to keep the banks in a thoroughly cleanly condition. The cholera epidemic of 1889 was due to the infection of the Hindree at this village.

2. Birth and death registers are neatly kept and up to date.

3. *Vaccination.*—Five cases were verified. Nineteen cases remained on the unprotected list.

KULLOOR.

Inspected 18*th December* 1895.

Population 1,343

4. The remarks made as to the latrines at Lanjapolur are applicable also here. The toty failed to show the trenches in which the night-soil is buried, and, although it is true she does collect the fœcal matter, it is evident that it is all eaten by the buffaloes. This is a matter that has been before represented to the Reddi, and there should be no difficulty in his seeing that this is carried out. In this village there had been, up to date of my visit, sixteen cases of small-pox, and I discovered a man suffering from the disease. The Reddi maintains that he had reported the matter to the Tahsildar 21 days previously; but the Deputy Inspector of Vaccination declares that no report on the subject had reached him. Irrespective of the risk involved to the villagers, the proximity of this village to Kurnool affords a special danger of the risk of infectious diseases being promptly reported. I brought the matter, before leaving, demi-officially to the notice of the Chairman of the Kurnool Municipality, and the District Sanitary Officer, advising the former to push re-vaccination. The well close to a site, long used

as a latrine in this village, should be closed. Much mortality was caused in this village during the cholera epidemic of 1889, until it was found that the people used this well for so-called "domestic purposes" in addition to the river Hindree.

5. *Vaccination.*—Five cases were verified and found correct.

PANTHIPAD.

Inspected 19th December 1895.

Population 272

6. The inhabitants used a step well besides the river. This should be converted into a draw-well. There were fourteen cases of cholera in this village during 1894.

7. *Vaccination.*—Four cases were verified and found correct.

ALLUR.

Inspected 21st December 1895.

Population 760

8. The karnam's well has the platform erroneously placed *inside* the parapet wall. This should be changed, and thus increase the protection of the supply from the entrance of filth. The Bechureddi's bauvi and Belakunta bauvi are both neatly built masonry wells that might be cheaply converted to the draw-well type. To avoid repetition, I may here say that where the building up by masonry would involve great expense in the case of these wells, the alternative is open of sinking within them cylinders of iron or of stoneware, or building rings of masonry. With a good concrete backing, or of puddled clay—if nothing better could be afforded—the well rings made by country potters would suffice. One or more such cylinders might be sunk in the well, which should then be surrounded with stones, gravel, and lastly sand. Over the sand could be built a concrete platform with cement plaster covering. The arrangement would be as shown in the accompanying diagram. To this method the villagers would, doubtless, at first object, on the ground that the total yield of the wells would be diminished. This, however, is not actually the case —the *rate* only could be affected by friction in passing through the stones; but this can always be met by increasing the number of cylinders sunk. Against this has to be placed the advantage of largely diminishing the loss by evaporation, and the very considerable grade of sanitary protection. Where villagers are sufficiently advanced to submit to this method, a still more simple mode of meeting the requirement is to sink an iron water pipe perforated at the end as shown in figure 2 and then fill up as formerly described. Within the pipe could then be sunk the suction pipe of a pump. This is a method that has lately been pressed upon public attention by Koch. I attach, for information of the district board, a translation of his statements on this point. The number of step wells in the Kurnool district is very great, and it is obvious that as long as these are employed the risk of contamination is very great. From personal experience I am perfectly aware that villagers are liable to make a fuss about these wells being interfered with; but they are fully appreciative of the sanitary results when actually secured by effecting alteration—as exhibited by the cleanly supply of water.

ENCLOSURE.

Management of sub-soil water and wells.

The following extract from a paper by Professor Koch (translated by Albert Bull, B.A.) is published for general information:—

For domestic filtration, *i.e.*, for the use of a family or of one house, there are small filters of a most varied construction at our disposal Of these, there are not many which can keep back micro-organisms, and therefore infectious matters, from the water, and those which can do so, *e.g.*, those made of silicious marl, aluminous clay, asbestos and celluloid, remain only a few days impermeable to germs, and very soon fall off as regards the quantity of water they supply, and require a very careful handling. I am not aware of any small filters which suffice for practical wants for any length of time, and I should not advise depending upon small filters in times of cholera.

Far better are the results of natural filtration. Rain water, when it sinks into the ground, and ultimately becomes sub-soil water, passes through far thicker layers and with far less rapidity than river water when passing by artificial filtration through sand filters. If the soil is only sufficiently granulated, we have in soil filtration a much more perfect process than is at our disposal in artificial filtration. As a rule, the soil is of a material much more finely granulated than the comparatively coarse-grained sand of the filter, and it is fair to expect that the sub-soil water, after passing sufficiently thick layers of this finely-granulated soil, will be either very poor in micro-organisms, or quite free from them. This is confirmed by the investigations of C. Fraenkel, who has shown that sub-soil water, even in a soil which has been much and for a long period contaminated, as in the case of Berlin, is quite free from germs. In other places the same results have followed from investigations made on this point. We have therefore no reason to keep out of consumption the sub-soil water, which can be found nearly everywhere. On the contrary, we cannot find a better filtered water and one more protected against infection. The only difficulty is to bring this perfectly purified water into consumption without its being later on again contaminated and infected. In this respect great errors are still most inexplicably made everywhere.

If the sub-soil water is raised by means of an iron conduit pipe, the possibility of contamination is avoided. The soil is so close to the pipe that no real disturbance of the filtering layers of the soil are produced by the boring. All liquids, even those most strongly contaminated, must, before reaching the depth from which the water is raised, pass through thick and efficient filtering layers, by which they are rendered absolutely free from infectious matters. Especially is this the case if the boring goes through an upper impermeable layer into deeper sand or gravel layers containing the water. Water coming from such depths will certainly nearly always contain some iron, but this is, in the case of a single pump, as also in the case of large filters, no reason for rejecting the water. It will only be necessary to free the water from iron according to the methods above described, *i.e.*, by exposure to air and filtration, in order to obtain quite excellent water in no way inferior to the best spring water. For this purpose the method given by Piefke is to be recommended, as it has proved itself to be excellent at Hamburg in the case of a number of pumps giving water containing iron.

The most rational way of obtaining sub-soil water is undoubtedly by the use of iron pumps. There is, it is true, the objection against it that the pumps gradually bring up less and less water. But it has been observed that this has nearly always been due to the fact that the metal sieve, which is intended to protect the pipe at the lower punctured end against sand, has been stopped by mud and become encrustated. But it will be easy to find a means of avoiding this by giving such a construction to the lower end of the pipe as to enable the metal sieve when stopped up to be removed and to put a fresh one in its place.

Iron pumps are unfortunately still too little used. Almost everywhere the sub-soil water is obtained in the old fashioned, but most irrational, system of wells. The construction of the well is such that from underneath, *i.e.*, from the sub-soil water, if the bottom of the well is deep enough and is in a good filtering soil, only good filtered water can come into the well. But from above the well is nearly always exposed to very serious contamination. Very often the wells are quite open or insufficiently covered; but even if they are covered above by masonry, or by iron plates, nearly always in the uppermost layers of the soil surrounding the well, which in summer become quite dry and in winter are exposed to the frost, there are cracks and fissures which allow unfiltered water coming from these unfiltered layers to leak into the well. Even masonry or cement is, when subjected to these influences, so cracked and fissured as to be unable to prevent the water flowing from the surface of the soil to reach the well. But this very water can be very badly contaminated, for the water of the well is used at the well for laundry purposes and for the cleansing of domestic utensils. Contaminated in this way, and possibly infected, it finds its way through the cracks and fissures of the covering back into the well. Besides the wells are generally situated in the lowest part of a district. As a result they receive the filth of over-full dung-heaps, gutters, &c.; and often the rain washes towards the well filth from human dwellings even if situated at a considerable distance. The fact that epidemics having their source in well water are generally observed to occur after a heavy rainfall is to be ascribed to the above fact. A proof, that even cholera infection can have its source in a well contaminated in such a manner, is to be found in the case of a well in the neighbourhood of Altona, into which filth had been allowed to pass from the surface. As to this case I shall have to report in another paper.

Wells, constructed no matter how, should not be tolerated in future if they are exposed to contaminations of this character, even if there is only suspicion that such contamination might take place.

