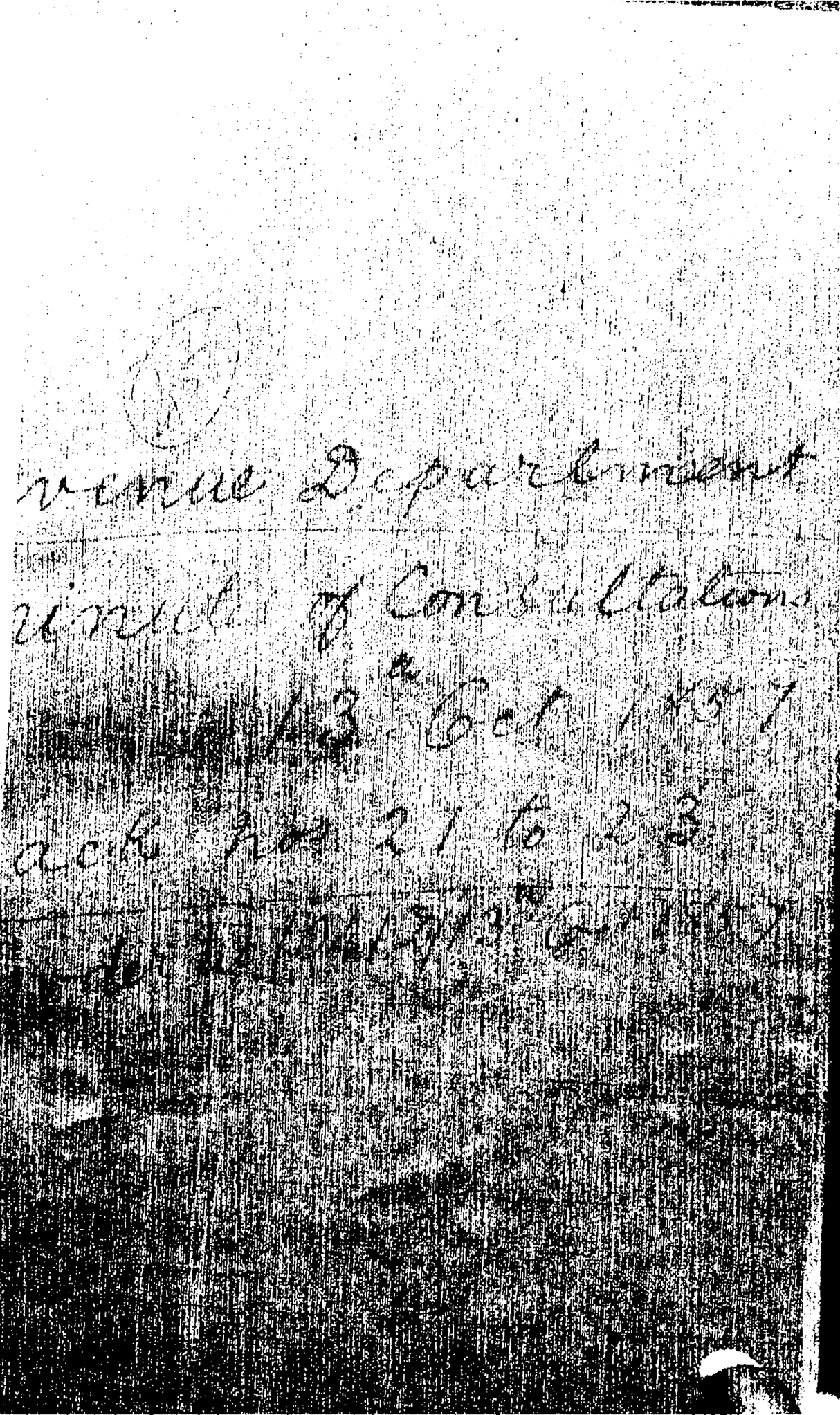


Fort Saint George, Revenue Consultation of 13th October 1857.

No. 21. Read the following Papers.

From L. FORBES Esq., Acting Sub-Secretary to the Board of Revenue; to H. FORBES, Esq., Acting Secretary to Government; Revenue Department; dated Fort St. George, 27th August 1857, No. 2855.

Sir,

1. In accordance with the orders of Government* on the occasion of sanctioning the expenditure of Rupees 4,000 for the purchase of six sets of Instruments for the Survey classes proposed to be established in seventy Districts†, I have the honor by desire of the Board of Revenue to forward the accompanying Reports‡ for the information and orders of the Right Honorable the Governor in Council.

2. Besides the five Districts indicated in the margin of the foregoing para. North Arcot was also provided with a set of Instruments, but as the Head Assistant who was selected for the duty of forming and superintending the class, was unable from press of other business to undertake the charge, no class was established there. A subsequent order of Government having forbidden the entertainment of more classes without special sanction the instruments were returned to the Board's office.

Fort St. George Cons. 8th August 1855.

Ditto Cons. 26th Nov. 1856.

3. The instruments were despatched to their several destinations only in June and July 1857, the Board were therefore unwilling to urge the transmission of the Collectors' Reports before their classes had had the opportunity of using the newly supplied appliances a full year.

Ex. Mis. Con. 1222 dated 5th Nov. 1855, R. D.

