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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

.....R.W. DEPARTMENT

G.O. No.	121	Press
B.P. No.		Mis.
Dated	27 Jan	1874 196

Not to be folded or roughly handled

*Proceedings of the Madras Government, Revenue Department,
27th January 1874.*

Read the following:—

No. 232. Proceedings of the Board of Revenue, dated 9th September 1873,
No. 1,784.

Read the following letter from the Hon. D. ARBUTHNOTT, Collector of Tanjore,
to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue,
dated 1st September 1873, No. 311:—

WITH reference to the Board's Proceedings, Miscellaneous No. 3,311, dated
2nd June 1873, I have the honour to report that a suitable site for opening new
pans has been selected on the side of the boat canal, about six miles south of
Negapatam.

2. The site consists of two contiguous plots (marked A and B in the
enclosed rough sketch) in the Villages of Chinnattambur and Prataparamapuram,
in the Negapatam Taluq, both together covering an area of 235 acres. The pans,
it is calculated, will produce 1,500 garce, or 180,000 Indian maunds of salt
annually. The land being Government poramboke, no compensation is required.

3. I examined the spot in company with the Salt Deputy-Collector, and
found that good strong brine was to be had within two or three feet of the surface
of the ground. In order, however, that there might be no doubt as to the quality
of the brine, or the suitability of the locality generally for the manufacture of
salt, I had a few beds laid out and worked experimentally, and beg to forward,
herewith, in two separate tin boxes, samples of the salt made in the two plots
abovementioned. I must here observe that the first crop of salt in pans newly
opened is always tenuous and rather discoloured; but the experiment in this
case was conducted under rather unfavourable circumstances, as, owing to the
prevalence of high westerly winds at the time, a great deal of dust was blown over
the beds during the evaporation of the brine. The result has, notwithstanding,
been highly encouraging; for in seven beds of usual size formed for the purpose
of the experiment, ten Indian maunds of very fair quality were scraped up, giving
an average of about a maund and a half for each bed, while the average outturn
of a bed elsewhere at this time of the year is hardly one maund. The Salt Super-
intendent of Negapatam, who conducted the experiment, states with confidence
that the future crop will be both larger in quantity and better in quality with
larger crystals.

4. The salt as it is made will be put in boats and carried up the canal to
Negapatam at the cost of Government,

Establishment.		RS.	Negapatam at the cost of Government, so that but a small establishment for superintending the manufacture, with a Police guard for watching the pans, as shown in the margin, is all that is required for this station, which will be kept up as a subsidiary one to Negapa- tam.
1 Salt Superintendent	...	30	
1 Clerk	...	15	
2 Vettians, at 5 Rupees each	...	10	
2 Peons, at 6	...	12	
Total per mensem...		67	5. It is proposed to allow to the manufacturers the same rate of warum or hire as is allowed in other stations excepting Negapatam, i. e., 1 Anna and 5 Pies per Indian maund, or Rs. 10-10-0
Police Guard.			
1 Fourth-class Head Constable	...	12	
8 Constables, at 7 Rupees each	...	56	
Total per mensem...		68	
Total, Establishment and Police Guard...		135	
Per annum...		1,620	

per garce, and the manufacturers are themselves to sink wells or brine pits and to prepare beds for making salt.

6. The works to be executed by Government are—embankments round the pans with the necessary masonry works of drainage, and choukandi huts for the Police guard, the cost of which, in the aggregate, is roughly estimated at Rupees 10,000. No platform is required as the salt is not to be stored or even weighed at this subsidiary station. So soon as the site for the proposed station was selected, the District Engineer was requested to prepare a plan and estimate, which will be forwarded to the Board as soon as it is received. The works may be commenced as soon as the north-east monsoon is over, and finished before the freshes of the next south-west monsoon are down, so that the manufacture of salt may begin in June next. As the earth-work will require a large amount of labour to ensure its being completed in one working season, it is proposed that it should be undertaken by the Revenue Department.

ENCLOSURE No. 1.—Sketch.

