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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No. / B.P. No.	807	Press / Mis.
Dated	26-5-	1961875

Not to be folded or roughly handled

bsw

Proceedings of the Madras Government, Revenue Department,
26th May 1875.

No. 274. Read the following Proceedings of the Board of Revenue, dated 13th May 1875, No. 1,273:—

Read the following letter from Lieutenant-Colonel C. S. HEARN, Inspector-General of Police, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Ootacamund, 22nd April 1875, No. 2,100.

With reference to the Proceedings of the Board of Revenue, No. 490, dated 1st March 1875, I have the honor to forward a letter from the Acting Collector of Chingleput, with the proposals of the Superintendent of Police for a guard over the additional salt-pans to be opened at Kattivak. The Superintendent appears to estimate for a permanent Head Constable, a temporary Acting Head Constable (on the pay of that grade), and twelve temporary men. The cost of this guard is shown in the margin. There is no provision for it in the budget estimate, nor is it likely that the cost can be met from savings.

		RS.
1 Head Constable,	Permanent.....	240
1 „ „	Temporary.....	120
12 Constables	„	516
		876
	Clothing	163
	Total Rupees	1,044

Enclosure No. 1.

From R. J. MELVILLE, Esq., Acting Collector of the Chingleput District, to Lieut-Colonel C. S HEARN, Inspector-General of Police, Madras, dated Sydapet, 15th April 1875, No. 142.

Adverting to paragraph 2 of the enclosed copy (to be returned) of the Board's Proceedings, dated 1st ultimo, No. 490, I have the honor to forward, for your consideration, the proposals of the Superintendent of Police regarding the guard required for the additional pans proposed to be opened at Kattivak, and request that, if you approve of them, you will submit the same for the sanction of the Board. In my opinion the guard proposed seems to be sufficient.

2. I have forwarded a copy of the Superintendent's letter to the Salt Deputy Collector, and requested him to furnish an estimate for the temporary huts and station that will be required for the Police.

Enclosure No. 2.

From Major R. H. CUNLIFF, Superintendent of Police, Chingleput District, to R. W. BARLOW, Esq., Collector of the Chingleput District, dated St. Thomas' Mount, 30th March 1875, No. 227.

With reference to your letter of the 15th instant, No. 95, and its enclosures, I have the honor to state that from information obtained from Inspector, one Head Constable and thirteen men are required for the additional pans proposed to be opened at Kattivak, one of the latter receiving the pay of a Head Constable in working season. The men may either be permanent or temporary, and, in the latter case, a proportion of permanent men would be assigned from the Government pans.

2. Temporary huts and station will be required.

(True Copy.)

(Signed) R. J. MELVILLE,
Acting Collector.

Proceedings of the Madras Government, Revenue Department,
26th May 1875.

SUBMITTED for the orders of Government.

2. The Board in their Proceedings, dated 1st March 1875, No. 490, approved the allotment of these plots of land at Kattivak for experimental salt manufacture, and directed the Collector to submit proposals for the requisite increase to the salt guard. The Inspector-General of Police has now forwarded an application for an addition to the guard of two Head Constables and twelve Constables, at a cost of Rupees 1,044, but states that funds are not available. As the Board are desirous that Mr. Cammiade should have an opportunity of carrying out his experiments, and as he has probably already incurred expense in connection with the undertaking, they suggest that funds should be provided from the salt grant. The establishment proposed, however, seems unnecessarily large, and the Board think that a guard of one Head Constable and six Constables should suffice.

(True Copies and Extract.)

(Signed) C. A. GALTON,
Acting Sub-Secretary.

No. 275. ORDER THEREON, 26th May 1875, No. 807.

Separate Revenue, No. 37.
Salt.

THE entertainment of a Police guard of the strength recommended by the Board is sanctioned, the charge being met as proposed from the salt grant of the year.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Officiating Chief Secretary.

To the Board of Revenue.
" the Accountant-General.
" the Financial Department.

Frd. W. H. French.

Govt. of [illegible] 1875; Ellis

REVENUE.