Ex. Mis. Con. 615 dated 17th June 1856, R. D.

4. Government are aware that an excess of Rupees 291-6-5 above the original amount of 4,000 Rupees was sanctioned, and a further sum of Rupees 500 was placed at the disposal of the Board to meet requisitions for instruments not remaining in store.

5. Of this latter amount Rupees 313 have been expended in the purchase of three Prismatic compasses passed by the Examining Committee§ and two extra Glasses, for the use of the class recently established in Guntoor, leaving a balance on hand of Rupees 168-6-0. A list of the instruments distributed and remaining in store is appended for information.

§ E. M. C. No. 615 above referred to.

6. Before proceeding to notice the Reports in detail it may be remarked that the standard strength and cost of the classes as approved by Government were,

Board's letter 19th October 1854.

E. M. C. 1374 dated 24th October 1854, R. D.

10 Pupils at 6 Rupees = Rs. 60
3 Peons at 4 do. = „ 12
making a total cost of Rupees 72 monthly.

7. The present Report from Rajahmundry is for the 2nd year of the class' institution. The establishment originally authorized by Government comprized,

Rajahmundry.

E. M. C. 158 dated 6th February 1854, R. D.

10 Pupils at 5 Rupees = Rs. 50
6 Peons at 3 do. = „ 18
Total... 68

* Ex. Mem. Cons. No. 1374 Dated 24th October 1854, para. 4 R. D.
† Para. 3 of Ex. Mis. Cons. 30 in N. C. D. Cons. 15th May 1855.
‡ Reports mostly dated 15th July 1857, in Cons. 27th Aug. 1857.

Masulipatam	„	28th	„	1856,	„	„ 21st	„ 1857.
„	„	15th	„	1855,	„	„ 27th	„ 1857.
Cuddapah	„	12th	„	1856,	„	„ 27th	„ 1857.
Madura	„	14th Aug.		1856,	„	„ 27th	„ 1857.
Coimbatore	„	4th July		1856,	„	„ 24th July	1857.
„	„	9th Aug.		1856,	„	„ 27th Aug.	1857.

பரதகுறிப்பு புறவு - 1

சமர்ப்பிப்பவர் பெயர் R. சிவராமன்

சமர்ப்பிக்கப்பட்ட நாள் 12/06.

சமர்ப்பிக்க வேண்டிய நாள் 22/07.

சரிபார்க்கப்பட்டது. சரிபார்க்கப்பட்டது. ஒப்புதல்
மூத்த மு. நி. ப. எ. உதவி நி. ப. எ. உதவியாளர்
கையொப்பம் கையொப்பம். கையொப்பம்

8. It was subsequently increased to,

1	Surveyor	Rs. 15
1	Do.	„ 10
10	Pupils at 3 Rupees each	„ 30
6	Peons at 3	„ 18
	Total	„ 73

* *E. St. C. to Govt. dated* 1st *May* 1855, *No. D. para.* 11

The additional cost of Rupees 23 monthly was sanctioned as an indulgence on the score of Government to give Mr. Taylor their best support and encouragement. The item of Rupees 150 was also allowed for the purchase of 20 Plane Tables, and a set of instruments at first intended for Tindivanam, was diverted to Rajahmundry in addition to those previously in use there.

9. The rate of pay to the Establishment appears to have been slightly modified since. There were at the date of the Report under review,

	3	Pupils at 10 Rupees each	Rs. 30
Appendix to Sub Collector's letter.	7	Do. at 5	„ 35
In C. Rejoin. dated 14th *July* 1856	1	Do.	„ 5
in Cons. 25th August 1857.	1	Do.	„ 3
	Total		„ 73

In the margin of para. 12 however the total amount of salary is entered as Rupees 73 : 1 the discrepancy very probably arises from one of the pupils being paid Rupees 13 a month as Surveyor, the post having been vacated. It is also presumed that the number of Peons and their salaries remain the same.

10. A report upon the first year's operations was submitted in February 1856 by Mr. Taylor, who left the District in November following. During his charge the pupils and also some Curnums of villages received the usual indoor instruction and were also exercised in the field, many limited surveys by dissimilar methods were undertaken, all tending to show that the District is greatly in need of a thorough Revenue survey.

11. Two months previous to Mr. Taylor's departure the stipendiary class entered upon the study of the principles and practice of the Circuit and Kunch method in which some of the pupils made considerable progress.

12. During the three months antecedent to Mr. Robinson's arrival at the station in February 1856, the pupils were superintended by Dumaroyen, the Annuldar of Muggiltoor, who is reported to be a good surveyor and able officer, and were kept employed in conformity with the instructions left with that officer by Mr. Taylor. The Curnums had dispersed simultaneously with Mr. Taylor's removal, and elementary in-door instruction was in a great measure suspended.

13. On resuming charge, Mr. Robinson found the majority of the pupils scattered over the country surveying detached summits and villages with the view of ultimately obtaining a complete Revenue survey. The boundaries of several villages had been taken with the compass, the kunch measurement of a few commenced, but no village completed.

14. Mr. Robinson was averse to allowing desultory and unsystematic operations such as those under consideration, to anticipate the regular survey which is about to be organized in the Delta, but he urged the employment of the pupils in cases requiring special examination, such as disputed boundaries, concealed cultivation, channels, &c., of which work there was quite sufficient to keep the class in employ.