THE Collector's letter with its enclosures is forwarded to Dr. Ratton for report. He is, the Board are informed, leaving Tuticorin for Madras on the 12th; by landing and staying a few days at Negapatam he will be able to inspect the proposed site and to advise on the general arrangements of the new pans if, as appears very desirable, they are laid down on the tract described in the Collector's letter.

2. The Collector will inform his Deputy at once of Dr. Ratton's expected arrival, in order that no time may be lost.

No. 233. Proceedings of the Board of Revenue, dated 30th October 1873,
No. 2,214.—

Read the following letter from Surgeon J. J. L. RATTON, M. D., on Special duty, to H. E. STOKES, Esq., Acting Sub-Secretary to the Board of Revenue, dated Madras, 30th September 1873.

I HAVE the honour to forward, in compliance with Board's Proceedings No. 1,784, dated 9th September 1873, a report on the proposed sites for new Salt pans, in the Villages of Chinnattambur and Prataparamapuram, in the Negapatam Taluq.

2. I examined the sites with Mr. Ricketts' assistance on the morning of the 20th instant. It had rained heavily during the previous night; the swamp was ankle deep in mud; and our exploratory wells, etc., were filled with fresh water. It has rained so frequently of late that no accurate experiments could be made as to the yield of brine obtainable from the sub-soil. I delay this report no longer, in the conviction that nothing further can be ascertained about the sites this year.

3. The swamp in which are the plots chosen, lies between the 6th and 7th milestones from Negapatam, on the west bank of the Vedarniem Canal. The Hon. D. Arbuthnott, Collector of Tanjore, in his letter and sketch has shown their area and position. See Proceedings above quoted.

4. In their favour as sites for salt manufacture is the character of the soil, which is admirably adapted to the formation of firm staunch salt works. The surface soil is a stratum of tough, ochreous clay, seven feet in thickness. In their favour also is the labour procurable with ease in the neighbourhood; their short distance from Negapatam, and direct communication with it through the Vedarniem Canal.

5. In their disfavour is the circumstance that they are at such a low level that they are swamped by the neighbouring river or canal during the early months of the season, and that though the river may be kept out by embankments, the direct rain-fall would equally swamp them, and it would not be easy to drain the sites until the surrounding water had fallen to a lower level.

6. I do not look upon this as being of any great consequence, as the ground would be in all probability dry enough to work on by the beginning of April, and there is little likelihood of their being deluged without the possibility of being drained between that time and the middle of September.

7. But the real objection to them is the doubtful character of the brine supply. The swamp or delta is a mile and a half from the sea, formed amidst streams, which, by whatever name they are called, are ultimate effluents of the Cauvery, and partake of the perennial freshness of that river. The canal bordering on the pans which separates them from the sea is in fact the deflection of a tolerably deep stream, spanned by a bridge of some arches at the Village of Villanganny, a few hundred yards away. (See sketch). It is fresh until rice cultivation ceases, about the beginning of April, and again becomes fresh when the Cauvery is swollen by the south-west monsoon in June. The site is, therefore, cut off from the sea two-thirds of the year or more, and the pans would have to rely exclusively on the sub-soil for brine. At least this is most probable.

8. How far this reliance would be justified by the supply it is very difficult to say from a mere inspection of the site, even combined with such experiments as testing the strength and the yield of brine from a pit of known capacity in a given and necessarily short time. Such an experiment was that, which is referred to in the Collector of Tanjore's letter, where each salt bed, moreover, had a brine pit to itself. On this subject, see paragraphs 4 and 5 of my letter to H. E. Stokes, Esq., Board's Proceedings, No. 1,853, dated 16th September 1873.

9. Nothing but the attempt to manufacture salt for a whole season in the ordinary way, that is allowing one pit to about forty salt beds, will show whether or not the sub-soil is capable of yielding brine in sufficient quantities and of such strength as to make the site a desirable one for the extension of Salt works on a large scale.

10. The characters of the brine supply may be to a certain extent conjectured from an examination of the porous stratum through which it percolates. The distance from the sea; the depth and strength of the brine found by exploratory wells dug at different seasons; the disturbing influence of surrounding fresh water;

and, finally, the nature and extent of the covering soil; all these seem to me to point to a strong but rather scant supply.