To

THE BOARD OF REVENUE.

&c. &c., &c.

Dated May, 26th.

Encl.

G. O., 26th May 1875, No. 807.

MAY.

Nos. 274-275.

Police guards for the additional Salt-pans to be opened at Kattivak in Chingleput District.—Sanctioning the entertainment of a — of the strength recommended by the Board, the charge being met from the salt grant of the year.

3/807

No. 490.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 1st March 1875.

Read the following letters:—

From R. W. BARLOW, Esq., Collector of the Chingleput District, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Caranguly, 13th February 1875, No. 64:—

I HAVE the honor to forward, for the consideration and orders of the Board, an application of Mr. G. H. Cammiade, requesting that about 100 cawnies of land may be allotted to him at Kattivakam and Eránavur for experimental manufacture of salt on the plan pursued by the salt-ryots, but modified a little in view to improving the quality of the salt.

2. From the enclosed report* of the Salt Deputy Collector, it will be seen that the lands applied for at Kattivakam consist of abandoned salt-pans, and would require a police guard of eleven constables and one deputy to guard. Further, as they are isolated from the adjoining stations of Vichur and Vullur, a separate small establishment, consisting of an Assistant Superintendent, on Rupees 20, and two vetties, at Rupees 6 each per mensem, seems necessary for keeping accounts, &c.

* Enclosure (plan) to be returned.

3. As regards the lands at Eranavur, the Salt Deputy Collector thinks that they should not be granted, because, from their distance from Kattivakam, a separate Superintendent with the necessary office and police establishment would be required.

4. Considering the expense involved, I would recommend, if the Board are disposed to favorably consider the application at all, that only plot No. 10, measuring forty-seven cawnies, be given. This would only necessitate an extra guard of six constables and a deputy, and possibly an Assistant Superintendent. Mr. Cammiade, it will be seen, proposes also to experiment on Dr. Ratton's plan on about eight or ten pans, and has given the subject of salt-manufacture some attention, and is very sanguine of the result.

ENCLOSURE No. 1.

From G. H. CAMMIADE, Esq., to R. W. BARLOW, Esq., Collector of the Chingleput District, dated Madras, 15th December 1874.

As requested in your letter, No. 359, of the 3rd instant, I have the honor to submit the following plan that I propose to adopt for the manufacture of salt should it meet with your approval.

2. I am informed that some lands, to the extent of about 100 cawnies, well suited for the purpose, are available in the Villages of Kattivakam and Eranavur near Ennore. These lands were formerly used as salt-pans, and about the year 1854, when Mr. R. P. Campbell was in charge of salt, they ceased to be so used, as difficulties were experienced in suitably guarding salt at this spot. Now, however, that a more efficient police has been organized, the same objection does not exist. If I am allowed the use of this land, I would be able to watch personally the whole process of manufacture. At a greater distance from Madras, the difficulties of access and of living, besides most likely unhealthiness of localities and exposure to the sun, would considerably imperil the chances of success in any attempt that I may make to work at salt-pans steadily for six months of the year when the sun is most powerful.

3. Taking for granted that the lands mentioned by me are placed at my disposal, I propose to lay out the larger number of pans purely on the native principle, and to experiment, on Dr. Ratton's plan, on eight or ten pans and no more. As regards those pans that I shall work on the native principle, I shall explain what I propose to do with reference to each of the following six points:—

(1.) The formation of beds.
(2.) Cleanliness.
(3.) The storage of salt.
(4.) The purity of salt.
(5.) The introduction of machinery.
(6.) Improvements in general.

(1.) *Formation of beds.*—First, as regards their level, and, secondly, as regards the impermeability of the soil, the beds require most careful formation. These two points are the first to be attended to, and on their importance Dr. Ratton and the native manufacturers quite agree. The natives, although aware of this fact, generally prepare their pans with great parsimony and consequent inefficiency. I propose to lay out on this fundamental work as much money and labor as may be required, being careful, however, to observe the most rigid economy without which no enterprize can be brought to a successful issue If practicable, I shall raise a bund to store a provision of brine at neap-tides at a sufficiently high level to avoid the necessity of using picottahs or other means of raising water. I shall not attempt to use asphalte or other expensive material in forming the beds, except perhaps on a very small scale and entirely as an experiment. In France the best of salt being made on beds of clay, we may trust to be able to do as well here.