15. He therefore in communication with Mr. Purris who was of the same opinion, brought the pupils again under active class instruction. The theory and practice of elementary surveying were imparted to such as required further tuition, or were not detached on duty as hereinafter described; particular attention was paid to simple chain measuring, and mapping; the use of the Prismatic Compass was not neglected, nor the circuit and kunch method of operation; and it was intended to carry the senior pupils on to the use of the Theodolite.

16. Mr. Robinson's letter contains also some useful remarks as to the more simple method of mensuration as adapted to village Curnums, in which he proposes to substitute considerably, chain for angular measurement.

17. Of the 12 paid pupils referred to in para. 9, two receiving 10 Rupees each are employed as monitors or teachers of those not on duty, and of the class of Curnums which was reassembled to the number of 73 students and taught until the 23d June last when it was dispersed to enable the Curnums to attend to their cultivation. It was Mr. Robinson's intention to resume their tuition when they were not thus occupied until every village had if possible " at least one Curnum capable of producing a simple but accurate map and measurement of any plot of land required," and the Board hope that this intention has not been abandoned since Mr. Robinson's departure.

18. Besides the paid pupils and Curnums there were also 11 volunteers under instruction; and the 1st class of the central school to the number of 12 availed itself of the last midsummer month's vacation to attend the survey classes, giving Mr. Robinson great satisfaction by mastering the uses of the chain and learning to keep field books. The number that came under the Sub-Collector's instruction for the five months of his charge was therefore 108.

* *Stipendiary pupils,* - - -	12
Curnums, - - - - - - -	73
Volunteers, - - - - - -	11
Central school boys, - - -	12
	108

19. From para. 19 of the Sub-Collector's Letter, it will be seen that 12 of the old stipendiary pupils have obtained various employments, three as surveyors in the English Department, one as Maramut Goomastah &c.

20. Much attention appears thus to be paid in Rajahmundry to surveying with a due return of progress among the students and revenue subordinate officers, indicating that the object of Government in sanctioning District classes is being more and more understood and appreciated in that District. The recent sanction of the Bengal Government for the survey classes in Rajahmundry and Guntoor would appear to render any further application to that authority for the permanent continuance of the class immediately engaging attention, unnecessary.

E. c. Min. Cons. No. 6 *dated* 26*th June* 1856.

21. The class in Masulipatam was instituted in March 1855 under the superintendence of Mr. Chase, Head Assistant, and consisted of

Masulipatam.

9 Pupils at 6 Rupees = Rs. 54
6 Peons at 3 Rupees = Rs. 18

involving a monthly expenditure of Rupees...72

A slight change in the number of pupils and peons has been since made with the sanction of the Board with the view of allotting two chainmen to each detachment of two surveyors. There are at present 8 pupils at 6 Rupees and 8 peons on 3 Rupees each.

To from Masulipatam 26*th ins. Cons.* 21*th August* 1856.

22. The Collector forwarded a letter from Mr. Chase dated 16th July of the same year submitting 4 maps as specimens of the work done by the pupils. There was at that time a great deficiency of appliances both for out and in-door work, only one Prismatic Compass, two protractors and two dividers and afterwards a second Prismatic Compass and stand, and a plane table belonging to Mr. Chase being available for the use of the survey. On a requisition contained in the same letter, and as the portion of the general supply made on the 2d July 1855, and intended for Masulipatam did not fully meet Mr. Chase's indent, the Board ordered the transmission of 1 chain of 100 feet, 1 do. of 50 feet and 2 parallel rulers in addition to that already supplied, and in returning the specimens of map drawing alluded to above, they expressed a hope that future plans would exhibit an improvement.

23. With the report under review nine maps are submitted as specimens of work recently done, together with a statement, shewing the area of all the villages and lands surveyed since the institution of the class. The surveys were made with the compass and chain, and the maps

evince considerable care in their preparation. Four of them have been coloured in accordance with the specimen shown in Lieutenant Beard's journals, and of the remaining five maps Captain Priestley's method has been followed. Mr. Chase prefers the latter and the Board agree with him, as it involves the use of a smaller number of distinctive colours and requires no tintings; it therefore takes up less time and is as clear and useful for revenue purposes as the former method.

24. From the statement it appears that the surveys comprised (1) 16 villages of a total area of 30,315 acres; (2) the boundaries of 2 villages 5,345 acres; (3) 38 seam villages measuring 1,907 acres for which Cowlenamahs were rendered; (4) seams measuring 2,321 acres, taken up for the Godavery channels, &c., in lieu of which other lands had been given; (5) the gardens of the Ex-Zemindar of Desy to the extent of 128 acres. These villages and lands are distributed over 16 different talooks and comprise an aggregate area of 87,000 acres. Two Islands in the Kistnah and 3 other villages were also resurveyed, which work of more immediate utility intervened, and they were in consequence abandoned for the time.

25. Both the Collector and Head Assistant state that the labour involved in the work shown in the statement was excessive, and is not fully represented by the number of acres entered, inasmuch as in the case of some lands taken up by the channels and the land afterwards substituted for them, the corresponding figures were frequently some distance apart and had to be surveyed separately, so that only a few measurements can be taken in hand at one time.