It will certainly not be easy to arrange that wells already in existence, even if badly constructed and dangerously situated, should be given up; but that is not always necessary It will be comparatively easy in most cases so to alter the construction of the well as to remove all danger of contamination from above. It is only necessary to give to the well the same protection, or approximately the same protection, against contaminating percolations by means of

filtering layers of soil such as exist in the case of a single pump. To achieve this, one should proceed by filling the well up to the highest water point with gravel, and over the gravel with sand up to the very top. Here it is of course assumed that the well is already provided with an iron pipe, or, if this is not the case, that it will be provided with one before the gravel or sand are put in. In this way the well is turned into a pump, with the advantage over other ordinary pumps that its lower end dips into a layer which gives no resistance to the sub-soil water. If it is proposed to keep the water-supply of the well quantitatively intact in order that, for instance, for purposes of extinguishing fires, a certain quantity of water should be at hand, there should then be erected above the highest point reached by the well water a construction of masonry or of iron capable of lifting the protecting sand covering. But the last should never be less than two metres deep. It is also to be recommended that the pump should not be erected immediately over the well, but some distance from it, and that it should be put into communication with the well by a lead pipe. This would prevent the water of the well, which, when used for washing and other domestic purposes, becomes foul, from leaking into the soil around.

Wells protected in this or similar methods, by good filtering layers, give the same protection against the infection of water as is given by the sand filtration of the great water works. In fact they really give a greater protection, for they are not exposed to the many disturbances in the process of filtration referred to previously and are also not affected by frost.

So much attention is now being given to perfecting as much as possible the water-supply of the great water works, that it is important not to lose sight of the domestic water-supply by pumps and wells. By improving the wells in the manner explained above, the spread of cholera, in so far as it is due to water, can be restricted to a great extent. It is just in this respect that a great deal can yet be done.

Note.—The Acting Sanitary Commissioner would specially call attention to Koch's proposals as to the filling up with gravel and sand existing wells. It seems to him especially adapted for use in the case of so-called 'step wells' which are so common in certain of the districts. The expenditure necessary to convert them into draw-wells is frequently prohibitive on account of their enormous size; but under this system they could readily be filled in leaving a cylinder of iron, glazed stoneware, or other suitable material in communication with the body of water. Round this cylinder could then, be built the ordinary parapet wall and basement of the 'draw-well;' although where prejudice against innovation can be sufficiently overcome, the use of a pump at a distant point as advised by Professor Koch would be far preferable.

MALAYALA.

Inspected 23rd December 1895.

Population 643

9. Ourho bauvi requires deepening and cleansing. The canal affords a certain proportion only of the annual supply as it dries up. The villagers have then to rely upon this well (which also dries up) and the Vellaputti bauvi. This latter has an indigo vat and a manure heap close to it, the latter being distinctly liable to contribute filth to the well on the occurrence of rain. Yet this is the only well that yields water when the canal is dry.

10. *Vaccination.*—Twelve cases were verified. These were the work of the probationary vaccinator. He is stated to have duly verified the results after operation. The number of results were incorrectly stated.

11. The two preceding villages belong to the union of Nandikotkur. Although they contribute taxes per house exactly in the same proportion as the villagers of Nandikotkur, the only benefit they seem to derive is that, at intervals of about one month, a certain number of sweepers are sent to make a general "clean-up." This seems hardly a fair way of managing the sanitary affairs of the union. To prevent a repetition, I may state that I found the same conditions at Vellapanur. It seems desirable that pains should be taken to make ryots understand that any taxes exacted from them on behalf of unions shall be spent as much to the interest of the smaller villages as the larger, which happens to be the head-quarters of the union.

NAGATUR.

Inspected 23rd December 1895.

Population 1,035

12. The Tamapauli bauvi might be modified into a "draw-well" with advantage.

13. *Vaccination.*—The unprotected list was found written up only as far as June 1895. Thirty-two cases were verified with satisfactory results as to the number of vesicles.

PAGIDALA.

Inspected 23rd December 1895.

Population 1,070

14. *Vaccination.*—The unprotected list here showed 66 unprotected cases. This was the number up to June 1895. Yet, in August 1895, the vaccinator, Masum Sahib, having visited the village, reports on the list that he could not get a single case to vaccinate, because the Reddi declared that the children were all suffering from fever. It is obvious that the Reddi has not the slightest influence over the villagers.

GOTLUR.

Inspected 15th January 1896.

Population 612

15. There is one drinking-water well in this village that could easily be built up, so as to convert it into a draw well.

16. *Vaccination.*—No unprotected list is maintained in this village. On the 12th of October 1895 the vaccinator did twelve cases and had not done any other cases since 1893. One case of re-vaccination was entered falsely as having had six vesicles.

I verified thirteen cases.

BUNUR.

Inspected 26th December 1895.

Population 701

17. The village well is on the high road, and is much used by the bandy drivers who halt there on their way towards Kurnool. The water in this well was very filthy, as might be expected from so many dirty feet and hands passing to it daily. It may be hard to convince the District Board of Kurnool that all the wells I mention as requiring improvement should be looked to *at once*; but, I trust, that this will be regarded as a specially urgent matter. The use of a well under the circumstances described by a large number of bandy drivers who subsequently pass through several villages on their way to a large town involves general danger of cholera spread along the route. I trust, therefore, the district board will convert this well in a manner that shall ensure its not being readily polluted, according to the suggestions given in the accompanying diagram No. 2.

JUPAUD.

Inspected 24th December 1895.

Population 701

18. Here five cases were verified. One child under six years of age was found to have been subjected to the operation of re-vaccination. This represents a waste of lymph unless under unusual circumstances of exposure during an epidemic. Not only so, but it is very misleading; as a number of cases being returned as re-vaccination, it is naturally understood that these imply operations on adults.

TARIGOPPULA.

Inspected 27th December 1895.

Population 1,042

19. *Vaccination.*—There are 21 cases on the unprotected list. The vaccinator visited the village on 30th May 1885 and 30th August 1895, but only managed to secure nine operations. Eleven cases were verified. The number of vesicles was incorrectly stated in two instances; otherwise results were correct. The Reddi here evidently requires to be reminded as to his duty as to aiding the advance of vaccination.

RAJOLI.

Inspected 15th January 1896.

Population 192

20. *Vaccination.*—Only twelve children on the unprotected list. The vaccinator had not visited the village during two years.

PAMULPAUD.

Inspected 27th December 1895.

Population 939

21. *Vaccination.*—The unprotected list shows that 45 cases unprotected have existed since 1894; but, on the visit of the vaccinator on 21st April 1895, he could only secure two cases. The Reddi is devoid of influence with the villagers. They bolted with their children helter-skelter, and could not be persuaded to submit their children to vaccination.

KAMBALLAPALLI.

Inspected 27th Dcember 1895.

22. *Vaccination.*—Kurnam absent; no list with the Reddi.

VELEPPANUR UNION.

Inspected 28th December 1895.

Population 1,966

23. This is one of the towns that has suffered severely from malaria since the introduction of increased moisture in the sub-soil from the Kurnool-Cuddapah canal. An examination of 38 inhabitants showed that 16 per cent. suffered from slight, 70 per cent. from considerable, and 16 per cent. from very severe, forms of enlargement of the spleen, exhibiting high grades of malarial poisoning. As an illustration of the extent to which the sub-soil is under the influence of the canal, I may state that the Nalapolana bauvi water was level with the ground at time of my visit. A patch of ground, on which about one dozen houses are built, is in a continual state of swamp. The only way in which any radical improvement in the state of this village could be effected would be by running a sub-soil drain so as to intercept the water on its passage through the soil from the canal. If the district board be not in a position to afford this, then some measure with regard to the patch just mentioned would, at least, seem imperative, as a matter of common humanity. Probably, the cheapest way to deal with the matter would be to find a piece of ground for these people elsewhere in the village-site, and give them a grant towards building their houses. If not, the wet cultivation above the houses should be stopped, or a correctly laid out interception sub-drain should be made above this particular portion.

