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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No. / ~~B.P. No.~~	66.	~~Press~~ / Mis.
Dated	10. 6. 1824 ~~196—~~.	

Not to be folded or roughly handled

No. 103.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 22nd January 1874.

Read again Board's Proceedings, dated 18th November 1873, No. 2,354.

Read also the following letters :—

From Surgeon J. J. L. RATTON, M.D., on Special Duty, Salt, to H. E. STOKES, Esq., Acting Sub-Secretary to the Board of Revenue, dated Coilpatam, 22nd August 1873.

I HAVE the honour to forward a separate report on the Mercanum Salt Division in compliance with the request contained in the Board's Proceedings, dated 2nd August 1873, in continuation of Official Memorandum, No. 869, dated 20th June 1873, the former of which was received by me on the 10th.

2. It is important to understand well, at starting, the manner in which Mercanum is topographically related to its water-way, as to this may be traced most of the defects under which it labours. It is divided into three stations—Mercanum proper, Cundada, and Chunampett,—the first on the south-west, the second on the west, and the third on the north-west of an extensive shallow backwater.

3. This backwater is, for a great part of the year, nothing more than a river expansion, or fresh-water lake, of irregular triangular outline, three miles in length by 1½ in breadth at the broadest part, formed mainly by the junction of two large rivers, flowing into it on the west, at the angles of the base and uniting at the apex, marked by the Thenbakum Bridge, into a single stream which reaches the sea some four miles further to the north-east.

4. Whether it is that the sectional area of the outfall is less than that of the affluent channels—and there are many small affluents besides the two described,—or that the outfall is too much obstructed by the Thenbakum Bridge, I am unable to say; but certain it is that fresh-water drainage is not removed here nearly as rapidly as it accumulates. In the early part of the year, or whenever heavy freshes occur, backthrows result, which have scooped out or denuded the sites on which the pans are situated. In May 1872 a thousand garce of salt crystals were destroyed in the beds, and in the following November, at a time when the outfall is freest, water rose to a height of eight feet on the pans and carried away 2,700 maunds of salt from the raised store platforms.

5. Besides this liability to flooding, the brine supply for these pans is for a long time less dense than at most other places, the removal of the fresh water being impeded in addition by the tide, which, for a season, as at the time of my visit, contests the water-way, driving back the river without itself penetrating or, at all events, influencing the character of the shallows. The tide which entered by the Thenbakum Bridge on the 28th of January, thirty-three days after the last shower had fallen, taken from the surface, or beneath it, marked 0° Beaumé.

6. From the foregoing it will be evident that the pans, which are seven miles from the bar, gathered about the west end of the spread-water, are in the worst situation for obtaining sea brine. In February last, at my request, Mr. Stokes, Sub-Secretary to the Board, forwarded one of Beaumé's hydrometers to the Deputy Collector of South Arcot, and Mr. Freer has since then kept a daily register of the density of the water in the neighbourhood of the pans.

The following, in brief, are the results up to the 20th of June, the date of the last entry received by me.

7. On the 25th of March, brine marking 2° B. could be obtained at the mouth of the Chunampett Supply-channel, which, it should be mentioned, is prolonged to about the centre of the lake. On the 30th of March, brine at 2°, B. reached Mercanum proper. Five days afterwards, or on the 4th of April, some rain fell—the usual mango showers,—and from that time until the 28th of April the estuary remained fresh. From the 28th of April, when salt-water reappeared, its salinity steadily increased until the 9th of May, when, for the first time, it touched 3° B., or the average density of sea-water, and at 3° B., more or less, it remained stationary up to the 20th of June. The lowest reading registered was 2·5° B., the highest 4·5° B., and the mean density of the backwater at Mercanum was 3·4° Beaumé. At Cundada, which is furthest from the sea, the readings are all lower; 2° B. was first found on the 13th of May, but, as Mercanum alone, of the three stations, is exclusively dependent on the estuary for its brine supply, this is not so important.

8. At Chunampett there are excellent wells of narrow calibre, like ordinary bowries, yielding brine at 15° B. At Cundada, too, some pits are used, and others can be dug; but the nature and position of the strata at Mercanum stand in the way of pit construction. The recent strata, with which we are concerned, are three in number—an upper one of loam three feet in thickness, upon which the pans are laid out; an intermediate bed of greasy-looking firm, black clay, two feet in thickness, which rests on the third or lowest stratum; an indetermined thickness of coarse sand permeated by an abundant and strong brine, the pit brine which is sought. When an excavation is made here, the subsoil water filtering through the third stratum carries into the pit the surrounding loose sand, undermining the black clay, which, thus unsupported, after a few moments, falls in with the superincumbent loam and fills up the pit. This might perhaps be prevented by supporting the sides with stakes, etc.