11. The sub-soil contains but little sand or gravel, it is not therefore very porous, and will not yield brine quickly, if even in good quantity. It is a thick silt, imbedding sea shells, oyster shells amongst the rest. It is evidently the bed of a former estuary, and may be supposed to be thoroughly impregnated with salt. As a matter of fact, I have noticed that this description of silt both contains more sodic chloride and holds it longer than looser soils. Exploratory wells sunk in May showed brine varying from 10° to 50° Beaumé. No exact record of its amount was kept, but Mr. Ricketts informs me that pits sunk about 300 yards off on the opposite side of the canal to a depth of 13 feet, failed to encounter any brine at all; this should suggest caution.

12. The 7 or 8 feet of alluvial deposit which covers the sub-soil is an evidence of the time that has elapsed since the retreat of the last tide. It shows also the tenacity with which the silt has held its sodic chloride, through years, perhaps centuries of sub-soil drainage, or else the slowness of the waste or drainage. Its thickness renders it most unlikely that the brine which flows over the surface during the few weeks permitted it by the river, can reach and re-inforce the sub-soil brine through leakage. The distance from the sea also a mile and a half is, in my opinion, so great as to preclude the chance of the present stock of salt being renewed by direct pressure or percolation of brine from the sea-bed. These things taken together tell against the likelihood of the brine supply being permanent even though it were promising at first.

13. Although there is abundance of fresh water about the site, the thickness of the clay stratum prevents its influencing the sub-soil brine in any way.

14. Knowing, as I do, the necessity that exists for opening new Salt works in connection with Negapatam, the difficulty of procuring labour, and the favourable view taken of these sites by the Collector of the district, I should like to have reported more favourably upon them than I have done. But I have often stated, and from experience lately gained at Kille and other places, I am deeply impressed with the fact, that our coast salt manufacture, from natural brine, cannot with safety be carried on apart from the sea.

15. Under the circumstances, I would suggest the opening of a few pans next year as an experiment, and that the works be confined to the northern plot, which is the most promising of the two. By the word pans I mean entire allums of the usual construction. The map forwarded is herewith returned.

ENCLOSURE No. 1.—Sketch.

THE Board are of opinion that unless a more favourable site can be found by the Collector, experiment should be made next season on that reported on, as suggested by Dr. Ratton. It is necessary that every possible source of supply to Negapatam should be utilized. The Board are inclined to fear rather swamping with fresh water than failure of brine in the site in question.

No. 233-A. Proceedings of the Board of Revenue, dated 21st January 1874,
No. 100.

Read the following letter from the Hon. D. ARBUTHNOTT, Collector of Tanjore, to J. GROSE, Esq., Secretary to the Board of Revenue, dated Vallam, 5th December 1873, No. 432:—

WITH reference to the Board's Proceedings, dated 30th October 1873, No. 2,214, I have the honour to report that I am unable to find a more favourable site than the one proposed for opening new pans in order to supplement the resources of Negapatam as a Salt Station. Before undertaking, however, another experiment on a larger and necessarily expensive scale, I would take leave once more to submit, for the Board's consideration, whether the site proposed may not be adopted at least as a tentative measure.

2. To manufacture salt for a whole season in the ordinary way for the purpose of the experiment, as recommended by Dr. Ratton, would likewise require protective works, and I do not see why the measure should not have a trial given it in its whole scope.

3. The District Engineer, to whom I had applied when I first wrote to the Board, has favoured me with a plan and estimate for the required embankment and drainage sluice, and I submit them herewith. The estimated cost of these works, it will be seen, is Rupees 3,570, which will be repaid by 16 garces of salt out of the first year's outturn, taking its value at the wholesale monopoly rate of

Rupees 228 a garce; another 7 garces will repay the whole cost* of the establishment asked for including Police

guards. The estimated annual outturn of the proposed new station is, as reported in my last letter, 1,500 garces; but taking a half of this as the outturn to be positively reckoned upon, the first year's return, after deducting the original outlay and working expenses, would be a gain of Rupees 1,65,810 to Government; and supposing that after a year or two the station has to be abandoned on account of the difficulties apprehended by Dr. Ratton, the sequel of the undertaking would still be a large gain to the revenue.