24. *Conservancy.*—The efforts of this union at night-soil conservancy would seem confined to the making of so-called latrines for females. These are most filthy spaces, which are duly cleansed by buffaloes. It would be much more comfortable for the females, and be far better for the agricultural prosperity of this village, if it could be arranged that temporary movable screens be placed in certain selected fields to which they could resort for the purposes of nature. Behind the screened space could be made small pits not exceeding 8 inches deep; beside each pit should be placed the excavated earth; close to each empty hole so prepared so as to identify its locality, should be inserted on the ground a small bamboo or other stick. Female "sweepers" could then be employed to proceed to the holes that have been utilized by the villagers and by a motion of the foot cover the contents with the earth—thus carefully effecting deodorization. This duty demands that nothing defiling should be touched by the sweepers, and is therefore applicable to a class of labour that would refuse to handle excreta after the manner of ordinary toties. This method is far more cleanly and

easily applicable than the "trench system." If, however, the union is of opinion that latrines *within* the inhabited area are necessary for the females of the village, certainly correct forms should be erected. Plans suitable for rural areas can be obtained from the Sanitary Board. The village already suffers from the effect of sub-soil water pressure. Yet about 30 cents of ground have been put under wet cultivation near the house of one Karkomah—thus swamping the surroundings. This is due to the influence of the Special Duty Deputy Collector. I found in the village of Allaguda also a patch of ground within the village-sites. I hope the district board will exert its influence in the opposite direction. Irrigation is a very good thing in its way; but it certainly is out of place within the inhabited area of villages. Such petty patches of 30 cents here, and 20 cents there, cannot be of so great importance to the canal prosperity that the health of the villagers should be risked in attaining a little increase of revenue.

25. Peddanagana bauvi, Seshanah bauvi and Bussi bauvi require correctly formed platforms. In the case of the Boomlawani bauvi, the platform is built on the wrong side of the parapet wall. There are also beams across the well on which persons stand when drawing water—thus contributing to its defilement. These beams should be removed.

26. In this village of Veleppanur, the Union Chairman did his best to aid vaccination, and during my stay the Deputy Inspector of Vaccination, Kurnool Range, managed to vaccinate a number of children direct from the calf.

BHOJANUM.

Inspected 28th December 1895.

Population 610

27. The banks of the stream near the town are much resorted to for purposes of nature. Dhobies wash above the site used by the people for removal of drinking water; the village manure heaps are also collected above this. It would not, I believe, require much influence from the revenue authorities to alter this state of affairs. The communication of cholera from village to village along this small stream has occurred more than once in the past, and, so long as this condition of affairs exists, history must be expected to repeat itself.

28. There are 52 children upon the unprotected list. In 1895 only six cases were performed. In excuse the Deputy Inspector of Vaccination states that in the course of 1894–95 there were no less than four changes of vaccinators. Five cases were verified by me. The marks found were very poor. This was apparently due to the use by the vaccinators, against orders, of lymph derived from scabs.

SANTAJUTUR.

Inspected 29th December 1895.

Population 858

29. No less than 127 cases were found in the unprotected list in this village. The vaccinator on the 25th October 1895 performed only five cases, and of these, only two proved successful. The Reddi here seems to have no influence over his people whatsoever.

PERMATUR.

Inspected 30th December 1895.

Population 537

30. This is an unusually dirty village. No efforts of any description being apparently made towards its cleanliness.

31. I verified only two cases of vaccination here, the Reddi maintaining that all the rest had gone to the fields.

PANIEM.

Inspected 4th and 5th January 1896.

Population 3,706

32. *Vaccination.*—One hundred and twenty-six cases were found on the unprotected list. The vaccinator, Doraswami, who has apparently now left the district board's service, vaccinated 59 cases, of which, however, only 18 were successful. These were performed against orders with scab lymph. Thirty-eight cases were also operated upon with glycerine paste; but here only nine were successful. Bad work of this sort should be put a stop to whenever detected; a man who goes over the country pricking children with a lancet for no earthly result is likely to do the cause of vaccination much harm.

33. The Ankamah bauvi is a neatly built specimen of a "step well". As the water level of this varies only about two feet throughout the year, it would be a simple matter to make a platform here even if the board would not consent to fill the well up in the manner advised in paragraph 8. I attach a diagram of the nature of platform I mean.

34. A part of this village is subjected to considerable excess of sub-soil water on account of pressure from the Paniem tank. This could readily enough be drained off, by making rough so-called "Irish sub-soil drains." These consist of trenches dug down to the water level and then filled in pell-mell with large stones. There are plenty of stones that would suffice for this purpose in the old fort. If the board would afford cooly labour, it could readily be accomplished by the Union Chairman as the matter requires no skill. After much persuasion, I managed to make the Reddi who was acting as Chairman to have a small section of the proposed drain made. This acted well, and was sufficient to convince him of the efficacy of the method. If the surplus water were thus allowed to have an exit, it would be an easy enough matter to make permanent road over the drains and thus for ever shut out what has been for many a long day an eyesore and inconvenience in the village.

NANDYAL.

Inspected 2nd January 1896.

Population 10,737

35. Several reports on the sanitary state of this town having been made by various officers, including myself, I presume the district board no longer requires to be told that its condition is highly unsatisfactory. Some efforts were made in 1888–89 under my advice by the district board towards ameliorating its state; but as the works were stopped after the accumulation of much material, considerable waste has resulted. Such work as was done, however, in the matter of improved sewerage has worn well, and is evidently sand work. The extensions of the drain made since that date however by the board, with the object of giving the sewage an outlet, for the work was stopped before this stage was reached,—are very crude. The stoneware pipes have been alternated with portions of Bombay conservancy pans, so as to make a series of traps for sedimentation of the sewage. It was the intention in the original scheme to have taken the sewage to a portion of undrained land and to have allowed the effluent after purification through land to flow into the river. Under the extraordinary arrangement now made very little sewage really reaches the outlet; but rather than take up the late Chairman's work it would probably be cheaper to fill in the numerous catchpits so as to bring them to the same level as the drain invert. The sewage discharge should be utilized for cultivation on the river bank.

36. Nothing perhaps could be more disheartening than the state of the space behind the buildings known as the Tahsildar's latrine. Several buildings were here thrown down and the space was in the process of being re-graded. It would have formed an admirable thoroughfare between the Behrumal street and the bazaar; but the union has built a wall straight across the space; thus effectually barring the drainage from its surface. Further, it is used, as formerly, as a huge latrine.

Nothing more utterly awful in the way of insanitary and filthy conditions could well be found within a space inhabited by human beings. The wells are still incorrectly protected. The Makkan bauvi, which was partially put in order, might, at small expense, be completed as to its platform and drains. I found this well surrounded with fœcal matter.

37. The proposal to cut off the sub-soil drainage from the tank, conjoined with stoppage of wet cultivation between the tank and the town, is a matter of very great importance. This has been approved by the sanitary board, and I trust the district board will lose no time in carrying it out. As soon as this work has been completed, or synchronously with it, I would advise that the District Board Engineer should draw up plans for the complete improvement of Nandyal, in consultation with the District Sanitary Officer. Complete plans for sewage, water-supply, conservancy and improvement of streets and of inhabited areas generally should be entered into. The matter of water-supply will presumably not offer any great difficulties, seeing that there is so close to the town a suitable storage tank. These plans, if approved of by the district board, would in ordinary course be placed before the Sanitary Board for scrutiny. It would then be possible for the district board to work year by year with these plans as its guide in making improvements *systematically*. If necessary, a loan should be required from Government. After completion of the works, the district board might well hand over its charge to the care of a municipal council.

DIBAGUNTLA.

Inspected 10th January 1896.

Population 744

38. No unprotected list was maintained in this village; but one was duly made on the date of my inspection. Last work by the vaccinator was on the 31st July 1895, when fourteen cases were operated upon. According to the newly made list of unprotected cases, however, 54 cases remained unvaccinated. I verified eight cases.

39. This village gets its supply of water partly from the canal—when this is available—and partly from a well within the temple enclosure. At a very small expense, the parapet wall might be correctly built. The beams across it should certainly be removed. As this well is much used by the public, notwithstanding its private character, presumably section 99 of Act No. V of 1884 could be made applicable.

KANALAPULLI.

Inspected 11th January 1896.

Population 343

40. Here nine cases were verified, and found correctly reported. The Malas' well in this village requires attention, as it is falling into ruins. At very little expense, the caste natives' well could also be built up correctly. The beams across it should certainly be removed.

YALLUR.

Inspected 12th January 1896.

Population 1,723

41. The vaccination work here was apparently performed with lymph derived from scabs; the marks are hardly recognizable as the result of vaccination.

PEDDA CHINTAGUNTA.

Inspected 13th January 1896.

Population 1,480

42. The unprotected list shows 78 unprotected cases. Three cases were verified here. The probationary vaccinator had worked here under orders with lymph from scabs, with the usual indifferent results.

43. The Konda Reddi bauvi supplies the whole village with water. It would cost but little to convert this into a draw well, and thus sanitarily protect it.

ALAGUDDA.

Inspected 14*th January* 1896.