9. One cause of deficient salt at Mercanum is thus seen to be owing to the necessity for postponing the commencement of its manufacture until the spread water has attained sufficient density, to repay the labour of irrigation, which is about the month of May. Before suggesting measures for the removal of this cause, one or two minor obstacles, in the way of early work, must be noticed.

10. The pans at Mercanum proper are in an undrained hollow, at the foot of some high ground terraced for rice-fields, and the water which stagnates upon them after the rains is hence not removed until wet cultivation has ceased, as evaporation is neutralized by percolation from above. This should be remedied by digging a superficial trench past the salt-beds, which happen to be at the lowest level, off to the nearest stream running to sea.

11. Another and greater impediment exists in the unwillingness of the people themselves to begin early, or to use anything but strong brine in the moulding of their ullums. They will not take advantage of the plastic condition in which the earth is left after the rain, but wait in obedience to their tradition, rather than for any other reason they can assign, until their brine supply has attained its maximum of density in April or May, by which time the ground is parched up and requires to be soaked and puddled for several days to be brought back to the condition of plasticity requisite for the formation of mud banks, etc. This is a very strong prejudice all through the south. At Chunampett, for instance, where the well-brine is scarce enough to demand economic usage, the ryots make their ullums with it, drawing it laboriously from deep wells, though abundance of fresh water, at a much higher level, is in the supply-channel close at hand, and though they know they will not have much brine left for the manufacture of salt. This instance, at least, shows the genuineness of the prejudice. Any measure taken with the object of relieving the scarcity of brine before May will tend to obviate this secondary evil.

12. As it is for our purpose practically impossible either to alter the character of the backwater or control its movements, some other source of brine should be sought for, drawing it from the subsoil or from the sea, or, if possible, from both together, for they mutually supplement each other's deficiencies of quantity and of density. At Chunampett and Cundada there will be no difficulty about this; at Mercanum it remains a question whether the subsoil brine, averaging about 12° B. in density, can be utilized.

13. The sea, though seven miles away to the north-east, following up the bed of the river or estuary, is fortunately, in a straight line across the sands, not more than half a mile south-east of a large swampy tract, the site of abandoned salt-works, which immediately adjoins the present pans. Here a large reservoir, made water-tight with black clay, might be excavated, filled from the sea and kept at a certain level, at a small expense, by means of an iron pipe, provided with the common floating ball, stop-cock, valve, or the pipe might discharge into supply-canals running through the works. Some rather high sand dunes intervening between the beach and the salt-pans render a cutting—in fact, anything but an iron pipe—out of the question.

14. If nothing else can be done, the present supply may, in the early months, be improved a little by bringing a channel, provided with a sluice-gate from the Thenbakum Bridge to the pans, to obtain the best brine, which enters the estuary at high tide, and retain it for use. But this, I believe, to be a measure of questionable economy. Mr. Freer's daily register of density shows that the difference in specific gravity at the two places is very slight and temporary before May, and that after May the brine is densest in the neighbourhood of the pans. Besides, the remains of such a channel still existing attest that it was not found worthwhile in the past to incur the expense of keeping it clean. I have since heard that Mr. Freer is opening a channel to the Thenbakum Bridge; if the necessity for more salt is very pressing, it certainly is, as far as it goes, a step in the right direction.

15. The soil at Mercanum, a mixture of alluvial loam and sand at the surface, altering beneath to yellow argillaneous clay, is not too well adapted to the formation of salt-works though they may be made firm and impermeable if prepared with care, but much greater care than is customary here should be expended on its preparation, especially as there is a superficial current of subsoil drainage, running two feet beneath the bed floors, on the surface of the black clay, which tends to attract leakage.