26. The Board are not satisfied that the usual checks for obtaining correct measurements of the areas of the villages have been employed as Mr. Chase states that "the areas of all the fields have been calculated according to the native measurement, viz. by multiplying the mean lengths and breadths together" and "the area of each village has been found by adding the area of all its component fields together." If the aggregate area of a village has been arrived at by the simple process of adding the contents of its component fields without taking any previous step for ascertaining the total area by inspection of that of each holding or field, it is to be feared, that the very important principle especially in surveys conducted with second rate agency and appliances, has been overlooked.

In from Collector 19th July 1856 *in Cons. 27th August* 1857, *para.* 3.

27. I am directed to mention that the Board have recently enquired of the Collector whether he has succeeded in obtaining the help of any of Captain Orr's Assistants as proposed by him to test the progress of the students by requiring them to make a survey under that officer's supervision; and if so, with what result.

19*th July* 1856 *para.* 2 *in Cons.* 27*th August* 1857.

The Collector's attention has also been called to para. 36 and to the Board's remarks regarding the circuit and Kusrah method of survey and that of chain measurement introduced in the Rajahmundry class.

28. From the progress already apparent however in this District, the Board are of opinion that the continuance of the class will be attended with much benefit to the State, and accordingly recommend that the Collector may be authorized to keep it on at the present cost, viz. *Rupees* 72 monthly.

Canara.

29. The Collector of Canara states that survey pupils have not been entertained as yet on pay in his District. The class established in the German Mission English School last year was broken up soon afterwards as its teacher Mr. Hoch was called away upon other duty.

12*th July* 1856 *in Con. 27th August* 1857.

30. At the date of the report Lieutenant Sweeney H. C. S. V. "Pownah" then in the harbour at Mangalore was engaged for two or three hours in the mornings in teaching 22 lads the rudiments of surveying, 12 of whom had obtained situations since joining the class.

31. Mr. Fisher states that until a permanent instructor is attached to the District and the time of the students can be altogether devoted to the study and practice of surveying, it would not be desirable to have stipendiary students.

32. There appears to be no lack of desire on the part of the youths in the District to learn surveying, and the Board cannot but regret that, adverting to the urgent want of a small survey establishment in Canara, as stated in the tabular application *In Cons. 19th July* 1856. 2d July 1856, operations should not have commenced yet. They observe however that there is every prospect of their being able to secure the services of a surveyor to superintend the establishment at no distant period.

Madura.

33. On the 8th April 1854, Mr. Conally intimated that there were more than twelve lads ready for instruction, some of whom Mr. Collett was desirous of taking charge of, that the rest would be instructed under the Collector's supervision by Mr. Cabral a clerk in the Huzzoor lately attached to Mr. Robinson; and that the pupils would be recommended for pay when they appeared from their qualifications to merit it. They were accordingly brought to the notice of the Board shortly afterwards and the strength of the class sanctioned on the 16th January 1855 was,

1 Temporary employe, no pay.	}	Mr. Collett.
4 Pupils at 5 Rupees = 20	}	
5 Do. at 5 do. = 25		Mr. Cabral.
45		

There were also five pupils at 3 Rupees each applied for, but the Board remarked that the work of the pupils, from the specimens of road traces sent, did not appear to require much science in that respect, and parties for measuring whenever necessary could be hired for the occasion, the charges incurred being included in the contingent or extra charges.

34. In explanation it was stated that the delineation of boundaries and measurement of fields were not neglected, but that as a number of roads had to be surveyed in order to allow of estimates for works being prepared, the pupils had been much engaged in that description of work. Mr. Collett however proposed employing three of the advanced pupils in surveying an Unsham.

35. The rates of pay to the pupils appear by the list forming an enclosure to the report now under notice, to have been increased as follows:

6 Pupils at 6 Rupees	= Rs.	36	} Attached to the Huzzoor.
4 Pupils at 4 do.	= ,,	16	}
		52	
2 Pupils at 6 Rupees	= Rs.	12	} Sub-Collector's station but lately
1 Do.	,,	4	} transferred to the Huzzoor.
		16	

making a total of 13 pupils on Rupees 68 per month.

* "*Eleccad*" *north of the town of Calicut.*

36. A plan of an *Unsham** on a scale of 16 inches to the mile, as also other specimens of survey together with eleven Field Books appertaining to them have been submitted. The maximum length of the unsham appears by the scale on the plan to be about 3½ miles and the breadth little less than 2 miles. The plan is neatly drawn and must have involved considerable labor, the smaller specimens are simple but show that some pains have been bestowed on them, and the diagrams at the back of each evince a practical acquaintance with the ordinary rules for the computation of areas.

† *Field Books Nos. 13, 12, 11 and 5.*

37. In four† of the eleven Field Books an attempt is perceptible to record the measurements, &c., in the form usually adopted by surveyors, the numbers employed being English and the notes in the Vernacular, but on the whole the Field books are defective, and beyond the plans themselves no information as to the total area, or the content of the different holdings is afforded.