Population 515

44. This is the new head-quarters of the Chagulmarri taluk. There is apparently some difference of opinion as to the site for the increased village that may be expected as a result of its official occupation. I think there can be no possibility of doubt that the area opposite the cutcherry, and having its slope towards the river, is the site that should be selected. This will doubtless not only yield good water, but will afford all the advantages derivable from site,—good soil, and facility of drainage and perflation. I understand this is the spot already selected by Mr. Mullaly, Collector of the district.

45. There are no toties in this village. This is a serious matter with an intended increase of population. Efforts should be made to get toties to settle there, with as little delay as possible.

46. The cutcherry well is open. It should be covered and be supplied with a pump. This pump should again supply a cistern from which the water could be drawn. It is not safe even for prisoners to draw water from a well open to contamination. This is, I know, no business of the district board's, but it might well contribute to any reasonable sum for improvement of the well, provided its use were allowed to the people.

DHONE.

Inspected 16*th December* 1896.

Population 2,620

47. As this is a village that has been fully reported upon before, I need not here enter into details. I look with regret to the abandonment by the district board of the scheme to allow the villagers to erect buildings on the high ground, which was specially bought for that purpose. The villagers represented to me that they were most anxious to take up the plots of ground, and I hope the board will reconsider the position. The public purpose for which this land was acquired was definitely stated to Government at time of purchase, and I cannot see that the railway, which it has been suggested to me restrains its use, has really any voice in the matter. This was never poramboke land. It seems but poor policy to keep the inhabitants in the present unhealthy site, on the mere chance that the railway may want the particular portion.

48. *Vaccination.*—Over one hundred cases were found upon the unprotected list, yet the vaccinator had remarked in the village vaccination list that he could effect no vaccination here, nor could he secure the aid of the Reddy in carrying it on. The conduct of this Reddy should be reported by the district board to the Collector.

Statement showing the vital statistics of villages inspected in the Kurnool district in 1895 :—

Names of places visited.	Rate per mille of population.	
	Births.	Deaths.
Lanjapolur	33·6	67·2
Kullur	40·2	43·2
Panthipaud	36·8	14·7
Allur	46·1	22·4
Malayala	40·4	29·5
Nagatur	30·0	19·3
Pagidala	39·3	35·5
Gotlur	13·1	19·6
Bunnur	42·8	45·6
Jupaud	41·4	42·8

Names of places visited.	Rate per mille of population.	
	Births.	Deaths.
Tharigoppula	29·8	47·1
Rajoli	31·2	26·0
Pamulpaud	39·4	17·0
Kamballapalli	..	..
Veleppanur union	53·9	34·6
Bhojanum	50·8	29·5
Santajutur	60·6	30·3
Permatur	52·1	26·1
Paniyam	26·7	15·9
Nandyal	18·0	13·8
Dibaguntla	51·1	21·5
Kanalapalli	32 1	26·2
Yallur	36·0	36·0
Peddachintagunta	35·1	31·8
Allaguda	44·7	13·6

Condition of vaccination as found on examination of children haphazard—

—	Number of vaccination cases inspected.			Number of unprotected cases.
	Under one year.	One to five years.	Five to ten years.	
Lanjapolur	4	5	8	18
Kullur	1	4	5	59
Panthipaud	4	3	..	24
Allur	..	2	2	23
Malayala	8	3	2	23
Nagatur	3	16	9	12
Pagidala	5	3	2	66
Gotlur	1	9	5	..
Bunnur	..	..	..	..
Jupaud	..	..	..	16
Tharigoppula	4	9	2	21
Rajoli	..	..	..	13
Pamulpaud	..	1	2	45
Kamballapalli	..	..	..	..
Veleppanur union	3	7	8	134
Bhojanum	2	4	1	52
Santajutur	..	1	..	127
Permatur	..	4	1	21
Paniyam	..	1	2	126
Nandyal	1	5	4	..
Dibaguntla	..	5	11	54
Kanalapalli	..	11	2	36
Yallur	..	1	..	192
Peddachintagunta	..	3	..	78
Allaguda	1	4	3	38
Total ..	37	101	69	1,178
Percentage of those under each age to total inspected.	17·9	48·8	33·3	..

49. From the foregoing lists it will be seen that the chances are that registration of births and deaths is effected with fair care in the villages concerned.

50. In regard to vaccination, the results of inspection cannot be said to be satisfactory, except in the matter of absence of falsification. The route chosen by me was unluckily one recently inspected by the District Medical and Sanitary Officer, so that the chances were against any such instance appearing. The question of imperfect organization has been the subject of special correspondence with the President, District Board. The organization formerly existing had been added to and changed in its *personnel* and mode of administration latterly, till the original outline was not discoverable. Matriculates are no longer demanded for vaccinators' posts. A method of paying had been introduced which corresponded simply to payment by results; therefore a vaccinator, when in want of money, performed a certain number of cases, and, when this was not the case, he remained at home; and, according to the District Medical and Sanitary Officer, added to his livelihood by following other professions. Under these circumstances, it is not to be wondered at that results from this district have of late been highly unsatisfactory. It is hoped the new arrangements, which

have been excogitated by the District Medical and Sanitary Officer will, without delay, be put in force, as soon as the sanctioned budget is received. The question of lymph supply has also been most unsatisfactory. The district was originally worked solely on the fresh lymph system, and there appeared at one time no great difficulty in the matter. It would, however, appear that of late years, the villagers have shown increasing indisposition to part with their calves. In view of this difficulty, it was advised by this office that glycerine paste should be issued; but with the advent of the hot weather the whole process broke down. Hence, a return to the fresh lymph method was the only course open. Under this combination of unfavourable circumstances, it would be unfair to criticize the resort by the vaccinators to the use of scabs. This, however, should in future be *absolutely forbidden* and punishment should be dealt to vaccinators who persist in using this method.

51. Provided that the new budget places at disposal of the district board a more numerous staff, I trust it will be remembered that each vaccinator should be efficiently trained and examined by the District Medical and Sanitary Officer *before* being allowed to join his appointment. This having been accomplished, there ought to be no difficulty in so directing their work that full results are obtainable, provided the aid of the revenue authorities be arranged for in the manner set forth in this office Circular No. 1238-V., dated 26th September 1894.

52. The point that struck me as that which required special attention is the want of energy on the part of the village Reddis in the matter of vaccination. There might be large numbers of unprotected cases upon the list, yet the vaccinator would visit the village in vain. This may result from one of two causes—either the present class of salaried Reddis really have no power with the villagers, which I suspect, or they are not sufficiently supported in their efforts by the Tahsildars. In any case, if the instructions contained in the circular alluded to were carefully carried out, there would arise no necessity to discuss this matter. Any failure of duty either on the part of the vaccinators or of the village heads would at once come to notice. It is hopeless to expect the vaccination department in any district to perform its duty, unless full *details* as to methods of working be attended to under a recognized system.

Fort St. George,
15*th May* 1896.

(Signed) W. G. KING, Surgn.-Lt.-Col.,
Sanitary Commissioner for Madras.

Order—No. 1266 L., dated 13th July 1896.

Communicated to the local boards concerned and the Collector of Kurnool for attention.

2. The diagrams referred to in paragraphs 8, 17 and 33 of the notes were received from the Sanitary Commissioner on the 3rd July 1896 or a month-and-a-half after the receipt of the notes. Such delay should not be allowed to recur.

(True Extract.)

Under Secy., P.W.D.,
for *Chief Secretary.*

[with three diagrams]

To the President, District Board, Kurnool.
„ Collector of Kurnool.
„ Sanitary Commissioner.
Editors' Table.

Exd. A. Raitt.

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

For A. S.

Proof for approval

Issued.

Recd. *Encl.*

G.O., No. 1266 L., 13th July 1896.

Pass
Please note &
file
27/7/96

JULY.

Sanitary Inspection.

Communicating, with remark, to the Collector of Kurnool and the local boards concerned, the Sanitary Commissioner's notes on the inspection of rural areas in the Kurnool district.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper:—

CONCISE NOTES on the Sanitary Inspection of rural areas in the

KURNOOL DISTRICT.

LANJAPOLUR.

Inspected 19th December 1895.