(2.) *Cleanliness.*—This is a point entirely neglected by natives in all their processes of manufacture. Let it be salt, sugar, indigo, cotton, tanned skins, or ought else, they never attempt to secure cleanliness in their produce, although that is a point so easily and readily securable. I propose to keep the reservoirs clean and free from vegetation and animal matter. I shall let the water stand in them sufficiently long to allow most matters in suspension to deposit. I shall use rough filters such as have been suggested by Dr. Ratton, or any other equally simple that I may find convenient. I shall use bamboo or wooden channels for the admission of water in the concentrating and crystallizing beds, so as to avoid, as much as possible, any disturbance of mud. I shall try to avoid all chances of soiling the salt after it has been scraped, and for that purpose I shall use conical baskets that may be hung on the bank, thus also securing better drainage than by forming mounds of salt. I shall carry the dried salt directly under suitable cover so as to avoid all contamination by dust, and I shall store the salt on planks, or other equally efficient flooring, to avoid admixture of earth and sand from the storing ground.

(3.) *Storage of salt.*—I propose to have a platform sufficiently high, so as to have nothing to fear from the heavy rains. On this platform I propose to erect a cheap, but permanent, shed with light cast-iron pillars, galvanized zinc roofing, and wooden walls to store salt in perfect security. I also propose to keep distinct the various qualities as regards color and size that may be produced in the course of manufacture.

(4.) *Purity of salt.*—I propose to divide the pans so that the relative sizes of the concentrating and crystallizing beds may permit to work in uninterrupted rotation, and so as to keep the brine in the concentrating beds until they attain 25° Beaumé. The proportions given by Dr. Ratton will most likely answer for this purpose. Brine at 25° Beaumé will be let into the crystallizing beds. I shall not, as proposed by Dr. Ratton, clean the beds after each scraping. A far more economical way would be to wash them with weak brine whenever crystals of sulphate of magnesium are detected in samples examined under the microscope or otherwise. For that purpose I shall take small samples out of every scraping for testing by reagents and for examination under the microscope. By preventing the formation of sulphate of magnesium, I believe that the more soluble salts contained in sea-water, except chloride of magnesium, will be effectually kept out. Finally I propose to remove all admixture of chloride of magnesium by washing the scrapings contained in a conical basket with a saturated solution of sea-salt. This process is an imitation of one used in refining sugar, and I found it in small experiments to answer very well.

The above paragraph is the only one that contains any important innovation in the native process. There is, however, nothing in it that any one of ordinary intelligence will not be able to do alone if he is shown once or twice how to operate. The whole process is far from being as intricate as photography, which is practised with satisfactory results by many who have not even the most elementary knowledge of chemistry.

(5.) *Introduction of machinery.*—I shall not in the first year attempt to use any machinery for the manufacture of salt. I propose, however, to try a method of drying salt that strikes me as advantageous, and which consists in driving a current of air through a mass of wet salt. This process has been used to dry coffee, and it has been lately applied with advantage to the desiccation of tea. It requires to be modified to suit the present purpose. I believe that suction through a pump communicating with the bottom of an inverted pyramid containing salt would answer very well. The pressure of the atmosphere would most effectually drive a current of air through the salt however closely it may be packed, and the moisture would thus be sucked out. I have tried with success some experiments on this plan, but on a very small scale, having used a funnel communicating with a guttapercha tube attached to a syringe. I am now getting ready a wooden pump and pyramid to test the process on a suitable quantity. This process, if successful, will enable me, not only to dry salt instantaneously, but it will ensure considerable freedom from foreign salts that may be in solution in the moisture adherent to the crystals of sea-salt. I find that the process of suction eliminates a considerable quantity of the bitter waters in the liquid state which otherwise would evaporate and leave a deposit of foreign salt.