38. With reference to the survey of the unsham, Mr. Cabral explains that it is not very accurate. The survey was commenced in December 1855 by a base line of 1048 yards being laid down and points fixed with the Prismatic Compass for dividing the survey into triangles so as to admit of one being allotted to each pupil for filling in the details. But when another base

line was taken as a test the discrepancy between the results of the two lines was so great as to necessitate the abandonment of that method. The boundary of the village was then surveyed with the compass and chain and the first step having been connected to Pchenaiy, the measurement of the fields with the rope and the bamboo rod of 12 feet was commenced and the survey brought to a close after much delay and difficulty.

39. The imperfections in the work which Mr. Cabeal very candidly and properly points out are attributed to the want of correct information as to the limitations of the fields arising from the ignorance of the village officers and the unwillingness of owners to afford it; to the defective state of the compasses, most of them being old and worn out and varying from 40 minutes to 5 degrees; the inexperience of some of the lads; the absence of others to other unavoidable work, and his own absence at the Lawrence's during which the fields were measured; the subsequent adjustment of measurements incorrectly read, was rendered impossible; allowing for the disadvantages under which the pupils laboured, it is manifest that more work has been done and the expenses not gained will in a great measure remove the difficulties which have hitherto retarded their progress.

40. It would appear from Mr. Cabeal's report that a very inefficient portion of the instruments supplied for the use of the Survey classes was allotted to him.

Para. 14. It may be that the Survey, but the whole of it is greatly out of order and should it be resolved to continue the class and Mr. Cabeal's instructions it will be necessary to comply with his request to be allowed a room for his pupils, furniture and stationery for their use, and a box to secure his instruments, which otherwise he can not be responsible. Mr. Robinson however is now Acting Collector of Madura, and the Board consider that his interest which he has always exhibited on the subject of surveys will be the best guarantee that every effort will be made to give effect to the wishes of Government. They propose to leave it to him to suggest what he may think best calculated for carrying on the experiment.

41. Mr. Clarke states the students generally are much improved, but that Nos. 2 to 9 merit favorable notice in a special degree. Considering the obstacles in the way, the Board consider Mr. Cabeal's exertions (rendered without remuneration) very creditable to him.

42. On the 13th March* 1854 the Board were informed by the Collector of Coimbatore that he had entertained 3 preliminary pupils at 5 Rupees and 3 Peons at 3 Rupees each, and that it was his intention to place one pupil and one Peon under each of his two Assistants, and the remaining pupil under the Mamaut Superintendent.

Coimbatore.

* *In Consultation 8th April* 1854.

43. The Board deferred recommending this measure for the sanction of Government until they learnt what possibility there was of the pupils receiving instruction adequate to the practical objects for which the district classes were being organized. On the receipt of further explanation to the effect that the pupils were being instructed in surveying and plan drawing under Captain Ludlow's personal superintendence, they included the district among the six to be provided with instruments.

44. From the statement enclosed in the first of the two letters now forwarded it appears that the number of pupils and Peons was subsequently increased under the general sanction to

	Rs.
7 Pupils at 6 Rupees	= 42
8 Peons at 4 „	= 12
	54

but that two of the pupils having been found unlikely to improve were removed, so that at the date of the report there were only 5 pupils and 3 Peons at a charge of Rupees 42.

45. Of the twenty-six specimens of work forwarded there are only five which have any reference (and that on a very meagre scale) to surveying. The rest are mere plans and sections of buildings. The survey specimens are said to have been done "by the pupils by means of rough sticks and models of the own on rough paper" and as the Collector has not furnished the Board with any field book, or notes, or rough calculations to enable them to form an opinion of the correctness of what has been done, little value can be placed on the performances.

46. In the second letter alluded to in the foregoing para., Mr. Thomas explains that at one time the apprentices were under the supervision of Messrs. J. G. Thompson and E. C. G. Thomas when they acquired considerable practical knowledge in road making, rough surveys, building, &c., and they are now variously employed by the officers of the Engineer Department and the Mamaut Superintendent. As Mr. Thomas has no time himself to teach them, he has written to the Civil Engineer of the 7th Division to know whether he would undertake the duty.

47. The Board desire me to observe that as the ends for which the classes were sanctioned are not likely to be attained in Coimbatore under the circumstances represented, it would be better to discontinue the stipendiary class and recall the instruments; and they propose doing so should Government concur in their opinion.

48. From the foregoing remarks it will be seen that of the seven Districts (inclusive of Ryahmundry and Trichinopoly) originally contemplated for the experimental survey classes, Rajahmundry, Masulipatam and Malabar have established classes with various degrees of success, and promise of further advancement, while the one in Coimbatore is recommended to be abolished; Canara may be expected to have one shortly, but the plan has been abandoned in North Arcot and Trichinopoly.

49. The Commissioner of the Northern Circars recommended to Government about a year ago that Mr. Newill the Acting Collector of Guntoor should be allowed to entertain a survey class, on the ground that surveys were in frequent requisition for the remission of sist on lands occupied by the irrigation channels from the Kistnah anicut; the substitution of new cusme for old ones (as taken up, and for the assessment of new unmeasured lands to which the cultivation was extending. The sanction of the Bengal Government to its entertainment was communicated to the Board in E. M. C. R. D. No. 651 dated 26th June 1856, and a class was organized of the following strength.

12th March 1856.