Population 1,846

Latrine floors and drains are in want of repair. Dry earth should be used in all the latrines. This would be feasible, if light thatched or corrugated iron roofs were added to protect from rain. Both here and at Kulloor the toties are women; their husbands having been sent elsewhere. This renders abortive the principle that guided the placing of scavengers in villages in former days in Kurnool. These people were imported chiefly from Salem at some expense to the district board, and it was the intention of the board to do all in their power to make these people comfortable by giving huts and keeping families together as much as possible. Failure to attend to this aspect of the matter will prevent the residence of this useful class in a district where their services are much required. The toties at Lanjapolur are not provided with any thing with which to collect fœcal matter from the latrines. Small hand buckets with close fitting iron lids should be provided. In view of the proximity of this village to Kurnool, and the fact that the Hindree has been shown to be the medium for cholera infection, special care should be taken to keep the banks in a thoroughly cleanly condition. The cholera epidemic of 1889 was due to the infection of the Hindree at this village.

2. Birth and death registers are neatly kept and up to date.

3. *Vaccination.*—Five cases were verified. Nineteen cases remained on the unprotected list.

KULLOOR.

Inspected 18th December 1895.

Population 1,343

4. The remarks made as to the latrines at Lanjapolur are applicable also here. The toty failed to show the trenches in which the night-soil is buried, and, although it is true she does collect the fœcal matter, it is evident that it is all eaten by the buffaloes. This is a matter that has been before represented to the Reddi, and there should be no difficulty in his seeing that this is carried out. In this village there had been, up to date of my visit, sixteen cases of small-pox, and I discovered a man suffering from the disease. The Reddi maintains that he had reported the matter to the Tahsildar 21 days previously; but the Deputy Inspector of Vaccination declares that no report on the subject had reached him. Irrespective of the risk involved to the villagers, the proximity of this village to Kurnool affords a special danger of the risk of infectious diseases being promptly reported. I brought the matter, before leaving, demi-officially to the notice of the Chairman of the Kurnool Municipality, and the District Sanitary Officer, advising the former to push re-vaccination. The well close to a site, long used

as a latrine in this village, should be closed. Much mortality was caused in this village during the cholera epidemic of 1889, until it was found that the people used this well for so-called "domestic purposes" in addition to the river Hindree.

5. *Vaccination.*—Five cases were verified and found correct.

PANTHIPAD.

Inspected 19th December 1895.

Population 272

6. The inhabitants used a step well besides the river. This should be converted into a draw-well. There were fourteen cases of cholera in this village during 1894.

7. *Vaccination.*—Four cases were verified and found correct.

ALLUR.

Inspected 21st December 1895.

Population 760

8. The karnam's well has the platform erroneously placed *inside* the parapet wall. This should be changed, and thus increase the protection of the supply from the entrance of filth. The Bechureddi's bauvi and Belakunta bauvi are both neatly built masonry wells that might be cheaply converted to the draw-well type. To avoid repetition, I may here say that where the building up by masonry would involve great expense in the case of these wells, the alternative is open of sinking within them cylinders of iron or of stoneware, or building rings of masonry. With a good concrete backing, or of puddled clay—if nothing better could be afforded—the well rings made by country potters would suffice. One or more such cylinders might be sunk in the well, which should then be surrounded with stones, gravel, and lastly sand. Over the sand could be built a concrete platform with cement plaster covering. The arrangement would be as shown in the accompanying diagram. To this method the villagers would, doubtless, at first object, on the ground that the total yield of the wells would be diminished. This, however, is not actually the case —the *rate* only could be affected by friction in passing through the stones; but this can always be met by increasing the number of cylinders sunk. Against this has to be placed the advantage of largely diminishing the loss by evaporation, and the very considerable grade of sanitary protection. Where villagers are sufficiently advanced to submit to this method, a still more simple mode of meeting the requirement is to sink an iron water pipe perforated at the end as shown in figure 2 and then fill up as formerly described. Within the pipe could then be sunk the suction pipe of a pump. This is a method that has lately been pressed upon public attention by Koch. I attach, for information of the district board, a translation of his statements on this point. The number of step wells in the Kurnool district is very great, and it is obvious that as long as these are employed the risk of contamination is very great. From personal experience I am perfectly aware that villagers are liable to make a fuss about these wells being interfered with; but they are fully appreciative of the sanitary results when actually secured by effecting alteration—as exhibited by the cleanly supply of water.

ENCLOSURE.

Management of sub-soil water and wells.

The following extract from a paper by Professor Koch (translated by Albert Bull, B.A.) is published for general information:—

For domestic filtration, *i.e.*, for the use of a family or of one house, there are small filters of a most varied construction at our disposal. Of these, there are not many which can keep back micro-organisms, and therefore infectious matters, from the water, and those which can do so, *e.g.*, those made of silicious marl, aluminous clay, asbestos and celluloid, remain only a few days impermeable to germs, and very soon fall off as regards the quantity of water they supply, and require a very careful handling. I am not aware of any small filters which suffice for practical wants for any length of time, and I should not advise depending upon small filters in times of cholera.

Far better are the results of natural filtration. Rain water, when it sinks into the ground, and ultimately becomes sub-soil water, passes through far thicker layers and with far less rapidity than river water when passing by artificial filtration through sand filters. If the soil is only sufficiently granulated, we have in soil filtration a much more perfect process than is at our disposal in artificial filtration. As a rule, the soil is of a material much more finely granulated than the comparatively coarse-grained sand of the filter, and it is fair to expect that the sub-soil water, after passing sufficiently thick layers of this finely-granulated soil, will be either very poor in micro-organisms, or quite free from them. This is confirmed by the investigations of C. Fraenkel, who has shown that sub-soil water, even in a soil which has been much and for a long period contaminated, as in the case of Berlin, is quite free from germs. In other places the same results have followed from investigations made on this point. We have therefore no reason to keep out of consumption the sub-soil water, which can be found nearly everywhere. On the contrary, we cannot find a better filtered water and one more protected against infection. The only difficulty is to bring this perfectly purified water into consumption without its being later on again contaminated and infected. In this respect great errors are still most inexplicably made everywhere.

If the sub-soil water is raised by means of an iron conduit pipe, the possibility of contamination is avoided. The soil is so close to the pipe that no real disturbance of the filtering layers of the soil are produced by the boring. All liquids, even those most strongly contaminated, must, before reaching the depth from which the water is raised, pass through thick and efficient filtering layers, by which they are rendered absolutely free from infectious matters. Especially is this the case if the boring goes through an upper impermeable layer into deeper sand or gravel layers containing the water. Water coming from such depths will certainly nearly always contain some iron, but this is, in the case of a single pump, as also in the case of large filters, no reason for rejecting the water. It will only be necessary to free the water from iron according to the methods above described, *i.e.*, by exposure to air and filtration, in order to obtain quite excellent water in no way inferior to the best spring water. For this purpose the method given by Piefke is to be recommended, as it has proved itself to be excellent at Hamburg in the case of a number of pumps giving water containing iron.

The most rational way of obtaining sub-soil water is undoubtedly by the use of iron pumps. There is, it is true, the objection against it that the pumps gradually bring up less and less water. But it has been observed that this has nearly always been due to the fact that the metal sieve, which is intended to protect the pipe at the lower punctured end against sand, has been stopped by mud and become encrustated. But it will be easy to find a means of avoiding this by giving such a construction to the lower end of the pipe as to enable the metal sieve when stopped up to be removed and to put a fresh one in its place.

Iron pumps are unfortunately still too little used. Almost everywhere the sub-soil water is obtained in the old fashioned, but most irrational, system of wells. The construction of the well is such that from underneath, *i.e.*, from the sub-soil water, if the bottom of the well is deep enough and is in a good filtering soil, only good filtered water can come into the well. But from above the well is nearly always exposed to very serious contamination. Very often the wells are quite open or insufficiently covered; but even if they are covered above by masonry, or by iron plates, nearly always in the uppermost layers of the soil surrounding the well, which in summer become quite dry and in winter are exposed to the frost, there are cracks and fissures which allow unfiltered water coming from these unfiltered layers to leak into the well. Even masonry or cement is, when subjected to these influences, so cracked and fissured as to be unable to prevent the water flowing from the surface of the soil to reach the well. But this very water can be very badly contaminated, for the water of the well is used at the well for laundry purposes and for the cleansing of domestic utensils. Contaminated in this way, and possibly infected, it finds its way through the cracks and fissures of the covering back into the well. Besides the wells are generally situated in the lowest part of a district. As a result they receive the filth of over-full dung-heaps, gutters, &c.; and often the rain washes towards the well filth from human dwellings even if situated at a considerable distance. The fact that epidemics having their source in well water are generally observed to occur after a heavy rainfall is to be ascribed to the above fact. A proof, that even cholera infection can have its source in a well contaminated in such a manner, is to be found in the case of a well in the neighbourhood of Altona, into which filth had been allowed to pass from the surface. As to this case I shall have to report in another paper.