Under this head I may mention that I shall leave in the centre of the works a wide road from which spacious paths will allow of easy access to all parts of the pans. A little land sacrificed for this purpose will surely repay well in better supervision and economy in the carriage of salt. I propose to lay these roads a little higher than the pans, and to make them of the soil found on the land. The surface will be convex and covered with a sufficient thickness of sea-sand. I might, if I find it practicable, use wheel-barrows or other more effective means of carrying salt from the pans to the platform.

(6.) *Improvements in general.*—On the return of Dr. Ratton, I propose to solicit from him any suggestions that may tend to improve the manufacture, and I shall take his advice on all points connected with the business. I shall also be glad to modify any plan as may be deemed necessary by you or by the Board. I trust that experience will suggest valuable improvements of which I shall avail myself.

4. Proceeding on the plan above described, I trust to produce as good salt as any to be had anywhere. But on comparing the clear, colorless, and dry crystals produced at Marseilles with the opaque, slimy, and most frequently filthy stuff that comes out of the native pans, I have serious apprehensions that very many difficulties will have to be got over, and I do not anticipate perfect success until I have devoted to the work a few years of perseverant labor.

5. In drawing up the above plan, I have as far as possible, always kept in view the necessity of introducing innovations only when such are absolutely required, and in all other cases of using the means that long practice has rendered familiar. By such means alone is it possible to secure cheerful co-operation from prejudiced and ignorant assistants, who, having made up their minds that failure will be the inevitable consequence of departure from old custom, throw obstacles in the way, and even take a sly pleasure in bringing about the discomfiture that often ensues.

6. I have given the subject of salt-manufacture considerable attention during the last two years ever since I have heard of Dr. Ratton's labors. I have visited the salt-pans at work from Covelong in the south to Tada in the north, to acquire some practical knowledge of the subject. Should I find that all these helps notwithstanding I am not able to effect the improvements I

expect, I shall, as a last resource, send for a skilled workman well acquainted with the manufacture of salt on the shores of the Mediterranean, to put me in the way of the many little particulars that practice alone can teach.

7. For the present 100 cawnies of land or thereabouts will be quite enough. Later, if I am successful, I shall apply for a great deal more.

8. I solicit the favor of an early reply, as the time is come to begin operations.

No. 9.

FORWARDED to the Salt Deputy Collector for immediate report in communication with Mr. Cammiade if necessary, as the manufacturing season is near at hand, as to whether any objection exists to making over the site to him.

The Collector is anxious to encourage such experiments, and, if no obstacles exist, will address the Board *at once*.

SYDAPET,
8th January 1875.

(Signed) R. W. BARLOW,
Collector.

ENCLOSURE No. 2.

From D. V. NARASINGA ROW, Deputy Collector in charge of Salt, to R. W. BARLOW, Esq., Collector of the Chingleput District, dated Voyalur, 25th January 1875, No. 40.

WITH reference to your docket of the 8th instant, No. 9, which reached me on the 14th idem, I have the honor to state that, with the company of Mr. Cammiade, I inspected on the 17th the lands proposed by him for opening pans at Kattivak and Eranavur, and again visited the same place myself on the morning of the 19th.

2. I beg to enclose a plan showing the position of the village of Kattivak, which I have obtained from the Curnam of the village. The land at No. 10, marked in the plan, containing 47 cawnies, can be turned into 90 pans, but one-eighth part of it, I think, is not well suited for salt-manufacture. The land at Nos. 11 and 12, measuring 2¾ and 18½ cawnies respectively, is not only unfit for salt-manufacture, but also too expensive for its conversion into pans.

3. Mr. Cammiade has not inspected with me the plot No. 11, and has not expressed his willingness to take the plot No. 12, and if he requires the above two spots, I see no objection to make over them.