4. Dr. Ratton's objections to the site now proposed are, firstly, that it is liable to be submerged with fresh water from the neighbouring river as well as by direct rain fall; and, secondly, that the distance of the site from the sea and the circumstance of its being separated from the sea by a stream filled with fresh water during the greater part of the year and surrounded by other fresh water streams besides, renders it impossible on the one hand to obtain a supply of brine from the sea, and on the other, precludes reliance on the sub-soil for a permanent and unfailing brine supply.

5. Without intending in any way to question the soundness of Dr. Ratton's scientific deductions, I would only call attention to a few facts which apparently have escaped that gentleman's notice.

6. In regard to the first objection, Dr. Ratton himself does not attach much weight to it; but still I may mention that the whole of the Tanjore delta is perfectly dry for four months from January to April, and that during the further period of five months from May to September, during which the manufacture of salt

*Proceedings of the Madras Government, Revenue Department,
27th January 1874.*

continues throughout this coast, there is not likely to be such heavy rain as would render the drainage of the site a matter of difficulty. Indeed, this objection applies to almost every station of manufacture which is more or less equally low compared with the country adjoining.

7. As regards the second objection, it is true that we have here to rely exclusively on the sub-soil for brine; but at the experiment already made it was the sub-soil which in the month of July, when the streams all over the delta were in full fresh, yielded a copious supply of strong brine. Dr. Ratton says that the canal which separates the pans from the sea "is fresh until rice cultivation ceases about the beginning of April and again becomes fresh when the Cauvery is swollen by the south-west monsoon in June," the period during which the fresh water is absent being thus reduced to about two months in the year. If by rice cultivation Dr. Ratton means the whole course of agricultural season closing with the harvest of the rice crop, he is not far from the mark in giving it a termination about the beginning of April; but surely his assumption that the river is fresh until about the beginning of April is very wide of the mark. The fresh-water streams cease to flow down to the coast generally in January, but after that month not a drop of water finds its way into estuaries.

8. I have the honour, under these circumstances, to urge again on the Board the advisability of opening a new station of manufacture at the site proposed, at least as a tentative measure, as otherwise I can see no way of supplementing our existing resources, for which the necessity is most pressing, every day lost in realizing this object being so much money lost to the public revenue.

9. In reply to a reference which I made to the District Engineer on the subject, that officer informs me that funds for the works required in connection with the proposed Salt Station are not obtainable from the Public Works Budget; but as the amount required is small, if the proposal which I have done myself the honour to again submit to the Board eventually receives the sanction of Government, the requisite funds can be provided from the sanctioned grants for the manufacture of Salt and for Petty Construction and Repairs, under both of which heads there is likely to be an adequate margin to cover this additional outlay during the current financial year.

10. The estimate, now submitted, does not include huts for the guards; but this being a comparatively very small item, if the present proposal is sanctioned, there will be no difficulty in providing the huts before the manufacture of salt begins.

ENCLOSURES Nos. 1 and 2.—Plans.

ENCLOSURE No. 3.—Estimate.

THE Board resolve to submit this letter together with copies of their Proceedings, dated 9th September 1873, No. 1,784 and 30th October 1873, No. 2,214, to Government with request that the opening of the new pans at the proposed site may be approved, and that sanction be accorded for the plans and

*Proceedings of the Madras Government, Revenue Department,
27th January 1874.*

estimates now submitted. It is essential to increase the supply at Negapatam and it is sufficiently clear that no loss at least can accrue from the experiment proposed.

2. Sanction is also requested for the establishment specified in paragraph 4 of the Collector's letter recorded in their 1st Proceedings above quoted.

3. The Collector must be careful to allow no occupancy rights to grow up. Either the pans must be worked by paid labour, or if assigned to manufacturers it must be understood that no claims for compensation will be admitted should the pans be abandoned after a short time.

No. 233-B. Proceedings of the Board of Revenue, dated 23rd January 1874, Miscellaneous No. 467.