Wells, constructed no matter how, should not be tolerated in future if they are exposed to contaminations of this character, even if there is only suspicion that such contamination might take place.

It will certainly not be easy to arrange that wells already in existence, even if badly constructed and dangerously situated, should be given up; but that is not always necessary. It will be comparatively easy in most cases so to alter the construction of the well as to remove all danger of contamination from above. It is only necessary to give to the well the same protection, or approximately the same protection, against contaminating percolations by means of

filtering layers of soil such as exist in the case of a single pump. To achieve this, one should proceed by filling the well up to the highest water point with gravel, and over the gravel with sand up to the very top. Here it is of course assumed that the well is already provided with an iron pipe, or, if this is not the case, that it will be provided with one before the gravel or sand are put in. In this way the well is turned into a pump, with the advantage over other ordinary pumps that its lower end dips into a layer which gives no resistance to the sub-soil water. If it is proposed to keep the water-supply of the well quantitatively intact in order that, for instance, for purposes of extinguishing fires, a certain quantity of water should be at hand, there should then be erected above the highest point reached by the well water a construction of masonry or of iron capable of lifting the protecting sand covering. But the last should never be less than two metres deep. It is also to be recommended that the pump should not be erected immediately over the well, but some distance from it, and that it should be put into communication with the well by a lead pipe. This would prevent the water of the well, which, when used for washing and other domestic purposes, becomes foul, from leaking into the soil around.

Wells protected in this or similar methods, by good filtering layers, give the same protection against the infection of water as is given by the sand filtration of the great water works. In fact they really give a greater protection, for they are not exposed to the many disturbances in the process of filtration referred to previously and are also not affected by frost.

So much attention is now being given to perfecting as much as possible the water-supply of the great water works, that it is important not to lose sight of the domestic water-supply by pumps and wells. By improving the wells in the manner explained above, the spread of cholera, in so far as it is due to water, can be restricted to a great extent. It is just in this respect that a great deal can yet be done.

Note.—The Acting Sanitary Commissioner would specially call attention to Koch's proposals as to the filling up with gravel and sand existing wells. It seems to him especially adapted for use in the case of so-called 'step wells' which are so common in certain of the districts. The expenditure necessary to convert them into draw-wells is frequently prohibitive on account of their enormous size; but under this system they could readily be filled in leaving a cylinder of iron, glazed stoneware, or other suitable material in communication with the body of water. Round this cylinder could then, be built the ordinary parapet wall and basement of the 'draw-well;' although where prejudice against innovation can be sufficiently overcome, the use of a pump at a distant point as advised by Professor Koch would be far preferable.

MALAYALA.

Inspected 23rd December 1895.

Population 643

9. Ourho bauvi requires deepening and cleansing. The canal affords a certain proportion only of the annual supply as it dries up. The villagers have then to rely upon this well (which also dries up) and the Vellaputti bauvi. This latter has an indigo vat and a manure heap close to it, the latter being distinctly liable to contribute filth to the well on the occurrence of rain. Yet this is the only well that yields water when the canal is dry.

10. *Vaccination.*—Twelve cases were verified. These were the work of the probationary vaccinator. He is stated to have duly verified the results after operation. The number of results were incorrectly stated.

11. The two preceding villages belong to the union of Nandikotkur. Although they contribute taxes per house exactly in the same proportion as the villagers of Nandikotkur, the only benefit they seem to derive is that, at intervals of about one month, a certain number of sweepers are sent to make a general "clean-up." This seems hardly a fair way of managing the sanitary affairs of the union. To prevent a repetition, I may state that I found the same conditions at Vellapanur. It seems desirable that pains should be taken to make ryots understand that any taxes exacted from them on behalf of unions shall be spent as much to the interest of the smaller villages as the larger, which happens to be the head-quarters of the union.

NAGATUR.

Inspected 23rd December 1895.

Population 1,035

12. The Tamapauli bauvi might be modified into a "draw-well" with advantage.

13. *Vaccination.*—The unprotected list was found written up only as far as June 1895. Thirty-two cases were verified with satisfactory results as to the number of vesicles.

PAGIDALA.

Inspected 23rd December 1895.

Population 1,070

14. *Vaccination.*—The unprotected list here showed 66 unprotected cases. This was the number up to June 1895. Yet, in August 1895, the vaccinator, Masum Sahib, having visited the village, reports on the list that he could not get a single case to vaccinate, because the Reddi declared that the children were all suffering from fever. It is obvious that the Reddi has not the slightest influence over the villagers.

GOTLUR.

Inspected 15th January 1896.

Population 612

15. There is one drinking-water well in this village that could easily be built up, so as to convert it into a draw well.

16. *Vaccination.*—No unprotected list is maintained in this village. On the 12th of October 1895 the vaccinator did twelve cases and had not done any other cases since 1893. One case of re-vaccination was entered falsely as having had six vesicles.

I verified thirteen cases.

BUNUR.

Inspected 26th December 1895.

Population 701

17. The village well is on the high road, and is much used by the bandy drivers who halt there on their way towards Kurnool. The water in this well was very filthy, as might be expected from so many dirty feet and hands passing to it daily. It may be hard to convince the District Board of Kurnool that all the wells I mention as requiring improvement should be looked to *at once*; but, I trust, that this will be regarded as a specially urgent matter. The use of a well under the circumstances described by a large number of bandy drivers who subsequently pass through several villages on their way to a large town involves general danger of cholera spread along the route. I trust, therefore, the district board will convert this well in a manner that shall ensure its not being readily polluted, according to the suggestions given in the accompanying diagram No. 2.

JUPAUD.

Inspected 24th December 1895.

Population 701

18. Here five cases were verified. One child under six years of age was found to have been subjected to the operation of re-vaccination. This represents a waste of lymph unless under unusual circumstances of exposure during an epidemic. Not only so, but it is very misleading; as a number of cases being returned as re-vaccination, it is naturally understood that these imply operations on adults.

TARIGOPPULA.

Inspected 27th December 1895.

Population 1,042

19. *Vaccination.*—There are 21 cases on the unprotected list. The vaccinator visited the village on 30th May 1885 and 30th August 1895, but only managed to secure nine operations. Eleven cases were verified. The number of vesicles was incorrectly stated in two instances; otherwise results were correct. The Reddi here evidently requires to be reminded as to his duty as to aiding the advance of vaccination.

RAJOLI.

Inspected 15th January 1896.

Population 192

20. *Vaccination.*—Only twelve children on the unprotected list. The vaccinator had not visited the village during two years.

PAMULPAUD.

Inspected 27th December 1895.

Population 939

21. *Vaccination.*—The unprotected list shows that 45 cases unprotected have existed since 1894; but, on the visit of the vaccinator on 21st April 1895, he could only secure two cases. The Reddi is devoid of influence with the villagers. They bolted with their children helter-skelter, and could not be persuaded to submit their children to vaccination.

KAMBALLAPALLI.

Inspected 27th Dcember 1895.

22. *Vaccination.*—Kurnam absent; no list with the Reddi.

VELEPPANUR UNION.

Inspected 28th December 1895.

Population 1,966

23. This is one of the towns that has suffered severely from malaria since the introduction of increased moisture in the sub-soil from the Kurnool-Cuddapah canal. An examination of 38 inhabitants showed that 16 per cent. suffered from slight, 70 per cent. from considerable, and 16 per cent. from very severe, forms of enlargement of the spleen, exhibiting high grades of malarial poisoning. As an illustration of the extent to which the sub-soil is under the influence of the canal, I may state that the Nalapolana bauvi water was level with the ground at time of my visit. A patch of ground, on which about one dozen houses are built, is in a continual state of swamp. The only way in which any radical improvement in the state of this village could be effected would be by running a sub-soil drain so as to intercept the water on its passage through the soil from the canal. If the district board be not in a position to afford this, then some measure with regard to the patch just mentioned would, at least, seem imperative, as a matter of common humanity. Probably, the cheapest way to deal with the matter would be to find a piece of ground for these people elsewhere in the village-site, and give them a grant towards building their houses. If not, the wet cultivation above the houses should be stopped, or a correctly laid out interception sub-drain should be made above this particular portion.