16. The average area of the ullum is 81,241 square feet. It is planned and worked almost precisely as at Cheyur, in the report on which division will be found a detailed explanation of the system of salt manufacture by accretion, perhaps the worst in use on the coast. Its faults are—that it consists of frequent, shallow irrigations, with rapid evaporation and the formation of successive layers of badly crystallized salt, which adhere together but for a short time and are not compacted into a solid cake, as it is intended they should be; that there is, from the nature of the process, no means whatever of removing the bitterns, which react injuriously on the crystal formation of sodic chloride and part with a certain proportion of the residual salts; that the bed floor is left, or made soft, on purpose, at the outset, to allow of the subsequent lifting off of the salt-cake; that it disintegrates after a time and permits of leakage around and beneath the crop, and that there is no getting at it, to repair it, during the continuance of manufacture; that the constant presence of a white, reflecting surface in the beds tends to diminish heat, evaporation, and consequently salt produce in a given time; and finally, that this system hazards the loss of the season crop by exposing it *en bloc* for a considerable time in salt-beds particularly liable to be flooded.

17. The process of accretion extends over about thirty-five days, at the end of which time the cake of salt which has been formed to an inch or 1½ inches in thickness is removed by coolies, who thrust their open palms through the soft mud beneath it and endeavour to procure it in large slabs with as few fractures as possible. In favourable season, a second and smaller crop, the result of a shorter trial of the same process, is worked from the pans, and it is a significant fact that, in remaking these beds for the second exposure, crystals resembling saltpetre form and are got rid of or put out of sight by being trampled into the mud.

18. This system is in every direction a lamentable failure as to its results. The produce of salt per 10,000 square feet, both at Cheyur and at Mercanum, is much less in the same period than at any of the other divisions as yet examined by me. At Cheyur the produce per 10,000 square feet in thirty days is 8·24 Indian maunds; at Mercanum it is 15·63 maunds. The average produce at all other stations from which I have obtained returns is 45·12 Indian maunds. The difference is remarkable, and should condemn the process of accretion. Of its faults, the softness of the bed floor is probably that which is most accountable for the deficiency, as it fails to oppose a sufficient obstacle to leakage, to which, owing to the under-current (described in paragraph 15), there is a natural tendency.

19. The salt-cakes when procured are left to drain a day or two at the pans side and then taken to the platform to be stored. The salt I examined had been some time on the platform. It was without visible admixture of magnesic or other crystals, larger grained and more lumpy than that of Cheyur, and clean, with the exception of mud adherent to the lower surface of the larger lumps, but there were no cakes or slabs indicating the process of manufacture, as these had been worn away to a few rounded fragments, sparsely dispersed through a mass of the common, coarse-grained salt. It is very heavy, as will shortly be noticed.

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20. No salt is destroyed at the pans themselves, as the system ensures its production of uniform quality; but, as most of the ryots elect to leave their heaps without a covering until purchased for the monopoly, the outer rind in-grained with dust is then removed and destroyed together with such salt as is laden with bed silt, through careless handling, by being thrown into the backwater or trampled into the mud at the ryot's expense. In this way about fifty garce are annually disposed of.

21. The salt is stored, on well-raised detached platforms, in heaps of ten garce, covered with palmyra leaf or straw thatching to protect them from the weather. A heap broken up for sale at Chunampett gave me an opportunity of judging of the efficiency of this protection. It was literally riddled with holes, which extended through it from top to bottom, as drainage pipes, from one to two inches in diameter, some stained with mud and others containing bits of decomposing thatch. Though far from considering this a fair test heap, it is worth mentioning, as disclosing an amount of wastage, well nigh impossible in the south, where earth-coverings are used. Thatching, besides very careful arrangement, requires to be placed at a steeper angle than that to which the sides of the top of the salt heap can easily be trained, to afford water-tight protection. I have no hesitation in saying, from what I have seen, that it is inferior to the mud-coverings in use in Tanjore, Madura, and Tinnevelly, to be described hereafter.

22. The following statement of accounts is taken from the returns of an ullum of the best class-manufacturing in Fasli 1282:—

				RS.	A.	P.
Area of ullum, 57,478 square feet.						
Credit with kudivaram value of eight garce, at Rupees 12-6-0 a-garce.				99	0	0
Debit with repairs	1	0	0			
,, hire of two coolies, at Rs. ... a month, for five months	20	0	0			
,, grain for above, two months, at 10 Annas a-month	2	8	0			
,, carriage of salt, at 6 Annas a-garce	1	8	0			
				26	0	0
Profit balance ...				73	0	0

Cost of manufacture, Rupees 3-4-0 a-garce.