From the Hon. D. ARBUTHNOTT, Collector of Tanjore, to J. GROSE, Esq., Secretary to the Board of Revenue, dated Vallam, 17th January 1874, No. 14.

I HAVE the honour to solicit early orders on my letter of the 5th December 1873, No. 432, relative to the opening of a new station for the manufacture of salt at Villanganny. If my proposal receives sanction, the requisite embankments and other works must be commenced at once to admit of their being completed this season, as otherwise the manufacture of salt at this station will have to be delayed for another twelve months.

2. You will observe from the estimate forwarded with my letter, above referred to, that the works required is under Rupees 4,000, an amount which would be more than covered by the manufacture of only 20 garces of salt.

SUBMITTED to Government in continuation of Board's Proceedings, dated 21st January 1874, No. 100, with request that early orders may be passed.

No. 234. ORDER THEREON, 27th January 1874, No. 121.

Separate Revenue, No. 14.
Salt.

APPROVED and sanctioned.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Secretary to Government.

To the Board of Revenue.
,, the Accountant-General.

Exd. G. A. Turton.

Cost. of 1874
REVENUE.

THE BOARD OF REVENUE.

Ac. 4. A.

1874-75.

and

G. O. 574, July 1874, No. 21.

JANUARY
Nos. 293-294.

*New Self paper at Westport. — Appending
a quantity of the — at the present rate, and the
amount for the required work, and printing
labels for the establishment of the necessary
establishment.*

PROCEEDINGS OF THE BOARD OF REVENUE, dated 21st January 1874.

Read the following letter from the Hon. D. ARBUTHNOTT, Collector of Tanjore, to J. GROSE, Esq., Secretary to the Board of Revenue, dated Vallam, 5th December 1873, No. 432:—

WITH reference to the Board's Proceedings, dated 30th October 1873, No. 2,214, I have the honour to report that I am unable to find a more favourable site than the one proposed for opening new pans in order to supplement the resources of Negapatam as a Salt Station. Before undertaking, however, another experiment on a larger and necessarily expensive scale, I would take leave once more to submit, for the Board's consideration, whether the site proposed may not be adopted at least as a tentative measure.

2. To manufacture salt for a whole season in the ordinary way for the purpose of the experiment, as recommended by Dr. Ratton, would likewise require protective works, and I do not see why the measure should not have a trial given it in its whole scope.

3. The District Engineer, to whom I had applied when I first wrote to the Board, has favoured me with a plan and estimate for the required embankment and drainage sluice, and I submit them herewith. The estimated cost of these works, it will be seen, is Rupees 3,570, which will be repaid by 16 garces of salt out of the first year's outturn, taking its value at the wholesale monopoly rate of

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4. Dr. Ratton's objections to the site now proposed are, firstly, that it is liable to be submerged with fresh water from the neighbouring river as well as by direct rain fall; and, secondly, that the distance of the site from the sea and the circumstance of its being separated from the sea by a stream filled with fresh water during the greater part of the year and surrounded by other fresh water streams besides, renders it impossible on the one hand to obtain a supply of brine from the sea, and on the other, precludes reliance on the sub-soil for a permanent and unfailing brine supply.

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(A true Copy and Extract.)

H. Eltola

for Acting Sub-Secretary.

To the Secretary to Government, Revenue Department,
with three original enclosures, and Board's Proceedings,
dated 9th September, and 30th October 1873, Nos. 1,784 and 2,214.
,, the Collector of Tanjore.

Copy to Dr. J. J. L. Ratton, on special duty.

,, to the Inspector-General of Police,
with Board's Proceedings, Nos. 1,784 and 2,214 of 1873.

Exd. G. A. Terton.

of five months from May to September, during which the manufacture of salt continues throughout this coast, there is not likely to be such heavy rain as would render the drainage of the site a matter of difficulty. Indeed, this objection applies to almost every station of manufacture which is more or less equally low compared with the country adjoining.

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ENCLOSURE No. 3—Estimate.

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MADRAS.

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Sept 23 Jan 1774

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Read the following:-

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No. 1,784.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 9th September 1873.