F. M. C. No. 410 dated 20 May 1856, *R. D.*

	Rupees
1 Survey Ameen or Superintendent of the survey class	25
1 Assistant	12
8 Pupils at 6 Rupees	48
10 Chainmen at 3 Rupees	30

Making a total of Rupees 115 monthly.

50. In conclusion, the Board would observe that the duty of establishing and superintending these survey classes was not at all imposed by them on the Collectors. It was only in those instances where application was made to them for such classes, and where they had good reason to suppose that means existed for proper training that they recommended these applications to Government. If the results have not as yet been sufficiently important, the Board would not forget that obstacles exist which must prevent any certainty of *permanence* in the progress of these classes. Their stability and success depends entirely on the personal qualifications of officers who are likely to be at any time removed from the District where they have established a class, and this has already occurred. It is not every Civilian who possesses a knowledge of surveying, or has the means of obtaining the assistance of others, and thus without any disparagement to the service as regards the exercise of their more legitimate duties, it is not to be expected that the scheme now under report can thrive equally well in all Districts.

51. It will be seen that applications for survey classes have been received from 8 Collectors (including Guntoor). That in 3 operations have not yet commenced, in 1 the results have not been altogether satisfactory, and from 4 (Rajahmundry, Guntoor, Masulipatam and Malabar,) the Board have every reason to expect the cost of the classes will be more than repaid. From the 3 first mentioned Districts of the 4, it is probable young men qualified to enter the Department of the new Revenue survey, which it is understood will commence in that part of the Presidency, will be found available, and thus save the time and expense of *teaching* so many new hands, and the work that has already been executed by these classes though not of any great pretentions, has been practically useful to the Revenue authorities.

52. Where labour of this kind is undertaken voluntarily, and at considerable personal sacrifice of time, the Board are not disposed to criticise very rigidly the plans and books submitted for their inspection, but they would offer a few suggestions for a guide in future.

53. The main object of these classes is not to draw sections of buildings, bridges, &c., or even to prepare Topographical maps, which require a knowledge of real Surveying, but to obtain the services of young men who shall be fairly competent after one year's practical and simpler branch of "land measurement" for conducting the plotting of ground work in combination, to scale and a correct method of computing areas of irregular figures. The establishment of *map* is a secondary consideration. The Board would prefer an unpretending plan of a few fields, with the chain lines clearly shown, and a book of entries to check measurements, and offers that a stranger might plot from it, to the most highly finished plan that could be executed.

54. In sending up plans, reference books and the late Inspector's remarks on the Survey Classes, also a report from the Collector, what success has been taken to test the accuracy of the plans.

55. In these Provinces specimens, the plans should always be drawn to a scale of 4 inches to an inch, as the 25 inches to a mile would be adopted a term may be [illegible] plots are not [illegible] were. This will enable others to test the accuracy of the measurements at a glance. The date of each field or plot should be entered in the book.

56. When a defined portion of land is measured, the extent of which is duly recorded in the Public Accounts, it seems in many instances, that area should be stated, as the native terms as well as the area obtained by the new measurement.

57. All areas should be in acres, and hundredths of an acre. No such terms as Cawnies and Guntahs should be allowed. A table for reducing measurements into *feet* to acres, when required, can be obtained by application to the Board.

58. The class instruments on which these classes will be employed, besides measuring, for content should for the examination of doubtful boundaries and the survey of portions of land required to be taken up for Public Works, or *damaged* by floods or alterations in the bed of a river. The classes might also be employed to layout such lines of road, as are under the Collector's own management, and supported by the "Road Fund."

59. The Board propose to recall the Instruments from those localities where they are not required, and to dissolve the class at Coimbatore.

No. 22. Extract from the Proceedings of the Board of Revenue dated 28th August 1857, No. 2876.

Read letter from the Acting Collector of Guntoor dated 3d August 1857.*

In Consultation 28th August 1857.

(Here enter No. 113.)

In continuation of their Proceedings of the 27th Instant, the Board would wish to bring to the notice of Government Mr. Newill's report on the working of his survey classes at Guntoor, which has been received since the close of the Proceedings above referred to.

2. The strength of the establishment sanctioned by Government, was as follows:

Dated 2d May 1856, *No.* 442, *R. D.*

1 Ameen on	25	Rupees per mensem
1 Assistant do.	12	,, ,,
8 Choomatas	6	,, each ,,
10 Chainmen	2	,, each ,,

The whole amount has not been expended, as it appears Mr. Newill has not as yet raised the pay of the Ameen to the full standard.

3. The results are perfectly satisfactory, though they would have been more so had the Prismatic Compasses been of better construction. Mr. Newill complains of those sent him by the Board, but they were the only kind the Board could procure from the Government stores, and they have since particularly requested the department in charge of instruments to supply the kind specified by Mr. Newill, which differ from those usually supplied from England.

4. Mr. Newill explains the process of survey which he has adopted, and it is much the same as that sketched out by the Board in their Proceedings of 27th February 1854, when reviewing Captain Priestley's operations. The only part of it the Board would object to is the

sub-division of the area into 10ths or "Coontas." They consider it most desirable to introduce a decimal sub-division which is not incompatible with native usage, inasmuch as the cawnie has been for many years so sub-divided in the native accounts of some of the Southern Districts. The term "Coonta" often used synonymously with "Goonta" and "Gudee" gives rise to continual discrepancies, inasmuch as it differs in different districts, and the Board wish it to be altogether discontinued. As far as the arithmetical computation is concerned, where measurements are made with Gunter's chain (as in Guntoor) the decimal sub-division is a saving of labor.