23. It will be seen that, owing to the system here, a certain exceptional saving is effected in the matter of repair and implements, and that the cooly hire is lower than at most divisions; but, allowing for this, I think this statement, which is reliable, having been carefully prepared for me by Mr. Freer, throws light, by comparison, on the worth of those usually supplied. It may be compared at once with that of Cheyur with the following odd result. Cheyur is but fifteen miles north of Mercanum, laid out on similar soil, having a much stronger brine supply, worked on the same system, in many instances by the same pan-owners, yet the cost of manufacture is returned as Rupees 13-14-0 a-garce, or four times as great as at Mercanum.

24. A list of the kudivaram rates, which are more complex than even at Cheyur, is here furnished for the sake of completing the information about Mercanum. Twelve ullums at Mercanum proper get Rupees 15-7-0 a-garce, and 255 receive Rupees 12-6-0. All the proprietors at Cundada get Rupees 14 5-0 a-garce. At Chunampett, twenty-five get Rupees 6-15-0, and a solitary ullum

Rupees 16-5-0; 8¼ obtain Rupees 16-14-0; 35⅞, Rupees 17-4-0 a-garce. Half an ullum receives Rupees 19-9-0; four, Rupees 22-5-0; and 1½, Rupees 26-2-0 a-garce.

25. The accounts furnished show that the profit on manufacture increases with the size of the ullum. The pans at Mercanum and Cundada, called one-all ullums, are worked by two men; those at Chunampett, called four-all ullums, though four times as large, require but four men, so that the area and presumably the outturn or kudivaram are multiplied four times at Chunampett, whereas the expense is but doubled. The largest sums of kudivaram, viz., Rupees 2,599 and Rupees 3,188, allotted to single individuals last season, were obtained by Chunampett proprietors.

26. Mercanum salt is better liked than that of Cheyur, from which station, of late especially, it has diverted much of the interior trade. The average sales during the past five years have been 209,000 Indian maunds, of which a little less than half has been sold in the district, 114,000 Indian maunds going inland and 44,000 to the French Government. In Fasli 1277 a small quantity of salt was shipped from here to Calcutta; but, owing to the difficulty experienced in getting the salt across the sand dunes to the beach, no shipment has taken place since. A road is now in process of construction, and it seems likely, from the inquiries of shippers, that when complete a demand for export salt will spring up here if the salt can be supplied in sufficient quantities.

27. The French Government are supplied by measure, receiving 424 marcals to the garce. Ordinarily they procure their salt from Mercanum; but, if that store runs short, they take it from Gundalum, or from wherever else it is procurable if there be none at Gundalum, as often happens. At Pondicherry a marcal of Mercanum salt was found by careful experiment [illegible]. A garce of 424 marcals would, therefore, weigh 5,162·200 kilos, which, at 32·15 oz. Avoirdupois to the kilogram, equals 165,953 ounces, or 498·1 lbs. more than the official garce weight, which is 157,988 ounces.

28. As during the past five years the French Settlement has been supplied with 366·6 garce annually, at so-called cost price, Rupees 13-14-3 the garce, each, however, containing 498·1 lbs. more than that obtained from the ryots by weight, the loss of salt on the transaction has been 18·49 garce per annum, or 92·45 garce in all, which at its real cost to Government, inclusive of establishment, Police, wastage, and other charges, represents a fair sum now, but which will have to be calculated at its monopoly value when the demand for salt exceeds the supply in the district.

29. This year, owing to the cyclone, the supply was obtained from the Gundalum salt stores at Cuddalore. A marcal of Gundalum salt weighed at Pondicherry 10 kilos and 267 grams. A garce of 424 marcals would, therefore, weigh 4,353,208 kilos or 139,355 ounces, or 1,164·5 lbs. less than the official garce, which regulates our purchases from the ryots. If the full quantity of 366·6 garce was forwarded from Cuddalore, each 1,164·5 lbs. short weight as tested by the machine, the gain has this year been on our side to the extent of 43·23 garce, or more than equal the loss in two years from Mercanum salt. So much for the stability of relationship between weight and measure even in neighbouring divisions of the same district.

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30. Mercanum, with an altered brine supply and improved method of manufacture, may be made one of the finest divisions in the Presidency. There is abundance of room on the swamp for extending the salt-works; labour is plentiful and the soil is pretty good, only one thing is required, that is, a proper feeling on the part of the manufacturers. Many of the Modeliar ryots are large pan-holders. The whole number of pans at Mercanum is 267, of proprietors sixty; at Cundada, the pans, which number 159, are in the hands of twenty-nine men; and at Chunampett, where there are seventy-six four-all ullums, equivalent to 304 of the ordinary kind, there are but twenty-two owners. These are mostly people of influence, intelligence, and means, with whose co-operation anything might be done in the way of improving salt manufacture, but without which, or in face of their passive resistance, nothing, or next to nothing.