Read the following letter from the Hon. D. ARBUTHNOTT, Collector of Tanjore, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated 1st September 1873, No. 311:—

WITH reference to the Board's Proceedings, Miscellaneous No. 3,311, dated 2nd June 1873, I have the honour to report that a suitable site for opening new pans has been selected on the side of the boat canal about six miles south of Negapatam.

2. The site consists of two contiguous plots (marked A and B in the enclosed rough sketch) in the villages of Chinnattambur and Prataparamapuram, in the Negapatam Taluq, both together covering an area of 235 acres. The pans, it is calculated, will produce 1,500 garce, or 1,80,000 Indian maunds of salt annually. The land being Government poremboke no compensation is required.

3. I examined the spot in company with the Salt Deputy Collector and found that good strong brine was to be had within two or three feet of the surface of the ground. In order, however, that there might be no doubt as to the quality of the brine or the suitability of the locality generally for the manufacture of salt I had a few beds laid out and worked experimentally, and beg to forward, herewith, in two separate tin boxes, samples of the salt made in the two plots above mentioned. I must here observe that the first crop of salt in pans newly opened is always tenuous and rather discoloured; but the experiment in this case was conducted under rather unfavourable circumstances, as, owing to the prevalence of high westerly winds at the time, a great deal of dust was blown over the beds during the evaporation of the brine. The result has, notwithstanding, been highly encouraging, for in seven beds of usual size formed for the purpose of the experiment ten Indian maunds of very fair quality were scraped up, giving an average of about a maund and a half for each bed, while the average outturn of a bed elsewhere at this time of the year is hardly one maund. The Salt Superintendent of Negapatam, who conducted the experiment, states with confidence that the future crop will be both larger in quantity and better in quality with larger crystals.

4. The salt as it is made will be put in boats and carried up the canal to Negapatam at the cost of Government, so that but a small establishment for superintending the manufacture, with a Police guard for watching the pans, as shown in the margin, is all that is required for this station, which will be kept up as a subsidiary one to Negapatam.

5. It is proposed to allow to the manufacturers the same rate of warum or hire as is allowed in other stations excepting Negapatam, i. e., 1 Anna and 5 Pies per Indian maund, or Rs. 10-10-0 per garce, and the manufacturers are themselves to sink wells or brine pits and to prepare beds for making salt.

Establishment.		RS.
1 Salt Superintendent	...	30
1 Clerk	...	15
2 Vettians, at 5 Rupees each	...	10
2 Peons, at 6	...	12
Total per mensem...		67
Police Guard.		
1 Fourth-class Head Constable	...	12
8 Constables, at 7 Rupees each	...	56
Total per mensem...		68
Total, Establishment and Police Guard.		135
Per annum...		1,620

PROCEEDINGS OF THE BOARD OF REVENUE, dated 30th October 1873.

Read the following letter from Surgeon J. J. L. RATTON, M. D., on Special Duty, to H. E. STOKES, Esq., Acting Sub-Secretary to the Board of Revenue, dated Madras, 30th September 1873.

I HAVE the honour to forward, in compliance with Board's Proceedings No. 1,784, dated 9th September 1873, a report on the proposed sites for new Salt pans, in the Villages of Chinnattambur and Prataparamapuram, in the Negapatam Taluq.

2. I examined the sites with Mr. Rickett's assistance on the morning of the 20th instant. It had rained heavily during the previous night; the swamp was ankle deep in mud, and our exploratory wells, etc., were filled with fresh water. It has rained so frequently of late that no accurate experiments could be made as to the yield of brine obtainable from the sub-soil. I delay this report no longer, in the conviction that nothing further can be ascertained about the sites this year.

3. The swamp in which are the plots chosen, lies between the 6th and 7th milestones from Negapatam, on the west bank of the Vedarniem Canal. The Hon. D. Arbuthnott, Collector of Tanjore, in his letter and sketch has shown their area and position. See Proceedings above quoted.