24. *Conservancy.*—The efforts of this union at night-soil conservancy would seem confined to the making of so-called latrines for females. These are most filthy spaces, which are duly cleansed by buffaloes. It would be much more comfortable for the females, and be far better for the agricultural prosperity of this village, if it could be arranged that temporary movable screens be placed in certain selected fields to which they could resort for the purposes of nature. Behind the screened space could be made small pits not exceeding 8 inches deep; beside each pit should be placed the excavated earth; close to each empty hole so prepared so as to identify its locality, should be inserted on the ground a small bamboo or other stick. Female "sweepers" could then be employed to proceed to the holes that have been utilized by the villagers and by a motion of the foot cover the contents with the earth—thus carefully effecting deodorization. This duty demands that nothing defiling should be touched by the sweepers, and is therefore applicable to a class of labour that would refuse to handle excreta after the manner of ordinary toties. This method is far more cleanly and

easily applicable than the "trench system." If, however, the union is of opinion that latrines *within* the inhabited area are necessary for the females of the village, certainly correct forms should be erected. Plans suitable for rural areas can be obtained from the Sanitary Board. The village already suffers from the effect of sub-soil water pressure. Yet about 30 cents of ground have been put under wet cultivation near the house of one Karkomah—thus swamping the surroundings. This is due to the influence of the Special Duty Deputy Collector. I found in the village of Allaguda also a patch of ground within the village-sites. I hope the district board will exert its influence in the opposite direction. Irrigation is a very good thing in its way; but it certainly is out of place within the inhabited area of villages. Such petty patches of 30 cents here, and 20 cents there, cannot be of so great importance to the canal prosperity that the health of the villagers should be risked in attaining a little increase of revenue.

25. Peddanagana bauvi, Seshanah bauvi and Bussi bauvi require correctly formed platforms. In the case of the Boomlawani bauvi, the platform is built on the wrong side of the parapet wall. There are also beams across the well on which persons stand when drawing water—thus contributing to its defilement. These beams should be removed.

26. In this village of Veleppanur, the Union Chairman did his best to aid vaccination, and during my stay the Deputy Inspector of Vaccination, Kurnool Range, managed to vaccinate a number of children direct from the calf.

BHOJANUM.

Inspected 28th December 1895.

Population 610

27. The banks of the stream near the town are much resorted to for purposes of nature. Dhobies wash above the site used by the people for removal of drinking water; the village manure heaps are also collected above this. It would not, I believe, require much influence from the revenue authorities to alter this state of affairs. The communication of cholera from village to village along this small stream has occurred more than once in the past, and, so long as this condition of affairs exists, history must be expected to repeat itself.

28. There are 52 children upon the unprotected list. In 1895 only six cases were performed. In excuse the Deputy Inspector of Vaccination states that in the course of 1894–95 there were no less than four changes of vaccinators. Five cases were verified by me. The marks found were very poor. This was apparently due to the use by the vaccinators, against orders, of lymph derived from scabs.

SANTAJUTUR.

Inspected 29th December 1895.

Population 858

29. No less than 127 cases were found in the unprotected list in this village. The vaccinator on the 25th October 1895 performed only five cases, and of these, only two proved successful. The Reddi here seems to have no influence over his people whatsoever.

PERMATUR.

Inspected 30th December 1895.

Population 537

30. This is an unusually dirty village. No efforts of any description being apparently made towards its cleanliness.

31. I verified only two cases of vaccination here, the Reddi maintaining that all the rest had gone to the fields.

PANIEM.

Inspected 4th and 5th January 1896.

Population 3,706

32. *Vaccination.*—One hundred and twenty-six cases were found on the unprotected list. The vaccinator, Doraswami, who has apparently now left the district board's service, vaccinated 59 cases, of which, however, only 18 were successful. These were performed against orders with scab lymph. Thirty-eight cases were also operated upon with glycerine paste; but here only nine were successful. Bad work of this sort should be put a stop to whenever detected; a man who goes over the country pricking children with a lancet for no earthly result is likely to do the cause of vaccination much harm.

33. The Ankamah bauvi is a neatly built specimen of a "step well". As the water level of this varies only about two feet throughout the year, it would be a simple matter to make a platform here even if the board would not consent to fill the well up in the manner advised in paragraph 8. I attach a diagram of the nature of platform I mean.

34. A part of this village is subjected to considerable excess of sub-soil water on account of pressure from the Paniem tank. This could readily enough be drained off, by making rough so-called "Irish sub-soil drains." These consist of trenches dug down to the water level and then filled in pell-mell with large stones. There are plenty of stones that would suffice for this purpose in the old fort. If the board would afford cooly labour, it could readily be accomplished by the Union Chairman as the matter requires no skill. After much persuasion, I managed to make the Reddi who was acting as Chairman to have a small section of the proposed drain made. This acted well, and was sufficient to convince him of the efficacy of the method. If the surplus water were thus allowed to have an exit, it would be an easy enough matter to make permanent road over the drains and thus for ever shut out what has been for many a long day an eyesore and inconvenience in the village.

NANDYAL.

Inspected 2nd January 1896.

Population 10,737

35. Several reports on the sanitary state of this town having been made by various officers, including myself, I presume the district board no longer requires to be told that its condition is highly unsatisfactory. Some efforts were made in 1888–89 under my advice by the district board towards ameliorating its state; but as the works were stopped after the accumulation of much material, considerable waste has resulted. Such work as was done, however, in the matter of improved sewerage has worn well, and is evidently sand work. The extensions of the drain made since that date however by the board, with the object of giving the sewage an outlet, for the work was stopped before this stage was reached,—are very crude. The stoneware pipes have been alternated with portions of Bombay conservancy pans, so as to make a series of traps for sedimentation of the sewage. It was the intention in the original scheme to have taken the sewage to a portion of undrained land and to have allowed the effluent after purification through land to flow into the river. Under the extraordinary arrangement now made very little sewage really reaches the outlet; but rather than take up the late Chairman's work it would probably be cheaper to fill in the numerous catchpits so as to bring them to the same level as the drain invert. The sewage discharge should be utilized for cultivation on the river bank.

36. Nothing perhaps could be more disheartening than the state of the space behind the buildings known as the Tahsildar's latrine. Several buildings were here thrown down and the space was in the process of being re-graded. It would have formed an admirable thoroughfare between the Behrumal street and the bazaar; but the union has built a wall straight across the space; thus effectually barring the drainage from its surface. Further, it is used, as formerly, as a huge latrine.

Nothing more utterly awful in the way of insanitary and filthy conditions could well be found within a space inhabited by human beings. The wells are still incorrectly protected. The Makkan bauvi, which was partially put in order, might, at small expense, be completed as to its platform and drains. I found this well surrounded with fœcal matter.

37. The proposal to cut off the sub-soil drainage from the tank, conjoined with stoppage of wet cultivation between the tank and the town, is a matter of very great importance. This has been approved by the sanitary board, and I trust the district board will lose no time in carrying it out. As soon as this work has been completed, or synchronously with it, I would advise that the District Board Engineer should draw up plans for the complete improvement of Nandyal, in consultation with the District Sanitary Officer. Complete plans for sewage, water-supply, conservancy and improvement of streets and of inhabited areas generally should be entered into. The matter of water-supply will presumably not offer any great difficulties, seeing that there is so close to the town a suitable storage tank. These plans, if approved of by the district board, would in ordinary course be placed before the Sanitary Board for scrutiny. It would then be possible for the district board to work year by year with these plans as its guide in making improvements *systematically*. If necessary, a loan should be required from Government. After completion of the works, the district board might well hand over its charge to the care of a municipal council.

DIBAGUNTLA.

Inspected 10th January 1896.

Population 744

38. No unprotected list was maintained in this village; but one was duly made on the date of my inspection. Last work by the vaccinator was on the 31st July 1895, when fourteen cases were operated upon. According to the newly made list of unprotected cases, however, 54 cases remained unvaccinated. I verified eight cases.

39. This village gets its supply of water partly from the canal—when this is available—and partly from a well within the temple enclosure. At a very small expense, the parapet wall might be correctly built. The beams across it should certainly be removed. As this well is much used by the public, notwithstanding its private character, presumably section 99 of Act No. V of 1884 could be made applicable.

KANALAPULLI.

Inspected 11th January 1896.

Population 343

40. Here nine cases were verified, and found correctly reported. The Malas' well in this village requires attention, as it is falling into ruins. At very little expense, the caste natives' well could also be built up correctly. The beams across it should certainly be removed.

YALLUR.

Inspected 12th January 1896.

Population 1,723

41. The vaccination work here was apparently performed with lymph derived from scabs; the marks are hardly recognizable as the result of vaccination.

PEDDA CHINTAGUNTA.

Inspected 13th January 1896.