31. There is at Chunampett, at various depths from two to six feet from the surface, an irregular deposit of transparent, laurellar, gypsum in lenticular pieces, having fibrous marking on the surface. It is not present in sufficient quantities to make it a commercial object, but there is enough of it to afford employment to local potters if they were taught its manipulation. I baked and powdered some of it and cast it into moulds and dies. Judging of it from its behaviour I should think it quite as pure as the plaster of Paris from which ordinary vases and biscuit China figures, etc., are made. These, as the product of an art prosecuted without machinery, perfected by industry, experience, and manual dexterity—qualities with the possession of which Hindoo art-workers are generally credited—might be successfully imitated at Chunampett.

32. Some additional information on the subject of salt manufacture, as conducted at Mercanum, will be found in my report on Cheyur forwarded to your office at the end of 1872.

From the same Officer, dated Madras, 20th November 1873, No. 15.

In compliance with Board's Proceedings, dated the 18th November, 1873, I have the honour to submit a few remarks on the Collector of South Arcot's letter, herewith returned.

2. I quite agree with what Mr. Sullivan says with reference to brine pits. I have consistently maintained that the sea itself is the best and only certain source of brine supply for natural salt-works, and that the subsoil brine, though it should always, if possible, be utilized, should not alone be depended upon as a source of supply.

3. The pottery pipes he speaks of as being made in the neighbourhood render the direct brine supply project easy of execution if the levels are favourable. The levels should be made out at once. The base of the reservoir, judging from our exploratory excavations, might be sunk four feet below the present surface-level and yet a foot of clay would remain to form an impermeable flooring. This should give an ample fall from the sea.

4. In addition to the supply of sea-water an attempt might be made to obtain subsoil brine through one of Norton's tube wells. It would be interesting as an experiment, though I fear it would be a failure. Subterranean water ways are too well-washed to contain salt; they yield fresh water even near the sea, as

at Cuddalore; and sand and silt, which contain sub soilbrine, will not, I fear, yield up their moisture to pumps.

5. Instead of a reservoir it would be cheap and just as good to have a canal carrying sea-water from the discharge pipe all round the works.

6. The Collector's recommendation, that before the system of manufacture at Mercanum is superseded by another the superiority of that other method should be practically demonstrated by experiments on a large scale, falls in with my request to be allowed to make such an experiment next year. However, I hope to find a better place for the purpose than Mercanum.

7. The Salt Superintendent at Cheyur obtained for me from the Cheyur manufacturers a profit and loss account showing the cost of salt manufacture per garce to be Rupees 13-14-0. This I had no doubt was a gross exaggeration. (See Salt Report, 1872, page 124, paragraphs 15, 16, and 17). It is strange that we are ignorant of what is the real cost of manufacture along the coast except at Mercanum and Ganjam.

8. Since writing the report to which the Collector's remarks apply I have visited all the southern salt stores down to Cape Comorin, and am confirmed in the opinion that mud-coverings are a cheaper and better protection for the salt heaps than straw or leaf thatchings. If Mr. Sullivan would like to introduce them into South Arcot a man might be sent from Kille to Needavasel to learn the business, and he could teach it to others on his return.

THE Board have now before them Dr. Ratton's report on Mercanum, Mr. Sullivan's remarks thereon and Dr. Ratton's further remarks on Mr. Sullivan's

hough Mercanum possesses many great advantages as a locality for salt manufacture there are some grave defects which require remedy. Owing to the great amount of land drainage received into the Mercanum Backwater and the narrow mouth, contracted still further by the Thenbakum Bridge, through which it passes into the sea, it is always late in the season before the brine is of sufficient strength to commence the manufacture of salt, and any unusual fall of rain is apt still further to derange the plans of the manufacturers.

3. To remedy this Dr. Ratton proposes, and Mr. Sullivan approves, that levels permitting a line of pipes should be laid to bring water direct from the sea to the Mercanum Pans.