5. In measuring the fields, Mr. Newill has adopted the system of measuring not only the 4 sides, as in the ordinary Khusrah but also the diagonal of each. This of course entails extra trouble and time, but not so much so comparatively in Guntoor where the fields are large, but it no doubt adds greatly to the accuracy of the work, and at the same time is appreciated and understood by the natives.

6. In computing the areas of the fields, instead of considering them as rectangles and multiplying the mean of the measured sides, Mr. Newill measures the perpendiculars from the *plotted plan* and computes with this and the measured diagonal. If the scale is sufficiently large this is more correct method than the other, but all depends on the scale.

7. Mr. Newill only forwards two village maps, but the Board understand these to be fair specimens of the sizes of fields in Guntoor. Any scale above 16 inches to a mile (that recommended by the Board to Captain Priestley) would make village maps too cumbersome, but it is not a scale sufficiently large to take certain *measurements from the plot* where fields are less than two acres. On this scale one square inch is 2½ acres, and the side of a square acre 0·324 inch. Land Surveyors in England who measure from the plot use 3 chains to an inch generally, or 253 inches. The full size survey of the cyclonic is 253 inches; and it is to be recollected that in Mr. Newill's system, the perpendiculars are not *measured*, but raised on the diagonals *on paper*, and if the diagonal is very short, as is often most *[illegible] to be in the shape of Trapezia.* [illegible], it is useless to attempt measuring a perpendicular. Still the system is an improvement on the Khusrah, and not inapplicable to localities where average size of the fields is above an acre.

8. The Board remark that in almost every instance, the areas given by Mr. Newill's survey considerably exceed the areas now shown in the village accounts. The Board believe this to arise from the accounts being in Coontas, which have been usually converted into acres at a rate now found to be erroneous. The old measurement in Coondahs was made before the British Government possessed this part of the country.

Paras. 10, 11.

9. Mr. Newill states that "the area of the whole village and of the subdivisions is calculated by scale from the plotted boundaries;" but in the opinion of the Board the plan adopted by Captain Priestley is more accurate, namely to compute the area from the traverse lines, adding or deducting the Offsets and Excesses. This entails considerable additional trouble and time, and Mr. Newill may not have considered it necessary to sacrifice time for this purpose, in a mere Elementary Survey.

10. Besides surveying 4 villages, the circuit of 6 more have been finished, and much progress has been made in the classes in assigning lands in exchange for those occupied by the new channels from the Kistnah and in measuring the allotments in the same villages under the revised [illegible] in accordance with Extract Minutes Consultation dated 7th February 1857, No. 193, R. D.

11. The maps and books sent up by Mr. Newill evince that the work of the classes has been diligently executed but the field books being in the native character, the Board have not been able to test it with the minuteness they would like to have done, and the Board have much pleasure in recommending two continuance of these classes. If Mr. Newill's successor can manage to keep up their efficiency, but take to the Board have elsewhere attributed their unsatisfactory result of their Revenue officers in general to being quite extraneous to the duties for which they are employed.

12. It is however probable that the services of the village men employed in the Guntoor Survey Classes may be available for the more [illegible] Survey about to be commenced on a more extensive system.

Board's letter, para 9.

Appx to Sub-Collector's letter to Collector of Rajahmundry to Board 14th July 1856 and para. 12 of that letter.

Board's letters, paras. 10 to 15.

5. The establishment was a modified continuance of that sanctioned on the 1st May 1855, costing Rupees 337 per mensem. Up to two months before Mr. G. N. Taylor's departure from the Districts, the pupils, and certain Curnums, were in general both in-doors and in the field; and many limited surveys were undertaken by them under instruction. During the last two months of Mr. Taylor's charge, the in-door and branch system was taught, and some progress was made; on his departure the Curnums rejoined their villages, but the Assistant supervised the out-door operations until the arrival of Mr. W. Robinson, who finding the class working in parties scattered over the country in a desultory way, with disorder or wastage, reconcentrated it, with the permission of the Collector, and caused it to resume the form of a strictly educational class; the pupils being brought under both the varied and active practical instruction, with particular attention paid to chain measurage and to mapping. A large number of Curnums was instructed in chain measuring according to the English system, and they continued under instruction until 23rd June 1856, and not 23d June last, as inadvertently stated by the Board.

Note of Collector's letter to Collector para. 13.

Para. 17.

6. Twelve pupils from the Central school underwent examination of the subtraction vouchers, to make themselves masters of the use of the chain, and of the method of keeping field books.

7. The surveying class in Rajahmundry has now become permanent in the Department, under the orders of Government dated 26th June 1856, No. 634, but no specimen of the work done has yet reached the Government.

Classification, 1st para. 21.

Ltr. to Board from 24th August 1856.

Para. 24.