Population 1,480

42. The unprotected list shows 78 unprotected cases. Three cases were verified here. The probationary vaccinator had worked here under orders with lymph from scabs, with the usual indifferent results.

43. The Konda Reddi bauvi supplies the whole village with water. It would cost but little to convert this into a draw well, and thus sanitarily protect it.

ALAGUDDA.

Inspected 14th January 1896.

Population 515

44. This is the new head-quarters of the Chagulmarri taluk. There is apparently some difference of opinion as to the site for the increased village that may be expected as a result of its official occupation. I think there can be no possibility of doubt that the area opposite the cutcherry, and having its slope towards the river, is the site that should be selected. This will doubtless not only yield good water, but will afford all the advantages derivable from site,—good soil, and facility of drainage and perflation. I understand this is the spot already selected by Mr. Mullaly, Collector of the district.

45. There are no toties in this village. This is a serious matter with an intended increase of population. Efforts should be made to get toties to settle there, with as little delay as possible.

46. The cutcherry well is open. It should be covered and be supplied with a pump. This pump should again supply a cistern from which the water could be drawn. It is not safe even for prisoners to draw water from a well open to contamination. This is, I know, no business of the district board's, but it might well contribute to any reasonable sum for improvement of the well, provided its use were allowed to the people.

DHONE.

Inspected 16th December 1896.

Population 2,620

47. As this is a village that has been fully reported upon before, I need not here enter into details. I look with regret to the abandonment by the district board of the scheme to allow the villagers to erect buildings on the high ground, which was specially bought for that purpose. The villagers represented to me that they were most anxious to take up the plots of ground, and I hope the board will reconsider the position. The public purpose for which this land was acquired was definitely stated to Government at time of purchase, and I cannot see that the railway, which it has been suggested to me restrains its use, has really any voice in the matter. This was never poramboke land. It seems but poor policy to keep the inhabitants in the present unhealthy site, on the mere chance that the railway may want the particular portion.

48. *Vaccination.*—Over one hundred cases were found upon the unprotected list, yet the vaccinator had remarked in the village vaccination list that he could effect no vaccination here, nor could he secure the aid of the Reddy in carrying it on. The conduct of this Reddy should be reported by the district board to the Collector.

Statement showing the vital statistics of villages inspected in the Kurnool district in 1895:—

Names of places visited.	Rate per mille of population.	
	Births.	Deaths.
Lanjapolur	33·6	67·2
Kullur	40·2	43·2
Panthipaud	36·8	14·7
Allur	46·1	22·4
Malayala	40·4	29·5
Nagatur	30·0	19·3
Pagidala	39·3	35·5
Gotlur	13·1	19·6
Bunnur	42·8	45·6
Jupaud	41·4	42·8
Tharigoppula	29·8	47·1
Rajoli	31·2	26·0
Pamulpaud	39·4	17·0
Kamballapalli	..	34·6
Veleppanur union	53·9	29·5
Bhojanum	50·8	30·3
Santajutur	60·6	26·1
Permatur	52·1	15·9
Paniyam	26·7	13·8
Nandyal	18·0	21·5
Dibaguntla	51·1	26·2
Kanalapalli	32 1	36·0
Yallur	36·0	31·8
Peddachintagunta	35·1	13·6
Allaguda	44·7	13·6

Condition of vaccination as found on examination of children haphazard—

—	Number of vaccination cases inspected.			Number of unprotected cases.
	Under one year.	One to five years.	Five to ten years.	
Lanjapolur	4	5	8	18
Kullur	1	4	5	59
Panthipaud	4	3	..	24
Allur	..	2	2	23
Malayala	8	3	2	23
Nagatur	3	16	9	12
Pagidala	5	3	2	66
Gotlur	1	9	5	..
Bunnur	..	..	..	16
Jupaud	..	9	2	21
Tharigoppula	4	..	..	13
Rajoli	..	1	2	45
Pamulpaud	..	..	..	..
Kamballapalli	..	7	8	134
Veleppanur union	3	4	1	52
Bhojanum	2	1	..	127
Santajutur	..	4	1	21
Permatur	..	1	2	126
Paniyam	..	5	4	..
Nandyal	1	5	11	54
Dibaguntla	..	11	2	36
Kanalapalli	..	1	..	192
Yallur	..	3	3	78
Peddachintagunta	1	4		38
Allaguda				
Total ..	37	101	69	1,178
Percentage of those under each age to total inspected.	17·9	48·8	33·3	..

49. From the foregoing lists it will be seen that the chances are that registration of births and deaths is effected with fair care in the villages concerned.

50. In regard to vaccination, the results of inspection cannot be said to be satisfactory, except in the matter of absence of falsification. The route chosen by me was unluckily one recently inspected by the District Medical and Sanitary Officer, so that the chances were against any such instance appearing. The question of imperfect organization has been the subject of special correspondence with the President, District Board. The organization formerly existing had been added to and changed in its *personnel* and mode of administration latterly, till the original outline was not discoverable. Matriculates are no longer demanded for vaccinators' posts. A method of paying had been introduced which corresponded simply to payment by results; therefore a vaccinator, when in want of money, performed a certain number of cases, and, when this was not the case, he remained at home; and, according to the District Medical and Sanitary Officer, added to his livelihood by following other professions. Under these circumstances, it is not to be wondered at that results from this district have of late been highly unsatisfactory. It is hoped the new arrangements, which

have been excogitated by the District Medical and Sanitary Officer will, without delay, be put in force, as soon as the sanctioned budget is received. The question of lymph supply has also been most unsatisfactory. The district was originally worked solely on the fresh lymph system, and there appeared at one time no great difficulty in the matter. It would, however, appear that of late years, the villagers have shown increasing indisposition to part with their calves. In view of this difficulty, it was advised by this office that glycerine paste should be issued; but with the advent of the hot weather the whole process broke down. Hence, a return to the fresh lymph method was the only course open. Under this combination of unfavourable circumstances, it would be unfair to criticize the resort by the vaccinators to the use of scabs. This, however, should in future be *absolutely forbidden* and punishment should be dealt to vaccinators who persist in using this method.

51. Provided that the new budget places at disposal of the district board a more numerous staff, I trust it will be remembered that each vaccinator should be efficiently trained and examined by the District Medical and Sanitary Officer *before* being allowed to join his appointment. This having been accomplished, there ought to be no difficulty in so directing their work that full results are obtainable, provided the aid of the revenue authorities be arranged for in the manner set forth in this office Circular No. 1238-V., dated 26th September 1894.

52. The point that struck me as that which required special attention is the want of energy on the part of the village Reddis in the matter of vaccination. There might be large numbers of unprotected cases upon the list, yet the vaccinator would visit the village in vain. This may result from one of two causes—either the present class of salaried Reddis really have no power with the villagers, which I suspect, or they are not sufficiently supported in their efforts by the Tahsildars. In any case, if the instructions contained in the circular alluded to were carefully carried out, there would arise no necessity to discuss this matter. Any failure of duty either on the part of the vaccinators or of the village heads would at once come to notice. It is hopeless to expect the vaccination department in any district to perform its duty, unless full *details* as to methods of working be attended to under a recognized system.

FORT ST. GEORGE,
15*th May* 1896.

(Signed) W. G. KING, Surgn.-Lt.-Col.,
Sanitary Commissioner for Madras.

ORDER—No. 1266 L., dated 13th July 1896.

Communicated to the local boards concerned and the Collector of Kurnool for attention.

2. The diagrams referred to in paragraphs 8, 17 and 33 of the notes were received from the Sanitary Commissioner on the 3rd July 1896, or a month-and-a-half after the receipt of the notes. Such delay should not be allowed to recur.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the President, District Board, Kurnool, with three diagrams.
„ Collector of Kurnool.
„ Sanitary Commissioner.
Editors' Table.

Exd. A. Raitt.

Govt. of {1896} Madras.

LOCAL AND MUNICIPAL.

Issued.

Recd.

Encl.

G.O., No. 1266 L., 13th July 1896.

JULY.

Sanitary Inspection.

Communicating, with remark, to the Collector of Kurnool and the local boards concerned, the Sanitary Commissioner's notes on the inspection of rural areas in the Kurnool district.

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LOCAL AND MUNICIPAL DEPARTMENT.
G.O., DATED 13-7-96
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[Despatch Abstract.]

Sanitary Inspection

Communicating, with remarks, to the Collector of Thurnoor and the local boards concerned the Sanitary Commissioners notes on the inspection of rural areas in the Thurnoor District.