4. The Board fully approve of the proposition, and request the Collector to get the requisite surveys and estimates made without delay. The chief difficulty will consist in keeping open the sea end of the pipe, and this point should be especially considered and reported on by the Department of Public Works Officer in charge of the Range. It is proposed to store the brine either in a reservoir in a certain low-lying swamp or, if the levels permit, in a canal which would distribute the brine to the pans. The Engineers should consider whether the pottery pipes made in the district would answer, and also whether it would be possible by means of pipes to maintain a sufficient supply. The Board have ascertained from Dr. Ratton that the area of the pans is about 35,000,000 square feet. With

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irrigations of four inches, once a fortnight, the daily supply should be 833,333 cubic feet. But, even though only a fifth of this quantity were supplied, the benefit to the works would be enormous.

5. Mr. Sullivan also proposes to sink Norton's tube wells for the purpose of raising the subsoil brine for the use of the manufacturers. Dr. Ratton supports the proposition although doubtful of the success of the experiment.

6. The Superintendent of Government Workshops will be requested to supply two sets of Norton's tubes, in good order and fitted with fly-wheels and cranks, for transmission to Mercanum. It is observed that Mr. Sullivan has already a driving apparatus in store. He will be so good as to take measures for having the tubes sunk at Mercanum when the season is sufficiently advanced to enable him to test their efficiency, and will in due course report on the result of the experiment.

7. It has been further proposed that attempts should be made to sink wells through the clay at Mercanum which overlies the sandy stratum containing brine, and the Board are of opinion that experiments with different kinds of wells should be made. It is possible that either stakes and brushwood or coarse wattling might be found sufficient to protect the sides from falling in, otherwise wells formed of pottery rings might stand. It is certainly desirable that efforts should be made to utilize the strong brine which is known to exist at a moderate depth below the surface.

8. Another complaint is that the commencement of manufacture is delayed by the proximity of wet cultivation, the percolation of fresh water from the fields for the work has been sanctioned. It should be carried out without delay.

9. The principal difficulty, however, according to Dr. Ratton, lies in the peculiar system of manufacture pursued at Mercanum and the adjoining stations. It is styled the accretion system, and consists in successive supplies of brine being admitted to the beds until the entire quantity of salt required is formed. Salt is not removed from time to time as elsewhere, but all is allowed to remain in the bed, layer upon layer being formed and the whole removed at one time.

This system is, of course, open to the objection that the whole year's crop may be destroyed by a single untimely fall of rain, and Dr. Ratton condemns it in this way on theoretical grounds. It has, however, been practised for many generations, and it is not to be supposed that the manufacturers will at once abandon it on the dictum of any one.

10. In order to judge of the comparative advantages of the different systems experiments of each must be made, and the Board desire that steps may be taken to lay out a certain number of pans at Mercanum for the next season on the plan proposed by Dr. Ratton, and that they should be worked by Government agency and with paid labour and the results carefully noted This should be done in communication with Dr. Ratton, and under his supervision. Even if Dr. Ratton finds, as he hopes, some better place for carrying out his layer experiments than at Mercanum, it is absolutely necessary that one experiment of the kind should be undertaken at Mercanum. The Board do not doubt that when the advantages of a superior process are demonstrated to them the Mercanum manufacturers will not be found unwilling to adopt it.

11. Dr. Ratton has recorded his opinion that the mud coverings for salt heaps in use in the Southern Districts are superior in efficiency and economy to either leaves or straw as used elsewhere, and the Board consider that early trial of this should be made in the different salt stations of South Arcot, Chingleput, and part of Nellore.

12. The Collectors of these three districts will direct their Salt Deputies to depute an intelligent subordinate of the Salt Department during the next few months to proceed to inspect the mode of covering salt heaps with mud in practice in Tanjore, and will have a portion of the heaps stored in their districts next season covered in the same manner, reporting the result on the salt being brought to sale. The Collector of Tanjore will be requested to direct his Deputy to afford these men facilities for ascertaining the practice of his district, and the different Collectors should communicate with him on the subject.

13. The Collector of South Arcot is requested to send specimens of the gypsum deposit stated to exist at Chunampett.

(True Copies and Extract.)

(Signed) J. GROSE,
For Acting Sub-Secretary.

To the Collector of South Arcot,
with copy of a demi-official note from Dr. Ratton.
,, the do. of the Chingleput District.
,, the do. of the Nellore.
,, the do. of the Tanjore.
,, the General Superintendent of Public Works Stores and Workshops,
with reference to paragraph 6.

Fwd. A. S. Rodgers.