4. In their favour as sites for salt manufacture is the character of the soil, which is admirably adapted to the formation of firm staunch salt works. The surface soil is a stratum of tough ochreous clay, seven feet in thickness. In their favour also is the labour procurable with ease in the neighbourhood; their short distance from Negapatam and direct communication with it through the Vedarniem Canal.

5. In their disfavour is the circumstance that they are at such a low level that they are swamped by the neighbouring river or canal during the early months of the season, and that though the river may be kept out by embankments, the direct rain-fall would equally swamp them, and it would not be easy to drain the sites until the surrounding water had fallen to a lower level.

6. I do not look upon this as being of any great consequence, as the ground would be in all probability dry enough to work on by the beginning of April, and there is little likelihood of their being deluged without the possibility of being drained between that time and the middle of September.

7. But the real objection to them is the doubtful character of the brine supply. The swamp or delta is a mile and a half from the sea, formed amidst streams, which, by whatever name they are called, are ultimate effluents of the Cauvery, and partake of the perennial freshness of that river. The canal bordering on the pans which separates them from the sea is in fact the deflection of a tolerably deep stream, spanned by a bridge of some arches at the Village of Villanganny, a few hundred yards away. (See sketch). It is fresh until rice cultivation ceases about the beginning of April, and again becomes fresh when the Cauvery is swollen by the south-west monsoon in June. The site is, therefore, cut off from the sea two-thirds of the year or more, and the pans would have to rely exclusively on the sub-soil for brine. At least this is most probable.

6. The works to be executed by Government are—embankments round the pans with the necessary masonry works of drainage, and choukandi huts for the Police guard, the cost of which, in the aggregate, is roughly estimated at Rupees 10,000. No platform is required as the salt is not to be stored or even weighed at this subsidiary station. So soon as the site for the proposed station was selected the District Engineer was requested to prepare a plan and estimate, which will be forwarded to the Board as soon as it is received. The works may be commenced as soon as the north-east monsoon is over and finished before the freshes of the next south-west monsoon are down so that the manufacture of salt may begin in June next. As the earth-work will require a large amount of labour to ensure its being completed in one working season it is proposed that it should be undertaken by the Revenue Department.

ENCLOSURE No. 1.—Sketch.

THE Collector's letter with its enclosures is forwarded to Dr. Ratton for report. He is, the Board are informed, leaving Tuticorin for Madras on the 12th; by landing and staying a few days at Negapatam he will be able to inspect the proposed site and to advise on the general arrangements of the new pans if, as appears very desirable, they are laid down on the tract described in the Collector's letter.

2. The Collector will inform his Deputy at once of Dr. Ratton's expected arrival in order that no time may be lost.

(A true Copy and Extract.)

(Signed) H. Sr. A. GOODRICH,
Acting Sub-Secretary.

To the Collector of Tanjore.

„ Dr. Ratton (with copy of letter read above, and sketch), office of British India
Steam Navigation Company, Negapatam.

Ed. A. S. Rodgers.

Salt-pans—New.—Letter from Collector of Tanjore containing proposals for opening six miles south of Negapatam, forwarded to Dr. Ratton for report after visiting proposed site. Collector to inform Salt Department Deputy Collector of Dr. Ratton's expected arrival at Negapatam.

SEPTEMBER.
No. 1,784.

Received

Encl.

PROCEEDINGS, 9th SEPTEMBER 1873, No. 1,784.

1873.
Board of Revenue,
MADRAS.

8. How far this reliance would be justified by the supply it is very difficult to say from a mere inspection of the site, even combined with such experiments as testing the strength and the yield of brine from a pit of known capacity in a given and necessarily short time. Such an experiment was that, which is referred to in the Collector of Tanjore's letter, where each salt bed moreover had a brine pit to itself. On this subject, see paragraphs 4 and 5 of my letter to H. E. Stokes, Esq., Board's Proceedings, No. 1,853, dated 16th September 1873.

9. Nothing but the attempt to manufacture salt for a whole season in the ordinary way, that is allowing one pit to about forty salt beds, will show whether or not the sub-soil is capable of yielding brine in sufficient quantities and of such strength as to make the site a desirable one for the extension of Salt works on a large scale.