8. In Masulipatam, on the original establishment of the surveying class, appliances both for out and in-door work are said to have been deficient; but as the wants of the class being supplied, it prospered under the superintendance of the Head Assistant Mr. Chaver and 16 entire villages have been surveyed, comprising upwards of 50,000 acres; together with extra land, making up a total Parea of 57,859 acres. The Government readily believe that, on account of the scattered nature of the operations, the labour involved is imperfectly represented by the area surveyed; and they consider the result to be highly creditable to Mr. Chaver and the class which was under his superintendence. It is to be regretted that the operations were not tested by a scientific circuit or traverse; and considering that the areas of the villages as given are merely the aggregate of the areas of all the component fields found according to the native method, it is impossible to expect any thing more than approximate correctness; but inasmuch as the object of the establishment of these classes is not to produce maps to be preserved as final and accurate to ascertain and revenue records, though they may be usefully employed to supply the immediate want of the survey of a disputed boundary, but to train pupils to do this hereafter under scientific superintendence on the general survey, the Government are not disposed to look upon the circumstantial plan or protracts of much consequence. The plotting and mapping, as seen in some of the plans submitted, evidence good proficiency on the part of some of the pupils, and there is reason to believe that in Masulipatam the object has been in great measure gained. Some of the field books should however have been forwarded with the Maps. The style of a surveyor's field book is a superior of interpretation than mechanical skill in plan drawing, which is preferable useful but does not prove the draftsman a careful surveyor, as a neat and well kept field book does.

Para. 22.

From Collector to Board 10th July 1856.

Board, paras. 27.

Collr. paras. 2 of letter to Bd. dated 10th July 1856.

9. It is observed that it was proposed to test the capabilities of the class by causing them to conduct a survey under the immediate superintendence of the district Engineer, the result of this proposal the Board will be so good as to give, in the further report now due.

14
1041

mornings in teaching 22 had the means of surveying 12 of whom had obtained situations since joining the class.

31. Mr Fisher states that with a permanent Instructor [illegible] to the District and the time of the students can be altogether devoted to the study and practice of surveying, it would not be desirable to have stipendiary students.

32. There appears to be no lack of desire on the part of the youths in the District to learn surveying and the Board cannot but regret that, adverting to the urgent want of a small Survey Establishment in Canara as stated in the letter of application 2nd July 1856 operations should not have commenced ere this. They observe however that there is every prospect of their being able to secure the services of a Surveyor to superintend the establishment at no distant period.— [illegible] 19 July 1856

33. On the 8th April 1854 Mr Conolly in Malabar intimated that there were more than twelve

lads ready for instruction, some of whom Mr Collett was desirous of taking charge of, that the rest would be instructed under the Collector's supervision by Mr Chad a clerk in the Huzzoor lately attached to Mr Robinson; and that the pupils would be recommended for pay when they appeared from their qualifications to merit it. They were accordingly brought to the notice of the Board shortly afterwards and the strength of the class Sanctioned on the 13th January 1855 was

1 Temporary Employé no pay		Mr Collett
4 pupils @ 5 Rupees	= 20	Mr Collett
5 do @ 5 do	= 25	Mr Chad
	45	

There were also five peons @ 3 Rs each applied for, but the Board remarked that the work of the pupils, from the specimens of same [illegible] sent did not appear to require much agency & that [illegible] and poles for measuring whenever necessary could be hired for the occasion, the charges incurred being included in the contingent or Extra charges.

the

13
1811

25
1844

Revenue Department

No 2854

Extract from the Proceedings of the Board of Revenue dated 31st August 1844

Read letter from the Secretary to Government Colonization Department dated 31st August 1844

(Waste Land Sales)

Resolved that the Proceedings of the Board of Revenue dated 26th ultimo on the above subject be forwarded to the Secretary Colonization Department for information and that the Board be informed of the Orders passed thereon

Ordered that the following Establishment be entertained from the 1st proximo for the Sales of Waste Lands in the Districts of Coimbatore and Salem

Dated 31st August 1844
Received 4th Sept 1844

1 Tahsildar on ——— 75 Rupees per mensem
1 Renter do ——— 40 ——— ———
8 Peons ——— 6 ——— each
10 Chowkeydars ——— 4 ——— each

The establishment to be entertained on the 1st proximo and the Board to be informed of the number of Peons and Chowkeydars entertained on the 1st of each month

3rd The Accountant General be requested to furnish the Board with a Statement

though they ... have ... [illegible]
... comparing ... [illegible]
... [illegible] ...
by ... [illegible] ...)
... [illegible] ... for the Government
... and they ... [illegible] ...
... Department in charge of the ...
made to ... the ... proposed by
Mr Hewitt, which differ from those usually
adopted ... [illegible]

4 Mr Hewitt ... [illegible] the
practice of ... which ... [illegible]
and ... [illegible] ... in the ...
... [illegible] ... of
... [illegible] ... Captain
Priestley ... the only ... [illegible]
... with regard to the subdivisions
of the ... [illegible] ... They
consider it most desirable to introduce a
decimal subdivision which is not incompatible
with native usage ... [illegible] ... with the ...
has been for many years in ... subdivided
in the native accounts of some of the Southern
Deccan ... [illegible] ...
... [illegible] ...
... to ... disturbances ... [illegible]
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the

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the Board wish it to be altogether discontinued. As far as the arithmetical computation is concerned, where measurements are made with Gunter's chain, (as in Guntoor) the decimal subdivision is a saving of labour.

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sizes

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Note.

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