4. In case the above three pieces of land are turned into places of salt-manufacture, a separate guard of six constables with one deputy for No. 10, two constables for No. 11, and three constables for No. 12 are sufficient. As the plot No. 10 is surrounded by water, and the backwater separates it from the Vichur and Vullur pans, it is not possible for the servants of those stations to supervise the works of that locality; consequently an Assistant Superintendent, on Rupees 20, and two vetties, at 6 Rupees each per mensem, are necessary to keep the accounts of the quantity daily scraped and that transmitted to the Madras Cotaur, and to stamp the salt manufactured and placed on the ridges and on the temporary platforms at the pans.

5. Some twenty or thirty years ago before the appointment of the Salt Deputy Collector to this district, the three plots in question seem to have been in operation for salt-manufacture, but I have no record in my office to state the reason why they were discontinued, and what quantity of salt was made.

6. In 1866 the late Deputy Collector, Mr. Smith, proposed* the opening of these pans and those at Eranavur, but were not sanctioned, I hear, for the reasons that the salt produced in them would cause pilfering, as they are situated close to the village on the eastern side of the canal. The records exhibiting the same are not with me at present, as I am on circuit.

* *Vide* Board's Proceedings, No. 7,413, dated 15th October 1866.

7. In my opinion, with police guard as suggested above, the pans at Kattivak can be well protected.

8. With regard to the land at Eranavur, I cannot recommend any pans to be established, for they lie near the Shadayan Cooppam Lock, which is at a distance of four miles from Kattivak, and a separate Superintendent, together with an establishment, and the police will be required for the efficient supervision of manufacture and guard.

9. If Mr. Cammiade wishes to try his experiments at the plot No. 10, opening two or three pans this year, I think the Superintendent of Police will be able to arrange to post two or three constables for guarding them if you request him to do so.

10. In conclusion, I must, however, state that, by opening of the new pans, the beds can be prepared, and a small quantity of salt produced in the first year, but not a large quantity, so as to help our demand.

11. I beg you will be pleased to order the enclosed plan to be returned to the Curnam of the village of Kattivak.

(True Copy.)

(Signed) R. W. BARLOW,
Collector.

ENCLOSURE No. 3.—Map.

From R. W. BARLOW, Esq., Collector of the Chingleput District, to H. E. STOKES, Esq., Acting Secretary to the Board of Revenue, dated Carangully, 15th February 1875, No. 67.

IN continuation of my No. 64, dated 13th instant, I have the honor to forward a further letter (to be returned) just received from Mr. Cammiade on the subject of improved salt-manufacture.

2. From paragraphs 16 to 20, it will be observed that Mr. Cammiade proposes to serve his condensing reservoirs with water, pumped direct from sea, by a steam engine through cast-iron pipes. Such an experiment must be costly to him, and, if successful, greatly to the interests of the State. I would, therefore, now suggest that, under these considerations, all the plots at Kattivak applied for may be made over to him instead of only No. 10 as I at first proposed.

ENCLOSURE No. 1.

From G. H. CAMMIADE, Esq., to R. W. BARLOW, Esq., Collector of the Chingleput District dated Madras, 11th February 1875.

As the manufacturing season is advancing, I trust you will be so good as to excuse my pressing again for a favorable disposal of my letter of the 15th December 1874.

2. Since writing that letter, I have had numerous occasions to elicit information from manufacturers, from Government officials in charge of salt, and from gentlemen in position to advise on the engineering and on the chemical parts in the manufacture of salt. I am, therefore, now able to speak with a little more confidence than in my last letter, and I am glad to state that the lands I have selected are about the best in the Chingleput District.

3. A comparison of the situations and yield of the several salt stations in this district will show that the following conditions have to be attended to in selecting a good site for salt-works.

(1.) Situation.
(2.) Quantity of brine available.
(3.) Admixture of fresh water.

(4.) Nature and level of the soil.
(5.) Purity of brine supply.
(6.) Natural reservoirs that may be turned to account.
(7.) Distance from the sea.
(8). Exposure to dust.

I beg leave to say a few words on each of these conditions.