Received

PROCEEDINGS, 22ND JANUARY 1874, No. 103.

Encl.

Board of Revenue,
1874.
MADRAS.

JANUARY.
No. 103.

Merkanum Salt Station—in South Arcot District.—Orders passed on Dr. Ratton's report on — and correspondence connected therewith.

Superintendent, Public Works Stores, requested to supply two sets of Norton's tube wells for transmission to Merkanum.

No. 1,248.

PROCEEDINGS OF THE BOARD OF REVENUE, dated 26th May 1874.

Read the following letter from J. H. GARSTIN, Esq., Collector of South Arcot, to J. GROSE, Esq., Secretary to the Board of Revenue, dated Cuddalore, 16th April 1874, No. 187:—

I HAVE the honour to forward, for the information of the Board, copy of a letter from the Salt Deputy-Collector, dated 8th instant, No. 64, reporting on the state of the manufacture of salt in this district in the beginning of the month.

2. I have addressed the District Engineer with reference to the Chunampet Supply-channel alluded to in para. 5 of Mr. Freer's letter.

3. Nothing has yet been [illegible] Department of Public Works Officers, either with regard to taking [illegible] certain if it is practicable to bring sea-water in pipes to the tide. [illegible] regard to the surveys and estimates alluded to in para. [illegible] of the Board's Proceedings of the 22nd January last, No. 103, [illegible] been written to on the subject.

ENCLOSURE No. 1.

From W. FREER, [illegible] Deputy [illegible], to J. H. GARSTIN, Esq., Collector of South Arcot,
dated Ch[illegible]t, 8th April 1874, No. 64.

I HAVE the honour to [illegible] report on [illegible] competency of the stock of salt in hand [illegible] divisions of the district in the beginning of the month, viz.:—

	MDS.
Merkanum	62,276
Gundalum	41,523
Total...	1,03,799

This quantity exceeds the balance in the beginning of last April by 36,825 maun[illegible]

2. The average sales inclu[illegible] for the second-half of the fasli, a[illegible] letter No. 12 of the 29th January [illegible] as yet miscarried, and judging still b[illegible] light we have now in hand more than will suffice for o[illegible] expenditure up to the end of the fasli.

	April, [illegible] and	MDS.
Merkanum	.....	58,97[illegible]
Gundalum and Killai ...	.....	2[illegible]
Total...		

3. Up to the end of last month there were [illegible] at—

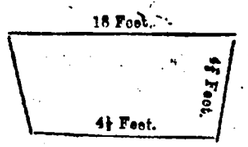
	MDS.
Gundalum	13,668
Killai	1,676
Total ...	15,344

of which 11,400 were stored and brou[illegible] in the month at Gundalum (a fact never realised in the past history of the [illegible] this district), leaving a balance of 3,944 maunds at the end of the m[illegible] ought to accoun[illegible]

4. The manufacture is progressi[illegible] in the Merkanum Division, and a crop is expected at the end of this month: if so, it will be a month in advance of any of the previous years. The supply of brine is scanty, and the ill-paid labourers show no desire to come betimes to take advantage of the rise of the water in the supply-channel by the tide.

O. 1—20,002—12-8-65.

5. It appears to me that the Chunampet Supply-channel is neither broad enough nor deep enough (the average size being as per margin) to bring up an ample supply of brine to the pans, and that it requires the inspection of the Range Officer in order that the needful may be done. This channel should, in my opinion, be put in the same footing as the Merkanum



Supply channel by making it to tap the back-water above the Chunampet Causeway, in which a head-sluice should be inserted so as to have no head-sluice at present, and the channel at high-tide level. We not so efficient.

S. H. GARSTIN,
Collector.

THE Board are glad to find that the supply of salt in hand in South Arcot is sufficient to meet the wants of the district until the new crop has been gathered. It is also satisfactory to learn that manufacture has been commenced far earlier than usual.

(True Copies and Extract.)

Acting Sub-Secretary.

To the Collector of South Arcot.

to the Acting Secretary to Government, Revenue Department.

Read W. H. French.

Revenue 1874. Department.

BOARD of REVENUE,
MADRAS.

PROCEEDINGS, 26TH MAY 1874, No. 1,248.

Dup. 28 May/74. Encl.

Received 29 May

MAY.
No. 1,248.

Salt—in hand in South Arcot District.—Board glad to find that supply of—is sufficient to meet wants of district until new crop has been gathered, also that manufacture has been commenced early.