10. The characters of the brine supply may be to a certain extent conjectured from an examination of the porous stratum through which it percolates, the distance from the sea, the depth and strength of the brine found by exploratory wells dug at different seasons, the disturbing influence of surrounding fresh water, and finally, the nature and extent of the covering soil. All these seem to me to point to a strong but rather scant supply.

11. The sub-soil contains but little sand or gravel, it is not therefore very porous, and will not yield brine quickly, if even in good quantity. It is a thick silt, imbedding sea shells, oyster shells amongst the rest. It is evidently the bed of a former estuary, and may be supposed to be thoroughly impregnated with salt. As a matter of fact, I have noticed that this description of silt both contains more sodic chloride and holds it longer than looser soils. Exploratory wells sunk in May showed brine varying from 10° to 15° Beaumé. No exact record of its amount was kept, but Mr. Ricketts informs me that pits sunk about 300 yards off on the opposite side of the canal to a depth of 13 feet, failed to encounter any brine at all; this should suggest caution.

12. The seven or eight feet of alluvial deposit which covers the sub-soil is an evidence of the time that has elapsed since the retreat of the last tide. It shows also the tenacity with which the silt has held its sodic chloride, through years, perhaps centuries of sub-soil drainage, or else the slowness of the waste or drainage. Its thickness renders it most unlikely that the brine which flows over the surface during the few weeks permitted it by the river, can reach and re-inforce the sub-soil brine through leakage. The distance from the sea also a mile and a half is, in my opinion, so great as to preclude the chance of the present stock of salt being renewed by direct pressure or percolation of brine from the sea-bed. These things taken together tell against the likelihood of the brine supply being permanent even though it were promising at first.

13. Although there is abundance of fresh water about the site, the thickness of the clay stratum prevents its influencing the sub-soil brine in any way.

14. Knowing as I do the necessity that exists for opening new Salt works in connection with Negapatam, the difficulty of procuring labour and the favourable view taken of these sites by the Collector of the district, I should like to have reported more favourably upon them than I have done. But I have often stated,

and from experience lately gained at Kille and other places, I am deeply impressed with the fact, that our coast salt manufacture, from natural brine, cannot with safety be carried on apart from the sea.

15. Under the circumstances, I would suggest the opening of a few pans next year as an experiment, and that the works be confined to the northern plot, which is the most promising of the two. By the word pans I mean entire ullums of the usual construction. The map forwarded is herewith returned.

ENCLOSURE No. 1.—Sketch.

THE Board are of opinion that unless a more favourable site can be found by the Collector experiment should be made next season on that reported on, as suggested by Dr. Ratton. It is necessary that every possible source of supply to Negapatam should be utilized. The Board are inclined to fear rather swamping with fresh water than failure of brine in the site in question.

(A true Copy and Extract.)

(Signed) H. E. STOKES,
Acting Sub-Secretary.

To the Collector of Tanjore.
„ Dr. J. J. L. Ratton.

Exd. G. A. Turton.

PROCEEDINGS OF THE BOARD OF REVENUE.

Dated 23rd January 1874

Read

Read the following

No. 14.

From The Honorable D. Arlethurst
Collector of Tanjore

To J. P. Lyrose Esq.
Secretary to the Board of Revenue,
Madras.

Sir, I have the honor to solicit early
orders on my letter of the 5th December
1873 No. 432, relative to the opening of
a new station for the manufacture of
salt at Velanganni. If my proposal
receives sanction the requisite embank-
ments and other works must be
commenced at once to admit of
their

their being completed this season,
as otherwise the manufacture of
salt at this station will have to
be delayed for another twelve months.

2. You will observe from the
estimate forwarded with my letter
above referred to that the total cost
of the works required is under
Rs. 1,000 an amount which -
would be more than covered by
the manufacture of only 20 garces
of salt.

Tanjore Collector's Office (Sd/-) D. Sebastian
Vallam 17th January 1874. Collector.

Submitted to Government in continu-
ation of Resolⁿ Proceedings dated 21st January
1874 No 100 with request that early orders
may be passed.
(True Copy and Extract)

Attest

By Sub. Secretary
The Secretary Government