4. (1.) *Situation.*—Apart from considerations of proximity to the centres of consumption, of facilities of carriage, and of police supervision, and as regards the sole question of the economy of manufacture, there is no more serious mistake than to depend on pans separated from the sea by the watershed of the neighbouring land. The effect of such a situation is that muddy water is used in the manufacture of salt and the works are abandoned to the mercy of every little downpour that may fall during the manufacturing season, so that one day's rain may stop the manufacture for an entire month. In 1873 two such downpours occurred about March and April, and the manufacturers about Ennore were quite disheartened, and the yield of salt that year was in consequence much reduced.

5. At first sight it would appear that all stations situated on the backwater are equally exposed to its action. I shall presently show that a little art can remedy the evil as regards the pans on the sea-side, whereas nothing of the kind can be attempted on the land-side (*vide* Dr. Ratton's first report, paragraph 113).

6. (2.) *Quantity of brine available.*—So long as a broad channel communicates freely with the sea, the supply of brine is safe at least for some months of the year. Such is the case at all the stations in this district north of Madras, and Kattivakam in that respect is one of the best supplied. The majority of pans at the other stations depend on narrow side-channels. At Kuttivakam it is possible to take an ample supply directly from the broad backwater at spring-tides. All the stations about Ennore are exposed to have their supply of brine cut off, as the bar is liable to close. Should such an event be followed by a moderate fall of rain, the brine is liable to become too weak for the manufacture of salt. If there be no rain, the water soon falls so low in the channels that the pans cease to receive a proper supply. The pans at Kattivakam may be rendered independent of such occurrences as explained in paragraph 16.

7. (3.) *Admixture of fresh water.*—The pans at Vadasamanjari present, I am told, a remarkable instance of damage done by fresh water. Formerly it would appear that these pans were renowned for their abundant crops, and that a cawny produced about twenty garce annually. Since the opening of the southern canal, the fresh water from the Adyar has deteriorated considerably the value of these pans (*vide* first report, paragraph 113).

8. The freshes coming down the Cortelliar impoverish the brine at the northern pans, so that they all suffer equally from that cause whatever their distance may be from the mouths of that river. If the flow of fresh water is large enough to affect the density of brine abreast of Mr. Campbell's bungalow, then evidently the proximity to the river or otherwise is of no consequence; for, the main body of water being weak, all the channels that take their supply therefrom must become equally weak. In paragraph 16 I explain how the pans at Kattivakam may be rendered independent of such an event. Drainage from the neighbouring paddy-fields also act unfavorably. But the quantity of fresh water from this source may be easily diverted, so that its evil effects are quite under control.

9. (4.) *Nature and level of the soil.*—The soil requires to be a mixture of clay and sand. A bed of clay alone cannot be made sufficiently hard, and it is liable to crack. A sandy soil cannot be made impermeable. With a suitable mixture, it is possible to make good beds. The pans near Ennore are all favorably situated in this respect.

10. As regards the level, opinions seem to differ. The natives seem to prefer land a few inches above high water, and they condemn lands covered by the tide. Dr. Ratton says that the latter are the best (paragraph 134), and, as far as I am able to judge of the question, I think he is right. For instance some pans at Vayaloor are actually thus situated, and they are the best in that locality. In this respect the various stations are rather unequally favored, and Kattivakam in this matter is second to none.

11. (5.) *Purity of brine supply.*—It is not possible to manufacture good and particularly clean salt with dirty water which may, no doubt, be filtered perfectly clear if a small quantity were required, but not so on the vast scale necessary for the manufacture of salt. This is I find the really great difficulty to overcome, as the pans are now situated near Madras, if we are to make salt as clean as it is obtained in Europe. The supply of brine now used is anything but clean, and at some stations the water is very filthy. I find that the width of the backwater has some connection with the muddiness or otherwise, and this again on the quality of the salt manufactured. Thus at Tada the backwater is some miles broad, and there the water is sufficiently clear to allow objects being seen two or three feet below the surface. At this place a fair specimen of white and light salt is manufactured. At Puldivak, on the other hand, where a narrow channel everlastingly paddled by boats, cattle, and foot-passengers, supplies nothing but muddy water, the salt is of an inferior description. Between these extremes the various salt stations, *cæteris paribus*, manufacture intermediate qualities according to the degree of purity of the water at their disposal. Now, whatever may be the degree of purity of the backwater, there is no doubt that water taken directly from the sea is far better suited for the manufacture of salt. Brine taken directly from the sea can alone fulfil all the conditions required for the suitable manufacture of salt (*vide* report, paragraph 112). This condition is observed in France, and this I propose to do at Kattivakam as explained in paragraph 16. Even without that help, Kattivakam is one of the most favorably situated of the northern pans.

12. (6.) *Natural reservoirs that may be turned to account.*—At certain places vast expanses of spread-water increase considerably the yield of the pans. Such is the case at Cheyoor and Covelong. At Vayaloor, where some of the pans have the benefit of a large piece of backwater enclosed by a bund, the annual yield of salt is the largest of all obtained in the northern pans. Vichur, Vullur, Ennore, and Attiput have no such advantage, and also their yield seldom exceeds four garce per pan, the majority producing much less. It is thus evident that fertility depends entirely in the existence of natural reservoirs (*vide* report, paragraphs 149 to 154). In this respect Kattivakam is very favorably situated, as a large piece of unused backwater adjoining may be turned to account as a collecting tank ensuring a plentiful supply of strong and clear brine.

13. (7.) *Distance from the sea.*—This condition has two opposite effects according to the season. Close to the bar the density of the backwater is almost equal to that of the sea. Further inland there is a difference which increases with the distance. Thus early in January this year at high tide near Messrs. Binny's bungalow the water marked about 2¼° Beaume; near Mr. Carr's bungalow it marked scarcely above 1°; and near Vichur the water was anything but brackish. So that, immediately after the rains the rule is that further from the bar the less salt there is in water. But in February the density at high tide up to Vichur was about 2½°; by the end of February most likely the whole backwater will have attained the density of the sea. From that moment the rule is reversed, and further from the bar the more salt there is in the water. As the pans are not ready before March, those furthest from the bar, *cæteris paribus*, receive the strongest brine. Thus, in ordinary seasons, Vayalur, and to a less extent Puldivak, get stronger brine than the stations closer to the bar. Vadasamanjari in like manner was very good before the opening of the Canal, and it was then very far from the bar.

14. Should one or two heavy showers of rain fall during the manufacturing season, the distant pans require a long time to recover, whereas the pans closer to the bar are much sooner able to resume work. In this respect, then, the advantages are counterbalanced, and so Kattivakam is in no way inferior to the others.

15. (8.) *Exposure to dust.*—This I am told is a very serious cause of damage to salt-works. About Ennore the land or westerly winds are those that bring clouds of fine dust from the dry waste land lying near the canal. A large quantity of dust also rises from the dry salt-pans

1875.

Board of Revenue

MADRAS.

PROCEEDINGS, 1ST MARCH 1875, No. 490.

Rev 3/1876/75

Excl.

Rev 126/75

Received

MARCH.

No. 490.

Land—at Kattivak in Chingleput District—Proposed allotment of three plots of—to Mr. Cammiade for experimental manufacture of salt approved, subject to certain conditions, and Collector directed to report what extra establishment is needed.

46 26-v-75-N: 807.

of that Grade) and 12 temporary men. The cost of this Guard is shewn in the margin.... There is no provision for it in the Budget Estimate nor is it likely that the cost can be met from Savings.

		Rs
1 Head Constable Permanent		240
1	do — do Temporary	120
12 Constables	— do —	516
		876
Clothing — ...		168
Total Rupees		1044.

Office of the Inspr. Genl. of Police ootacamund 22nd April 1875.

I have &c
(Sd) C. S. Ffaria
Inspector Genl. of Police.

Submitted for the orders of Government.

2 The Board in their Proceedings dated 1st March 1875, No. 490 approved the allotment of three plots of land at Kattivaik for experimental salt manufacture and directed the Collector to submit proposals for the requisite increase to the salt Guard. The Inspector General of Police has now forwarded an application for an addition to the guard of two Head Constables and 12 Constables at a cost of Rupees 1044 but states that funds are not available. As the Board are desirous that Mr. Cammiade should have an opportunity of carrying out his experiments and as he has probably already incurred expense in connection with the undertaking they suggest that funds should be provided from the salt grant; the establishment proposed is however seems unnecessarily large and the Board think that a guard of one Head Constable

constable and 6 Constables should suffice.

/ True copy and Extract /

a. a. Cabton
Sub Secretary

To
The Secretary to Government
Revenue Department

with copy of Board's Proceedings dated 1st March 1875 No. 490 and Copies of Enclosures.

Chingleput Dist.
Collectors Office
Saidapet, 15th
15th April 1875.

Rec. 142.

From R. J. Melville Esqre
Acting Collector of the Chingleput District.

To
Lieut. Col. C. S. Hearn
Inspector General of Police,
Madras.

Sir

Adverting to para 2 of
the enclosed copy of the Board's
Proceedings dated 14th ultimo
× to be returned
& 17th June the honor to for-
-ward for your consideration,
the proposals of the Superin-
-tendent of Police regarding the
guard required for the addi-
-tional pass proposed to be
opened at Kattivakam, and
request that, if you approve
of them, you will submit the
same for the sanction of the
Board. In my opinion the
guard

No 807

The entertainment of a Police guard of six strength recommended by the Board is sanctioned, the charge being met as proposed from the Salt Grant of the year.

14th Feb 1876 Boarding Revenue June
& the Accountant & Paymaster
15th the Financial Depy

26 May 1876

LR 17.5.75.

Rec: 18.5.75 & 4th
Proceedings of the
Board of Revenue
Nos 1225 & 1886

Letter Board 13th May 1875
Mr. Wallace 21.5.75
No 807 dated 18.5.75

Write Collr
Subj Re entertainment of
Police guard
Ack with thanks
Letter from Supt Police
& Police Financial Circ
From Collr Chingleput
Dated 15th instant
& Police Guard
Recd the 20th inst
Same to be stopped
at Kattivakkam

guard proposed seems the suf-
-ficient.

2 I have forwarded a copy
of the Superintendents letter to
the Salt Deputy Collector and
requested him to furnish an
Estimate for the temporary
huts and Station that will
be required for the Police

I have &c
(Sgd) R. J. Melville
Actg Collector.

/ True copy /

Actg Subsecretary.

13/807

No 227.

From

Major R. H. Cumbliff:
Superintendent of Police
Chinglepet District

To R. W. Barlow Esqre
Collector of Chinglepet District.

Sir

With reference to your letter of the 15th Instant No 95 and its enclosures I have the honor to state that from information obtained from Inspector / Head Constable and 13 Men are required for the additional Pass proposed to be opened at Battwakam, one of the latter receiving the pay of an Head Constable in working Season. The men may either be permanent or Temporary and in the latter case a proportion of permanent men would be assigned from the

Enclosure in Rec. of the Board of Revenue
Rec. Letter dated 2 June
R.D. dated 13 April
1875

Rec'd 25/5/75

Rec'd 7/6/75

Copy of letter from
Chief Constable
& the Police Force
of Police dated
15th April 1875.

the Government pays.

2 No Temporary Rules and Station will be required.

I have &c

Chinglet Dist.
Police Office
St. Thomas Jamt
30th March 1895

(Sgd) R H Cunliffe Major
Supt. of Police
Chinglepet Dist.

True copy

(Sgd) R J Melville
Ag Collector

(True copy)

Ag Sub Secretary

E H Whitehead
Chairman

Encls: in Proc: of the Board
of Rev: & the Secretary
& Govt: R.D. dated
13th May 1875.

Rev 2/1886/75

Rev 126/75

Copy of letter from
the Supdt. of Police
Chinglepet & Coll.
of Chinglepet Dist.
dated 30th March 1875

26/5/75 - cl2 507